Getting to the Roots

- Mobilizing community volunteers to combat Vitamin A Deficiency Disorders in Nepal
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Annex I
Foreword

Science has been brought to bear to resolve one of humankind’s most intriguing phenomena: that certain deaths of children and women are traceable, ultimately, to the loss of a tiny quantity of micronutrient called vitamin A. The only visible sign is ailment to their eyes that ranges from night blindness to a growth on the cornea. That the replenishment of this vital nutrient will not only restore vision, but prevent child death from infectious diseases like diarrhea and measles, as well as maternal death from anemia and hemorrhage during delivery, to a remarkable degree.

In the global quest to unravel the mystery, Nepal has played host to three community trials conducted by US researchers in the 1980s and 1990s. The discovery, along with other trials underway around the world at the time, has brought hopes, new global and national policies and programmes to tackle the depletion of this micronutrient and its harrowing consequences. For a country with high child and maternal mortalities, without an advanced primary health care infrastructure, Nepal has overcome it by supplementing vitamin A capsules to all target children, and eventually, women, within a decade.

The road to achieving virtual elimination of vitamin A deficiency, which results in a number of health disorders, is a story of ingenuity, diligence and dedication. The process of diffusing the invaluable fruit of science, unfurling and spreading it to the populace, showcases the stages from policy advocacy to social mobilization for partnership building, and the behaviour change of mothers from one of ignorance to knowledge about and demand for vitamin A supplementation. It is a process worthy of documentation and study, and henceforth, the paper to share with all the successful experience of Nepal.

The paper is dedicated to the Female Community Health Volunteers, commonly called the FCHVs, who even as the opportunity for education eludes them and many are unable to write their own name, have unknowingly brought out a global best practice. A force of 48,549 women, over 60% illiterate, have tirelessly administered vitamin A capsules to millions of Nepalese children without any salary or monetary returns to their service. By 2002, when the National Vitamin A Programme (NVAP) reaches every corner of the Himalayan Kingdom by phase, the life-saving micronutrient has been delivered to 3.2 million out of a targeted 3.3 million children between aged 6 – 59 months. The noticeable symptoms, night blindness and more seriously, Bitot’s spot, are brought under control to the extent that vitamin A deficiency no longer constitutes a public health problem.

What gives life to NVAP is the ubiquity of change agents, relying heavily on words-of-mouth communication and the active engagement of the FCHVs and their communities. Of equal importance is the dedicated training, supervision, coordination and promotion of the implementing agency, the Nepali Technical Assistance Group (NTAG), on which the prestigious Global Best Practice Award was deservingly bestowed in 2000 by the Washington DC-based Global Health Council.

Finally, it is the payoff from partnership between the Ministry of Health, USAID, AusAID and UNICEF, and above all, Johns Hopkins University at every stage from the initial quest of science to the current Vitamin A Plus strategy to make a dent on malnutrition and mortality as a whole. We take pride in sharing the story to inspire actions, to bring to an end one of humanity’s most invisible, silent emergencies – vitamin A deficiency disorders.

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Getting to the Roots
- Mobilizing female volunteers to combat Vitamin A Deficiency Disorders in Nepal

1. Introduction

Behind the endless vistas of its stunning Himalayan snow peaks lay a malady that had slithered around Nepal for centuries until the new millennium dawned. It tormented a number of people even though the symptom, common and ephemeral, was deemed an inevitable part of life or simply, karma.

Each day, near dusk, as the sun dissolved into crevasses of the brilliant Everest and Annapurna massifs, its remaining ray casting the sky indigo, some women and children would lose control of their eyesight. Every object would turn obscure with all of nature’s kaleidoscopic charm going dimmer, and dimmer. The opacity was total when the sun and the moon finally exchanged place, plunging their world into darkness, and chaos.

The affected women – oft pregnant, eyes glazed and visages pale – were instantly bound to a corner, unable to cook, wash, clean and attend to crying babies. Some tripped, some bumped against beams and walls as they strained to move about their mud-brick houses. And many relied on family members to take over domestic chores, including tending to their need to answer nature’s call. The affected children, too young to realize what went wrong, would whine to register their fear, to the grief of helpless parents.

The physiological anomaly, as though a spell cast and gone, would vanish when day broke. The vision was restored, and the nightmare evanesced, until dusk descended again….

It is known as night blindness, a symptom of xerophthalmia, an eye disease spurred by the deficiency of vitamin A. In its more severe form, xerophthalmia leads to the growth of a white tissue on the eye’s surface, called the Bitot’s spot. When left untreated, it degenerates into keratomalacia, marked by extreme dryness of the cornea – the transparent skin that lines and protects the eyeballs – causing it to “melt”, resulting in permanent blindness.

In Nepal, several surveys conducted in the 1980s found that night blindness and Bitot’s spot were widespread among the populace, higher than the WHO acceptable standard (see Graph 1). Vitamin A deficiency disorders were declared a significant national public health problem.

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Xerophthalmia, however agonizing, is curable and merely an obvious sign of a deeper malaise that ravages the health of women and children. The most devastating impact of vitamin A deficiency is the erosion of the immune system, the body’s natural ability to fight infections. It impairs the child’s ability to resist illness, in fact, long before blindness occurs.

Its ruinous consequences, long ignored, had only begun to receive international attention in the 1980s. A number of trailblazing researches conducted by US scientists together with international colleagues established a causal link between the death of children and the depletion of vitamin A. These included a community trial in Nepal itself, which confirmed that the survival of generally malnourished preschool children was improved by 30% after they were supplemented with large doses of vitamin A.

