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HELEN KELLER INTERNATIONAL

FINAL ACTIVITIES REPORT

Vitamin A Deficiency Control Project

Helen Keller International

NIGER

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GLOSSARY

AED	Academy for Educational Development, Inc.
AVRDC	Asian Vegetable Research and Development Center
CM	Centre Medical (Medical Center)
DDS	Direction Departementale de la Sante (Office of the Departmental Director of Health)
DES	Direction des Etablissements des Soins (Office of the Director of Health Establishments)
DIP	Detailed Implementation Plan
DR	Dispensaire Rural (Rural Dispensary)
Dundumi	The Hausa word for "night blindness"
ESV	Equipe de Sante Villageoise (Village Health Worker)
GON	Government of Niger
HKI	Helen Keller International, Incorporated
IU	International Unit
IVACG	International Vitamin A Consultative Group
JNSP	Joint Nutrition Support Project (Joint WHO/UNICEF Nutrition Program)
Matrone	Traditional Birth Attendant
MCH	Maternal and Child Health
MOH	Ministry of Health
MSF	Medecins sans Frontieres
NGO	Non-Governmental Organization
ONPPC	Office National des Produits Pharmaceutiques et Chimiques (National Office of Pharmaceutical and Chemical Products)
PVO	Private Voluntary Organization
Sage Femme	Nurse/Midwife
VAC	Vitamin A Capsules
VAD	Vitamin A Deficiency
VHW	Village Health Worker

EXECUTIVE SUMMARY

The Vitamin A Project in Niger is a collaborative effort between HKI and the Nigerien Ministry of Health (MCH). It is an operational research initiative that began during March 1987 and finished on July 31, 1989.

The two major goals of the project are (1) the development of an operational research program to identify the most efficient, sustainable strategy of vitamin A capsules delivery and (2) the prevention of blinding malnutrition and treatment of xerophthalmia during the life of the project.

The objectives include comparing alternative strategies of program implementation to reach a workable methodology for reducing nutritional blindness among the target population, and increasing awareness of vitamin A deficiency and xerophthalmia among key policy makers, professionals, and the general public.

To date, the project has accomplished the following:

* Training Programs

- Training material development (October 1987)
- First training sessions - Tahoua (November, 1987)
- Second training sessions - Maradi (March, 1988)
- Third training sessions - Madaoua (November, 1988)

* Vitamin A Capsules Distribution

- Prophylactic distribution is ongoing via (1) fixed base health units in Birnin N'Konni, Tahoua starting December 1987, and in Madaoua, Tahoua and Aguié, Maradi starting December 1988, (2) village health workers in Guidan Roumji, Maradi starting April 1988.
- Curative distribution via fixed based health units starting December, 1987 in Birnin N'Konni, March, 1988 in Guidan Roumji, and December, 1988 in Madaoua and Aguié.

Although the project initially used the training programs to distribute VACs directly to health providers, it now relies on the normal supply system of the MOH. VAC stocks were deposited at the medical center of each arrondissement. Dispensaries were asked to request their needs from the center according to the regular supply system.

Data were recorded using the same records of the health units. The project, in its effort to reinforce the existing structure did not introduce an additional recording system for vitamin A activities.

Three rounds of data collection were accomplished during February 1988, July 1988, and February 1989. The aim was to collect data for the monitoring and the operation research systems. Analysis was conducted by HKI in Niger with the assistance of Headquarters. The operation research system was designed in January 1988, and revised in May 1988 and January 1989.

The project conducted two vitamin A days in the school of medicine (May, 1988 and 1989), and distributed currently available information to key policy makers and health professionals. It has also initiated contact to include vitamin A deficiency in the curriculum of pediatrics and infectious diseases.

The project initiated contacts with UNICEF, School of Medicine, MCH division of the MOH, and the pharmaceutical authority for Niger in order to organize a series of meetings to discuss how to integrate vitamin A into the national health system.

A national workshop was held in Niamey during June, 1989 to discuss issues related to the vitamin A deficiency control activities in Niger. The workshop raised a tremendous awareness towards the problem among key health policy makers, health professionals, and the general public.

The project promoted the integration of vitamin A messages in health education sessions of fixed base health units and among village health workers. It has also produced a poster and a list of local foods rich in vitamin A in 7 local dialects. A story book was designed for children in primary school.

The project contacted CARE International, MSF, AVRDC, Pritech, Peace Corps, UNICEF, and other organizations in order to increase their awareness of the problem of vitamin A deficiency in Niger. AVRDC, CARE, and Peace Corps have already taken initiatives.

A system was designed to monitor project activities. The system generated a quarterly report.

The project successfully identified and demonstrated an effective VAC delivery system integrated into the national health system. The final evaluation recommended continuation.

INTRODUCTION

The Vitamin A Project is a collaborative effort between the Nigerien Ministry of Health, the National Blindness Prevention Program, and Helen Keller International. It is an operational research initiative where two strategies of vitamin A capsules distribution were tested to identify the most appropriate in the Nigerien context. The activities began during March 1987 and ended on July 31, 1989. Funding was provided by the Office of Private and Voluntary Cooperation (Grant No. PDC-0284-A-00-6131-00), the United States Agency for International Development, and Helen Keller International.

Due to the operational research nature of the project, a significant amount of data was collected over a large period of time. In addition the project followed an extensive system to monitor its activities and completed a mid-term evaluation in November, 1988. As the project completed its activities in July 1989, this report will summarize the accomplishments of the program since its inception. A final evaluation was undertaken in December, 1989 (see attached).

I. PROJECT DESIGN SUMMARY

A. Statement of Country Project Objectives

The vitamin A project in Niger had two major goals:

1. Development of an operational research program to identify the most efficient, sustainable strategy of vitamin A capsules delivery.
2. Prevention of blinding malnutrition and treatment of xerophthalmia during the life of the project.

The objectives included comparing alternative strategies of program implementation to reach a workable methodology for reducing nutritional blindness among the target population, and increasing awareness of vitamin A deficiency and xerophthalmia among key policy makers, professionals, and the general public.

Project objectives have not been changed since the first annual report submitted during October 1987. However, following discussions with the MOH, more emphasis is being put on nutrition education as a major vitamin A intervention. Hence, in addition to nutritional training, the project has produced a poster and list of local foods rich in vitamin A in 7 local dialects, for use during health education sessions. A story book was designed for children in primary school.

B. Location and Size of the Priority Population

The target population for the project are children 6 months to 6 years of age and immediate postpartum women. The target area is composed of 4 arrondissements:

Department	Arrondissement
Tahoua	- Birnin N'Konni - Madaoua
Maradi	- Guidan Roumji - Aguié

Table # 1: Target areas of the project

The target population is composed of:

- All infants between the age of 6 months to 1 year
- All children between the age of 1 to 6 years
- All immediate post-partum mothers
- All children with symptoms and signs of xerophthalmia
- All children at risk of developing vitamin A deficiency. They are children below the 5th percentile of weight for height, children with measles, children with chronic diarrhea.

For estimates of the size and distribution of the target population in the project areas, see the following table. The total is 194,715. No changes occurred in the target population during the implementation period.

Arrondissement	General Population	Estimated # Children < 6 y	Estimated # post-partum
Birnin N'Konni	253,646	51,490	12,936
Madaoua	167,073	33,916	8,521
Guidan Roumji	211,418	42,918	10,782
Aguié	134,459	27,295	6,857
TOTAL	766,596	155,619	39,096

Table # 2: Target Population

Source of data - Ministry of Health

C. Strategies For Identifying and Providing Follow-up Service to "High Risk" Groups

The project targeted high risk groups as follow:

- Children below the 5th percentile of weight for height
- Children with measles
- Children with chronic diarrhea

Children with the above characteristics are identified by the health workers of medical centers and rural dispensaries, and are given a treatment dosage. Treatment consists of 1 megadose (200,000 I.U.) of vitamin A capsule by mouth immediately upon diagnosis, with repeat dosage the following day and additional dose 1-2 weeks later to boost liver reserves. Due to the high frequency of diarrheal episodes, the project recommended only 1 vitamin A capsule to children with chronic diarrhea. The project encourages follow-up service for malnourished children by the Maternal and Child Health Units in each medical center or rural dispensary. Children with measles, and chronic diarrhea are followed during the general consultation performed daily.

D. Child Survival Interventions

Adequate increased vitamin A intake by children under the age of six promotes the normal development of the eyes and may reduce child morbidity and mortality. Vitamin A deficiency is associated with limited childhood growth and development, as well as leaving the child with increased vulnerability to diarrhea and respiratory infection -- major childhood killers in the developing world.

The project addresses the problem of vitamin A deficiency which, according to the xerophthalmia survey conducted by HKI in May 1986, constitutes a major public health problem in Niger. Historically, Vitamin A deficiency has been known to exist in the Sahelian countries of Africa and was exacerbated by the drought and famine of 1984/1985.

The interventions focus upon capsule distribution, nutrition education, and increased awareness towards the problem of vitamin A deficiency among key policy makers, health professionals, and the general public in project areas. The following is a description of the major activities:

1. Preventive Distribution

The project used 3 different channels to reach the maximum number of children accessed by the health system infrastructure.

Once every six months, health workers of the arrondissements of Birnin N'Konni, Madaoua, and Aguié conducted a mass distribution of vitamin A in their corresponding outreach

villages. One megadose capsule was given to each child not carrying a health card.

Children registered at the dispensaries received the capsule during their routine follow-up visits. This capsule was recorded on their growth monitoring chart.

Children of Guidan Roumji received the capsule from the village health workers. Those who carry health cards followed the same system as the other arrondissements.

Village or dispensary health workers gave each post-partum mother, during the first two weeks after delivery, one megadose of vitamin A. The aim is to increase the amount of vitamin A that reach the new-born during nursing.

2. Curative Distribution

Children diagnosed with night blindness, xerophthalmia, measles, or severe malnutrition were given a treatment dosage in the medical center or the rural dispensary. Those with chronic diarrhea received one megadose capsule.

Vitamin A stocks were deposited by HKI staff at the medical centers at each arrondissement. The capsules were then distributed to the dispensaries and, in Guidan Roumji, to the village health workers for scheduled prophylactic distribution as requested by the dispensaries. It is planned that the vitamin A stocks will, in the future, be distributed to the medical centers by the general drug distribution system. HKI monitors the timely delivery of vitamin A stocks.

3. Training

The project conducted three training programs. One in November 1987 for the health workers of Tahoua and Birnin N'Konni. The second was in March 1988 for those of Maradi and Guidan Roumji. Health workers of Aguié and Madaoua were trained in November 1988. Health workers were trained to identify and manage vitamin A deficiency in project areas. At least one health professional in each medical center or rural dispensary and one village health workers in each village covered by this system were trained. Training of village health workers covered 113 villages out of 125 having VHWS, with a percentage of 90.4%. A group of trainers was trained in each department of the project (Maradi & Tahoua).

HKI's training consultant visited the project in October 1987. She produced a significant amount of training material which was also used by the National Blindness Prevention Program and in sessions of the medical and nursing school. (Annex I) The following table shows number and percentage of trainers and trainees.

INDICATOR	Maradi		Tahoua	
A: Training of the Trainers				
# trained	8		5	
	G. Roumji	Aguie	B. N'Koni	Madaoua
B: Training of Health Professionals				
# existing	18	13	31	19
# trained	14	9	15	14
% trained	77.7%	69.2%	48.3%	73.7%
C: Training of Village Health Workers				
# existing	225			
# trained	185			
% trained	82.22%			

Table # 3: Number and percentage of trained health workers

Source of data: Training Program Reports

4. Official and Public Awareness

One of the major objectives of the project was to raise the awareness of key policy makers and health professionals to the importance and the magnitude of the problem in Niger. To reach such a goal, the project used a multi-approach technique as described in the detailed implementation plan. The following activities were accomplished:

- a. Project administrators held meetings with government officials, health policy makers, health professionals and community leaders on the importance of vitamin A deficiency and control efforts.
- b. Project office distributed, via mail, currently available information about vitamin A deficiency to policy makers and health professionals. (Annex II)
- c. Two vitamin A days were organized during the spring of 1988 and 1989 for the students of medical and nursing schools. The aim was to increase the awareness of the new graduates about the importance of the problem, and the challenges they face to control it.

- d. A conference was held in Niamey during May 1989 to discuss all issues related to the vitamin A problem in Niger. The conference achieved its objective of drawing national attention to the problem and to the control efforts accomplished by the project.
- e. The project organized a series of meetings with UNICEF, School of Medicine, MCH division of the MOH, and the pharmaceutical authority for Niger to discuss how to integrate vitamin A into the national health system.

Training programs, vitamin A days, and the national conference received significant coverage by the media. (Radio, Television, and Newspapers)

The effects of these efforts were demonstrated as follow:

- a. Medical and Nursing school increased the time devoted to vitamin A in their curriculum (ophthalmology and pediatrics courses).
- b. Nursing school asked to use the training manuals of the project as a reference for their ophthalmology course.
- c. National Blindness Prevention Program (NBPP) asked UNICEF to provide vitamin A capsules for the other regions not covered by the project.
- d. HKI's training materials have been adopted by the NBPP and will be used in all training sessions of health workers throughout the country.
- e. Several dispensaries, outside project areas, send requests for supplies of vitamin A capsules.
- f. Maternal and Child Health Units in the Commune of Niamey decided to give vitamin A capsules to all cases of measles, and severe malnutrition.
- g. The Ministry of Health included vitamin A on the essential drug list following the recommendation of the national conference on health held in Dosso during the summer of 1988.

In its efforts to educate the public about the problems and the different means to control it, the project produced a significant amount of health education materials. This included materials to be used by health workers during the regular health education sessions held in the dispensaries, a Poster, and a story book designed for school children. All materials were produced in appropriate languages and cover various topics including the promotion of breast-feeding, knowledge of vitamin A-rich food, and the promotion of their consumption by children from six months on.

5. Operational Research

The project also focused on identifying an appropriate methodology to deal with the problem of nutritional blindness in Niger. This was conducted through an operational research approach. Two different strategies of capsules distribution were being undertaken in the arrondissements of Birnin N'Konni and Guidan Roumji. Data were collected from all medical centers and rural dispensaries in the 2 arrondissements in February 1988, July 1988, and February 1989. In addition, house-to-house data were collected from ten villages randomly selected in each arrondissement, visited in July 1988 and February 1989. All data were then analyzed by HKI/NY and HKI/Niger.

The final data analysis report concluded that the strategy implemented in Guidan Roumji reached a higher percentage of the target population. For a full description of the conclusions of the data analysis, please refer to page 29 of the final data analysis report attached to Annex IV.

6. Supply and Data Recording

Although the project initially used the training programs to distribute VACs directly to the health providers, it now relies on the normal supply system of the MOH. VAC stocks were deposited at the medical centers of each arrondissement. Dispensaries were asked to request their needs from the center according to the regular supply system.

Data were recorded using the same records of the health units. The project, in its effort to reinforce the existing structure did not introduce an additional recording system for vitamin A activities.

7. Supervisory Tours

Supervisory tours were conducted by the project staff during the life of the project. The aim was to learn about the implementation of the activities, and to conduct on-the-job training for health workers.

E. Improvements in Program Quality

Since the beginning of the implementation plan, the project has emphasized the importance of improving program quality and effectiveness.

1. Each activity conducted by the project was analyzed as described in monthly project reports or field trip reports. This gave a set of "recommended/unrecommended items" which was used in the planning of similar activities in areas such as training, field trips, and communication with the government.

2. The project set up a monitoring system which allows continuous evaluation of project activities. The system consisted of 27 indicators. (Annex III) The monitoring report was generated every three months.
3. Meetings were held routinely with government officials and key policy makers at the national and the local levels to discuss planned activities in order to adjust theoretical planning to the cultural and geographic setting of Niger.
4. The project encouraged any involvement of the Ministry of Health officials in the issue of vitamin A. For example, the School of Public Health (Nursing) plans to use the manual developed by the project to train health professionals in their regular curriculum.
5. The project participated actively once every six months in the supervision of health professionals in Health Centers and Rural Dispensaries. This allowed direct contact with the primary health care providers. Experience obtained during these visits were used to adjust both planning and implementation of future activities.
6. Periodic review of project implementation and work plans by the Health Officer of USAID local mission in Niger and HKI's Headquarters technical staff allows assessment of program quality.
7. The project conducted three rounds of data collection. An analysis report was generated after each round. It included a description of the methodology and tools used and a set of recommendations. This information was used to enhance the process for the next round.
8. As stated in the Detailed Implementation Plan, the project explored with the Ministry of Health the possibility of adding vitamin A to the national system of data collection. Vitamin A data is now included in the national health information system.
9. In an effort to increase the skills and knowledge of project staff, the following activities were undertaken:
 - i. HKI/Niger Country Director attended the International Vitamin A Consultancy Group (IVACG) meeting held in Addis Ababa in December 1987. He also attended two Child Survival workshops conducted in Rwanda and Kenya during June 1987 and 1988 respectively. This was an excellent opportunity to share experience with other child survival projects.
 - ii. HKI/Niger Country Director attended the regional HKI meeting for Africa held in Addis Ababa in December 1987. This allowed for discussions and planning with HKI staff from New York and other field offices.

- iii. HKI/Niger Country Director made three visits to Headquarters in January 1988, May 1988, and January 1989 to discuss project activities with HKI's senior technical staff and management executives.
- iv. HKI Field Coordinator who is a Nigerien health professional attended a workshop held in Niamey by the Asian Vegetable Research and Development Center on vitamin A gardening. Representatives from Mali, Burkina Faso, Mauritania, and Niger attended the workshop. This allowed for good interaction between participants.
- v. HKI Field Coordinator attended the WHO nutrition workshop in Mali during April 1989. This provided a good opportunity to share information about different nutrition programs and means to incorporate vitamin A activities.
- vi. HKI Field Coordinator attended a training program organized by the Academy of Educational Development in Niamey. This was followed by participation in an ethnographic survey which served as a base for a nutrition social marketing proposal.

A comparative analysis of the quality of the activities accomplished by the project reveal a significant improvement over time in health programming, project management, and information collection.

II. LINKAGES TO COMMUNITY, GOVERNMENT, AND NGO HEALTH ACTIVITIES

The activities of this project are being incorporated into the existing governmental health system infrastructure. A testing of two alternative strategies of capsule distribution provided information about the most feasible approach in the Nigerien context. The determination of an effective strategy has financial and personnel implications as well as humanitarian impact in reducing vitamin A deficiency in populations at risk.

The results of the operational research analysis report were discussed in detail during the Vitamin A Workshop held in Niamey in early June, 1989. The workshop grouped all decision makers from project areas, several peripheral health workers and representatives from all the technical divisions of the Ministry of Health.

On the Governmental level, the project cooperates with four national programs:

1. National Blindness Prevention Program

Since the planning phase, the project cooperated with the National Blindness Prevention Program. In fact the director, Dr. Kabo Moussa, is the government counterpart for the vitamin A

project. Linkage took place in many activities such as training, health education material production, extending vitamin A activities outside project areas, etc.

2. National Diarrheal Disease Control Program

Although both projects see room for future collaboration, a decision was made to wait until the diarrheal program is well accepted before adding vitamin A activities.

3. Expanded Program of Immunization

Discussions have started to examine the integration of vitamin A into this national program. The idea of distributing vitamin A capsules has been accepted by the Director of the EPI program. The Ministry of Health and HKI will cooperate in identifying the appropriate methodology.

4. Joint WHO/UNICEF Nutrition Support Project (JNSP)

HKI provides technical assistance to the JNSP to conduct a vitamin A rapid assessment of its project regions. HKI will also cooperate in planning a four-year project based upon the the assessment findings.

On the peripheral level, the project is constantly in contact with administrative and health authorities. Several health centers and rural dispensaries have conducted meetings with community leaders to discuss the vitamin A problem. Similar meetings have been held in villages by village health workers. This represents a major success for the project because these activities were initiated and sponsored completely by the communities without any added support from the project.

Other collaborations have been organized. The project has initiated contact with the Horticulture project of the Asian Vegetable Research and Development Center to examine possible linkages. The project collaborates with CARE International on their child survival project in the Department of Zinder and with AFRICARE on their child survival project of Dosso and Diffa.

Cooperating Agencies	
CARE International	AFRICARE
Asian Vegetable Research and Development Center	
Tulane University	U.S. Peace Corps
Academy of Educational Development	
Medecins Sans Frontieres	U.N.I.C.E.F.

The Peace Corps has asked to participate in the curative distribution of vitamin A capsules and nutrition education. Thirty-eight Peace Corps volunteer nutritionists were trained to perform these activities in their villages. HKI/Niger provided the Vitamin A Capsules (VAC), and the appropriate protocol necessary for proper usage.

In addition the project is in close contact with Tulane University, and the African Food System Initiatives project. HKI/Niger opened discussions with the Academy of Educational Development to work together in their nutrition social marketing initiative in Niger. The project is also cooperating with Medecins Sans Frontieres in their nutrition surveillance program in Maradi.

HKI has been working closely with UNICEF and the MOH negotiating to get UNICEF to donate necessary stocks of vitamin A capsules to the government for the National Blindness Prevention Program. In summary, HKI serves as the lead agency in vitamin A in Niger, serving as a focal point and forum for discussion.

III. HUMAN RESOURCES AND TECHNICAL SUPPORT

Human resources of the vitamin A project can be categorized into three groups.

1. HKI field staff

This field staff included Country Director who served as the project manager. Dr. Ahmed Zayan is a physician with a Master's Degree in Public Health from the University of Pittsburgh. He has extensive experience in the management of international health programs. Dr. Zayan Arrived in Niger early March, 1987.

A Field Coordinator was hired in February 1988 to assist the project manager in the implementation of project activities. Mr. Ide Djermakoye is a Nigerien health professional with public health training. He has 25 years of experience in the rural health system of Niger.

Support staff includes a Secretary/Accountant, and a driver. The remaining needed logistical support was provided by CARE International until the end of March, 1989 when HKI in Niger moved to a new location and hired a secretary, and 2 watchmen.

2. Ministry of Health Participants

The decision-making body of the project was the Administrative Group which was formed of the Director of Health establishments, the Director of the National Blindness Prevention Program, and the Country Director of HKI in Niger. Its role is to follow project activities (past & future). The group met every three

months to review project activities, overcome any difficulties in program implementation, and suggest solutions to problems. Since the Ministry of Health, the National Blindness Prevention Program, and HKI were represented, the group was able to coordinate project activities with other ongoing functions. In addition, decisions taken were coherent with the Ministry of Health and HKI policies.

On the regional level, the Departmental Health Director was responsible for project activities. An arrondissement coordinator the chiefs of the medical centers was designated in each of the four arrondissements of the project. Nurses in charge of rural dispensaries and village health workers were responsible for the implementation of the activities in their areas.

During the last year, the project was implemented in two new arrondissements (Madaoua and Aguié). In each of them, the chief of the Medical Center (MC) took full charge of the implementation of project activities. They were helped by a deputy in the MC and all the Chiefs of rural dispensaries. On the departmental level, the Departmental Director of Health supervised the implementation. He was assisted by other professionals in his office or in the departmental hospital.

The cooperation between the project and the Government of Niger is very constructive. HKI has been accepted as an active PVO in Niger since November 1987. This project is implemented under the supervision of the MOH. It is assigned to the "Direction des Etablissements des Soins" (DES). As described in the DIP, the DES supervises the project administratively and the Director of the National Blindness Prevention Program (NBPP) technically. Recently, the Director of the NBPP has been promoted Dean of Niamey School of Medicine thus expanding his sphere of influence in public health in the country. On the peripheral level, project activities are implemented by doctors and nurses in charge of medical centers and rural dispensaries, in addition to village health workers in the arrondissement of Guidan Roumji.

3. Headquarters Support

HKI/Niger receives continuous support from HKI Headquarters. Country Director reports to the Manager of the Africa Region who is a public health specialist. The regional manager is assisted by a Desk officer and a Secretary. Special experts in training, educational materials development, vitamin A related issues, monitoring, and evaluation are available at Headquarters to call upon when the need rises. This support was provided either through visits from Headquarters experts to the field or vice versa.

Victoria Sheffield, HKI Training Director, spent 25 days in Niger during October 1987 to develop training material. She was able to produce the following items during her stay (Annex I):

1. Three training manuals (for training trainers, nurses, and village health workers);
2. Three training guides
3. Food value list (in 7 languages)
4. Training tool list
5. Community education guide

She was also able to prepare the slides necessary for the production of the project poster and drawings for a children's story book.

During December 1987, HKI's Country Representative from Niger visited HKI/NY. This was a good opportunity for Headquarter's staff to review project activities and advise on different issues. HKI's epidemiologist examined the operation research and the monitoring system for the project. Another review of the same system was done in May, 1988 during another visit of the Country Representative to New York. This time discussions were based on experience since HKI's Niger project staff and representative from the Ministry of Health in Niger had collected data from all Health Centers and Rural Dispensaries of Birnin N'Konni. A third visit for discussions and consultation was accomplished in January, 1989.

HKI's Regional Manager for Africa visited the project in March 1988. During her visit, she was able to attend the training of the trainers for the Department of Maradi. She exchanged ideas with project staff on several issues. She also met with key policy makers in the MOH and USAID where discussion included a review of the implementation plan of the project and future involvement of HKI in Niger. Another visit was accomplished during June 1989. The objective was to review the process to complete the project, examine future plans for HKI in Niger with the Ministry of Health and the local USAID mission, and discuss the transition of the position of Country Director and project manager.

In November 1989, Ms. Victoria Sheffield visited the project for 15 days to conduct the mid-term evaluation. She was also able to attend the training program held in Madaoua. This gave her the opportunity to observe the implementation of the curriculum which she developed one year earlier. During her stay, Ms. Anne Paxton and Dr. Louis Pizzarello, HKI medical advisor, visited Niger to discuss program implementation related issues, and future activities of the project.

Mr. Robert Gern, HKI Monitoring and evaluation consultant, visited Niger for 11 days during the month of April, 1989. His objectives were to finalize the analysis of the data collected during the life of the project and start the operation research final analysis report.

The project also received tremendous assistance from other divisions of Headquarters such as Accounting, Personnel, Procurement, computers, etc.

IV. PROJECT HEALTH INFORMATION SYSTEMS

A. Baseline Survey

The vitamin A project completed its baseline survey from May 20 to May 30, 1986 by a team from the Ministry of Health and HKI.

A stratified random sample of 1,997 children aged 0-10 were seen at 10 sites chosen from the departments of Tahoua, Maradi, and Zinder. The results of this rapid assessment of the prevalence of xerophthalmia in Niger indicated that vitamin A deficiency is a public health problem. Among the 0 - 5 year age group, 3.9% of cases had night blindness, 0.93% had active signs of xerophthalmia and 0.22% had corneal destruction. The reported rates of night blindness and the observed level of ocular signs of active xerophthalmia indicate a chronic problem of vitamin A deficiency. These rates of active and inactive VAD in children 0-5 years surpassed the WHO criteria for constituting a public health problem.

Severe signs of active xerophthalmia were found solely among children less than six years. The prevalence of past vitamin A deficiency, e.g. vitamin A or measles-related corneal scars, was six times greater in children ages 6-10 years compared with children under age six years. This reflected the accumulation of prior cases of corneal destruction over time.

B. Operation Research Data Collection

Three rounds of data collection were completed by the project. An integrated team from the Ministry of Health, the National Blindness Prevention Program, and Helen Keller International collected data from project areas. In addition to the HKI/Niger staff (3 persons), the MOH provided three participants on the national level and 2 on the local level.

During February 1988, data were collected from all health centers and rural dispensaries of Birnin N'Konni (7 days). In July 1988 (12 days) and in February 1989 (16 days), data was collected from all health facilities and 10 randomly selected villages from each of the arrondissements of Birnin N'Konni and Guidan Roumji.

A special questionnaire were used by the team to collect data needed to analyze the efficiency of each of the two strategies. It was developed by HKI in Niger, reviewed by HKI's epidemiologist and tested by project staff. Criteria for choosing the indicators were drawn from the detailed implementation plan which describes the rationale for the operation research methodology.

At the clinic level, data are recorded in different registers. Cases of xerophthalmia, night blindness, measles, and chronic

diarrhea are registered in the clinic register. Those with severe malnutrition are recorded in the follow up register. Maternal and child health units keep records about children under six and pregnant mothers. The record contains information about growth monitoring, vaccination, and other medical and logistical data.

Village Health Workers at the community level keep records on forms which utilize sketches, each represents a common disease or condition, for data recording. The VHW put a mark under the appropriate sketch each time he provides a service. The nurse of the rural dispensary adds them up and transfers the total to a special register kept at the clinic. Family cards and registers are used but their efficiency are doubtful. Data collected by HKI project monitoring teams is found in the above-mentioned records.

Operation research data collected every 6 months are used for central planning and management. These data include:

- Logistical problems related to training
- Proportion of vitamin A service providers trained
- Description of the existing supply system and identification of problems pertinent to vitamin A capsule distribution
- Determination of the extent of the capsule coverage for prophylaxis and treatment
- Ability of VHWs to accomplish their tasks
- Ability of clinic based people to recognize signs and symptoms of Vitamin A deficiency
- Procurement of vitamin A capsules (VAC) in Niger, distribution to and receipt of VAC by service providers, description of problem encountered
- Efficiency of supervision.

Data were tabulated and analyzed by HKI staff in New York and Niger with some assistance from the Ministry of Health. A lotus 1-2-3 computer program was used for this purpose.

Results of the analysis were discussed during the national workshop, held in Niamey during June, 1989. The final data analysis report which is attached to annex IV was sent to all parties involved in the implementation of the project.

C. Monitoring Systems

Annex III contains a copy of the monitoring system used by the project. Twenty seven indicators were used to monitor all planned project activities. Some of these indicators were monitored every three months, others every six months.

During the round of data collection, in addition to the operation research data, other indicators were used to monitor project activities. The collected data are recorded in a monitoring report every 3 months and the operational research report every 6 months. Those reports are mailed to all participants up to the rural dispensary level.

Last year expenditures showed approximately 30% for monitoring. The following represent Tier I indicators as collected by the project:

INDICATOR (Tier I)	
Total Population	766,596
No. of children under 12 months	29,897
No. of children between 12 & 23 months	27,597
No. of children between 24 & 35 months	25,297
No. of children between 36 & 59 months	48,295
No. of children between 12 & 59 months	101,957
No. of women of reproductive age	151,019
No. of women between 15 & 19 years	43,696
No. of women between 20 & 24 years	39,863
No. of women between 25 & 29 years	33,730
No. of women between 30 & 34 years	29,897
No. of women between 35 & 39 years	13,798
No. of women between 40 & 44 years	16,865
No. of women between 45 & 49 years	6,133
Estimate annual no. of live births	34,497
Total number of Health Workers	
1. Maradi	264
2. Tahoua	55
Life of Project Budget (USAID)	\$400,337
Life of Project Budget (HKI)	\$228,109
Estimated % of USAID contribution allocable to nutrition activities	100%
No. of project trained Health Workers	65
No. of proj. trained village hth workers	185
No. of service units providing vitamin A	26
No. of VAC distributed by the project	160,000
No. of PVOs contacted	8
No. of supervisory tours	4

The project used the following indicators to track progress towards achieving sustainability:

- i. Number and percentage of nurses trained.
- ii. Number and percentage of VHW trained.
- iii. Quantity of vitamin A literature distributed to health policy makers, and professionals.
- iv. Number of Health education sessions where vitamin A was mentioned.
- v. Number of VAC received by the rural dispensaries.
- vi. Number of VAC existing in the rural dispensaries.
- vii. Number of VAC distributed by the rural dispensaries.
- viii. Number of cases of xerophthalmia treated at the rural dispensaries.
- ix. Number of cases of high risk treated at the rural dispensaries.
- x. Number of supervisory tours conducted by the health authorities to the rural dispensaries.

D. Midterm Evaluation

A mid-term evaluation of Helen Keller International's "Control of Vitamin A Deficiency" project in Niger was accomplished in October 1988. Victoria M. Sheffield, Director of Training for HKI and Dr. Sally Stansfield named by USAID were to visit Niger at that time to perform the evaluation. Schedule conflicts prevented Dr. Stansfield from participating in the evaluation. As Ms. Sheffield was already in Niger, she carried on with the evaluation as planned for HKI's purposes. (Annex V)

a. Evaluation Model

An open-ended interview format was used as the most direct, practical and appropriate technique for use in the evaluation.

Furthermore, questionnaires for HKI Staff, government counterparts, trainers, trained health workers, and community members were developed for the training program evaluation which occurred simultaneously with the mid-term evaluation.

The evaluation followed the "Mid-term Evaluation Guidelines for CSII Projects", July 12, 1988 by Dr. Gerold V. van der Vlugt, Child Survival Coordinator, AID/FVA/PVC.

Arrangements have been made for a comprehensive schedule which included the following:

1. Interviews with HKI Staff.
2. Interviews with local counterparts including the staff of the National Program to Prevent Blindness.
3. Interviews with USAID/Niamey health officers.
4. Interviews with appropriate NGO representatives.
5. Field trips to selected towns and villages in the Departments of Tahoua and Maradi for the purposes of evaluating the training program.
6. The opportunity to observe a nurse training session in Madaoua, Tahoua.

b. Evaluation Participants

1. HKI/Niger Country Director
2. HKI/Niger Staff
3. Director, National Blindness Prevention Program
4. Manager, National Blindness Prevention Program
5. Ministry of Health/DES
6. Ministry of Health/DDS
7. USAID Health Officers
8. Staff at the Department of Ophthalmology/MOH
9. Associated NGO Representatives
10. US Peace Corps Volunteers

The following are the conclusions and the recommendations of the mid-term evaluation:

a. Conclusions

In general, the Niger program is an extremely good one. It has both accomplished and institutionalized nearly all of its objectives. There are some minor difficulties which the project staff is addressing and the evaluator was not hit with any "surprises" during the evaluation.

1. A tremendous awareness about vitamin A deficiency and its management has been created in the two project departments as well as within the MOH and with other NGOs. The project is continuing the momentum through the institutionalization of its activities. An added benefit has been the requests for materials to be used in the training programs in the medical, nursing, and public health schools.

2. The National Blindness Prevention Program has adopted HKI's training materials for use in its activities countrywide. This has been an excellent result in the interests of cooperative activities and sustainability.
3. HKI has been able to get vitamin A included in the "Essential Drugs List" for Niger which is a strong and sustainable accomplishment.
4. The Training Program for the most part have been institutionalized through the activities of the National Blindness Prevention Program and the ongoing training of new health personnel in the medical, nursing, and public health schools.

The VAC Distribution Program is making progress towards institutionalization through the inclusion of vitamin A on the "Essential Drugs List". HKI is working for full institutionalization of distribution through negotiations with UNICEF to have VAC donated to the government, encouraging the chief medical officers to request VAC on the monthly forms, and to get VAC distribution listed in the formal MOH reporting system.

The operational research data will be analyzed by HKI in the coming months and presented at a national workshop planned for June in Niamey. At this workshop, comparison of the two operational research strategies will be discussed and it is hoped that the Ministry of Health will determine that a national policy on vitamin A will then be set.

5. Technical support from HKI/NY and from external sources has been adequate in strengthening the activities of the project.
6. The project is on target with its finances and will have enough funds to cover the remaining project activities.
7. It was observed that, for the most part, nurses and village health workers do not give public eye health education talks. This is often due to time constraints in the clinics. From those interviewed, it can be assumed that almost none actually travel to villages to speak with the community members because of the tremendous distances and the lack of transportation.
8. At the moment, HKI is facing difficulties with the issue of per diems for the Nigerien participants in the training program. As described earlier,

USAID/Niamey has reduced the schedule of per diem rates and the government has not concurred and has not issued any formal change in rates. For this reason, the Nigeriens feel that they should be paid according to the schedule of rates issued by the government which has not, to date, been changed.

When this issue came up in discussion during the training session in Madaoua, the country director was really caught between a rock and a hard place being tied to giving only the rates authorized by USAID. I was impressed with his demeanor and his ability to separate issues from the highly charged emotions and I hope that this matter will be resolved as soon as possible between USAID and the Government of Niger.

b. Recommendations

1. As vitamin A deficiency is due to malnutrition, treated with the micronutrient vitamin A, and is prevented with good nutrition, the Nutrition Division of the MOH should be brought more into future activities. Xerophthalmia, the strikingly obvious and devastating ocular result of vitamin A deficiency necessitates eye care services involvement in the recognition and management of this condition. However, with the added guidelines addressing measles, diarrhea, acute respiratory infection (ARI), and severe malnutrition, the nutrition division should be encouraged to give great emphasis to vitamin A in its training of field workers and its general activities.

Additionally, HKI's collaborative activities with Dr. Gamaty and the Department of Pediatrics should continue to be strengthened so that health workers recognize that children with these life-threatening conditions should also be given vitamin A.

2. The project has created an awareness within the MCH system about vitamin A deficiency and the MCH officials have agreed that children should be given treatment doses of vitamin A when they present with xerophthalmia or measles. Talks should continue with MCH personnel to encourage them to follow the guidelines which recommend that one dose of vitamin A also be given to children with acute diarrhea, ARI, and severe malnutrition.

3. As the VAC stocks will no longer be delivered to the medical centers by HKI, but rather through the regular MOH drug distribution channels, HKI staff realize that they have to monitor whether the stocks reach the centers in time for the prophylactic distributions.
4. HKI is working closely with UNICEF and their JNSP project to integrate vitamin A activities within their nutrition work. UNICEF certainly recognizes the importance of vitamin A and it is hoped that HKI will be successful in convincing UNICEF to supply stocks of VAC to the Government of Niger in the future.
5. HKI has created a strong network of cooperation with other NGOs and many such as CARE, MSF, and AVRDC are hoping to include vitamin A initiatives into their future programming. Project staff and personnel from the National Blindness Prevention Program will need to become strong advocates to the NGOs to continue the momentum created about the importance of vitamin A deficiency so that vitamin A will indeed be included in future programming.
6. Lastly, HKI has recognized areas in the training program that need modification and will hold meetings with the trainers to begin to make the necessary revisions. The Director of Training in New York will continue close contact with the country director to see that efforts are maximized in the revision process.

Results of the evaluation were communicated to the project staff, participants, and all other professionals implicated in the implementation of the activities. As soon as the report arrived in Niger, it was translated and distributed as described. In addition findings were discussed during the project workshop held in Niamey during June, 1989.

Annex V contains the full report about the mid-term evaluation.

Based on the mid-term recommendation, the following took place:

V. WORK PLAN AND CONSTRAINTS

The detailed implementation plan contained a global work plan for the project to achieve its objectives. Every six months, project staff outlined a half year plan that contains more specific activities. This permitted

readjustment in the time frame of each activity and its optimal timing.

No major problems or constraints faced the project during its life. Some of the MOH personnel raised the issue of possible side effects caused by mass distribution of VAC. The project intensified its efforts to convince health policy makers that the advantage of distributing VAC and promoting vitamin A rich foods outweigh the possibility of any side effects. Since all activities proceeded as planned, there was no need to reschedule critical activities.

VI. PROJECT EXPENDITURES AND BUDGET REVISION

Attach Form A "PVO Country Project Pipeline Analysis"

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HELEN KELLER INTERNATIONAL, INC.
 1989 ANNUAL REPORT FORM A: COUNTRY PROJECT PIPELINE ANALYSIS
 PVO / COUNTRY PROJECT- PDC-0384-A-00-6131-00

NIGER COST ELEMENTS	ACTUAL EXPENSES TO DATE (9/30/86 to 9/30/89)			PROJECTED EXPENSES AGAINST REMAINING OBLIGATED FUNDS (10/1/89 to 9/29/90)			TOTAL AGREEMENT BUDGET (9/1/86 to 9/29/90)		
	AID	HKI	TOTAL	AID	HKI	TOTAL	AID	HKI	TOTAL
PROGRAM	\$359,635	\$103,225	\$462,860	\$3,150	\$91,740	\$94,890	\$362,785	\$194,965	\$557,750
EQUIPMENT	\$11,257	\$11,782	\$23,039	(\$4,257)	(\$11,782)	(\$16,039)	\$7,000	\$0	\$7,000
TOTAL DIRECT COST	\$370,892	\$115,007	\$485,899	(\$1,107)	\$79,958	\$78,851	\$369,785	\$194,965	\$564,750
INDIRECT COST	\$36,956	\$20,471	\$51,427	(\$636)	\$12,673	\$12,037	\$30,320	\$33,144	\$63,464
TOTAL COST	\$401,648	\$135,478	\$537,326	(\$1,743)	\$92,631	\$90,888	\$400,105	\$228,109	\$628,214

12/06/89

VII. SUSTAINABILITY

A. Estimate of recurrent costs and Potential for recovery

All costs of program components can be sustained and absorbed into the government structure.

Positive signposts towards total cost recovery by the government have been reached. To mention a few:

- School of Medicine has increased the space given to vitamin A deficiency in the ophthalmological curriculum
- Ministry of Health has included vitamin A capsules on the essential drug list
- The National Blindness Prevention Program has requested vitamin A capsules from UNICEF
- Several health centers and rural dispensaries on the central and the peripheral levels outside project zones have requested vitamin A capsules from HKI/Niger
- Several PVOs have shown a commitment to participate in the effort to control vitamin A deficiency in Niger (CARE, AVRDC, MSF).

B. Strategies for Reducing Sustainability Concerns

The following measures are adopted to reduce sustainability concerns:

1. Close collaboration with the National Blindness Prevention Program (NBPP). The GON has established this program as a part of its effort to control major causes of blindness. A positive impact of the vitamin A project was manifested when the NBPP asked UNICEF to provide VACs to be distributed in areas other than the vitamin A project sites. In addition, the project is collaborating with the Joint WHO-UNICEF nutrition support project. This allows direct integration of vitamin A as an important part of the control of malnutrition in Niger.
2. Continued collaboration with national and local health officials in order to them involved in project activities.
3. Training of health professionals in project areas to perform project activities, and development of training curricula for future use.

4. A major component of the project is to increase official and public awareness. A positive impact of this activity was the decision by the Dean of the School of Medicine to incorporate xerophthalmia in the ophthalmological curriculum. The project has experienced recently an increase in requests for VAC, especially from MCH units, nutrition rehabilitation centers, and dispensaries located in remote dry areas. This reflects a positive impact of the implemented measures to increase official awareness.
5. Close collaboration with other PVO's to encourage the integration of vitamin A deficiency control activities into compatible programs.
6. Exploration of UNICEF donation of vitamin A capsules to the Government of Niger. At this time, HKI/Niger is providing the capsules through donors; however, a long-term solution is a formal agreement between UNICEF and the Government to include vitamin A as an essential drug of the Country.
7. Increase public awareness through health education focusing on the consumption of foods rich in vitamin A. The project produced a poster which is now available in all project sites. The project also designed a story book for primary school children.

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First Annual Report, October 1986 - September 1987

Sheffield, VM, Mid term Evaluation, November 1988.

Operational Research Data Analysis Report, Part One, July 1988.

Operational Research Data Analysis Report, Final , May 1989.