Like most other micronutrients, vitamin A is a substance that the human body needs, often in only tiny quantity, to orchestrate a whole range of essential physiological functions. Its invisible nature however, not until symptoms crop up, tend to mask its calamitous effect on one’s health. Depletion of this vitamin, usually stored in the liver, contributes to anemia and increases the severity of common, preventable diseases and the risk of young children dying. A high rate of under five-mortality (USMR) in a country is often reflective of consequences of endemic vitamin A deficiency.

A fat-soluble substance, the vitamin is essential to preserving the epithelial tissue, made up of cells that line and protect the surface of internal organs such as intestines and the skin, including that of the eyes, for normal functioning. The presence of a host of viruses in an unhygienic environment raises the rate of infections, which corrode the tissue and wreck havoc on the body.

In these environments worms too, proliferate. Roundworms, ringworms and whipworms that enter the body compete for vitamin A to regenerate epithelial – its slippery bodily surface – to sustain survival and grow in human intestines. Studies in Nepal have shown that parasitic infection of roundworms was three times higher among children suffering xerophthalmia. Most troubling is the fact that the deficiency is impalpable, running deep, until warning signs arise or death triumphs in the guise of measles, diarrhea, pneumonia and other infectious

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2 “Report of the Sub-Committee on Nutrition at its Twenty-Fifth Session”, UN Standing Committee on Nutrition, United Nations, 1998
4 “Report of the Sub-Committee on Nutrition at its Twenty-Fifth Session”, UN Standing Committee on Nutrition, United Nations, 1998
diseases. And elusive worms add to the likelihood by taking away whatever little retinol (the clinical term for vitamin A) was left in the body to thwart the invasion of viruses and bacteria.

Adults, mostly pregnant and anaemic women, are not spared the silent scourge. In recent years, scientific researches also detected increased risk of death from pregnancy-related complications due to vitamin A deficiency. Night blindness happens usually in the third trimester of pregnancy or when women are breastfeeding. A study conducted in the late 1990s in Nepal found that 16.7% of women reported having experienced this symptom in their last pregnancy. The prevalence rate was way above the WHO recommended standard of less than 1%. Yet many women regarded night blindness a normal phenomenon that came with reproduction, given its common occurrence and tendency to disappear without treatment shortly after childbirth.

This paper examines the measures Nepal had taken to achieve virtual elimination of vitamin A deficiency disorders among preschool children, with actions started on pregnant and lactating women, all within a decade, against a set of inexorable conditions rooted in poverty and its unique topography. The latter was, in particular, onerous to a country made eminent by its summits, but also made formidable by large tract of jagged terrains where villages scattered among craggy mountains, accessible only by steep, rocky footpaths.

Geographic condition exacerbates situations of deprivation, not only of basic services but also basic necessities such as food, especially among the poor. In the north-western mountainous districts such as Humla and Jumla, families rely mostly on produce harvested in the Terai, the thin stretch of fertile plain that lined Nepal’s rolling hills, which undulated beyond into shrilling pinnacles and eight of the world’s highest peaks. The distance between Simikot, the mountainous district headquarters of Humla and Nepalganj, the nearest trading hub in Terai is a walk of at least 15 days – in fine weather – by traders with wares mounted on mules. Food items thus sold naturally becomes more expensive, and few can afford to buy a variety. Famine is, in fact, frequent and regular in Nepal’s north-western Karnali region, wedged between China’s Tibet, the ‘roof of the world’, and India’s hilly, snow-clad Uttarakhand State.

Vitamin A is preformed in animal source, in particular, liver and fish liver oil. Economic conditions, however, largely determine what type of food families place on the table. With a staggering 38% of Nepal’s 23 million people living in absolute poverty, grappling each day to make ends meet, meat remains a luxury for most.

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7 Ibid
The Nepalese staple is made up of grain and pulses, and the diet is known to everyone as *Dahl Baat Takari*. Translated to mean lentil (dahl), cooked rice (baat), and vegetable (takari), it is a standard meal that dwindles in variety according to household wherewithal. A typical meal for the poor, if they do not go hungry, consists of only rice and watery lentil. For those who can afford a small amount of vegetables, it is commonly potatoes – more filling for the stomach – rather than green leafy ones, rich in carotenoid which, together with yellow fruits, are another food source of vitamin A.

Even as vegetables are easy to grow, they are not readily available to the landless, such as the Musars, one of the lowest caste groups hired to till and plough rice paddies in exchange for a shelter. And Musars are everywhere in the Terai region where more than half of Nepal’s population live. “We count ourselves lucky to have a roof,” said a young mother of four from the Musar caste in Saptari district. “Planting vegetables is beyond my imagination, since we don’t even possess an inch of land. On good days, I can ask my kind-hearted neighbours to give me a bundle of green vegetables from their garden, but I cannot exploit their good will all year long,” she added. Nepal’s average household size of land holding is a mere 0.24 hectares, and a large number of people are landless. And with whatever families can farm, the cash crops, including vegetables, are more often sold to generate income than reserved for self-consumption.

The condition of deprivation for the low-castes, closely linked to social exclusion is, however, quite unlike groups in the mountains where food resources are scarce, virtually all year round, owing to topographic constraints. Accompanying food insecurity and inadequate dietary health are high rates of illiteracy. More than 60% of the illiterates aged six and above in Nepal are females. Deprivation of basic education holds mothers in bondage of superstitious belief, hearsay and traditional practices, without the knowledge or opportunity to think critically. Aversion to yellow vegetables such as pumpkin, rich in vitamin A, is common throughout the Terai region. Generations of mothers believe that consuming yellow food during pregnancy will produce a jaundiced-looking child. Further, consuming green leafy vegetables will turn the stool of a child scarily green!

Many also believe it wise for postpartum mothers to immediately follow a strict diet of mere rice and ginger – continuously for a month. Some ethnic groups avoid egg and regard it as “bad food”; while some others, such as the Magar, roast vegetable on the pan rather than boil or sauté it with oil, out of sheer ignorance of carotenoids in the greens, and certainly, not knowing that adding fat will enhance absorption of this live-saving nutrient.

Poverty’s other constant companion, poor hygiene practices, also worked against improvement of children’s and women’s health. Open defecation is practiced by the majority, spawning viruses and bacteria in the environs, and access to sanitation facilities, including a simple pit latrine, has not advanced with the advent of the 21st century. Sanitation coverage

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9 Ibid
nationwide, in over a decade, manages to inch forward only 9%, from 20% in 1990 to 29% in 2000, 23% in rural areas and 73% in the urban centers. Although improved water supplies are available to 80% of the population – 92% in urban and 78% rural – no survey has been conducted on the quality of water distributed. Nationally, as many as 30% of households report the incidence of diarrhea, dysentery, jaundice, typhoid or cholera; and prevalence of diarrhea among preschool children is 25.4%.

2. A remarkable discovery diffused to the populace

Though the host of seemingly insurmountable conditions exacerbated vitamin A deficiency disorders on the scale it threatened public health, it also became a cause for scientific quest. Firstly, the high prevalence of xerophthalmia drew the attention of Professor Alfred Sommer, John Hopkins University, USA in 1980s who, after conducting the first trial in Indonesia, initiated the second research with his colleague, Professor Keith West, in Nepal. The community trials established a definite, causal link between vitamin A deficiency and childhood mortality, and reactions to various types of interventions that could help avert the tragic deaths of children. The findings in Nepal showed that there were 30% fewer death among preschool children after they were administered a large dose of vitamin A once every four months, or thrice a year. The trial in Indonesia produced a higher percentage, 34%, with two doses given to preschool children, six months apart.

The results, along with studies being conducted in other countries (described in the next section), gained worldwide attention and hope of controlling the disorders that directly affected half a million children who went blind each year globally. More importantly, they augmented the certainty of protecting over 100 million preschool children deficient of vitamin A, and the annual 1 million – 2.5 million among them who suffered its destructive consequences and lost their lives.

Secondly, the challenges were overcome not by removing conditions of poverty, however critical and necessary, but by harnessing local resources – a largely illiterate team of female volunteers – to respond to the silent emergency. These community participants helped bring the global research breakthrough out of the realm of science to the populace, making the solution widespread, benefiting millions of children and women. The case makes for a best practice as it demonstrates the process by which a ground-breaking discovery in the 1980s, deriving partly from field research in Nepal itself, is diffused to the public in a chain of human actions.

The route towards national policy and a programme that touches nearly every child’s life in Nepal, interestingly, attests to a popular communication theory; the Diffusion of Innovations, introduced by Professor Everett Rogers, whose work since the 1960s has been widely adopted by marketing professionals all over the world. His landmark theory, also widely applied to resolving social problems, delineates the stages in which new ideas are adopted and eventually made popular, providing a blueprint for designing communication campaigns, whether for the prevention of HIV/AIDS or marketing a product for profit.

The theory, in brief, explains the stages an innovation is diffused and eventually produces change in a society. The communicative force emanates first from people closest to the innovation, followed by various communication “talks” such as “advocacy” to persuade others to adopt it. And through a two-way, interactive process, the persuaded, ranging from agenda-setters, policymakers to opinion leaders, who are engaged in the decision making

12 Ibid
become early adopters who will then propagate the messages to the rest of the population, primarily through mass communication, namely networking between individuals, media publicity and advertising.

Once the idea reaches a critical mass of early adopters, the innovation spreads at an exponential rate, either spontaneously or through a planned communication process. Interpersonal communication, it postulates, is essential to achieving the critical mass or a necessary number of pace setters, and assumes greater importance than mass communication in influencing popular adoption of new ideas and practices. And interpersonal communication is more effective when the communicator and the receiver are similar, or in its original term, homophilous.

Nepal’s National Vitamin A Programme (NVAP) carries many salient features of this theory by the process it followed: from advocacy to social mobilization and behaviour change communication, the latter strongly relying on interpersonal means to spread the message. Underpinning its success is a strong degree of community participation to engender ownership at the grassroots, centering on the mobilization of district and village officials, and a phalanx of Female Community Health Volunteers (FCHVs) – women selected by mothers in communities – to deliver vitamin A and conduct nutrition education.

The programme’s design is strategic at every stage, with its modus operandi one of radiating from a few to many and on to millions of families through FCHV’s outreach and service delivery. NVAP utilizes the power of empirical evidence, firstly, to convince decision- and policymakers of the need for public health intervention. ADOVCACY induces the government’s espousal of the cause and commitment to action, which is then translated into a national programme with resource allocation, as well as financial assistance of development aid agencies. This particular stage involves not just the scientific community, as in the case of NVAP, but usually journalists and civil society to actively draw decision-makers’ attention to a situation that requires special intervention.