Second Annual Report, October 1987 - October 1988

ANNEXES

1. List of educational materials developed by the project
2. List of vitamin A documents distributed by the project
3. Job description and role of project staff
4. Operation Research System Analysis Report
5. Mid-term Evaluation
6. Final Evaluation

ANNEX I

LIST OF MATERIALS DEVELOPED BY THE PROJECT

Training Manual for Trainers

Training Manual for Nurses

Training Handout for Village Health Workers

Training Guide to train Trainers

Training Guide to train Nurses

Training Guide to train Village Health Workers

Pre-Post Test for Trainers

Pre-Post Test for Nurses

Pre-Post Test for Village Health Workers

Vitamin A Food Values List

Children's Story Book

Poster

Pagne Design

Guide for Health Education

Training programs tools list

GOBIA FFF

ANNEX II

LIST OF DOCUMENTS DISTRIBUTED BY THE PROJECT

1. Meres et Enfants (Volume 5, Number 3)
2. Nutrition: A miracle vitamin
(Asian Week, December 1987)
3. Les Vitamines (Roche)
4. Vitamin A for Measles (UNICEF, May 1987)
5. A magic Bullet to reduce Child Mortality
(Indonesian Observer, January 8, 1989)
6. Vitamin A for Measles (Lancet, May 9, 1987)
7. Vitamin A: A key to Child survival (International
Health News, January 1988)
8. Vitamin A supplements and the Mortality related
to Measles (British Medical Journal,
January 31th, 1987)
9. Vitamin A supplementation and Child Mortality
(Xerophthalmia Club, November 1986)
10. Increased Mortality in children with mild
vitamin A deficiency (Lancet, September 10th, 1983)
11. Statement on Vitamin A and Mortality (United
Nations, April 11, 1986)
12. Impact of vitamin A supplementation on
childhood mortality (Lancet, May 24, 1986)
13. Increased risk of Xerophthalmia following Diarrhea
and Respiratory Diseases (American Journal of clinical
nutrition 1987;45:977-80)
14. Impact of vitamin A on childhood mortality (Indian
Journal of Pediatrics 1987;54:461-463)
15. Fall and Rise of an Anti-infection Vitamin (Lancet)

16. Directive lines for the utilization of supplements of vitamin A in the treatment and the prevention of vitamin A deficiency and xerophthalmia (WHO, February 1988)
17. Hypervitaminose A (Medecins Sans Frontieres, Niamey, April, 1988)
18. Strategie D'apport Complementaire de vitamine A (Dr. Logovi, HKI, June 1988)
19. Vitamine A et Survie de l'Enfant (Dr. Logovi, HKI, June 1988)
20. Lutte contre l'avitaminose A en Situation de Secheresse: Un Cas au Burkina Faso (Dr. Logovi, HKI, June 1988)

ANNEX III

JOB DESCRIPTION AND ROLE OF PROJECT STAFF

I. Country Director and Project Manager

Responsibilities:

1. Set policies and standards for the implementation of the activities
2. Review every two weeks the plan of action
3. Develop a detailed time table every six months
4. Set Monthly objectives
5. Follow project activities and assure completion of different tasks as scheduled
6. Bring technical expertise as needed
7. Plan, conduct, and attend training sessions
8. Acquire authorizations, and other documentation. Coordinate project relation with the MOH, USAID, and HKI
9. Collect Information and data for the monitoring
10. Overall management of the project including field activities, production, distribution, and monitoring of diffusion

II. Field Coordinator

1. Assist the project Manager in all his tasks.
2. Conduct field trips to coordinate activities with peripheral participants
3. Coordinate logistics of the detailed implementation plan
4. Participate in setting monthly objectives
5. Participate in program development and evaluation
6. Participate in the planning and the implementation of project activities

ANNEX IV

OPERATIONAL RESEARCH FINAL ANALYSIS REPORT

VITAMIN A PROJECT
HELEN KELLER INTERNATIONAL - NIGER

OPERATIONAL RESEARCH
DATA ANALYSIS REPORT

[FINAL DRAFT]

FEBRUARY 1989

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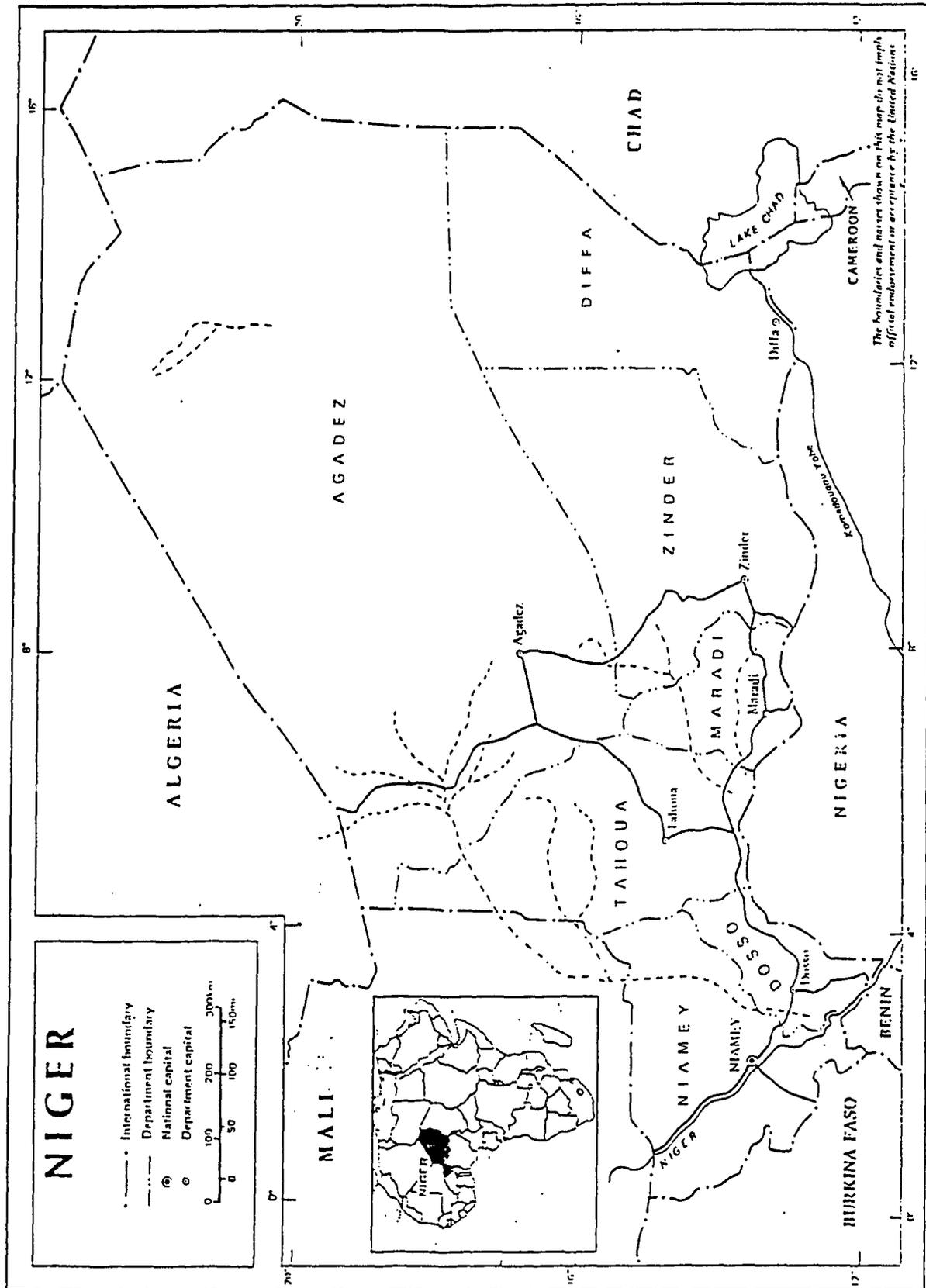
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- A. Tabulated Data from Birni N'Konni
- B. Tabulated Data from Guidan Roumji



VITAMIN A PROJECT
OPERATIONAL RESEARCH DATA ANALYSIS REPORT

SECTION I: INTRODUCTION

The Vitamin A Project in Niger is a collaborative effort between the Ministry of Health, the National Blindness Prevention Program and Helen Keller International. It addresses the issue of nutritional blindness in Niger which, according to WHO standards, constitutes a public health problem. A major goal is to identify the most appropriate strategy of Vitamin A Capsule (VAC) distribution via an operational research methodology.

The Vitamin A Project began during September 1987. It was implemented in four arrondissements: Birni N'Konni and Madaoua in the department of Tahoua, and Guidan Roumji and Aguié in the department of Maradi. Only the two arrondissements of Birni N'Konni and Guidan Roumji are included in this operational research report.

The two major goals of the project are:

1. Prevention of nutritional blindness and treatment of xerophthalmia via the distribution of megadose VAC.
2. Identification of the most appropriate strategy of VAC distribution in Niger.

Two strategies are being tested:

1. In Birni N'Konni, VAC is distributed to the target population for the prevention and treatment of vitamin A deficiency from the network of medical centers and rural dispensaries.
2. In Guidan Roumji, VAC is distributed for the treatment of vitamin A deficiency from health centers and rural dispensaries while the preventive distribution is conducted by Village Health Workers (VHWS).

Project Activities:

The project distributes a prophylactic dosage of VAC (200,000 IU) every six months to children under six years of age and to immediately postpartum women. A curative dosage of three VACs is given to children who present themselves with signs and symptoms of night blindness, clinical xerophthalmia, measles and/or severe malnutrition. Those who suffer from chronic diarrhea receive one VAC. Children under one year of age receive a half dosage.

In addition to VAC distribution, the project encourages the integration of vitamin A related issues in the health education sessions normally held in health clinics and small group talks organized by the VHWs. For this purpose, a poster has been produced which promotes breast feeding and consumption of vitamin A rich foods and lists such foods which are available in the villages.

The project has also implemented several activities to create awareness among health policy makers regarding the issue of vitamin A deficiency in Niger. These include a "Vitamin A Day" in the medical and nursing schools, the distribution of currently available information about vitamin A to the professional community, and continued meetings with health and PVO administrative authorities to explain the importance of vitamin A and the control of its deficiency.

Operational Research:

Training activities started in November 1987 in the arrondissement of Birni N'Konni and in March 1988 in Guidan Roumji. Data were collected in February 1988 only in Birni N'Konni and again in two complete rounds in July 1988 and in February 1989 in both arrondissements. The two strategies were compared in order to determine their respective effectiveness according to the following indicators:

- * Extent of preventive and curative coverage of VAC
- * Proportion of health workers trained
- * Ability of trained health workers to identify the signs and symptoms of xerophthalmia
- * Logistical problems associated with the training
- * Efficiency of the capsule supply system
- * Ability of the VHWs to accomplish their tasks

Data Collection Design:

Data recording was accomplished by health workers (nurses in the medical centers and rural dispensaries) according to the system established by the Ministry of Health. The regular registers of each health clinic and VHW were used. The project did not add any new registers to record its activities.

An integrated group from the Ministry of Health, the National Blindness Prevention Program and Helen Keller International conducted field trips during all three rounds to collect data from seven health clinics and from ten randomly selected villages in each of the two arrondissements. Data were then tabulated and analyzed by HKI staff in Niger and New York. This report contains an analysis of the data from the clinic-based survey and from the population-based (community) survey.

Demographics of the target areas:

- * The two arrondissements are similar in size and composition in terms of numbers of postpartum women and children under six years of age, family and village size, and socioeconomic status.

- * Both are from the same geographic region of the country and both have similar proportions of urban and rural residents.

- * Overall, the two arrondissements appear to be quite comparable.

Magnitude of the population-based survey:

- * After the two complete rounds of data collection, over 7.2% of the population had been included; the percentages are less among postpartum women and more among children. This constitutes a fairly large sample size which will be even larger after the final round of the population survey is conducted in July 1989; perhaps a cumulative sampling of 10% of the overall population will be achieved at that time.

- * Sampling rates are very similar between Birni N'Konni and Guidan Roumji since the survey methods were the same (i.e., ten villages per round and per arrondissement).

- * Refer to Table 1 on the following page.

TABLE 1

DEMOGRAPHIC CHARACTERISTICS AND
MAGNITUDE OF THE POPULATION SURVEY
IN THE ARRONDISSEMENTS OF
BIRNI N'KONNI AND GUIDAN ROUMJI, NIGER
AS OF FEBRUARY 1989

TARGET AREA INDICATORS	BIRNI N'KONNI		GUIDAN ROUMJI	
Overall Population (1987 Census)	253,646		211,418	
Population of Children < 6 Years [1]	51,490		42,918	
Population of Postpartum Women [2]	12,936		10,782	
Total Target Population	64,426		53,700	
=====				
POPULATION SURVEY INDICATORS [3]	#	%	#	%
Children < 6 years Surveyed in Villages (% of total child pop. in the area)	4,351	8.5%	3,469	8.1%
Postpartum Women Surveyed in Villages (% of total p.p. women in the area)	519	4.0%	372	3.5%
Total Target Pop. Surveyed in Villages (% of total target pop. in the area)	4,870	7.6%	3,841	7.2%
Villages Included in the Surveys	20		20	

FOOTNOTES:

[1] Estimated as 20.3% of the overall population.

[2] Estimated as 5.1% of the overall population; refers to births within the previous six months.

[3] Culmination of two rounds of data collection (June 1988 and Feb. 1989).

SECTION II: CLINIC-BASED SURVEY RESULTS

The survey results on Table 2 are based on seven clinics in each of the two arrondissements. In Birni N'Konni, three time periods were covered while only the latter two periods were included in Guidan Roumji. Measurements were made of the coverage rates for Vitamin A Capsules on a preventive as well as a curative basis. Since VACs were not distributed on a preventive basis through the health clinics in Guidan Roumji, no data are available in these categories. Both arrondissements used the same system of clinic-based curative distribution of VACs for night blindness, clinical signs of xerophthalmia, measles, chronic diarrhea and severe malnutrition.

NOTE: The summary data tables for the clinic-based survey (Table 2) and the community survey (Table 3) both indicate the rate, range and sample size for each category measured. It is important to note the 95% Confidence Intervals ("range") for each rate, since some rates which appear to differ greatly may actually have overlapping ranges.

1. PREVENTIVE DISTRIBUTION (only in Birni N'Konni)

A. Children's coverage rates over time:

* Rates declined slightly but consistently from 36.7% in February 1988 to 24.6% in February 1989. This is the same trend as observed in the community survey although the coverage rates in the clinic-based survey are almost twice as high for each time period. The bias in the sampling of children from clinics as opposed to the villages could account for the difference in magnitude of the figures from the two surveys.

B. Postpartum women's coverage rates over time:

* Rates increased from 61.8% in February 1988 and stabilized at a very high level (over 93%), unlike the community survey where the rates declined over time. Also, the rates here are much higher (four to eight times as large) than in the community survey. This indicates that the surveys sampled different populations of postpartum women (eg., the clinic-based survey is based on a biased sampling of postpartum

women). The magnitude of the difference between these two surveys' results makes at least one of them suspect. Because coverage rates of over 93% are extraordinarily high, it is most likely that these figures do not accurately reflect the population in question.

C. Compare children's coverage to postpartum women's coverage:

* Rates for postpartum women are much higher here (two to four times) compared to the rates for children, unlike the analogous ratio from the community survey. Again, this gives the impression that the extremely high rates for postpartum women found here survey are not representative.

2. CURATIVE TREATMENT WITH VITAMIN A

A. Birni N'Konni over time in all categories:

* July 1988 was the best overall round, with a "weighted average" (i.e., to account for the difference in sample size in each category) coverage rate of 83.9%. Coverage rates peaked during this time period for night blindness (99.4%), measles (100.0%) and for chronic diarrhea (87.9%). However, overall coverage rates declined in February 1989 to a level (23.0%) comparable to that in the first round.

* For clinical signs of xerophthalmia and for severe malnutrition, coverage rates continued to climb slightly higher (although not significantly) in the last round and peaked at 100.0% and 55.5%, respectively.

* All rates improved dramatically (from almost two to five times) between February 1988 and July 1988.

* For measles, there was a vast increase in numbers from February 1988 to July 1988 (from seven to 434 cases), but the coverage was excellent even with the higher numbers. This indicates a good ability to recognize and treat measles.

* For chronic diarrhea, however, cases multiplied from July 1988 to February 1989 (506 to 2924 cases) and the coverage rate fell sharply (from 87.9% to 17.2%). This may indicate that the sheer number of cases of diarrhea in the third round was overwhelming to the curative VAC distribution system. The large numbers

of cases and the low coverage rate in the last round were "weighted" heavily and, thus, caused the overall curative coverage rates to drop dramatically.

B. Guidan Roumji over time and compared to Birni N'Konni in all categories:

* Almost all rates were within similar ranges in Guidan Roumji and Birni N'Konni for a given condition and time period. This was to be expected since there was no difference in the method of curative distribution of VAC between the two arrondissements. The only exception to this was with chronic diarrhea.

* In Guidan Roumji, all coverage rates were fairly stable over time except for chronic diarrhea which improved dramatically from 29.6% in July 1988 to 100.0% in February 1989. This increase resulted in significantly higher overall rates in Guidan Roumji during the last round and occurred while the coverage rates for chronic diarrhea fell sharply in Birni N'Konni (as noted above).

* For measles, the numbers of cases dropped sharply (from 274 to nine cases) in Guidan Roumji, but the coverage rates were maintained at high levels (65.3% in July 1988 and 74.1% in February 1989) which were similar to those in Birni N'Konni during the same time period.

C. Important trends in curative coverage:

* Curative coverage rates are generally quite high, with very few below 50% and no condition that was consistently below 50% coverage over time. Most are in the 50% to 100% range.

* Coverage rates for night blindness and clinical signs of xerophthalmia are somewhat more consistently higher than those for other high-risk categories. However, because of the smaller numbers of cases compared to the other high-risk categories, coverage rates for night blindness and clinical signs of xerophthalmia do not have a large effect on the overall ("weighted average") curative coverage rates.

* Chronic diarrhea coverage rates fluctuate over a wide range and, because of the large number of cases, have a marked impact on the overall curative coverage rates. In fact, if the cases of chronic diarrhea were ignored, the overall coverage rates in February 1989 would have been almost identical in the two arrondissements (63.7% in Birni N'Konni and 62.1% in Guidan Roumji).

TABLE 2

CLINIC-BASED SURVEY RESULTS
FROM THE ARRHOISSMENTS OF
BIRHI N'KOHNI AND GUIDAH ROUMJI, RIGER
BASED ON SEVEN CLINICS SURVEYED PER TIME PERIOD
AND PER ARRHOISSMENT

VITAMIN A CAPSULE COVERAGE (1)	BIRHI N'KOHNI			GUIDAH ROUMJI	
	FEBRUARY 1988	JULY 1988	FEBRUARY 1989	JULY 1988	FEBRUARY 1989
PREVENTIVE DISTRIBUTION:					
CHILDREN < 6 YEARS (thru clinics and mass distribution)	rate = 36.7% range = 35.8% to 37.5% n = 12501	34.6% 33.9% to 35.3% 10551	24.6% 23.9% to 25.4% 12959	N/A	N/A
POSTPARTUM WOMEN (within 6 months)	rate = 61.8% range = 58.5% to 65.1% n = 830	94.9% 93.8% to 96.1% 1344	93.3% 91.9% to 94.7% 1246	N/A	N/A
CURATIVE TREATMENT (2) OF:					
DIARRHEA	rate = 51.8% range = 41.1% to 62.4% n = 85	99.4% 97.4% to 100.0% 56	66.7% 47.4% to 85.9% 23	100.0% 100.0% to 100.0% 48	97.4% 88.8% to 100.0% 13
CLINICAL SIGNS OF XEROPHTHALMIA	rate = 52.0% range = 36.7% to 67.3% n = 41	93.7% 83.2% to 100.0% 21	100.0% 100.0% to 100.0% 13	60.0% 17.1% to 100.0% 5	75.0% 32.6% to 100.0% 4
MEASLES	rate = 38.1% range = 2.1% to 74.1% n = 7	100.0% 100.0% to 100.0% 434	73.7% 66.5% to 80.9% 142	65.3% 59.7% to 71.0% 274	74.1% 45.4% to 100.0% 9
CHRONIC DIARRHEA	rate = 16.7% range = 13.3% to 20.0% n = 480	87.9% 85.1% to 90.8% 506	17.2% 15.8% to 18.5% 2924	29.6% 26.0% to 33.2% 621	100.0% 100.0% to 100.0% 482
SEVERE MALNUTRITION	rate = 23.1% range = 15.1% to 31.0% n = 307	46.4% 40.5% to 52.4% 270	55.5% 49.1% to 61.8% 238	48.6% 43.4% to 53.7% 368	61.1% 57.2% to 65.0% 603
"WEIGHTED AVERAGE" OF ALL OF THE ABOVE	rate = 24.0% range = 20.9% to 27.1% n = 720	83.9% 81.9% to 85.9% 1287	23.0% 21.5% to 24.4% 3340	45.0% 42.3% to 47.7% 1316	78.5% 76.1% to 81.0% 1111

FOOTNOTES:
 (1) "Rate" indicates the proportion of patients receiving a proper dose of vitamin A capsule(s).
 "Range" indicates the 95% Confidence Interval for the above rate.
 "n" indicates the number of patients in each category.
 (2) Rates are calculated by dividing the number of vitamin A capsules distributed by the number of patients with each condition and then dividing again by the number of capsules in a proper curative dosage as follows:
 3 capsules per dose for all conditions listed except for chronic diarrhea;
 1 capsule per dose for chronic diarrhea.

SECTION III: COMMUNITY SURVEY RESULTS

The community surveys were conducted in ten villages in each arrondissement during the past year (i.e., six month time periods ending in July 1988 and February 1989). In the villages, unlike in the clinics, only preventive distribution took place. Thus, there is no data here which is comparable to the curative coverage rates from the clinic-based survey. The community surveys also asked questions about people's ability to correctly identify vitamin A capsules. Refer to Table 3 for a summary of the results.

1. PREVENTIVE DISTRIBUTION

A. Birni N'Konni over time in both categories:

* Preventive distribution to community residents was conducted through the medical centers and rural dispensaries (Strategy #1).

* Coverage rates for children and for postpartum women declined slightly but significantly from 19.9% to 14.1% and from 23.9% to 11.9%, respectively. This may indicate the need for continued training of clinic staff or may be due to a problem with VAC supply in the clinics. See the following sections of this report for further discussion of this point.

* Neither the children nor postpartum women had consistently higher coverage rates, although the magnitude of decline was greater for postpartum women.

B. Guidan Roumji over time in both categories:

* Preventive distribution was done solely by the village health workers (Strategy #2).

* Coverage rates for children were consistently higher than those for postpartum women. This may be a result of the training of the VHWS and/or the knowledge, attitude and practice of the postpartum women.

* Coverage rates for children and for postpartum women improved dramatically, on the order of three to four times. This is, at least in part, due to the increased number of survey villages where a VHW was present in February 1989 compared to July 1988 (four out of ten, and eight out of ten, respectively).