Graph 2: Relationship between Advocacy, Social Mobilization, Behaviour Change Communication and Service Delivery, each differed by target audience and functions

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Even with a policy, broad based support to carry out the programme to realize its objective does not automatically come to pass. **SOCIAL MOBILIZATION**, a way of bringing together all feasible inter-sectoral social partners, enlisting the participation of institutions, communities, social and religious groups and individuals in identifying, raising, and managing human and material resources have to be in place. The key to mobilization success lies in persuasion of all potential partners about the programme’s benefits, and filtering awareness down to leaders and stakeholders at the grassroots.

Training plays an important role in eliciting interest and enhancing partners’ knowledge, engaging them in jointly identifying approaches and means to reach out to millions of target children and families. It engenders a sense of ownership, forming a diverse source of support for the programme at every stage and administrative level from central, district to village, ward and settlement. The resources proffered by partners, such as consent of the education authority to use schools as a venue for vitamin A capsule supplementation, vital as they are, however, do not mark the end of intervention.

**BEHAVIOUR CHANGE COMMUNICATION** creates awareness and demand among the public or target users through mass media and interpersonal channels, an approach that effectively reaches out to millions, enabling families to receive and act on new information and knowledge. NVAP utilizes both Public Service Announcements, a form of social advertising through radio, TV and newspapers as well as an important IPC channel, the FCHVs, to deliver not only information and knowledge but capsules. In doing so they had to persuade caretakers – parents, siblings, grannies – to bring children to a fixed capsule supplementation site.

Involvement of the FCHVs and through them, motivating school teachers, students, community members, village and district leaders to spread the word around, sustain the momentum of community participation. Defined as follows, community participation is a principle that underpins NVAP at every stage of its implementation, involving the full range of advocacy, social mobilization and behaviour change communication from district to village levels:

“**COMMUNITY PARTICIPATION** is both a development process and a communication strategy based on dialogue, consultation with and empowerment of people in a community to identify their own problems, decide how best to overcome the problems, make plans and seek appropriate solutions and assistance……”\(^\text{16}\)

The NVAP, through an extensive training effort, builds community capacity to manage the programme, a crucial element in sustaining the outcome of social mobilization and long-term behaviour change.

### 3. Advocacy - from researches to national policy

#### 3.1 The earliest quest: Vitamin A and childhood mortality

Professor Alfred Sommer initially observed 3,481 children in rural Indonesia for 18 months, interestingly, with the intent to study vitamin A deficiency and xerophthalmia, not mortality. Toward the end of his research, however, he detected that mortality rate went up 4 times, and in some age groups, 8 to 12 times, among preschoolers suffering mild xerophthalmia (night blindness and Bitot’s spot).\(^\text{17}\) Mild vitamin A deficiency was directly associated with at least 16% of all deaths in children aged from 1 to 6 years.\(^\text{17}\)

\(^{16}\) “Communication Guideline (Updated Draft)”, UNICEF, New York, April 1999

Dr. Sommer took his findings one step further in Aceh Province, Indonesia, three years later, this time to observe the effect of supplementing high-dose vitamin A in preventing childhood mortality. As many as 25,939 preschoolers between one to six years old in 450 villages were randomly selected. About half of them (in 229 villages) received 200,000 IU of vitamin A while the rest were given placebo over a period of 13 months. Child deaths in the control villages were found to be 49% higher than in the other 221 villages where vitamin A supplements were given. The result coincided remarkably with his earlier trial linking mild vitamin A deficiency to increased mortality. More importantly, it demonstrated a reduction of mortality by as much as 34% when supplements were issued to vitamin A deficient children.18

Having established a clear pattern of vitamin A supplementation on reducing childhood deaths in Indonesia, Professor Sommer brought the trial to the landlocked Himalayan kingdom in South Asia. He was curious about whether cultural differences might alter the impact of supplementation on child survival. In Nepal, he also wanted to ascertain the efficacy of vitamin A supplementation – how much dosage and how frequently should it be given – and how the combination would have an effect on child survival. The randomized, double-masked, placebo-controlled vitamin A supplementation trial funded by USAID with a special grant from UNICEF, was carried out from September 1989 to December 1990 in Sarlahi, located along the Terai region. Dr. Keith West Jr, his colleague in JHU, was appointed the principal investigator, observing 28,630 children aged 6 – 72 months categorized into control-experiment groups. Through the research, the JHU team also wanted to determine what impact on childhood mortality could be achieved by giving preschoolers a large dose of vitamin A or 200,000 IU, once every four months, or three times during the experimental year.

The finding was strikingly close to the earlier trials in Indonesia, a reduction of mortality by 30%. And the benefit of supplementation grew stronger with age, reaching a 50% reduction in mortality as children turned five and six years old.20 It also demonstrated a drop of 40% in deaths attributed to diarrhea, one of the major killers of children in Nepal, and a substantial decrease – 76% – in mortality from measles.20

A separate USAID-funded field trial conducted by John Snow Incorporated in Jumla, a mountainous district, in 1991, corroborated the major result. It observed a 29% reduction in mortality among children 6 months and above after they were each given a single, large dose of vitamin A. The impact in the steep, lofty landmass of northern Nepal was similar to that in its southern plains, even though childhood mortality in Jumla was 7 – 10 times higher than that in the southern Terai.

From the Sarlahi trial, the investigators noticed a small 10% reduction in mortality for infants up to 5 months of age. They went on to conduct another trial, and failed to show much of an impact after giving 50,000 IU vitamin A to newborns under one month-old, and 100,000 IU to infants between 1-5 months old. A similar finding was reported in Jumla, negating the need for

supplementing children below 5 months with vitamin A. However, newborns would benefit from vitamin A through breast milk, and supplementation of a high dose to lactating mothers could achieve health effects for both the mother and child.

### Table 1: Results of eight major trials on reduction of child mortality

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Vitamin A Supplement</th>
<th>Reported Mortality Reduction †</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aceh</td>
<td>Indonesia</td>
<td>Large dose every 6 mo.</td>
<td>34%*</td>
</tr>
<tr>
<td>Bogor</td>
<td>Indonesia</td>
<td>Vitamin Afortified MSG</td>
<td>45%</td>
</tr>
<tr>
<td>Sarlahi – NNIPS</td>
<td>Nepal</td>
<td>Large-dose every 6 mo.</td>
<td>30%</td>
</tr>
<tr>
<td>Jumla</td>
<td>Nepal</td>
<td>One large dose follow-up at 5 mo.</td>
<td>29%</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>India</td>
<td>Weekly Recommended Daily Allowance (8,133 IU)</td>
<td>54%</td>
</tr>
<tr>
<td>Hyderabad</td>
<td>India</td>
<td>Large dose every 6 mo.</td>
<td>6%‡</td>
</tr>
<tr>
<td>Khartoum</td>
<td>Sudan</td>
<td>Large-dose every 6 mo.</td>
<td>+6%</td>
</tr>
<tr>
<td>VAST</td>
<td>Ghana</td>
<td>Large-dose every 6 mo.</td>
<td>19%</td>
</tr>
</tbody>
</table>


† Six months and older at baseline (one year or older if younger children not reported separately)

* Alternative analyses suggest at least 40% to more than 50%

‡ As calculated from data in the studies but not reported as such

The series of important findings was further tested by four independent meta-analysis, which turned out a largely similar range of figures: the reduction of childhood mortality by 23% to 34%, based on either the six Asian trials or all eight of them, including the Ghana and Sudan studies in Africa. The results confirmed that the effect of vitamin A supplementation on child survival is unlikely to have been due to chance. The statistics were remarkably consistent given the vast heterogeneity across populations of different culture, ecology, xeropthalmia prevalence and underlying mortality, and the wide variations in trial design, dosing intervals, size of the vitamin A dose and duration of supplementation, etc.

### Graph 3: Results of the eight major trials on reduction of child mortality

The findings prompted the United Nations Subcommittee on Nutrition to issue a statement in 1992, endorsing the observations that control of vitamin A deficiency might be an important

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21 A statistical analysis by combining the results of several studies, e.g. randomised controlled trials, to produce an overall summary figure on the impact of an intervention.


23 Ibid
way to reduce mortality in preschool children above six months old. Even before this, Al Sommer’s very first trial in Indonesia had brought hope of eliminating the disorders, and inspired UNICEF to push for vitamin A as one of the supporting goals of the World Summit for Children in 1990.

The community trial in Nepal, known also as the Nepal Nutrition Intervention Project – Sarlahi (NNIPS), gave rise to a further observation that vitamin A deficiency among pregnant women and lactating mothers could be a previously unrecognized public health problem. It led to a second trial, also in Sarlahi, conducted between 1993 and 1997, and was named NIPPS-2. Researchers from Johns Hopkins studied approximately 44,000 young married women, nearly half of whom were pregnant in the course of the trial. They were given either placebo or capsule supplements, in the form of pure vitamin A or beta-carotene, the latter usually available in dark green leafy vegetables and yellow fruits.

The findings showed 38% fewer deaths among women who received pure vitamin A, and 50% fewer maternal deaths among those receiving beta-carotene during pregnancy and for three months following child birth, compared to the group receiving placebo. Anemia, usually associated with iron deficiency and known to be contributing cause of maternal deaths, was 45% lower in women taking these supplements and not infected with hookworm. The field trial observed that the mortality rate among women dropped dramatically – by an average 44% – after they received vitamin A or beta-carotene.

### 3.2 The birth of a national programme

For Nepal, the field trials conducted on its own soil as well as findings around the world demonstrated one of the most cost-effective approaches to tackling vitamin A deficiency disorders. The intervention, in particular, capsule supplementation, made its way into the Food and Nutrition Policy of His Majesty’s Government’s (HMG) Eighth Plan (1992 - 1997), along with other efforts to reduce malnutrition as a whole:

“In accordance with Nepal’s commitment to the World Summit for Children 1990, a target has been fixed for improving nutritional conditions with regard to children and development by 2000 A.D. The government is equally determined to bring about improvements in the conditions of malnutrition among women and the rural population…….. Areas with a high prevalence of micro-nutrient deficiencies such as vitamin A, iron and iodine will be identified and a programme will be launched to supply such micronutrients.”

The HMG’s Ten-Year National Programme of Action (NPA), formulated in 1992 in response to the Summit’s Declaration recommending the attainment of 7 major goals and 20 supporting goals by 2000, detailed the target for achieving virtual elimination of vitamin A deficiency and its consequences, including blindness. It aimed to reduce Bitot’s spot prevalence from 1.9% to 0.1% by 2001:

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25 Recollection of Mr. Kul Gautam, Deputy Executive Director, UNICEF who was Director, Programme Division, UNICEF New York in the early 1990s. According to him, Al Sommer’s finding was brought to the attention of Mr. James P. Grant, then Executive Director of UNICEF, two years before the Summit, in March 1988, at a meeting of the task force for child survival in Talloires, France. It was in that meeting that a list of goals for children in the 1990s was first formulated, including the goal of virtual elimination of vitamin A and Iodine Deficiency Disorders. The deliberations laid the groundwork for the World Summit for Children goals in 1990.
26 “A Window to Child Health in the Terai, NIPPS,” Johns Hopkins University, Nepal Neta Jyoti Sangh, USAID, February 1999
On 11 – 12 February 1992, the field trial results were presented to decision-makers in government, NGOs and international agencies in Kathmandu. The advocacy meeting, called by the Ministry of Health, drew senior representatives from the Ministries of Agriculture, Education and Local Development, the National Planning Commission, the Nepal Research Council, UNICEF, WHO, USAID and a number of national and international NGOs. Underscoring the high prevalence of vitamin A deficiency disorders in Nepal, the meeting yielded a new understanding of the potential for its remedy. Vitamin A supplementation was recommended as a strategy, and the gravity of the situation led to an expressed commitment for action.