However, when the data on coverage rates are disaggregated into those village with VHWS and those without VHWS, a distinct pattern is seen:

<u>RATES FOR CHILDREN</u>	<u>JULY 1988</u>	<u>FEB. 1989</u>
Villages with VHWS	60.0%	71.5%
Villages without VHWS	0.9%	30.9%
Overall	22.8%	60.9%

<u>RATES FOR POSTPARTUM WOMEN</u>	<u>JULY 1988</u>	<u>FEB. 1989</u>
Villages with VHWS	23.7%	46.0%
Villages without VHWS	1.8%	51.0%
Overall	9.4%	47.3%

* The differential between villages with and without VHWS was most dramatic in July 1988. At that point, almost no preventive distribution took place among people living in villages where no VHW was active.

* If only the villages with a VHW were included in the analysis, the coverage rates would in Guidan Roumji would have appeared to be significantly higher than in Birni N'Konni in July 1988.

* By February 1989, the distribution in the villages without a VHW reached substantial levels (30.9% for children and 51% for postpartum women). This could be due to a number of factors including: clinic nurses expanding their work into these villages; villagers going into the clinics for preventive as well as curative doses of vitamin A; other groups such as Mediciens Sans Frontiers distributing VAC in the area.

* Since any of the above mentioned factors may also apply to village with VHWS, the level of coverage in these village may have been increased accordingly. This possibility could be analyzed in the final round of data collection.

C. Compare Birni N'Konni to Guidan Roumji in July 1988:

* Rates for child coverage are similar (i.e., 19.9% in Birni N'Konni and 22.8% in Guidan Roumji). Note that the ranges are overlapping.

* Rates for postpartum women are more than twice as high in Birni N'Konni (23.9%) as in Guidan Roumji (9.4%).

* By July 1988, the project had been in progress for almost nine months in Birni N'Konni and for only five months in Guidan Roumji. However, this difference in

the length of time is not relevant to the coverage rates for children (since they are not significantly different) and does not seem to explain the lower coverage rates for postpartum women in Guidan Roumji (where less time had elapsed since the training of VHWS; see part D below).

D. Compare Birni N'Konni to Guidan Roumji in February 1989:

* Rates in Guidan Roumji are much higher than in Birni N'Konni for both categories: 60.9% compared to 14.1% among children and 47.3% compared to 11.9% for postpartum women.

* Although by February 1989, the difference in the length of time from the beginning of the training in each area could account for some of this difference, Guidan Roumji's coverage rates are more than four times as high as those in Birni N'Konni. This dramatic difference must be attributed, at least in part, to the basic difference between the two strategies of capsule distribution.

E. Important trends in preventive distribution:

* Birni N'Konni's preventive coverage rates declined significantly over time in both categories. (As noted earlier, the extremely high rates for postpartum women in the clinic-based survey are suspect; the lower rates observed in the community survey are probably more accurate.)

* Guidan Roumji's coverage rates for children and for postpartum women improved dramatically over time.

* By February 1989, Guidan Roumji's coverage rates were approximately four times as high as those in Birni N'Konni. Thus, the strategy utilizing the VHWS appears to be more effective at increasing the VAC coverage rates than the clinic-based strategy.

2. CORRECT IDENTIFICATION OF VITAMIN A CAPSULES

Heads of households were asked to identify a VAC from among three other types of pills or capsules. They were also asked to identify the proper pill or capsule to be used for the prevention of night blindness.

A. Birni N'Konni over time:

* There was no significant change between June 1988

and February 1989 (from 20.2% to 17.8% correct responses) for the "other pill" comparison.

* It is not possible to measure a change in the rate for the "night blindness identification" since it was only asked in February 1989. However, the rate of correct identification was very low (only 6.5%).

* The current rate for knowing that VAC is used for night blindness is about one-third as great as the rate for recognizing VAC from among other pills.

B. Guidan Roumji over time:

* Rates for the "other pill comparison" doubled over time (from 27.7% to 55.0%). This also may be due to the fact that there were twice as many VHWS in the surveyed villages in February 1989 as in June 1988.

* Changes in rates for "night blindness identification" cannot be measured. As in Birni N'Konni, rates for correctly stating which pill is to be used for night blindness (18.1% in February 1989) are about one-third those for VAC identification from among other pills.

C. Compare Birni N'Konni to Guidan Roumji in July 1988:

* Both arrondissement had similar rates for VAC identification: 20.2% in Birni N'Konni and 27.7% in Guidan Roumji, although their ranges nearly overlap.

* The night blindness question was not asked in either case.

D. Compare Birni N'Konni to Guidan Roumji in February 1989:

* Both rates are three times as high in Guidan Roumji as in Birni N'Konni. Thus, the VHW strategy may be working better in terms of patient and public education.

E. Important trends in VAC identification:

* Moderate rates for recognizing VAC from among other pills (ranges up to 60%). Possibly because people recognize other pills and are using a process of elimination to identify VAC, these rates are consistently higher than those for correctly identifying the pill for night blindness.

* Rates are generally very poor for knowing that VAC is used for night blindness (ranges only up to 21%;

lower than the rate would be for random guessing!). This implies that public education effort must be strengthened in this area.

* Both rates are three times as high in Guidan Rounji as in Birni N'Konni. Thus, the VHW strategy may also be working better in terms of patient and public education.

3. EFFECT OF VILLAGE SIZE AND/OR DISTANCE TO CLINICS

The raw data for each of the village surveyed during the three rounds can be found in appendices A and B. Regression analyses were conducted in order to determine if any significant associations existed between independent variables such as the size of the village population or the distance from the village to the nearest clinic and some potentially dependent variables such as preventive VAC coverage rates for children and postpartum women or rates of the correct identification of VAC.

Interestingly, no such associations were found. The two variables which were the most closely related were the distance from a clinic and the ability to recognize VAC from among other capsules, where $R^2=0.16$ in Birni N'Konni (i.e., only 16% of the variation in the rates of capsule identification were due to the variation in the distances from the villages to the clinic). Thus, this relationship was still very loose and inconsequential.

It was suspected that there might be an association between the distance from the villages to the clinics in Birni N'Konni (where the preventive distribution is done only at the clinics) and one of the coverage rates, although none was shown. Multiple regression techniques indicated a degree of association on the order of only 5% for children's coverage rates and 13% for postpartum women. Values of R^2 were similar in Guidan Rounji, where VHWs were used.

TABLE 3

COMMUNITY SURVEY RESULTS
FROM THE ARRONDISSEMENTS OF
BIRNI N'KONNI AND GUIDAN ROUMJI, NIGER
BASED ON TEN VILLAGES SURVEYED PER TIME PERIOD
AND PER ARRONDISSEMENT

VITAMIN A CAPSULE COVERAGE (1):	BIRNI N'KONNI		GUIDAN ROUMJI	
	JULY 1988	FEBRUARY 1989	JULY 1988	FEBRUARY 1989
CHILDREN < 6 YEARS	rate = 19.9% range = 18.2% to 21.5% n = 2170	rate = 14.1% range = 12.6% to 15.5% n = 2161	rate = 22.8% range = 20.9% to 24.6% n = 1755	rate = 60.9% range = 56.5% to 63.2% n = 1714
POSTPARTUM WOMEN (within 6 months)	rate = 23.9% range = 18.9% to 28.9% n = 276	rate = 11.9% range = 7.9% to 16.0% n = 243	rate = 9.4% range = 5.0% to 13.7% n = 171	rate = 47.3% range = 40.4% to 54.2% n = 201
CORRECT IDENTIFICATION OF VITAMIN A CAPSULE (2):	JULY 1988	FEBRUARY 1989	JULY 1988	FEBRUARY 1989
FROM OTHER PILLS (3)	rate = 20.2% range = 17.8% to 22.7% n = 1023	rate = 17.8% range = 14.9% to 20.7% n = 691	rate = 27.7% range = 23.9% to 31.4% n = 542	rate = 55.0% range = 50.9% to 59.1% n = 565
FOR NIGHTBLINDNESS (4)	N/A	rate = 6.5% range = 4.7% to 8.4% n = 691	N/A	rate = 18.1% range = 14.9% to 21.2% n = 565

FOOTNOTES:

- [1] "Rate" indicates the proportion of patients receiving a preventive dose of vitamin A.
"Range" indicates the 95% Confidence Interval for the above rate.
"n" indicates the number of patients in each category.
- [2] "Rate" indicates the proportion of people able to correctly identify the vitamin A capsule.
"Range" indicates the 95% Confidence Interval for the above rate.
"n" indicates the number of people asked.
- [3] Heads of households were asked to identify a vitamin A capsule from among three types of pills and/or capsules.
- [4] Heads of households were asked to identify the proper pill or capsule to be used for the prevention and treatment of nightblindness from among three types of pills and/or capsules.

SECTION IV: SUPPLY OF VITAMIN A CAPSULES

This section will be entirely descriptive with numerous references to the appendices containing the raw data on the Health Services System. Due to the nature of the material, summary tables of rates were not appropriate.

The first part is based on the relevant data from the clinic-based survey in the two arrondissements. In Guidan Roumji, there were seven clinics which were each surveyed during two separate time periods. In Birni N'Konni, seven clinics were surveyed during three separate time periods.

The second part of this section focuses exclusively on Guidan Roumji and the village health workers there. The relevant data was obtained from both the clinic-based survey and the community survey (two time periods each).

I. SUPPLY AND FLOW OF VITAMIN A CAPSULES THROUGH THE HEALTH CLINICS (medical centers and rural dispensaries) in the arrondissements of Guidan Roumji and Birni N'Konni.

- A. Records of the numbers of capsules received by the clinics during a specific time period and the number of capsules existing in the clinics at the time of the data collection:

1. Guidan Roumji

* Overall, the supply appears to be appropriate to the size and volume of the clinics. The only medical center (Guidan Roumji medical center) has a supply roughly ten times the size of that in the dispensaries. This reflects the fact that the medical center supplies several of its surrounding dispensaries and handles referrals from those dispensaries. The other six clinics surveyed (five dispensaries and one medical post) had roughly equal supplies and handle roughly equivalent patient loads.

* In only one instance (out of the 14 separate recordings) was there an inconsistency between the number of capsules received and the number on hand; this was at Tibiri during the first round of data collection when the number of capsules on hand in July 1988 exceeded the number received during that time period. In all other cases, the pattern of capsules received and those on hand is logical and can be used to determine the exact number of capsules distributed during a given time period.

* Twice (out of the 14 separate recordings) the supply of capsules fell to zero. This occurred in the dispensaries at Meiki and Sae Saboua. One other time, the supply fell to 50 capsules in the dispensary at Guidan Sori. All three of these events occurred in the first time period (recorded in July 1988) and were not repeated in the following round. This may indicate that the problem of maintaining an adequate supply was solved after some initial logistical problems. In all other cases, the supplies never fell below a few hundred in the dispensaries and the medical post or a few thousand capsules in the medical center.

* In most cases, the supply of capsules in the second round is consistent with the need (based on the numbers of capsules on hand) at the end of the first round. At the Guidan Roumji medical center and at the Souloulou dispensary, the amount received doubled from the first to the second round when the supply on hand was about half of that originally received. In Meiki, the amount received almost tripled when the supply fell to zero. At the Chadakori dispensary, the amount received was reduced by half when the amount on hand was relatively high. In other cases, the amount received remained steady from one round to the next. Only in Sae Saboua was there a problem of resupply. When the supply fell to zero, the amount received in the following round should have increased rather than remained the same. This may have been due to the fact that there is no record of the head of the dispensary requesting a new supply (refer to part B below).

2. Birni N'Konni

* As with the clinics in Guidan Roumji, the supply of capsules in Birni N'Konni appears to be appropriate to the size of the clinic. The medical center at Birni N'Konni is supplied with roughly six to ten times as many capsules as are the five dispensaries and the medical post.

* In all cases, there was a logical pattern of capsules received and the number on hand during a given time period. This pattern can be used to measure the number of capsules distributed during the time period and then compare this number to the record of the total number of capsules distributed from the clinics on a curative and a preventive basis.

* In all but one of the cases (out of 21 separate recordings), there was an adequate supply of capsules on hand (i.e., at least a few hundred in the

dispensaries and the medical post, and at least a few thousand in the medical center). The only exception was in the dispensary at Allela in February 1989 when the supply fell to 55 capsules. This may be explained by the fact that the head of the dispensary was new at the time, had not gone through the training and had not requested a resupply during that time period (refer to part B below).

* The resupply of capsules was fairly consistent with the need. In most cases, the resupply was on the order of 1000 to 1500 capsules per round and remained within this range from round to round. Only in Allela, as noted, was the resupply to 500 capsules in the last round nearly inadequate.

3. General Comments

* The supply system of vitamin A capsules in both arrondissements is working well. Most clinics are adequately stocked and are resupplied regularly.

* The total amount of capsules received by the clinics in each arrondissement was in the range of just over 10,000 to 21,000 capsules per time period.

* A fairly reliable tracking system is in place to measure the supply and flow of vitamin A capsules.

* The records of the number of capsules received and the number on hand during a given round of data collection can be used to estimate the number of capsules actually distributed during that round.

B. Records of the head of the clinic requesting and receiving a resupply of vitamin A capsules:

1. Guidan Roumji

* In July 1988, there are no records of clinic heads asking for or receiving capsules even though there are records of a supply being received for all but two of the clinics (see above).

* In February 1989, there are records of only three clinic heads (at Meiki, Guidan Sori and Tibiri) requesting and five receiving a supply of capsules although all clinics are recorded (see above) as having received a substantial supply during that time period. For two out of the five records of a clinic head receiving capsules (those at Chadakori and Sae

Saboua), there was no record of a request having been made.

* In the two cases where the supply fell to zero (at Meiki and Sae Saboua), there is a record of a resupply being requested and/or received in the following round. The same is true in Guidan Sori after the supply fell to only 50 capsules. This shows that, at least in these important cases, the head of the clinic was careful to record his request and/or receipt of capsules.

2. Birni N'Konni

* Out of 21 separate recording, all but five showed a request and receipt of capsule supplies. As noted above (in part A), there is a record of the number of capsules received in all seven clinics during all three time period.

* In no case was there a record of a request without a receipt or vice versa.

* Of the five cases where there is no record of a request or receipt, three of them occurred in the first round (February 1988). This may reflect the fact that the distribution and recording systems were new to the clinic heads at that time.

* In February 1989, there is no record of the head of the dispensary in Allela requesting or receiving a supply of capsules even though the number of capsules received during that time period was recorded as 500 (see above). This failure to record request and receipt may be due to the fact that this person was new to the dispensary and had not yet been trained in the recording system.

3. General Comments

* The records of request and receipt of capsules supplies are not always complete and consistent with the records of the numbers of capsules received by the clinics.

* According to the available records, capsules were received by the clinics every time a supply was requested. However, the reverse is not true in Guidan Roumji.

* Birni N'Konni has somewhat better records of request and receipt than does Guidan Roumji. This is

reflected in the fact that there are fewer inconsistencies in the records in Birni N'Konni.

II. VITAMIN A CAPSULE SUPPLY AMONG THE VILLAGE HEALTH WORKERS (VHWS) in the arrondissement of Guidan Roumji, as recorded by the clinic-based survey and the community survey. (Refer to Appendix B for this data)

A. Clinic-based records (from seven clinics, each surveyed in two time periods):

1. Records of Vitamin A Capsules Received by VHWS

* There is a wide range of capsules received by VHWS, from a low of zero to a high of 600 per clinic in a given time period. This reflects a very uneven supply system.

* More than half of the cases recorded zero capsules received by the VHWS. This either shows an inadequate supply or an inconsistent recording system.

* The total number of capsules received by VHWS almost doubled over time, from an average of 90 per clinic in June 1988 to an average of over 171 in February 1989.

2. Records of VHWS Who Received Vitamin A Capsules from the Clinics

* Some inconsistencies exist between the number of capsules received and the record of VHWS who received capsules. For example, in the medical center at Guidan Roumji in July 1988, there is a recording of one VHW who received capsules although the number of capsules recorded is zero. In Chadakori, there is no record of a VHW receiving capsules in July 1988, although the record shows that ten capsules were received during that time period.

* More than half of the cases (8 out of the 14 separate recordings) indicated no VHW receiving capsules. This either show a poor supply system or a poor recording system.

* The average number of VHWS receiving capsules from the clinics increased from 0.71 per clinic in July 1988 to 1.29 in February 1989. Despite this significant increase, these numbers reflect a very small number of VHWS receiving their capsule supply from the clinics.

* The number of VHWS existing in villages served by the various clinics was only recorded once in July 1988 (refer to the section on staff, below). Thus, this is the only time period in which to measure the proportion of existing VHWS who actually come to the clinics for their capsule supply. The range is from zero percent (in three out of the seven clinic) to a high of 15%, with a weighted average of only 4%.

3. General Comments

* As noted above, the system of recording the number of VHWS who receive vitamin A capsules from the clinics is not always consistent with the records of the numbers of capsules received by the VHWS.

* The ratio of capsules received to VHW receiving capsules in a given clinic during a given time period (other than the two inconsistent cases noted) ranges from a low of 20:1 to a high of 400:1. This indicates a wide variation in the supply system.

* The above ratios correspond fairly well with those noted in part B, below (i.e., 10 - 60 capsules on hand per VHW after they have distributed 200 - 250 capsules each).

* The vast majority (96% average) of the VHWS are not receiving their capsules directly from the clinics and are presumably being given their supply by the project staff members who are driving to each of the villages.

B. Community-based records (from ten villages, each surveyed in three separate time periods):

1. Records of Vitamin A Capsules on hand with the VHWS

* Half of the villages surveyed yielded no data either because the VHW was absent or because the village did not contain a VHW. However, the number of surveyed villages without a VHW declined from seven out of ten in July 1988 to only three out of ten in February 1989.

* The average number of capsules on hand per VHW increased from about ten in July 1988 to about 60 in February 1989. The village of Rafin Wada (in February 1989) was a notable exception, with the VHW having over 200 capsules on hand. Without this exceptional case, the average in February 1989 would have been closer to 30 capsules per VHW -- still a sharp

increase over the average in July 1988.

* Three of the ten cases recorded zero capsules remaining with the VHW. This indicates that the supply was used up and not replenished by the end of the time period.

* Other than Rafin Wada and the villages where the VHW had no capsules on hand, the range was from 21 to 98.

2. Records of the Vitamin A Capsules Distributed by the VHWS

* As noted above, half of the villages yielded no data.

* Other than Rafin Wada where only four capsules were distributed by the VHW in the time period recorded in February 1989, the range was from just under 200 to just over 400 in a given village.

* Over time, there was an increase in the average number of capsules distributed in the villages from 205 in July 1988 to 259 in February 1989.

3. General Comments

* The supply of vitamin A capsules with the VHWS has not been adequate in some cases (where zero capsules were recorded as being on hand). The average of less than ten capsules on hand per VHW in July 1988 is too low, but did show a marked increase during the next time period.

* In two of the ten instances when villages with a VHW were surveyed, the VHW was absent at the time of the visit and no data could be recorded. This indicates a difficulty with the recording system as it relates to the project survey.

* In nine out of ten cases where data could be collected, it appears that the VHWS are performing the job of capsule distribution properly (i.e., a few hundred capsules distributed with only a few dozen remaining at the end of a given time period). Only in Rafin Wada was there an exception to this. This recording system has the capacity to spot VHWS who are or are not performing adequately.

SECTION V: TRAINING, LEVEL OF KNOWLEDGE
AND SUPERVISION OF STAFF

The first part of this section refers to the clinic-based staff which is common to the two arrondissements. The clinic-based survey of seven clinics per arrondissement per time period was used as the source of data. Most survey items were monitored only during the most recent two time periods. Refer to Table 4 for a summary of the relevant data.

The second part of this section refers to the village health workers in the arrondissement of Guidan Roumji. The two sources of data were the clinic-based survey and the community survey conducted during the two most recent time periods, as noted on Table 5.

I. CLINIC-BASED STAFF

A. Training and Effectiveness of Nursing Staff:

1. Birni N'Konni over time

* Although the number of nurses in the seven clinics increased from 31 in July 1988 to 38 in February 1989, the number and percentage of those trained by the Vitamin A Project declined somewhat (from 15 or 48.4% to 12 or 31.6%). This indicates that the rate of turnover among the trained staff exceeds the rate at which they are being trained.

* The number of health education talks given by the nursing staff which included a section on vitamin A peaked in July 1988 at 175 (for an average of 25 per clinic). However, the number fell in February 1989 to only 50 talks (7.1 per clinic).

* Both the drop in the number of trained staff in the clinics and the frequency of health education sessions on vitamin A during the last year may be responsible for the reduction in coverage rates which were recorded in the community and in the clinic-based surveys.

2. Guidan Roumji over time

* The number of nursing staff in the seven clinics increased from 18 in July 1988 to 25 in February 1989. The number of those who were trained by the Vitamin A Project also increased (from 13 to 16) although the percentage declined from 72.2% to 64.0%. This decline was not as great as that in Birni N'Konni during the same time period.

* The number of health education talks on vitamin A remained fairly constant over time, averaging 8.7 per clinic during the time period ending in July 1988 and 8.4 per clinic in February 1989.

* The increase in trained nursing staff may have contributed to the improvements in coverage rates (both preventive and curative) and in people's ability to correctly identify VACs in Guidan Roumji.

3. Compare Birni N'Konni and Guidan Roumji

* There appears to be less turnover among the clinic staff in Guidan Roumji than in Birni N'Konni. Thus, the number of trained staff increased in Guidan Roumji while that in Birni N'Konni declined.

* Although the numbers of trained staff in the two arrondissements are similar, the percentage of total staff at the clinic who are trained in vitamin A is consistently higher in Guidan Roumji.

* Except for the time period ending in July 1988, when the numbers of health education talks on vitamin A had a dramatic but temporary increase in Birni N'Konni, these numbers were quite similar in the two arrondissements.

B. Level of Knowledge of Xerophthalmia amongst the Staff:

1. Birni N'Konni over time

* The rate at which questions about signs of xerophthalmia were answered correctly remained at exactly the same level (76.2%) over the last two time periods. This can be considered a measure of practical knowledge of the condition.