But it was clear that the distribution of capsules to millions of targeted children in the mountainous kingdom was unachievable if left to the health system alone. The NVAP was conceived against a glaringly poor utilization rate of public health facilities. Less than 20% of families throughout the country took their child to a health facility for an illness such as diarrhea or pneumonia, and fewer than 10% of deliveries took place at a hospital.30 The odds for failure was high if the NVAP had to depend on changing families’ use rate of health facilities and motivating caretakers to trudge miles to the health posts where absenteeism of health care personnel was common. Further, there were only 617 health posts in 199231 and 751 sub-health posts31 serving 3,913 villages that covered 35,217 wards (9 wards per village). The system was simply unable to cope with a programme that called for an extensive outreach. The involvement of others, especially line ministries and NGOs would be necessary, with the Ministry of Health taking the lead. A multi-sectoral approach that emphasized partnership building, inherent to social mobilization, was deemed essential to accelerating capsule coverage rather than leaving it to the ordinary pace of development.

The recommendations at this meeting were translated into a “Guideline for Implementation”, providing the blueprint on how NVAP would be implemented (see Annex 1)32. Adopted in November 1992, the “Guidelines” specified that:

“In accordance with recommendations of the vitamin A workshop (advocacy meeting) and the National Health Policy of HMG of Nepal, the control of vitamin A deficiency will be

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29 “Elements of Success, National Vitamin A Programme - Nepal”, MOH, JSI, USAID, NTAG and UNICEF, 1999
### Table 2 : Phasing of goals for 2001

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A Deficiency (Bitot’s spot Prevalence)</td>
<td>2.1</td>
<td>1.9</td>
<td>1.7</td>
<td>1.5</td>
<td>1.3</td>
<td>1.1</td>
<td>0.9</td>
<td>0.7</td>
<td>0.5</td>
<td>0.3</td>
<td>0.1</td>
</tr>
</tbody>
</table>


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29 “Elements of Success, National Vitamin A Programme - Nepal”, MOH, JSI, USAID, NTAG and UNICEF, 1999
achieved through a multi-sectoral approach which will mobilize not only different ministries of the government, but also various NGOs and INGOs, and donor agencies.”

Written in both Nepali and English, and distributed to every ministry and organization involved in its implementation, the “NVAP Guidelines” set out clear objectives, strategy and mode of implementation.

Objectives:  

1. To reduce child mortality and prevent xerophthalmia through supplementation of children 6 – 60 months with high-dose vitamin A capsules and to reduce vitamin A deficiency to a level that it no longer constitutes a public health problem.

2. To bring about a change in behaviour so as to increase dietary vitamin A intake of the target group through nutrition education, increased home production, consumption and preservation of vitamin A-rich foods, proper breastfeeding and child feeding practices and increased maternal literacy.

Strategies to realize the two objectives emphasized delivery of the vitamin A capsules, knowledge of nutrition among parents to improve dietary practices, and training of health workers in case treatment. High-dose vitamin A was to be delivered to all children 6 months to 5 year old twice a year in 32 priority districts over a four-year period. These districts were selected according to five criteria:

- High prevalence of xerophthalmia (as a marker for widespread vitamin A deficiency)
- Presence of FCHVs who have undergone the MOH basic training
- Large child population
- Presence of active NGOs and other project partners to support the programme
- Activities of other ministries that can complement the vitamin A programme

The prioritization of districts was based on the decision to introduce NVAP by phase, in view of the need to invest time – bracing topographic challenges as well as low educational attainment of the FCHVs and other conditions – to produce quality results. The phase-in of new districts initially over four years would also allow time for the government to build local capacity and ownership. The supplementation drive, introduced with intensive efforts in each district, had to be managed by district authorities and communities after the initial intervention, to the extent it became a routine activity. Thus eight districts would be covered in the first year, followed by another eight in the second year, and so on until 1997, the end of the Eighth Plan. By then, a further decision would be taken on the expansion of NVAP to all 75 districts of Nepal, a policy to be covered under the Ninth Plan (1997 – 2002).

The NVAP – with substantial financial and technical input from USAID and the assistance of UNICEF in capsules supply, promotion and coverage surveys – was designed with a heavy focus on training and fortressing a local structure of support for supplementation as well as nutrition education. It was to be implemented by MOH through its District Health Office, Health Post, Sub-Health Posts and FCHVs in a three-tier order modeled after the government’s administrative structure.