* Knowledge of causes of xerophthalmia appeared to be somewhat better (90.5% in July 1988 and 81.0% in February 1989) than knowledge of its signs. This

measurement reflects more of a theoretical than a practical knowledge, both of which appear to be quite good.

2. Guidan Roumji over time

* Rates for the knowledge of signs of xerophthalmia increased from 61.9% in July 1988 to 85.7% in February 1989. As with the number of trained clinic staff, this increase parallels the improvement in coverage rates over time in Guidan Roumji.

* Rates for the knowledge of causes of xerophthalmia also increased over time (from 85.7% in July 1988 to 95.2% in February 1989). This measure of theoretical knowledge is consistently higher than the measure of practical knowledge of xerophthalmia. The increase also may contribute to the improved coverage rates.

3. Compare Birni N'Konni and Guidan Roumji

* Both have similarly high rates for correctly identifying the signs and causes of xerophthalmia. This reflects well on the quality of the training of the nursing staff in the clinics.

* The level of "theoretical knowledge" of the causes of xerophthalmia is consistently higher than the level of "practical knowledge" of its signs. This may be due to an emphasis in the training which could be addressed in the future.

C. Supervision of the Nursing Staff:

1. Birni N'Konni over time

* The number of supervisory visits increased steadily over time. The average per clinic doubled from 1.1 visits in the first time period to 2.3 visits during the time period ending in February 1989.

2. Guidan Roumji over time

* The number of supervisory visits more than trebled from an average of 1.0 per clinic in July 1988 to 3.1 in February 1989. This may have influenced the increase in the level of knowledge amongst the nursing staff, as noted above.

3. Compare Birni N'Konni and Guidan Rounji

* By February 1989, the average number of supervisory visits to the clinic-based staff in Guidan Rounji was substantially higher than that in Birni N'Konni (3.1 compared to 2.3).

* The rate of increase in Guidan Rounji was more dramatic than in Birni N'Konni.

II. VILLAGE HEALTH WORKERS (Guidan Rounji only)

A. In July 1988, the clinic-based survey recorded the number of VHWs trained by the Vitamin A Project and affiliated with the health clinics and those working in the villages:

* In the average clinic, over 32 VHWs had some affiliation with the staff (eg., receiving their supply of medications from the clinics). Of these, an average of 27.4 per clinic (or 85.3%) had been trained by the Vitamin A Project. This rate is somewhat higher than the percentage of total nursing staff at the clinics who were trained by the Project (see above).

* Higher still was the rate of trained VHWs who were actually working in the surveyed villages surrounding the health clinics. Of 125 such workers, 114 or 91.2% had been trained in Vitamin A.

B. The community survey asked questions relating to the VHWs effectiveness, level of knowledge and supervision during the last two time periods:

* VHWs gave very few educational talks on vitamin A (less than one per village in each time period). The apparent decline from 0.7 talks per village in July 1988 to 0.4 in February 1989 is not significant because of the small numbers involved.

* The rates for correctly identifying night blindness and its causes as well as foods rich in vitamin A were all quite high in July 1988 (90% to 100%). The latter remained steady at about 90%, although the level of knowledge of night blindness and its causes dropped from 100% to 81.0% and 85.7%, respectively, in February 1989. Overall, these rates are similar to those found in the survey of clinic-based staff.

* The average number of supervisory visits per village with a VHW increased from 1.0 in July 1988 to 1.7 in February 1989. This shows the same trend of increasing frequency of supervision as found in the survey amongst the clinic-based staff.

CLINIC-BASED STAFF
TRAINING, LEVEL OF KNOWLEDGE AND SUPERVISION
IN THE ARRONDISSEMENTS OF
BIRNI H'KONHI AND GUIDAN ROUJJI, NIGER
BASED ON SEVEN CLINICS SURVEYED PER TIME PERIOD
AND PER ARRONDISSEMENT

ARRONDISSEMENT	FEBRUARY 1988			JULY 1988			FEBRUARY 1989		
	TOTAL	AVERAGE	SD or %	TOTAL	AVERAGE	SD or %	TOTAL	AVERAGE	SD or %
BIRNI H'KONHI:									
NURSING STAFF:									
EXISTING IN CLINICS	H/A	H/A	H/A	31	4.4	H/A	38	5.4	H/A
TRAINED BY THE PROJECT [1]	H/A	H/A	H/A	15	2.1	48.4%	12	1.7	31.6%
HEALTH EDUCATION TALKS ON VITAMIN A	60	8.6	10.7	175	25.0	32.7	50	7.1	8.6
LEVEL OF KNOWLEDGE [2]:									
SIGNS OF XEROPHTHALMIA	H/A	H/A	H/A	16	2.3	76.2%	16	2.3	76.2%
CAUSES OF XEROPHTHALMIA	H/A	H/A	H/A	19	2.7	90.5%	17	2.4	81.0%
SUPERVISORY VISITS RECEIVED	8	1.1	0.6	12	1.7	0.7	16	2.3	0.7
GUIDAN ROUJJI:									
NURSING STAFF:									
EXISTING IN CLINICS	H/A	H/A	H/A	18	2.6	H/A	25	3.6	H/A
TRAINED BY THE PROJECT [1]	H/A	H/A	H/A	13	1.9	72.2%	16	2.3	64.0%
HEALTH EDUCATION TALKS ON VITAMIN A	H/A	H/A	H/A	61	8.7	7.9	59	8.4	6.3
LEVEL OF KNOWLEDGE [2]:									
SIGNS OF XEROPHTHALMIA	H/A	H/A	H/A	13	1.9	61.9%	18	2.6	85.7%
CAUSES OF XEROPHTHALMIA	H/A	H/A	H/A	18	2.6	85.7%	20	2.9	95.2%
SUPERVISORY VISITS RECEIVED	H/A	H/A	H/A	7	1.0	0.5	22	3.1	1.6

FOOTNOTES:

- [1] The third column for each time period represents the percentage of nursing staff in the clinics which has been trained by the Vitamin A Project.
- [2] Five questions were asked of the clinic staff in each of the two categories. A score of one to three was awarded on the following basis: Score one for one or two correct answers; score two for three or four correct answers; score three for five correct answers. The third column for each time period represents the average score converted to a percentage.

NOTE:

Except where mentioned above, the third column for each time period represents the standard deviation of the data.

VILLAGE HEALTH WORKERS'
TRAINING, LEVEL OF KNOWLEDGE AND SUPERVISION
IN THE ARRODISSEMENT OF
GULDAH ROUMI, NIGER

SOURCE OF DATA	JULY 1988			FEBRUARY 1989		
	TOTAL	AVERAGE	SD or %	TOTAL	AVERAGE	SD or %
CLINIC-BASED SURVEY RESULTS (1):						
VHWS AFFILIATED WITH CLINICS:						
EXISTING ON STAFF	225	32.1	N/A	N/A	N/A	N/A
TRAINED BY THE PROJECT (2)	192	27.4	85.3%	N/A	N/A	N/A
VILLAGES WITH VHWS:						
WORKING IN THE VILLAGE	125	17.9	N/A	N/A	N/A	N/A
TRAINED BY THE PROJECT (2)	114	16.3	91.2%	N/A	N/A	N/A
COMMUNITY SURVEY RESULTS (3):						
HEALTH EDUCATION TALKS ON VITAMIN A LEVEL OF KNOWLEDGE (4):	2	0.7	N/A	3	0.4	N/A
IDENTIFY NIGHTBLINDNESS	9	3.0	100.0%	17	2.4	81.0%
CAUSES OF NIGHTBLINDNESS	9	3.0	100.0%	18	2.6	85.7%
FOODS RICH IN VITAMIN A	8	2.7	88.9%	19	2.7	90.5%
SUPERVISORY VISITS RECEIVED	3	1.0	0.8	12	1.7	0.7

FOOTNOTES:

- (1) Based on seven clinics surveyed in the time period ending in July 1988.
(2) The third column represents the percentage of the staff in place which has been trained by the Vitamin A Project.
(3) Based on three villages surveyed in the first time period and seven in the second time period.
(4) Five questions were asked of the village health workers in each of the three categories. A score of one to three was awarded on the following basis: Score one for one or two correct answers; score two for three or four correct answers; score three for five correct answers. The third column for each time period represents the average score converted to a percentage.

NOTE:

Except where mentioned above, the third column for each time period represents the standard deviation of the data.

SECTION VI: CONCLUSIONS AND RECOMMENDATIONS

I. CONCLUSIONS

* Preventive coverage rates fell in Birni N'Konni and rose in Guidan Roumji so that the latter are currently four times as high as the former.

* Curative coverage rates for both arrondissements remained high in all categories, except for chronic diarrhea in Birni N'Konni.

* Public education of vitamin A (as measured by ability to recognize VAC) improved in both arrondissements and is now three times higher in Guidan Roumji than in Birni N'Konni.

* No significant associations were found between village size or distance from villages to clinics and the coverage rates or the ability to identify VAC.

* A tracking system is in place which makes it possible to account for the VAC being distributed.

* VAC supply in clinics is generally adequate and consistent, although the recording of request and receipt of VAC by the clinic heads is better in Birni N'Konni.

* VAC supply among VHWs is uneven; inadequate supply was recorded in at least half of the cases; records are inconsistent and incomplete.

* Very few VHWs are receiving VAC directly from the clinics; most are relying on project staff to deliver VAC to their villages.

* Overall, VHWs are performing well in terms of the distribution of VAC; however, they are giving almost no health education talks on vitamin A.

* The turnover rate is higher among the clinic-based staff than among the VHWs; net decline in trained staff in clinics.

* Results of the training appear to be good in terms of the staff ability to identify xerophthalmia, night blindness and vitamin A rich foods.

II. RECOMMENDATIONS:

The following are recommendations for Project activities leading up to the final round of data collection to be conducted in July 1989:

* The clinic-based survey results for preventive coverage rates (in Birni N'Konni only) are not reliable and should not be collected in the final round; the clinic-based survey should focus on curative coverage rates while the community survey can be used to compare preventive coverage rates.

* Project staff should not deliver VAC supplies to the villages; VHWs should receive their supplies directly from the clinics so that this method can be analyzed as it would function independently from the operational research component of the Project.

* Records kept by VHWs concerning VAC supply must be improved so as to be more consistent and complete; this may require further training in this area.

* Increased training and follow-up supervision are necessary in order to reduce the turnover rate, especially among the clinic-based staff.

* Training of female VHWs (i.e., matrones) may increase the coverage rates among postpartum women and should still be considered.

* In each village surveyed, questions could be added for the final round of data collection to address the issue of preventive distribution of VAC resulting from activities not specifically included in the operational research design.

* An analysis of project costs must be conducted and combined with this operational research report for the purpose of making a final determination of the most appropriate strategy for VAC distribution.

VITAMIN A PROJECT MONITORING SYSTEM

PROCESS INDICATORS

Indicator	periodicity	Source of data	Timing																		
			12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
# & timing of meetings of the VAP Administrative group	3 mo.	HKI	+		+			+		+			+			+				+	
# of monthly objectives partially or not achieved	3 mo.	HKI	+			+			+			+				+				+	
# of technical expertise days	6 mo.	HKI	+						+					+							+
# of health professionals trained	6 mo.	HKI/DDS	+						+					+							
# of VIWs trained	6 mo.	HKI/DDS							+												
Analysis of prepost tests results	6 mo.	HKI	+						+					+							
# of cases of night blindness transferred by VIWs	6 mo.	CM/DR												+						+	
Describe accomplishment of schedule activities	3 mo.	HKI				+								+						+	

KI = Helen Keller International
 DS = Direction departementale de la sante
 AP = Vitamin A Project

CM = Centre medicale
 DR = Dispensaire Rural
 VHW = Village Health Workers

Indicator	periodicity	Source of data	Timing																		
			12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
# of meetings held with government officials, key health policy makers, health professionals, and community leaders where vitamin A was mentioned (Some description)	3 mo.	HKI/CM DDS/DR MOH	+			+			+			+			+			+			+
# of vitamin A literature distributed to health professionals (Some description)	6 mo.	HKI				+						+						+			+
# of health education sessions in CM/DR where vit. A was mentioned	3 mo.	CM/DR				+			+			+			+			+			+
# of health education materials distributed (by category & to whom)	6 mo.	HKI/DDS MOH				+						+						+			+
# of VACs that reach CM/DR (Estimated from clinic record)	6 mo.	CM/DR	+						+					+							+
# of VACs that reach VIWs	6 mo.	HKI/CM DDS/DR							+					+							+
# of VACs present at any given time in each CM/DR (If possible)	3 mo.	ST				+			+			+		+				+			+
# of VACs distributed by each CM/DR	3 mo.	CM/DR				+			+			+		+				+			+

ST = Supervisory Tournee

MOH = Ministry of Health

Indicator	perio- dicity	Source of data	Timing																	
			12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5
* # of VACs distributed by each VIIW	6 mo.	ST								+					+					+
* # of cases treated from xerophthalmia by each CM/DR	3 mo.	CM/DR				+				+			+		+			+		+
* # of cases of high risk group treated by each CM/DR	3 mo.	CM/DR				+				+			+		+			+		+
* # of supervisory tours conducted per arrondissement (Retrospective)	6 mo.	DR DDS/CM				+						+					+			+
* # and name of sites covered by the supervisory tours (If possible)	6 mo.	ST				+						+					+			+
* # of VIIWs seen by a supervisor	6 mo.	VIIW															+			
* # & name of PVOs contacted	6 mo.	HKI	+							+					+					+
* # & name of PVOs that adopt vitamin A activities in their programs	6 mo.	HKI	+							+					+					+

PVO= Private Voluntary Organization

ANNEX V

MID-TERM EVALUATION

MID-TERM EVALUATION

Vitamin A Deficiency Control Program

Helen Keller International

NIGER

(USAID Support Grant No. CSII PDC-0284-A-00-6131-00)

Victoria M. Sheffield
Director of Training
Helen Keller International
November 1988

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ATTACHMENTS

- I. Terms of Reference
- II. Project Description (from Grant Agreement)
- III. Detailed Implementation Plan (from First Annual Report)
- IVa. Demographic Characteristics - Feb. 1989
- IVb. Community-Based Survey Results - 7 Clinics
- IVc. Community Survey Results - 10 Villages
- V. Letter from Director of Training, HKI/NY.
- VI. Training Manual for Trainers (English version)
- VII. Training Guide to train Trainers
- VIII. Pre-Post Test for Trainers
- IX. Training Manual for Nurses - Table of Contents in French
- X. Training Guide to train Nurses
- XI. Pre-Post Test for Nurses
- XII. Training Handout for Village Health Workers
- XIII. Training Guide to train Village Health Workers
- XIV. Pre-Post Test for Village Health Workers
- XV. Vitamin A Food Values List
- XVI. Children's Storybook
- XVII. Poster
- XVIII. Pagne Design
- XIX. English/French "Guidelines" Card
- XX. French "Vitamin A Recognition Card"
- XXI. French "Saving A Child from Xerophthalmia"
- XXII. "Data Analysis of the Operational Research Report",
Section 5: "Training, Level of Knowledge,
Supervision of Clinic Staff and Village Health
Workers"

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Last but not at all least, Anne Paxton, Susan Eastman, Karima Kerby, and Dr. Nancy Sloan gave strong support and guidance for the plan of the evaluation as well as all necessary background documentation.

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Ms. Stacey Hill	Peace Corps Volunteer Guidon Ider Village
Ms. Julia Miller	Peace Corps Volunteer Dogarawa Rural Dispensary

GLOSSARY

AED	Academy for Educational Development, Inc.
AVRDC	Asian Vegetable Research and Development Center
CFA	Currency (franc) of the Banque Centrale des Etats de L'Afrique de L'Ouest (Central Bank of the States of West Africa)
CM	Centre Medical (Medical Center)
DDS	Direction Departementale de la Sante (Office of the Departmental Director of Health)
DES	Direction des Etablissements des Soins (Office of the Director of Health Establishments)
DON	Department of Nutrition
DR	Dispensaire Rural (Rural Dispensary)
Dundumi	The Hausa word for "night blindness".
ESV	Equipe de Sante Villageoise (Village Health Worker)
GON	Government of Niger
HKI	Helen Keller International, Incorporated
HNP	Health/Nutrition/Population
IU	International Unit
IVACG	International Vitamin A Consultative Group
JNSP	Joint Nutrition Support Project (Joint WHO/UNICEF Nutrition Program)
Matrone	Traditional Birth Attendant
MOH	Ministry of Health
MSF	Medecins sans Frontiers
NGO	Non-Governmental Organization
ONPPC	Office National des Produits Pharmaceutiques et Chimiques (National Office of Pharmaceutical and Chemical Products)
PEC	Primary Eye Care
PHC	Primary Health Care
PMI	Protection Maternelle et Infantile (Maternal/Child Health Clinic)
PVO	Private Voluntary Organization
RTH	Road-to-Health Card
Sage Femme	Nurse/Midwife
VAC	Vitamin A Capsules
VAD	Vitamin A Deficiency
VHW	Village Health Worker

I. INTRODUCTION

A mid-term evaluation of Helen Keller International's "Control of Vitamin A Deficiency" project in Niger was planned for October 1988. Victoria M. Sheffield, Director of Training for HKI and Dr. Sally Stansfield named by USAID were to visit Niger at that time to perform the evaluation. Schedule conflicts prevented Dr. Stansfield from participating in the evaluation. As Ms. Sheffield was already in Niger, she carried on with the evaluation as planned for HKI's purposes.

A. Evaluation Model

An open-ended interview format was used as the most direct, practical and appropriate technique for use in the evaluation.

Furthermore, questionnaires for HKI Staff, government counterparts, trainers, trained health workers, and community members were developed for the training program evaluation which occurred simultaneously with the mid-term evaluation. The training program evaluation is part of a larger evaluation of HKI training programs worldwide and addresses the progress and effectiveness of training strategies. Preliminary findings are alluded to in this report.

The evaluation followed the "Mid-term Evaluation Guidelines for CSII Projects", July 12, 1988 by Dr. Gerold V. van der Vlugt, Child Survival Coordinator, AID/FVA/PVC.

Dr. Zayan had arranged a comprehensive schedule which included the following:

1. Interviews with HKI Staff.
2. Interviews with local counterparts including the staff of the National Program to Prevent Blindness.
3. Interviews with USAID/Niamey health officers.
4. Interviews with appropriate NGO representatives.
5. Field trips to selected towns and villages in the Departments of Tahoua and Maradi for the purposes of evaluating the training program.
6. The opportunity to observe a nurse training session in Madaoua, Tahoua.

B. Evaluation Participants

1. HKI/Niger Country Director
2. HKI/Niger Staff
3. Director, National Program to Prevent Blindness
4. Manager, National Program to Prevent Blindness
5. USAID Health Officers
6. Staff at the Department of Ophthalmology/MOH
7. Associated NGO Representatives
8. US Peace Corps Volunteers

II. BACKGROUND

A. Grant Agreement

The Vitamin A Project in Niger is a collaborative effort between HKI and the Nigerien Ministry of Health (MOH) and is supported by a grant (No. PDC-0284-A-00-6131-00) from the Office of Private and Voluntary Cooperation, Agency for International Development dated September 1986. It is an operational research project that began in March 1987 and is expected to finish on July 31, 1989.

B. Project Description

Historically, vitamin A deficiency has been known to exist in the Sahelian countries of Africa and was exacerbated by the drought and famine of 1984/1985. From May 20 to 30, 1986, HKI conducted a rapid assessment of the prevalence of xerophthalmia in Niger (Attachment IV).

A stratified random sample of 1,997 children aged 0-10 were seen at 10 sites chosen from the departments of Tahoua, Maradi, and Zinder. Results indicated that vitamin A deficiency was a significant problem. Among the 0-5 year age group, 3.9% of cases had night blindness, 0.93% had active signs of xerophthalmia, and 0.22% had corneal scarring. These rates of active and inactive VAD in children aged 0-5 years surpassed the WHO criteria for constituting a significant public health problem.

Severe signs of active xerophthalmia were found solely among children less than age 6 years. The prevalence of past vitamin A deficiency, e.g. vitamin A or measles-related corneal scars, was six times greater in children ages 6-10 years compared with children under age six years. This reflected the accumulation of prior cases of corneal destruction over time.

With funding from USAID's PVC Office in Washington, HKI began its Vitamin A Program placing its country director, Dr. Ahmed Zayan, in-country in March 1987. An initial Detailed Implementation Plan (DIP) was submitted on April 8, 1987 and subsequently revised in collaboration with AID/Niamey in September 1987 (Attachment III).

The project has two major goals:

1. Development of an operational research program to identify the most efficient, sustainable strategy of vitamin A capsule delivery.
2. Prevention of blinding malnutrition and treatment of xerophthalmia during the life of the project.

The objectives include comparing alternative strategies of program implementation to reach a workable methodology for reducing nutritional blindness among the target population, and increasing awareness of vitamin A deficiency and xerophthalmia among key policy makers, professionals, and the general public.

The project sites are the arrondissement of Birni N'Konni in the Department of Tahoua and the arrondissement of Guidon Roumji in the Department of Maradi.

The project works closely with the "Programme National de la Lutte Contre la Cecite" which is directed by Dr. Kabo, Moussa, an ophthalmologist who is also Dean of the Medical School and serves as Dr. Zayan's counterpart.

To address the project goals, the major activities are the training of health workers in the detection and control of vitamin A deficiency, and the vitamin A capsule distribution program. Included in these activities is an emphasis on nutrition education and increased awareness about vitamin A among policymakers and the general public.

1. Operations Research

The operations research project will compare two strategies of vitamin A capsule distribution to determine the most effective method for reaching children with prophylactic doses of vitamin A and treating children with xerophthalmia, measles, prolonged frequent diarrhea, acute respiratory infection, and severe malnutrition. The determination of an effective strategy has financial and personnel implications as well as humanitarian impact in reducing vitamin A deficiency in populations at risk.

The project is being implemented in the arrondissements of Birni N'Konni in the department of Tahoua and the arrondissement of Guidon Roumji in the department of Maradi. These two sites were evaluated during HKI's rapid assessment in 1986 and were selected for their geographic location and accessibility.

In the sections below describing the "Training Program" and the "VAC Distribution Program", activities for implementing the two strategies are detailed.

Preliminary results from the July 1988 report indicate that there is little difference between the rates of children prophylaxed in the fixed-based facilities by nurses (Strategy #1) and rates of those dosed in villages by VHWs (Strategy #2). However, data being collected since then seems to reflect better coverage in the villages but has not yet been formally analyzed.

After continued monitoring and evaluation of the data collected, all information will be analyzed and reviewed by the HKI technical and program staff. At a national workshop to be held in Niamey in June 1989, the report of the operations research will be presented for discussion. It is then hoped that the Ministry of Health will declare vitamin A as part of its national health care policy.

2. Training Program

Health workers were trained to identify and manage vitamin A deficiency in the high risk groups. Children at risk are in the age 6 month to 6 year age group. Also, mothers within the first two months after delivery. Children identified for treatment with three doses of vitamin A are those showing ocular signs of vitamin A deficiency (xerophthalmia) or measles. Children with severe malnutrition, prolonged and frequent diarrhea, or acute lower respiratory infection are treated with one dose of vitamin A.

All children age 6 months to 6 years in the project areas should receive one dose of vitamin A every 6 months. Mothers receive one 200,000 IU doses within the first two months after delivery.

Comparing alternative strategies for capsule distribution, the following strategy was implemented.

- a. In Birni N'Konni, Tahoua, personnel at fixed-based health facilities were trained in the identification and treatment of vitamin A deficiency as well as distribution of vitamin A capsules on a 6-monthly prophylactic basis.
- b. In Guidon Roumji, Maradi, personnel at fixed-based health facilities were trained in the identification and treatment of vitamin A deficiency only.

Village Health Workers were trained to give the 6-monthly prophylactic distribution in their own villages.

Training materials were designed and developed in-country by the HKI Training Specialist from the New York office and the HKI staff and counterparts in Niger.

3. Vitamin A Capsule Distribution Program

As mentioned above, a 6-monthly vitamin A capsule distribution program would take place at the HKI project sites.

- a. In Birni N'Konni, Tahoua, personnel at fixed-based health facilities provide vitamin A capsules every six months to children under age 6 years as they presented to the clinics and according to the individual schedules on the patients' Road-to-Health Cards.
- b. In Guidon Roumji, Maradi, the 6-monthly vitamin A capsule distribution is carried out to all children under age 6 years in villages by the Village Health Workers.

4. Other Activities

HKI/Niger planned to work closely with bilateral agencies and NGOs which were doing related work in health and nutrition such as US Peace Corps, AVRDC, CARE International, MSF.

HKI/Niger has succeeded in getting vitamin A included in the curricula of the medical, nursing, and public health schools.

Various strategies to create awareness among policymakers and the general public such as a "Vitamin A Day" were planned and have been implemented since the start of the project.

C. Finances

The Grant Agreement of September 1986 called for a three-year budget of \$628,214 of which AID will contribute \$400,105 (63.7%) and HKI will contribute \$228,109 (36.3%).

As of September, 1988, the project has spent \$269,933 of the \$628,214. The breakdown is as follows:

	HKI	USAID	Totals
Contribution	\$228,109	\$400,105	\$628,214
<u>Spent as of 9/88</u>	<u>\$ 36,146*</u>	<u>\$233,787</u>	<u>\$269,933</u>
Remaining	\$264,255	\$166,318	\$358,281

*Does not reflect HKI's contribution of VAC stocks to the project.

Remaining funds will cover activities for the remaining life of the project.

III. MINISTRY OF HEALTH/HKI VITAMIN A ACTIVITIES

A. Issues Related to Specific Evaluation Objectives

The Second Annual Report is extremely well organized and written and served as an excellent basis for reviewing the project's progress. As stated earlier, a general interview format was used to address the following issues and questions as interpreted from the "Mid-term Evaluation Guidelines for CSII Projects", July 12, 1988 by Dr. Gerold V. van der Vlugt, Child Survival Coordinator, AID/FVA/PVC.

1. Assess progress toward meeting objectives.
2. Assess infrastructure supporting project.
 - a. Adequate staff.
 - b. Local counterparts in place.
 - c. Local staff have managerial and technical capacity to eventually take over all project activities.
3. Technical support.
 - a. Adequacy of headquarters and external assistance.
 - b. Needs for technical assistance in the time remaining.
4. Information systems - monitoring/management information systems collecting and analyzing appropriate data and information.
5. Comparison of rate of expenditures to budget.
 - a. Enough money left to complete objectives?
 - b. Underspent?
6. Sustainability.
 - a. Which activities can be sustained after end of project?
 - b. Which activities are being institutionalized by the government, local NGOs, the community, etc?
 - c. Is there a demand in the community for the health benefits to be sustained?
 - d. Is the project implementing methods to help insure sustainability.
7. Recurrent costs and cost recovery mechanisms.
8. Effectiveness.
 - a. How many children are receiving the child survival intervention (VAC).
 - b. Are the targetted risk groups being reached effectively?

B. Observations

1. Progress Toward Meeting Objectives

The project in Niger appears to be well on target of its objectives. The following activities have been accomplished according to the DIP:

a. Training of Health Workers

In October 1987, the HKI Training Specialist from New York joined the HKI/Niamey staff and government counterparts to design the training program for health workers in Tahoua and Maradi and to design the training materials.

For explanation, primary eye care specifically addresses the subspecialty of eye care in the context of primary health care. Primary eye care is defined as the treatment and prevention of common eye conditions, first-aid for eye injuries, and the group of public health activities such as hygiene, sanitation, nutrition, and safety which also promote and maintain general good health.

In the context of primary eye care, vitamin A deficiency can have obvious devastating ocular consequences and are recognized as the condition called xerophthalmia. Identification of xerophthalmia, the leading cause of blindness in children in developing countries, has been a major activity of all levels of health workers where vitamin A deficiency is prevalent. Treatment with vitamin A is done by appropriate trained health personnel. The distribution of vitamin A to at risk children for the prevention of xerophthalmia is also done by appropriately trained personnel.

All primary eye care training includes public health measures for health workers to teach to members of their communities. Nutrition education emphasizes local vitamin A foods and food preparations that community members should know and integrate into their daily diets, especially for mothers and children.

The additional guidelines from the WHO and IVACG to dose children with measles, prolonged frequent diarrhea, acute lower respiratory infection, and severe malnutrition have now been included in the training of health personnel in primary eye care.

After meetings with staff and counterparts, it was determined that the newly established "Programme National de la Lutte Contre la Cecite" had no materials for training health workers. Dr. Pierre Huguet stated that he hoped that the materials could have a basic introductory section on primary eye care so that the materials could be used throughout the country. This was perceived as an excellent idea in the interest of sustainability. Indeed, all of the materials that were designed, translated, field tested, and produced are being used by the Programme elsewhere besides Tahoua and Maradi.

The following materials were designed:

- Training Manual for trainers (Att. VI)
- Training Guide to train trainers (Att. VII)
- Pre/Post Test for trainers (Att. VIII)
- Training Manual for nurses (Att. IX)
- Training Guide to train nurses (Att. X)
- Pre/Post Test for nurses (Att. XI)
- Training Handout (pictures) for VHWS (Att. XII)
- Training Guide to train VHWS (Att. XIII)
- Guidelines for Public Education
- Vitamin A Food Values List (Att. XV)
- Storybook for schoolchildren (Att. XVI)
- Poster (Att. XVII)
- Pagne (Att. VIII)

A Pre/Post Test for VHWS was designed by HKI/Niger staff at a later date (Att. XIV)

At the home office in New York, general materials were translated and printed in French for use in Niger. They are:

- "Guidelines for the Prevention of Vitamin A Deficiency (Xerophthalmia)" (Att. XIX)
- "Vitamin A Recognition Card" (Att. XX)
- "Saving a Child from Xerophthalmia" (Att. XXI)

The training sessions have been accomplished in the following areas:

- Training of nurses in Birni N'Konni, Tahoua, took place in November 1987.
- Training of nurses and VHWS in Guidon Roumji, Maradi, took place in March/April 1988.
- Training of nurses in Madaoua, Tahoua, took place in November 1988.

The "Operational Research Data Analysis Report", July 1988, describes the average results on the pre/post-tests. They are as follows:

Average Rate	Birni N'Konni	Guidon Roumji/Nurses	VHWS
Pre-test	67.0	58.6	43.2
Post-test	82.8	82.1	81.7

As mentioned previously, an evaluation of the training program itself was going on at the same time as this mid-term evaluation and will be written separately. However, observations from that evaluation will be included here.

The training sessions have been conducted by HKI/Niamey staff and ophthalmologists from the Ministry of Health and the National Program to Prevent Blindness. The sessions have been well received and the health workers state that they enjoyed the sessions and learned a lot from them. In all cases, they wanted continuing education sessions on eye care.

According to preliminary results from the questionnaires used in the training program evaluation, many of the nurses trained in both Tahoua and Maradi are functioning well in the recognition and treatment of vitamin A deficiency. Nurses in Tahoua are distributing prophylactic doses to children under age 6 years who present to the clinics. In Maradi, prophylactic doses are distributed by trained VHWS.

Further detailed information on the test results and knowledge retention is described in the "Data Analysis of the Operational Research Report", Section 5 titled "Training, Level of Knowledge, and Supervision of Clinic Staff and Village Health Workers", April 1989 (Att. XXII).

b. Public Eye Health Education

From the training program questionnaires, it appears that only a few nurses in both departments and a few VHWS give public eye health education talks on the prevention of vitamin A deficiency. This is due mostly to distances, the lack of transportation, and time constraints.

Many of the nurses said that they trained their midwives and similarly, many VHWS said they asked the matrones working under their supervision to talk to mothers about vitamin A foods and the prevention of dundumi (the Hausa language word for night blindness) when they visited the homes.

In Maradi, when village health workers and community members were interviewed about vitamin A and its prevention, the situation is very individual. Some VHWS are very conscientious and distribute the vitamin A throughout their villages when it is delivered to them. They also speak to men, women, and children in the village about dundumi (night blindness) and its prevention as well as foods that are rich in vitamin A. Other VHWS distribute the vitamin A when it is delivered, but aren't really sure why it is being distributed and don't do health education talks.

Health education talks to villagers are not easy to do because of distances and lack of transport. However, if supervision can be improved, it is believed that all health workers will be more aware of the importance of the foods that prevent dundumi and other signs of vitamin A deficiency. Also, word of mouth, both intra- and inter-village, is very strong and it was found that mothers in some villages learned about the distribution of vitamin A capsules from friends and relatives and not necessarily from health workers.

In general, a great awareness about vitamin A deficiency has been created among health workers in both Tahoua and Maradi. In communities where the village health worker and nurse are giving health talks about vitamin A, community members speak up about what they know. Often, when asked about vitamin A, community members pointed to the poster. When mothers were asked to choose the vitamin A capsule from a handful of tablets including a VAC, aspirin, and two other tablets, most chose the aspirin. However, when asked again "What is the cure for dundumi", all mothers chose the VAC.

When asked which foods prevent dundumi, the mothers listed foods rich in vitamin A. The program has built on the traditional knowledge of dundumi. Many health workers and community members said that before the training, they knew about dundumi, but didn't know how to cure or how to prevent it. They went to the local priest for traditional prayers to be written on a Koranic board with ink made from water, tree sap, and sugar. After the reading of the prayers, the board is washed with water and the patient drinks the inky water to cure the dundumi. This practice was done for three days and repeated if the patient wasn't cured. Interestingly, the evaluators looking at the training program in western Sudan in December 1988 found that the Muslim people had the same practice to cure night blindness.

In communities where trained VHWS had talked with community members about vitamin A and how it cures and prevents dundumi, the community members say that they know that night blindness is related to the lack of vitamin A foods and most people have witnessed the disappearance of night blindness in patients who have been treated with VAC or been given liver.

While having the privilege of observing the training of nurses at Madaoua, it appears that the counterparts responsible for the training have not necessarily followed the training guide designed in October 1987. A lot of highly technical clinical ophthalmology has been added. When asked about this, it was explained that the nurses get more knowledge while in school than this program is giving them and the trainers wanted to give the students more knowledge. After long discussions during the evening of the first training day, it was determined that these sessions were not to teach ophthalmology in three days, but to be a practical session in understanding how to manage common eye problems that appear in the clinics with a major emphasis on the recognition, treatment, and prevention of xerophthalmia. Also, that the sessions should include a lot of demonstration and practice of skills.

The HKI Director of Training has written a letter to Dr. Zayan (Attachment V) which is being used as the basis for meetings in Niamey for the trainers to redefine the purposes of the training sessions and exactly what material should be covered and why. The HKI Director of Training and HKI/Niamey staff will work closely to support the trainers to help the sessions be more appropriate and practical in future.

All of the training materials that were designed in October have been translated, field tested, produced and are in use in the project except the storybook for schoolchildren and the pagne. By way of explanation, a pagne is a colorful cloth worn by women as a skirt and to carry their babies. It can also be fashioned into a blouse and headwear. Pagnes are often used to advertise a message printed into the design and have been successfully used to promote health and agricultural messages in the past.

At the moment, the Ministry of Education is making some revisions on the storybook for schoolchildren. HKI has an agreement with the MOH to produce the storybook when all of the revisions have been made. It is hoped that local funding can be sought to produce the storybook for use in all schools.

To produce a pagne, a retailer has to accept the design. He then front-loads the very expensive production costs and sells them on the local market. HKI would then be able to buy some for its own use, but most would be sold directly to Nigeriens on the local economy.

The Schools of Nursing and the Schools of Public Health have asked HKI for supplies of the eye care manuals for use in their own programs. This is an excellent added benefit in the interest of further disseminating information and training on vitamin A.

Margaret Neuse mentioned that she feels that HKI's training program is one of the best in the country and is probably the best organized thanks to the extreme attention to detail and documentation by Dr. Zayan.

This may be the juncture at which to mention some recent difficulties that Dr. Zayan has been having regarding per diems for the trainers. The trainers are the Chief Medical Officers and eye nurses of the medical centers. In recent months, USAID has been negotiating with the government to reduce the schedule of per diem rates. It is the evaluator's understanding that no agreement on this issue has been made between the government and USAID.

USAID reduced the per diem rates for Nigerien program participants in USAID funded programs. HKI has thus been bound by this new per diem schedule. HKI and other organizations now continually have difficult discussions with the program participants who state that they have had no written documentation from the government about the reduction and expect to receive the formerly agreed upon rates.

This has led to problems with morale and enthusiasm, particularly with the trainers in the training course. At the moment, HKI has very little power in influencing the situation as it is between USAID and the Government of Niger. However, it is hoped that a written agreement can be brought to bear so that NGOs aren't caught in the middle of this situation.

c. Vitamin A Capsule Distribution Program

According to the alternative strategies, vitamin A capsules were distributed in the following manner according to schedule:

Birni N'Konni, Tahoua Department

From December 1987, children with xerophthalmia and associated diseases (measles, prolonged frequent diarrhea, acute lower respiratory infection, and severe malnutrition) were treated with vitamin A at fixed-based facilities. Prevention doses were also given to all children under age six who presented to the facilities every six months according to the dates registered on their RTH cards. Village health workers did not distribute vitamin A capsules.

Guidan Roumji, Maradi Department

From March 1988, children with xerophthalmia and associated diseases were treated with vitamin A in fixed-based facilities.

In April, 1988, children were given prevention doses of vitamin A by village health workers as supplied and instructed by their supervising nurses.

These activities have been going well. See Section 8 for coverage estimates. Vitamin A stocks were deposited by HKI staff at the medical centers at each arrondissement. The capsules were then distributed to the dispensaries and, in Maradi, to the village health workers for scheduled prophylactic distribution as requested by the dispensaries. It is planned that the vitamin A stocks will, in future, be distributed to the medical centers by the general drug distribution system which is often not quite as efficient. HKI will monitor whether vitamin A stocks are delivered in a timely fashion.

d. Other Activities

The first annual "Vitamin A Day" was held in May 1988 in the School of Medicine and it went well in so far as creating an awareness about vitamin A. Margaret Neuse from USAID/Niamey attended the event and commented that she felt it was a successful day even though some of the speakers spent a bit too much time on theoretic information and not enough time on programmatic issues. Other such activities are planned and suggestions from the first event will be taken into consideration for future events.

HKI staff has spent a lot of time with cooperative activities with other agencies:

US Peace Corps - HKI has trained 26 Peace Corps volunteers about vitamin A deficiency presenting a two-hour session during their regular training. Five others attended the training session for nurses held in Madaoua. The training is extremely valuable both for the volunteers and for HKI's objectives as these volunteers, for the most part, are nutrition specialists.

AVRDC - Anne Turner, doctoral candidate at Cornell who is working with AVRDC in Niger, has been very cooperative with HKI in assisting with the nutrition education sections of the training program.

In 1987, a cooperative project was proposed that HKI and AVRDC could work in the same areas to promote vitamin A in gardening projects. However, it seems that AVRDC's staff is not yet in the field and is doing research only in a limited area in Niamey.

HKI's country director participated in AVRDC's seminar for West Africa which was held in Niamey. However, AVRDC is only "growing seeds" now and has not trained anyone for field work in the area of gardening. At the present time, any larger intervention (e.g. gardening projects, nutrition education) cannot be implemented with AVRDC until they are further along with their programmatic initiatives.

CARE - HKI has been hoping to work with CARE in Zinder Department, but their health project is one year late in the start-up. CARE presently has growth monitoring only in 2 arrondissements and 13 dispensaries. HKI feels that the only initiative that might be appropriate at this time is a strategy for curative VAC distribution using nurses in the clinics and dispensaries, but not a prevention program. Discussion for this type of activity is under way between Kathy Tilford, CARE's Health Advisor for West Africa and HKI.

MSF - MSF has individual health workers working in HKI's project areas. They are doing growth monitoring in the dispensaries and do give vitamin A for malnutrition. There is no real vitamin A program activity at this time. However, HKI keeps in contact with MSF to make sure that their vitamin A activities do match the strategies and guidelines being initiated by the National Program to Prevent Blindness and HKI.

Tulane University - Consultants from Tulane are working vigorously to update the health information systems within the MOH. They are trying to get VAC distribution on the standard report form sent in from the dispensaries to the MOH. Tulane is comfortable with the addition even with their goal of reducing the amount of paperwork in the reports. HKI is monitoring the situation and feels hopeful that VAC distribution will become part of the standard reporting system.

UNICEF - HKI has been working closely with UNICEF and the MOH negotiating to get UNICEF to donate necessary stocks of VAC to the government for the National Program to Prevent Blindness. At present, UNICEF is investing heavily in the JNSP and has its own projects. HKI hopes that allocations for VAC will be in the UNICEF budget for the next fiscal year. Also, the HKI project has been collaborating with the JNSP to allow integration of activities against VAD within the nutrition activities in Niger.

AED - HKI is working with AED to develop a "Social marketing" proposal for a 5-year project in Niger. The project would hope to institutionalize its activities within the health system utilizing existing health workers and facilities as well as government trainers. The project would focus on the long-term strategies of nutrition education and home gardening.

2. Assess the Infrastructure Supporting the Project

a. Adequate Staff

HKI's country director in Niger has proven to be capable, competent, and enthusiastic in accomplishing the established goals. He has good relations with a wide-range of people including government officials, NGO representatives, and local staff. Dr. Zayan manages the program activities responsibly and conscientiously and has proven to be an able country director to both the headquarters staff and colleagues in the field.

HKI's current in-country staff is adequate for the project's activities at the present time. The staff includes a field coordinator, accountant/secretary, and a driver. Temporary personnel are hired as needed.

b. Local Counterparts

Dr. Moussa Kabo and Dr. Abdou Moha cooperate well with the project. The country director states that both are supportive, give guidance, and he feels that they give good program back-up support.

c. Local Staff Have Managerial and Technical Capacity to Eventually Take Over All Project Activities

The field coordinator has excellent technical capabilities having worked within the Ministry of Health for a number of years and provides strong technical support to the project.

The accountant/secretary has been trained in the use of the computer as well as accounting duties. Her excellent performance and managerial skills have led to a promotion to office manager.

It should be noted that, as program activities are being institutionalized utilizing existing health workers, facilities, and the drug distribution system, it is hoped that HKI staff support for on-going activities will become minimal. Eventually, the program will fall under the responsibility of the National Program for the Prevention of Blindness.

3. Technical Support

a. Adequacy of Headquarters and External Technical Support

Technical support from headquarters New York has been timely and certainly adequate. Anne Paxton, Africa Regional Manager, worked with Dr. Nancy Sloan, epidemiologist, and Dr. Zayan in writing the revision of the DIP. Since then, Anne Paxton has visited Niger three times on supervisory trips. Dr. Zayan and Ms. Paxton have an excellent working relationship and Anne has remained a constant and stable back-up for the project at HKI/NY.

Susan Eastman, HKI's Director of Vitamin A Programs has reviewed all reports from Niger and advises the program on vitamin A issues and works with Anne Paxton in the supply of VAC stocks to the project.

Dr. Nancy Sloan, HKI's epidemiologist, assisted with the design of the Operations Research protocol and has been a strong back-up with the monitoring of the project throughout. Mr. Robert Gern, recently pointed Monitoring and Evaluation Specialist at HKI New York is taking over the tracking and analysis of the operational research data and plans to visit Niger in the next few months.

Victoria Sheffield, Director of Training, visited Niger in October 1987 to work with the HKI staff and counterparts to design the training program and materials. Back-up support is constant with the review of the program and local materials, as well as the design of additional materials in French from HKI/NY for use in Niger.

Drs. Alfred Sommer and Louis Pizzarello, HKI's medical advisors, also review all reports and advise the program on all issues including vitamin A, training, evaluation, and future planning. Dr. Pizzarello visited the project in Niger in November 1988.

Anne Turner of AVRDC/Niger has been very cooperative in advising the project about indigenous vitamin A foods and recipes to be used in the nutrition education sections of the training program.

b. Needs for Technical Assistance in the Time Remaining

The country director would like assistance planning the final evaluation. There has been a lot of data collected with regard to the training of health workers and VAC distribution and he would like to have all of this information analyzed for inclusion in the final report.

4. Information Systems - Are the monitoring/management information systems collecting and analyzing appropriate data and information?