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33 “Guidelines for Implementation of the National Vitamin A Deficiency Control Programme in Nepal”, Nutrition Section, Child Health Division, Department of Health Services, Ministry of Health, November 1992
34 Ibid
35 The age group 6 – 60 months, identified in the original document, was subsequently revised to 6 – 59 months to more accurately reflect coverage of children up to the end of 59 month, before turning five years old, in the 60th month.
36 The FCHV Programme and basic training is described in Section 5 of this paper: “Behaviour change communication – combining knowledge with service”
The District Development Committee (DDC), the highest local governing authority as shown in the graph above, administers some 30 – 100 Village Development Committees (VDCs) in a district. Each VDC composes of 9 wards, which in turn administers the settlements, made up of a cluster of households each. The health system is managed by the District Health Office, which supervises primary health care centers and health posts in the town areas and sub-health posts in every village. In principle, staff at sub-health posts supervises the FCHVs. Created in 1988, the FCHV Programme was conceived out of the need and a vision to enhance women’s participation in development for health. It set out to train female volunteers to provide basic primary health care, and promote simple health knowledge, use of health services and family planning in the bid to expand the PHC network to the rural majority. FCHVs are volunteers and not paid for their service, the health system’s hierarchical order of responsibility does not apply to them formally. Even though they are not a health staff, they are a vital bridge between the public health services and the community.

**Graph 5: Nepal’s Administrative Structure**

There are 75 districts in total. Each district is sub-divided into VDCs which are further divided into 9 wards. In each ward there is at least one FCHW.
With the training structure determined, the dosage for children and condition of those with specific need was also ascertained, based on WHO’s recommendation:

**A. Dosage**

- All children 6 to under 12 months old to receive 100,000 IU of vitamin A
- All children above 12 months to receive 200,000 IU of vitamin A

**B. Treatment protocols**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Dose (If applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xerophthalmia</td>
<td>Three doses</td>
</tr>
<tr>
<td>(Night blindness,</td>
<td></td>
</tr>
<tr>
<td>Bitot’s spots</td>
<td>One dose upon diagnosis</td>
</tr>
<tr>
<td>Keratomalacia, etc.</td>
<td>One dose the following day</td>
</tr>
<tr>
<td></td>
<td>One dose one month later</td>
</tr>
<tr>
<td>Measles</td>
<td>Two doses</td>
</tr>
<tr>
<td></td>
<td>One dose upon diagnosis</td>
</tr>
<tr>
<td></td>
<td>One dose the following day</td>
</tr>
<tr>
<td>Prolonged diarrhea</td>
<td>One dose</td>
</tr>
<tr>
<td>(&gt; 14 days duration)</td>
<td>Immediately upon diagnosis</td>
</tr>
<tr>
<td>Severe malnutrition</td>
<td>One dose</td>
</tr>
<tr>
<td>(Under weight)</td>
<td>Immediately upon diagnosis</td>
</tr>
</tbody>
</table>

The MOH took a bold step by allowing the Female Community Health Volunteers to administer vitamin A capsules to children. Though perceived by many in the medical community as a drug to be dispensed only by medical personnel, the MOH decision was balanced against the risk of stalled progress. Poor utilization of public health services and mistrust of the health system’s quality of care made compelling reasons for the Ministry to seek alternate sources of support instead of following the norm.

The FCHVs were to be trained on three major “technical” tasks: 1) administrating the supplements, 100,000 IU for children 6 - 12 months old, and 200,000 IU for children above 12 months old. For the former, they should pinch five drops out of the capsule, and for the older ones, empty the full caplet. 2) keeping a record of all eligible children in the ward who had received vitamin A; and 3) educating families, in particular, mothers on vitamin A-rich food to enrich nutritional content of their daily diet. They would also learn how to detect cases of xerophthalmia, measles, prolonged diarrhea and severe malnutrition, and refer them to health workers, who would be trained on case treatment based on the WHO/UNICEF/IVACG recommended dosages above. And case treatment was to be carried out by health workers in all of Nepal’s 75 districts.
Considering the enormous logistic challenges, the frequency of supplementation was set for twice a year, six months apart. The guideline determined the following schedule:

**Baisakh** 37 6- 7 (April) – during the peri-measles season and approaching the high-risk season for xerophthalmia

**Kartik 2 – 3 (October) –** prior to the harvesting season

Supplementation activities were to follow a campaign approach with FCHVs, assisted by district and village officials, teachers, students and community members, motivating families to bring children to a fixed site to receive vitamin A. A series of promotional activities would be organized before each round to raise awareness and elicit public interest in the event.

During the campaign, special emphasis was given to severely malnourished children to ensure they receive a large dose of vitamin A. The FCHVs were instructed to pay attention to these children and make referrals when necessary. Later, in 1995, they were also trained to seek out women in their ward who had just given birth, and administer 200,000 IU of vitamin A to them immediately or as soon as possible up to six weeks postpartum.

These were rather hefty duties for the FCHVs, and quite a lot to memorize in order to do the job well. High-quality training was the key to effective delivery. At the same time, the unpaid volunteers needed help from the local governments, NGOs, and above all, people in their own communities to go around, persuading families to come to a fixed site where supplementation took place. And it could take place in a village school, a sub-health post, or in the open area of a hill, and often under a tree.

**4. Social mobilization – sustaining the outcome**

Extensive advocacy at the national level – building alliances with other government departments and organizations – had brought out a legitimate cause for intensive social mobilization at the district level, followed by village and ward to reach the ultimate target: families with children between 6 months to 5 years old in all settlements.

Although the concept of diffusion was never spelled out in the NVAP strategy, the idea was put to work visibly through social mobilization, an approach well cited, recognized and accepted by all involved in the programme. Target partners were in principle “everyone!” but focusing on line ministries at national level, and through their endorsement, down to district line authorities, village workers, ward workers and families. Partnership building was actively promoted at every level, with support filtering out from the first tier to the second, such as from the District Education Office to schools, principals, teachers and students, and from FCHVs to mothers and families, with a rippling effect, swirling out from smaller rings to larger ones.