Dr. Zayan mails information about vitamin A and the distribution program, including reporting forms, to all chief medical officers in the medical centers every three months. A written report on the vitamin A activities in all project areas is written by HKI/Niamey for the project, HKI/NY, and USAID/Niamey every three months. Additionally, Dr. Zayan visits all project sites every six months to provide supervision and monitor reporting.

Considering the time and distances involved in both of these reporting activities, the evaluator feels that the project is doing an excellent job with reporting and management of information and the collection of programming data. A great deal of raw data and information are being collected and the HKI Monitoring and Evaluation Specialist will be charged with organizing and analyzing this information for review and recommendations by the HKI medical advisors and program staff.

As letters written to various departments within the government are not often circulated between departments in a timely fashion if at all, Dr. Zayan copies all letters and informational material on program activities to all concerned governmental departments himself.

Margaret Neuse of USAID/Niamey commented that HKI's country director regularly sends full reports to USAID on all project activities. She is very pleased with HKI's monitoring and documentation capabilities.

5. Compare rate of expenditures to budget - Is there enough money left to complete objectives? Is the project underspent?

Dr. Zayan's budgeting activities are excellent. He has remained "on or within target" throughout the project. He shoots for a monthly expenditure of \$10,000 and has always remained within a manageable estimate of that amount.

6. Sustainability

- a. Which activities can be sustained after the project ends?
- b. Which activities have been institutionalized by either the government, local NGOs, or the community, etc.?

The following categories will address both questions.

Awareness

Almost everyone contacted during the evaluation stated that a tremendous awareness about vitamin A deficiency and its management has been created in Niger because of HKI. This has been through activities such as the "Vitamin A Day" in the medical school, posters, the training program, and the VAC distribution program. Cooperative activities with NGOs such as AVRDC, the US Peace Corps, MSF, CARE, and UNICEF's JNSP have also contributed to the increased awareness among policymakers and the public.

Training Program

HKI's training materials have been adopted by the National Program to Prevent Blindness and will be used in all training of health workers throughout the country. As was planned, HKI's program has its major emphasis on vitamin A deficiency and its prevention and the National Program includes vitamin A as a major activity. While basic primary eye care material was included in the training program at the request of the counterparts in the National Program and the emphasis on vitamin A deficiency appears to some to have been diluted, the country director feels that this has been a very good move politically in the interests of sustainability.

HKI's curricula and materials have been requested for use in the medical, nursing, and public health schools. In this way, all new trainees will be sensitized to and trained about vitamin A deficiency and its management.

The country director and the project counterparts have also convinced Dr. Gamaty, the Chief of Pediatrics and who also teaches in the medical school, to include vitamin A in the pediatric curriculum and to use VAC in the pediatric clinics as appropriate.

HKI has had meetings at the MOH with those responsible for the activities in the MCH clinics. Vitamin A activities have now been integrated throughout the entire MCH system. Clinic workers give VAC on diagnosis of measles and hospitalized cases of malnutrition (3 treatment doses). At this time, it is felt that they do not wish to give VAC for diarrhea because it is hard to monitor these patients. In Niamey for instance, it is not necessarily difficult to monitor children visiting one MCH clinic, however, Niamey has many clinics and patients may visit any one of them and they fear the chance of overdosing.

However, the evaluator feels that this initiative with the MCH staff is a major step and, as the benefits become more apparent, it is hoped that they will expand their dosing regimes to include dosing of children with prolonged frequent diarrhea, acute lower respiratory infection, and severe malnutrition.

VAC Distribution Program

In 1988, Dr. Zayan was able to get Vitamin A on the "Essential Drugs List" for Niger. This is a great accomplishment, especially as the project is only two years old.

The Pharmaceutical Authority (ONPPC) is an independent organization and is supposed to be self-sustaining. The conventional wisdom is that if the medical officers in the rural areas increase their requests for VAC, then the ONPPC would stock more VAC and have it available to supply the demand. For this reason, HKI has been emphasizing to the medical officers that they should be sure to order VAC on their monthly drug requests.

HKI has been acting as a catalyst in negotiations to have UNICEF provide future stocks of vitamin A to the government of Niger.

- c. Is there a demand within the communities for the health benefits to be sustained?

It is too early to tell at this point if the community is recognizing the benefits of VAC distribution and demanding vitamin A. However, coincidentally, the evaluator noted that, in villages where the VHW was giving talks about dundumi and its prevention, community members knew that VAC was the cure and the prevention. They actually saw for themselves the benefit to children who were treated for night blindness with VAC. This information was gathered during the evaluation of the training program which was being done concurrently. Conventional wisdom dictates that, as more and more mothers recognize the benefit of vitamin A in the cure of dundumi, the strong word of mouth will duplicate this knowledge and increase the demand for VAC when children have night blindness.

d. Is the project implementing methods to help insure sustainability?

This question has been answered in the previous descriptions. HKI has worked closely with the National Program to Prevent Blindness and the medical/nursing/public health schools to institutionalize the training program and materials; the MCH system to get VAC distributed through MCH clinics; the NGOs to create further awareness with other organizations providing health care; UNICEF to get VAC to the government through UNICEF channels; and the ONPPC to get vitamin A on the "Essential Drugs List". Most of these activities have already been institutionalized and this is of great credit to Dr. Zayan and the HKI project.

7. Recurrent costs and cost recovery mechanisms.

- a. Do managers understand human, material, and financial resources being used by the project?
- b. Do they understand the difference between star-up and on-going costs?
- c. Does the community have an agreement on a system to help pay for ongoing costs?

These questions will be addressed in the following narrative.

HKI feels that the government is aware of the level of inputs by HKI such as the start-up costs for the training program, VAC and its distribution to the medical centers, and the site supervisory visits.

On-going costs should be minimal for the following reasons:

- Training of existing health workers will be carried on by the National Program to Prevent Blindness.
- Training of new medical staff will take place in the medical, nursing, and public health schools as vitamin A has been integrated into their curricula.
- It is planned that UNICEF will provide VAC to the government in the future.

- Distribution of VAC stocks to the rural areas will take place through the "normal channels" of drug distribution.
- Supervision will fall under the regular supervisory responsibilities of the medical officers in the medical centers and the nurses in the rural dispensaries. It should be noted that the HKI project did not have funding nor responsibility to support supervision of health workers, so HKI's departure would not reduce any present supervisory activities.

8. Effectiveness

a. How many mothers and children are receiving the VAC (child survival intervention)?

Following is general demographic information for the project areas taken from "Demographic Characteristics and Magnitude of the Population Survey in the Arrondissements of Birni N'Konni and Guidan Roumji, Niger as of February 1989", HKI, taken from the 1987 census (Attachment IVa).

TARGET AREA INDICATORS	BIRNI N'KONNI	GUIDON ROUMJI
Overall Population (1987 Census)	253,646	211,418
Population of Children <6 years [1]	51,490	42,918
Population of Postpartum Women [2]	12,936	10,782
Total Target Population	64,426	53,700

[1] Estimated as 20.3% of the overall population.

[2] Estimated as 5.1% of the overall population; refers to births within the previous six months.

Following are the coverage rates for prevention doses and treatment interventions in high risk groups in Birni N'Konni and Guidon Roumji as taken from a subsample of seven clinics surveyed per time period and per arrondissement, HKI. Percentage rates listed below are only the average rates based on population sampled. See Attachment IVb for population sample, rate range, and average rate.

<u>PROPHYLACTIC DISTRIBUTION [1]</u>		<u>BIRNI N'KONNI</u>	<u>GUIDON ROUMJI</u>
		<u>Clinic Personnel</u>	<u>VHws</u>
Children <6 years	Feb. '88	36.7% average	N/A
	July '88	34.6% average	N/A
	Feb. '89	24.6% average	N/A

Postpartum Women (within 6 months)	Feb. '88	61.8% average	N/A
	July '88	94.9% average	N/A
	Feb. '89	93.3% average	N/A

<u>CURATIVE TREATMENT [2]</u>		<u>BIRNI N'KONNI</u>	<u>GUIDON ROUMJI</u>
		<u>Clinic Personnel</u>	<u>VHws</u>
Night Blindness	Feb. '88	51.8% average	N/A
	July '88	99.4% average	100.0% average
	Feb. '89	66.7% average	97.4% average

Clinical Signs of Xerophthalmia	Feb. '88	52.0% average	N/A
	July '88	93.7% average	60.0% average
	Feb. '89	100.0% average	75.0% average

Measles	Feb. '88	38.1% average	N/A
	July '88	100.0% average	65.3% average
	Feb. '89	73.7% average	74.1% average

Chronic Diarrhea	Feb. '88	16.7% average	N/A
	July '88	87.9% average	29.6% average
	Feb. '89	17.2% average	100.0% average

Severe Malnutrition	Feb. '88	23.1% average	N/A
	July '88	46.4% average	48.6% average
	Feb. '89	55.5% average	61.1% average

- [1] Percentage indicates the proportion of patients receiving one dose of vitamin A for prevention.
- [2] Percentages are calculated by dividing the VAC distributed by the number of patients with each condition:
 Children with chronic diarrhea received one VAC.
 Children with all other conditions received 3 VACS.

Another subsample of 10 villages were surveyed in Birni N'Konni and Guidon Roumji to determine coverage rates for prophylactic distribution. Percentage rates are based on population sampled. See Attachment IVc for population sample, rate range, and average rate.

<u>PROPHYLACTIC DISTRIBUTION [1]</u>		<u>BIRNI N'KONNI</u>		<u>GUIDON ROUMJI</u>	
		<u>Clinic Personnel</u>		<u>Clinic Personnel</u>	
Children <6 years	July '88	19.9% average		22.8% average	
	Feb. '89	14.1% average		60.9% average	
Postpartum Women (within 6 months)	July '88	23.9% average		9.4% average	
	Feb. '89	11.9% average		47.3% average	

[1] Percentage indicates the proportion of patients receiving one dose of vitamin A for prevention.

b. Are the targetted risk groups being reached effectively?

In reviewing the data from the survey of 7 clinics (Attachment IVb), one sees that, while the number of people from the target population presenting to the clinic is low, the coverage for treatment dosing is very good. However, coverage for prevention doses of children below age 6 years can be improved and this will best be accomplished through improved supervision.

Also, the coverage rates in general are very good considering that an awareness about VAD has just been created and health workers have been trained. It is expected that health workers will do a better job in future as they become accustomed to recognizing vitamin A deficiency and dosing patients for treatment and prevention.

When comparing the prophylactic distribution coverage rates of the two surveys for Birni N'Konni, the coverage rates in the survey of 7 clinics (Attachment IVb) are higher than the coverage rates shown in the survey of 10 villages (Attachment IVc). This is most likely because only a small percentage of the number of children in the villages report to the clinic for their prevention dose. (In Strategy #1, the prevention doses are given out in the clinics only).

This also indicates that prophylactic coverage is probably quite low as children usually present to the clinic only when they are extremely ill and not for "preventive" interventions.

c. Identify any changes in health status?

At this point in time, it is difficult to identify such changes without prospective studies either on mortality or measles-related xerophthalmia/mortality.

It can be noted that anecdotal evidence from US Peace Corps volunteers working in villages state that they have observed an improvement in children's general health status in the two months following VAC distribution. However, after questioning, it seems that those two months have also been the two months following the harvest and more food is around. (VAC is distributed immediately pre-harvest). The Peace Corps volunteers are extremely sensitized to VAD, are paying a lot of attention to it, and are observing children's health status with regard to VAD.

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

In general, the Niger program is an extremely good one. It has both accomplished and institutionalized nearly all of its objectives. There are some minor difficulties which the project staff is addressing and the evaluator was not hit with any "surprises" during the evaluation.

1. A tremendous awareness about vitamin A deficiency and its management has been created in the two project departments as well as within the MOH and with other NGOs. The project is continuing the momentum through the institutionalization of its activities. An added benefit has been the requests for materials to be used in the training programs in the medical, nursing, and public health schools.
2. The National Program for the Prevention of Blindness has adopted HKI's training materials for use in its activities countrywide. This has been an excellent result in the interests of cooperative activities and sustainability.
3. HKI has been able to get vitamin A included in the "Essential Drugs List" for Niger which is a strong and sustainable accomplishment.
4. The Training Program for the most part have been institutionalized through the activities of the National Program to Prevent Blindness and the ongoing training of new health personnel in the medical, nursing, and public health schools.

The VAC Distribution Program is making progress towards institutionalization through the inclusion of vitamin A on the "Essential Drugs List". HKI is working for full institutionalization of distribution through negotiations with UNICEF to have VAC donated to the government, encouraging the chief medical officers to request VAC on the monthly forms, and to get VAC distribution listed in the formal MOH reporting system.

The operational research data will be analyzed by HKI in the coming months and presented at a national workshop planned for June in Niamey. At this workshop, comparison of the two operational research strategies will be discussed and it is hoped that the Ministry of Health will determine that a national policy on vitamin will then be set.

5. Technical support from HKI/NY and from external sources has been adequate in strengthening the activities of the project.
6. The project is on target with its finances and will have enough funds to cover the remaining project activities.
7. It was observed that, for the most part, nurses and village health workers do not give public eye health education talks. This is often due to time constraints in the clinics. From those interviewed, it can be assumed that almost none actually travel to villages to speak with the community members because of the tremendous distances and the lack of transportation.
8. At the moment, HKI is facing difficulties with the issue of per diems for the Nigerien participants in the training program. As described earlier, USAID/Niamey has reduced the schedule of per diem rates and the government has not concurred and has not issued any formal change in rates. For this reason, the Nigeriens feel that they should be paid according to the schedule of rates issued by the government which has not, to date, been changed.

When this issue came up in discussion during the training session in Madaoua, the country director was really caught between a rock and a hard place being tied to giving only the rates authorized by USAID. I was impressed with his demeanor and his ability to separate issues from the highly charged emotions and I hope that this matter will be resolved as soon as possible between USAID and the Government of Niger.

B. Recommendations

1. As vitamin A deficiency is due to malnutrition, treated with the micronutrient vitamin A, and is prevented with good nutrition, the Nutrition Division of the MOH should be brought more into future activities. Xerophthalmia, the strikingly obvious and devastating ocular result of vitamin A deficiency necessitates the eye care services to be involved in the recognition and management of this condition. However, with the added guidelines addressing measles, diarrhea, acute respiratory infection (ARI), and severe malnutrition, the nutrition division should be encouraged to give great emphasis to vitamin A in its training of field workers and its general activities.

Additionally, HKI's collaborative activities with Dr. Gamaty and the Department of Pediatrics should continue to be strengthened so that health workers recognize that children with these life-threatening conditions should also be given vitamin A.

2. The project has created an awareness within the MCH system about vitamin A deficiency and the MCH officials have agreed that children should be given treatment doses of vitamin A when they present with xerophthalmia or measles. Talks should continue with MCH personnel to encourage them to follow the guidelines which recommend that one dose of vitamin A also be given to children with acute diarrhea, ARI, and severe malnutrition.
3. As the VAC stocks will no longer be delivered to the medical centers by HKI, but rather through the regular MOH drug distribution channels, HKI staff realize that they have to monitor whether the stocks reach the centers in time for the prophylactic distributions.
4. HKI is working closely with UNICEF and their JNSP project to integrate vitamin A activities within their nutrition work. UNICEF certainly recognizes the importance of vitamin A and it is hoped that HKI will be successful in convincing UNICEF to supply stocks of VAC to the Government of Niger in the future.

5. HKI has created a strong network of cooperation with other NGOs and many such as CARE, MSF, and AVRDC are hoping to include vitamin A initiatives into their future programming. Project staff and personnel from the National Program for the Prevention of Blindness will need to become strong advocates to the NGOs to continue the momentum created about the importance of vitamin A deficiency so that vitamin A will indeed be included in future programming.
6. Lastly, HKI has recognized areas in the training program that need modification and will hold meetings with the trainers to begin to make the necessary revisions. The Director of Training in New York will continue close contact with the country director to see that efforts are maximized in the revision process.

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ANNEX VI

FINAL EVALUATION

Helen Keller International

Niger

VITAMIN A PROJECT

EVALUATION

USAID Grant: CS II PCD-0284-A-00-6131-00

March 1987 - July 1989

Nicholas Cohen Md

Expanded Programme on Immunization
World Health Organization
1211 Geneva 27
Switzerland

December 1989

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ANNEXES

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1. SUMMARY

- 1.1 Vitamin A deficiency is an increasingly recognized problem of public health significance in Niger. The background is that of overall food shortage and poor nutritional status for a large proportion of the population, with periodic and progressive deterioration in recent years of Sub-Saharan drought. Blindness due to malnutrition and vitamin A deficiency is the prime cause of irreversible loss of sight in childhood, and is entirely preventable.

Furthermore, it is now established from large-scale community-based trials in other countries that shortage of vitamin A reduces survival in childhood. Developing integrated strategies to deal with the prevalent and preventable micronutrient deficiencies in Niger - iron and iodine as well as vitamin A - is therefore both appropriate and urgent.

- 1.2 The major goals of the HKI project have been defined as:

Goal 1. Prevention of blindness due to malnutrition, and treatment of eye damage due to vitamin A deficiency (xerophthalmia) among children aged 0-6 years, and women of child-bearing age in the target areas.

Goal 2. Operational research to identify the most effective strategy (or combination of strategies) in the context of Niger for reducing xerophthalmia rates below WHO levels for a problem of public health significance.

Goal 3. Training of health workers at all levels to prevent, identify and treat vitamin A deficiency.

Goal 4. Promotion of increased consumption of foods rich in vitamin A, from available sources.

Goal 5. Sensitization at a national level of public health authorities and the population to the problem of vitamin A deficiency, with the aim of defining a national control policy.

1.3 Field activities, over two years, have involved periodic oral supplementation with large doses of vitamin A (200 000 IU). Alternative distribution strategies, have been monitored in two arrondissements (total population 881,689; 223,949 children below 6 years). In a fixed strategy (Birni n'Konni) all activities for prevention and treatment have been focused at health centres and dispensaries. In an outreach strategy (Guidan Roumji) village health workers (ESV) distributed vitamin A supplements and treated xerophthalmia directly in the community.

Vitamin A supplements have been distributed in two other arrondissements, without the same level of monitoring.

1.4 Evaluation of Field Activities:

Goal 1: Prevention and Treatment of Vitamin A Deficiency cannot be evaluated completely due to the project design which did not include collection of pre-intervention and final measures of clinical outcome in the target populations. Several indirect measures of process are, however, available from the very complete operational research (Goal 2).

1. Coverage of children below 6 years with vitamin A supplements in the final round (February 1989) was 14.1% in the Fixed strategy area, as compared with 60.9% in the Out-Reach villages. 11.9% of women had received vitamin A after delivery in the Fixed villages as compared with 47.3% in the Out-Reach villages.

Delivery of vitamin A supplements by village health workers (ESV), in addition to health centre support, is clearly the best strategy. The comparatively low coverage from Fixed centres reflects problems of distance and access for the target populations. These constraints are common to the whole health care system in Niger. It is difficult to envisage sustained higher coverage levels than were achieved in the Out-Reach villages. More female workers should be used.

2. In both strategies, over 80% of children presenting with xerophthalmia had been treated appropriately (final round figures). Between 50-75% of high risk children with diseases known to precipitate severe vitamin A deficiency had been given vitamin A.

3. Supply of vitamin A supplements and distribution, as in the existing HKI project, is not feasible for a national program.

Vitamin A is listed as an essential drug in many countries. But the supply and distribution system for vitamin A supplements in Niger requires further work on coordination between the Ministry of Health (MSP/DES), the National Office for Pharmaceutical and Chemical Products (ONPPC) and UNICEF. This is a potentially important focus of activity for HKI.

4. Inadequate emphasis has been given to social mobilization. Cultivation of vitamin A rich foods in household gardens, and especially off-season food production, were not included in project activities.

5. Training (Goal 3) was made available to almost half the health workers in the Fixed strategy area, over 80% of VHW (ESV) in the Out-Reach strategy. The curriculum appears relevant and well organized. But there could be more emphasis on practical problems encountered by field workers, as well as integration with other health care activities. The proportion of workers trained reflects in part frequent rotation of health service staff: it emphasizes the need for repeated training sessions.

Training at a national level was also intensive, including two vitamin A conferences involving the School of Public Health, health professionals and NGOs based in Niamey and the Faculty of Health Sciences. HKI also participated in Ministry of Health and NGO seminars.

1.5 There is a need for increased emphasis on control of infectious diseases as a means of reducing vitamin A deficiency. Vitamin A deficiency control activities should be more integrated within overall Maternal and Child Health (MCH) actions of the Departement de Sante Maternelle et Infantile (DSMI), the Expanded Programme on Immunization (EPI/PEV), the Programme for the Control of Diarrhoeal Diseases and other disease control activities.

1.6 Supervision of field activities could be reinforced by integration within the national health service system. Problems of logistics and cost are outstanding.

1.7 Promotion of increased consumption of vitamin A from available sources (Goal 4) has been active both at a national level and in the project areas. A list of foods rich in vitamin A, as well as a poster and a story booklet, have been produced for the first time in Niger. There could be more emphasis on promotion of breast feeding as the most important source of vitamin A in the early months of life. Further visual material should be carefully pre-tested in the field.

1.8 Our overall evaluation of the impact of the HKI project is that its activities, while obviously limited in scope especially in the field, have had a very important catalytic effect on sensitization of the public health community in Niger to the problem of vitamin A deficiency (Goal 5). A national policy document defining strategies for the control of vitamin A deficiency and blindness is under development by the Government of Niger in collaboration with WHO/UNICEF/FAO/HKI and other concerned organizations, in some measure due to the project initiatives both in the field and with decision

makers.

The HKI project, with funding and support by USAID, has made a significant contribution towards improvement of child survival in Niger.

2. RECOMMENDATIONS

Depending on the specific requests of the Government of Niger, it is recommended that the major roles in the field of vitamin A for HKI be:

- 2.1 Provision of technical assistance in the development of the National Plan to Control Vitamin A Deficiency and Blindness in Niger.
- 2.2 Technical assistance as well as support to monitoring and evaluation methodologies and operational research, during the initial phase of implementation.
- 2.3 In particular:
 1. Provision of support and joint work with the Programme for the Prevention of Blindness (PNLCC) in the field of Primary Eye Care, as relevant to xerophthalmia and prevention of eye disease due to malnutrition.
 2. Collaboration with the Expanded Programme on Immunization (PEV) in feasibility studies for integration of vitamin A supplementation with vaccine delivery.
- 2.4 Liaison between UNICEF, the main supplier of vitamin A supplements to governments worldwide, and potential distributors to the health care system for the Government of Niger. The aim would be to define the best system both for vitamin A procurement and distribution.
- 2.5 Production of health and nutrition educational materials for use by health workers at all levels. Communication through radio and television should also be included.
- 2.6 Social mobilization and development of household gardens should be emphasized. Special efforts should be made to promote off-season agriculture. FAO would be an important collaborator in this work.

2.7 Field activities and related operational research should continue, but be limited to the existing project area, or adjacent arrondissements.

Another option would be to focus field activities in areas where another organization already has an established health and nutritional network. The JNSP/PCAN arrondissements are recommended.

3. ECOLOGICAL AND ADMINISTRATIVE CONTEXT

3.1 Geography. Niger is a vast, dry and exceptionally hot Sahelian country in West Africa covering an area of some 1,267,000 sq km. Niger is an enclave with the nearest port at over 1,000 km distance. The population in 1986 was estimated at 6,613,000 with an average settlement density of 13 per sq km.

Desert covers a large part of the land. The short rainy season is from June to September: average rainfall is less than 2.5 cm annually for over two thirds of Niger. The river Niger in the south west is the only permanent water course. Adequate water supply both for immediate needs and for irrigation to increase food production is therefore a constant priority.

Three climatic zones can be recognized, Sudan, Sahelian and Saharan. The majority of the population live in the savannah to the south. Agriculture and small scale cattle raising are the main sources of livelihood. About one in six of Nigerien are nomadic or semi nomadic, including Peulh and Touareg populations, living for at least part of the year with their livestock in the desert.

Dramatic changes in climate with drought and resulting famine over the past decade have left probably permanent changes on the life of many communities. Against a background of increasing pressure on food resources, the movement of desert to the south has reduced the savannah area. Deforestation as a result of both human and animal population pressures, and the need to burn wood for fuel, has opened the way to further loss of land. Loss of livestock and consequent inability to maintain themselves in the desert environment has led to sedentarization of large numbers of nomads.

3.2 Administrative structure. Niger is divided into seven Departments, each administered by a Prefet. Each department includes several Arrondissements, each administered by a Sous-Prefet. Village Chefs are responsible for their communities and the state is represented at all levels.

In some regions, groups of villages make up a Canton with a responsible Chef. The towns are divided into Quartiers.

French is the official language, but Hausa and Djerma are also widely spoken.

3.3 Health Services Structure. The Ministry of Health (MSP) and the Directions des Etablissements de Soins (DES) are at central level. Each Department has a unit responsible for health (DDS) and a hospital (CHD). Each Arrondissement has a Health Centre (CM). The Medical Centres (PM) cover 2-3 Cantons.

Rural dispensaries (DR) are at village level. Smaller villages have an Aid Post (Case de Soins). Countrywide, about 50% have a team of village health workers (Equipe de Sante Villageoise - ESV). It is relevant that the ESV are responsible to the Ministry of Planning (MP), at least in part, as well as to the DES or Ministry of Health.

4. HELEN KELLER INTERNATIONAL

4.1 Overview. Helen Keller International (HKI) is an American Non-Governmental Organization founded in 1915 with support and encouragement from Helen Keller. HKI works to prevent blindness, restore sight and to educate and rehabilitate the irreversibly blind. For over 30 years HKI's programmes have been devoted exclusively to the developing countries.

Within the United Nations, HKI headquarters has NGO consultative status with WHO and UNICEF, and in the course of its development has shared mutual objectives with FAO.

HKI has been a pioneer organization in the development of methodologies and programmes for the prevention of blindness due to malnutrition and the control of vitamin A deficiency. Starting generally with detailed research to define the dimensions of the problem, HKI has developed protocols and material for implementing intervention strategies, organizing the delivery of supplements where needed, training and social mobilization. HKI projects are evaluated using rigorous outcome measures, including where possible an estimate of cost-effectiveness.

HKI now works to prevent vitamin A deficiency in some 20 countries worldwide. A specialized Vitamin A Technical Assistance Project (VITAP) offers aid in training NGOs and organizations working in the vitamin A field.

4.2 HKI in Africa and Niger. Assistance in Africa became a full-time mandate following the devastating years of drought from 1979-84. Apart from Niger, HKI has worked in many of the affected countries including Burkina Faso, Ethiopia, Mali, Mauritania and Sudan.

The involvement in Niger began in 1986 when a group of headquarters staff and Ministry of Health (MSP) professionals participated in a survey of vitamin A status among children under 10 years of age in three regions. HKI has had an agreement with the Government of Niger (GON) since 1987 to develop mutually agreed activities. In parallel with activities to control vitamin A deficiency, a project has been approved for assistance in Primary Eye Care with the objectives of training ophthalmic assistants (technicians and nurses) and providing educational and training materials. The direct counterpart for HKI in the MSP is the Direction of Health Establishment.

Close collaboration with the MSP is maintained through the National Program for Prevention of Blindness (PNLCC) which is directed by an inter-ministerial committee. HKI also works with the Direction of Nutrition and the Joint Nutrition Support Program (JNSP/PCAN) which has representation from MSP/WHO/UNICEF. Additionally, HKI cooperates in areas of mutual interest with other NGOs such as CARE, AFRICARE, Medecins sans Frontieres (MSF).

Funding for HKI activities in Niger has been provided substantially by the United States Agency for International Development (USAID) and from HKI headquarters.

5. OVERVIEW OF VITAMIN A DEFICIENCY PROBLEM

5.1 Epidemiological situation. Vitamin A deficiency is a major public health problem in Africa, especially in the Sahelian countries where overall food shortage and inadequate dietary sources of vitamin A are widespread. According to WHO, 18 countries throughout Africa have a serious problem of vitamin A deficiency. Preschool-age children, as well as women during pregnancy and lactation, are most vulnerable. Vitamin A deficiency is also an outstanding risk among emergency and relief populations, where older children and adults are also often affected.

Severe vitamin A deficiency has long been recognized, in regions at-risk, as the prime cause of blindness in early childhood. Vitamin A is also essential for immune responses, resistance to infection, growth and the integrity of cells lining the intestines and respiratory system. The understanding that shortage of vitamin A, acting from within the first months of life, reduces the chances of survival throughout childhood is far more recent. Controlled trials of vitamin A supplementation in Indonesia and India have shown reductions of death rates in childhood of as much as 30%.

There is evidence that the most severe and prevalent childhood illnesses - measles, diarrhoea and acute respiratory infections - may either be more severe or episodes more frequent in the presence of vitamin A deficiency. The implications for Niger, where infant

mortality is currently 150 per 1,000, are clear.

Vitamin A deficiency has clearly been present for some time in Niger. However, no large scale studies of dietary intake of vitamin A exist. Consumption of oil/fat is also known to be very low in rural areas; again no quantitative studies are available. From other situations it is estimated that the intake of oil/fat is below 10g/day in the groups at-risk.

A specific term exists for night blindness, due to shortage of light sensitive pigment in the retina activated by retinol (vitamin A), in several local languages. It is clear that shortage of vitamin A is widespread and probably few areas of Niger are spared.

Detailed epidemiological studies based on eye damage due to shortage of vitamin A are, nevertheless, rare. Only three epidemiologically valid studies appear to be available. More information is definitely needed about the distribution of vitamin A deficiency and the communities most affected, in order to evaluate the impact of interventions at a regional or district level. It is our opinion, however, that the distribution of vitamin A deficiency and xerophthalmia should be relatively uniform throughout Niger, outside the few main towns.

In May 1986, HKI surveyed almost 2,000 children aged 0-10 years in the districts of Tahoua, Maradi and Zinder. Results for children aged 0-5 years are shown in Table 1. Night blindness rates were about four times in excess of WHO levels for a serious problem. The very high levels of corneal scars (x 22 in excess of WHO levels for a problem of public health significance) suggests other important causes of corneal damage, probably measles also linked to increased demand for vitamin A.

In October 1987, a survey in JNSP villages of children aged 0-5 years found night blindness rates from 1.2 - 4.0%.

A national study of eye disease and blindness in April-June and October 1988, examined 1,438 children aged 0-5 years in 30 randomly selected clusters countrywide. Night blindness rates were 2%, and corneal scars almost 50 times in excess of WHO threshold levels for a serious problem (Table 1). The sample size for the national study is too small to be significant for potentially blinding corneal lesions, as an indicator for example of areas of especial risk, below the level of the whole of Niger.

It is interesting that in all the studies rates for Bitot's spots were low. It should also be noted that trachoma is hyperendemic in Niger.

Table 1. Prevalence of Eye Signs of Vitamin A Deficiency in Children aged 0-5 years. Niger.

Eye sign	HKI 1986 %	National survey, 1988 %	WHO criteria %
XN	4.0	2.0	>1.0
X1B	0.7	0.2	>0.5
X3	0.14	0.29	>0.01
XS	0.22	0.49	>0.01

estimated: 1680 - 2520 preschool-age children
surviving blind each year.

5.2 Number of blind due to malnutrition. There is no information on the incidence of potentially blinding lesions. Similarly, the number of children blind from vitamin A deficiency has never been estimated directly. But taking into account all available information, including the severity of measles and low immunization levels as well as experience from other countries, we interpolate a prevalence for bilateral blindness in preschool-age children of 4-6 per 10,000. 70% of such loss of sight can be regarded as due to vitamin A deficiency and corneal damage. There is also a very high mortality for children blinded in early childhood.

Applying this estimate countrywide, 1,680 - 2,520 preschool-age children are surviving needlessly blind due to vitamin A deficiency and corneal scarring each year.

5.3 Diet and Overall nutrition. Vitamin A deficiency cannot be viewed in isolation. Due to the recent periods of drought and the invasion of desert land into southern areas of settlement, there is increasing pressure on all food resources at household level. Seasonal as well as annual variations in dietary intake and nutritional status are marked, especially in nomadic groups.

Cereals - especially millet but also sorghum, rice, maize and wheat - remain the major dietary components. Nomads have a higher consumption of milk and dairy products. Fruit and vegetable sources of vitamin A are rarely eaten or available, especially in the dry season.

Breast feeding is almost exclusive in rural areas until the

age of two years, unless the mother becomes pregnant when weaning is abrupt. In urban areas though breast feeding is becoming less prevalent: current estimates are 75-80%. Colostrum, especially rich in vitamin A, is not given to newborns in Niger.

Many restrictions and taboos limit dietary intake for pregnant and lactating women.

The results of a 1985 national study of nutritional status of children aged 0 -59 months, using anthropometric measures of growth as a proxy for nutritional status, are summarized in Table 2. The proportion of children with severe, third degree malnutrition (wt/age below 60%) is terribly high. Furthermore, the malnutrition was of recent onset in a quite high proportion of children (wt/ht below 80%).

In 1985, Niger clearly had a very severe problem of child malnutrition. Rural children were on average twice as malnourished as children in the towns. Tourareg, Peulh (nomads) and Kanari (cultivators in the extreme East of Niger) were the most deficient. There were no significant differences between boys and girls.

Table 2. Nutritional status of children aged 0 - 59 months in Niger. National Study, 1985.
Sample size n = 1957.

	Wt/Age <60%	Ht/Age <90%	Wt/Ht <80%
rural	6.9	24.3	15.5
urban	2.9	12.0	9.7

5.4 Intervention Options. Control and elimination of vitamin A deficiency is best achieved through a mixed strategy of intervention options. Control of vitamin A deficiency should also be seen as part of an integrated MCH and nutrition strategy, aiming also to reduce protein-energy malnutrition and improve intake of dietary fat, essential for absorption of precursor vitamin A from non-animal sources.

In the long term, increased production and consumption of foods rich in vitamin A are fundamental. Promotion of breast feeding is essential to maintain vitamin A status of very young children. Reduction of the incidence and impact of serious

infections increasing demand for vitamin A in childhood - especially measles, diarrhoea and acute respiratory infection - should be a linked policy.

Periodic distribution of vitamin A supplements is effective in the short term, but calls for high coverage by the health care structure and is difficult to sustain. Fortification of foods rich in vitamin A requires a suitable staple of the diet which is consumed in sufficient quantity by the target group, and whose cost can be subsidized either directly by the consumer or from other sources.

6. EYE DISEASE AND BLINDNESS PREVENTION

6.1 National Program. The National Program for Prevention of Blindness (PNLCC) was implemented in 1987 by the MSP, in association with WHO and the Cooperation Francaise. Three main causes of blindness are defined as priority targets for reduction:

1. Degenerative conditions - cataract and glaucoma.
2. Trachoma and associated conjunctivitis.

A study by HKI in 1986 showed severe trachoma in 2.9% of the mild. study population, 20.8% moderate, and 18% mild.

3. Vitamin A deficiency (xerophthalmia).

6.2 National Survey. A 1989 national study of eye disease and blindness examined a total population of 3,5000 in 30 randomly selected clusters. The estimated all-ages prevalence of total blindness was 1.5% (CI 1-2%). All main causes of blindness were considerably in excess of WHO limits for a problem of public health significance.

The number of all-ages blind surviving countrywide is estimated at 20,000. 11% of blind in the sample were under the age of 5 years - a figure compatible with the estimate for surviving preschool-age blind calculated previously. Eighty five percent of blindness in Niger is classified as avoidable: 80% as treatable.

The Program for the Prevention of Blindness is at the start of a phase of considerably accelerated activities. HKI will be collaborating with the Ministry of Health and the PNLCC in a five year project (1990-94) aimed at improving Primary Eye Care, eye services in general, and the rehabilitation of the blind.

7. EXPANDED PROGRAMME ON IMMUNIZATION (PEV)

7.1 **Relevance to Control of Vitamin A Deficiency and Blindness.** The EPI in Niger is directed at six main target diseases - measles, tetanus, polio, tuberculosis, whooping cough and diphtheria. Yellow fever vaccine is also available.

Measles in Niger is a severe disease with a high mortality threatening the young child. The risk of severe complications is high. Reducing the incidence of measles especially will have considerable impact on both vitamin A status and blinding corneal lesions.

Measles:

1. Increases demand for vitamin A, thus precipitating severe vitamin A deficiency where vitamin A status is already marginal. This is the situation for many children in Niger.
2. Precipitates corneal damage and blindness: both frequent sequela of severe measles in Niger.

There are therefore likely advantages to integration of distribution of vitamin A supplements with the existing EPI (PEV) infrastructure. Providing vitamin A along with vaccine delivery would be a cost-effective way of improving vitamin A status at a critical period of childhood.

7.2 **EPI strategies and coverage.** EPI activities began in Niger in 1988. The target population is children aged 0-23 months (with the possibility of vaccination up to five years for unimmunized children), and women of childbearing age.

Two basic strategies are employed countrywide:

1. Fixed and out-reach strategies for urban centres and populations within 5-15 km of health centres. (An estimated 40% of the overall population). In early 1989, 131 immunization centres covered almost all the country.
2. Mobile teams to cover populations living more than 15 km from immunization centres. (60% of the overall population).

The EPI programme is expanding rapidly. Most recent coverage statistics available from EPI Niamey are shown in Table 3. Coverage with all antigens is predicted to reach at least 30% by the end of 1990. This is well below the global coverage target of

APPENDIX D:

EVALUATION RECOMMENDATIONS

Appendix D

The mid-term evaluation of the pilot vitamin A project suggested recommendations which have been addressed by the project as follows:

1. As VAD is due to malnutrition, treated with the micronutrient vitamin A, and is prevented with good nutrition, the Nutrition Division (ND) of the MOH should be brought more into future activities.

In order to involve more the ND in HKI's vitamin A project and in vitamin A activities in general, HKI took three major actions. Firstly, the project staff held meetings with the NO staff in order to bring their attention to the importance and magnitude of the VAD problem in Niger. Secondly, pursuant to these discussions, HKI assisted the DN in the development of a social marketing proposal to promote the consumption and production of vitamin A-rich foods. Thirdly, at the end of the project, HKI organized a workshop to review the results of the operational research and set national policies for the control of VAD. Representatives from the ND attended this workshop and took part in the development of the national policies.

2. Talks should continue with MCH personnel to encourage them to follow the WHO guidelines which recommend that one dose of vitamin A also be given to children with acute diarrhea, ARI, and severe malnutrition.

At the end-of-project workshop, HKI raised the issue of protocol, i.e. suggesting that children with acute diarrhea, ARI, and severe malnutrition also be given one dose of vitamin A. The GON agreed to include children with severe malnutrition, but decided not to include children with ARI and acute diarrhea because the health staff at the arrondissement level (mostly dispensaries) is comprised of paramedical workers and it was thought that it would be difficult for them to diagnose ARI and acute diarrhea cases.

3. Assure sustainability and planned distribution of VAC by MOH.

In order to assure sustainability and planned distribution of VAC, HKI used the project structure by providing the central dispensaries (centre medical) with adequate supplies of VAC on a quarterly basis. Additionally, HKI approached the DN and UNICEF to discuss ways to institutionalize a sustainable system for VAC procurement. The project was not able to institutionalize a VAC procurement system during the pilot phase, and it is one of the reasons why HKI would like

to expand and scale up the VAC distribution to research the feasibility of institutionalizing VAC distribution system.

4. UNICEF certainly recognizes the importance of vitamin A and it is hoped that HKI will be successful in convincing UNICEF to supply stocks of VAC to the GON in the future.

In order to assure sustainability of supply of VAC through UNICEF collaboration, the project was successful in convincing UNICEF to supply stocks of VAC to the GON in the future under the condition that their yearly allocation of drugs to the GON remain the same. Unfortunately, the GON did not agree to have its yearly allocation of drugs reduced to include VAC. HKI plans to address this problem during the expansion phase.

5. Project staff and personnel from the National Program for the Prevention of Blindness will need to become strong advocates to the NGOs to continue the momentum created about the importance of VAD so that vitamin A will indeed be included in future programming.

Since project outset, HKI has collaborated with UNICEF and WHO. HKI was also successful in creating a strong network of collaboration with other NGOs and many such as CARE, Medecins sans Frontieres, AVRDC and Africare included vitamin A components into their child survival activities. The project also trained about 80 Peace Corps volunteers (nutritionists) in recognition, treatment and prevention of VAD.

6. Areas in the training program need modification; efforts should be maximized in the revision process.

In order to improve the content of the training program which was too technical for health workers, focusing too much on the ophthalmological aspect of VAD and not enough on the nutritional aspect, HKI's director of training provided technical assistance suggesting ways to increase the efficacy of the program. Additionally, meetings were held with the core of trainers to review and modify the content and training techniques. This question was also raised at the end-of-project workshop and all institutions at the MOH agreed that the training program should focus more on the nutritional aspect of VAD and less on the ophthalmology of the disease.

Recommendations of the final evaluation included:

1. Provision of technical assistance towards the development of a national plan to control VAD and blindness in Niger. Blindness (PLNCC).

During the pilot phase of the vitamin A HKI has been able to assist the government in a VAD control program which the GON is committed to continuing as long as the problem of VAD exists in the country. HKI hopes in the next three years to strengthen its technical assistance role, assisting the GON to formulate a VAD control strategy and plan of action, and coordinating the involvement of other NGOs (both PVOs and UN agencies) in the effort.

2. Provide technical assistance in monitoring and evaluation methodologies and operational research.

During the expansion/scale-up phase HKI plans to assist in feasibility studies to test ways to systematize monitoring and evaluation methodologies for the distribution of VACs. The proposed project will attempt to integrate VAC distribution into the overall child survival monitoring system, i.e. incorporating VAC intake into the growth monitoring forms.

3. Provision of support and joint work with the Programme for Prevention of Blindness (PLNCC) in the field of primary eye care, as relevant to xerophthalmia and prevention of eye disease due to malnutrition.

During the expansion phase, HKI will provide technical assistance to the PLNCC in order to integrate treatment and control of xerophthalmia into the primary eye care services. Specifically, HKI will train health workers in detection, treatment and treatment of xerophthalmia.

4. Collaboration with the Expanded Programme on Immunization (EPI) in feasibility studies for integration of vitamin A supplementation with vaccine delivery.

HKI is already collaborating with Niger's EPI in feasibility studies to integrate VAC distribution into the vaccination programme. During the expansion phase, HKI proposes to evaluate this activity and assist in the institutionalization of the integration of VAC into Niger's EPI.

5. Liaise with UNICEF, the main supplier of VAC to governments worldwide in defining the best system both for vitamin A procurement and distribution.

During the pilot phase of this project, VACs were provided by HKI. In order to move towards a more sustainable system for procurement and distribution of VAC to the target populations, during the expansion/scale-up phase, HKI plans to work closely with the MOH, the Ministry of Planning, the

National Office for Chemical and Pharmaceutical Products (ONPPC) in order to develop a procurement and distribution system that can be replicable at the national level. See mid-term evaluation recommendations No. 4 above.

6. Production of health and nutrition educational materials for use by health workers at all levels.

During the pilot phase of this project HKI has developed a series of educational materials in collaboration with the MOH and UNICEF such as posters on VAD, story booklets, etc. Articles and literature have been widely distributed to government health staff, Peace Corps volunteers and PVOs. Radio and television spots were also used as communication media. During the expansion/scale-up phase, HKI plans to use a social marketing approach to improve the messages that have been developed during the pilot phase in order to obtain a greater impact on the target population's attitude towards the consumption of vitamin-A rich foods. Interpersonal and mass media communications will be used to achieve this goal.

7. Social mobilization and developemnt of household gardens should be emphasized.

In order to address the importance of production of vitamin A-rich foods, HKI plans to implement home gardening demonstration projects in the proposed project area and liaise with relevant organizations such as FAO.

8. Field activities and related operational research should continue.

During the proposed expansion phase, HKI will continue to research ways to reduce VAD in target areas through integration of VAC distribution into EPI, social marketing techniques, monitoring and evaluation systems, integration of VAD into the national blindness prevention training program, etc.