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37 The official calendar of Nepal, called Bikram Sambat (B.S.) based on ancient Hindu tradition. Bikram Sambat has 56.7 years more than the A.D year (i.e. 2003 A.D would be 2059-2060 B.S). Baisakh is the first month of the year, and new year day usually begins on 14 April.
Building an alliance of partners to promote supplementation was central to NVAP’s modus operandi. The agency responsible for training was a technical assistance group, known as TAG, set up to assist the Nutrition Section, Department of Health Services, MOH to introduce the programme in 32 districts and later, nationwide. Comprising a team of Nepalese, some of them having participated in the community trials in Sarlahi TAG, which was later renamed NTAG and registered as an NGO, was entrusted with four major activities:

1. Training
2. Promotion
3. Logistics support for capsule distribution before the round
4. Mini surveys for programme monitoring and coverage assessment

Training formed the bulk of NTAG’s activities to orient and build up a critical mass of adopters of the vitamin A supplementation approach. It was conducted in a cascade approach: from district to village and ward before the first supplementation round was in effect, followed by a refreshers’ training in preparation for the second round.

The training of trainers or TOT method was adopted to enable staff at the District Health Office (DHO) to train the chief of Health Post and assistants at the next tier, who would further train village health workers, the FCHVs and others, initially with the help of trainers from NTAG. The focal points were District Health Officer and other health staff, who were trained as trainers to conduct orientation for village level or Health Post staff at the next level. The health and sub-health post officers in-charge thus trained would then pass on their knowledge to village health workers and FCHVs at the ward level. And the FCHVs would impart their new knowledge to mothers at their regular monthly meeting in the ward.

Before training commenced, a NTAG coordinator usually traveled to the district headquarters to formulate a plan with the District Development Committee (DDC) and DHO authorities. The following was scheduled:

1. District level orientation for major government departments and TOT
2. Village level and Health post/sub-health posts orientation
3. Ward level community training for FCHVs, teachers and others

Table 3: Three-tier training by NTAG

<table>
<thead>
<tr>
<th>Training</th>
<th>Introductory (No. of days)</th>
<th>Refreshers (No. of days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. District level</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>2. Health Post level</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. Community level</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Nepali Technical Assistance Group

The training was scheduled before the two supplementation campaigns during each year—April and October. With the steps worked out for the first round, NTAG would leave and return before the second round for a refreshers training, facilitating officials at all three levels to take stock of experiences from the first. The hitches and successes discussed would become lessons learned to ensure the second round was better carried out.

Once training in preparation for the first two rounds of vitamin A supplementation was completed, over the course of one year, a district was considered “graduate” or “old”. NTAG would then hand over the training, including suggested methods of conducting local promotions, scheduled twice a year before each round, to the District Health Office, and move on to a new district.
As a double assurance, however, NTAG would organize a “transition” by returning to the same district before the 3rd round on the second year. This time, the district level meeting would be convened by the District Coordinating Committee, with feedback and update of preparations for the next rounds. Then NTAG was out of the district completely, with its attention channeled to regular phone calls to ensure timely supply and delivery of capsules, attending to emergencies where unexpected glitches arose, national promotion through the mass media and conducting a randomly sampled mini-survey to monitor the quality of each round.

NTAG staff often spent days walking and trekking up hilltops to village training sites penetrable only by foot. In the hilly Gokha district north of Kathmandu, for instance, paved roads were not yet in existence for vehicles. A trip between the district’s headquarters to remote villages located at the other end would entail a hike of at least 5 days. The trainers usually needed to proceed in a team for personal safety, for there was no guarantee if they
would encounter wild animals as they tramped through bushes and jungles. On most occasions, they would rent a bed for the night from families they found along the way, and set off again the next day. And they had to follow the same trail back after training, walking for another 5 to 7 days to return to the district center.

The geographic distance, considering the time and cost, made it necessary for NTAG to conduct community level training immediately for the same cluster of villages after the HP session was over. Participation at the lowest administrative unit dwindled by type but grew in size, for each village was represented by at least 9 FCHVs. A cluster of 20 to 30 villages would raise attendance to some 180 – 270 FCHVs, in addition to the Ward Chairman, Village Health Workers, Maternal and Child Health Workers, farmers’ representatives and field workers. The NTAG trainers and logistics staff had to organize several simultaneous sessions to cover all of them in 3 days.

In a year, NTAG would have initiated the two training activities – introductory and refreshers’ – in 8 districts, and proceeded in the second year to another 8 districts, and covered 32 districts in four years, and all 75 districts in slightly less than 10 years.

4.1 The first tier – district level training

The vertical infusion of knowledge from one tier to the next was not confined to the health system, but included all possible partners who could bring human and material resources to bear on NVAP’s implementation.

The beginning of social mobilization was marked by an invitation letter from the DHO to district representatives of line ministries and the most influential organizations to join in the three-day training or orientation. These included officials from the departments of health, education, local government and agriculture, as well as NGOs and INGOs representatives, such as the Red Cross, CARE and the Save the Children Alliance. The usual composition of district participants is shown in Table 5:
The target audience was first made aware of NVAP as outcome of a national policy, and what other districts had started to supplement kids and to what effect. The role of district health functionaries was spelled out during the orientation. It centered on administration to ensure timely supply and delivery of capsules from the Regional Medical Stores to Health Posts, Sub-Health Posts and finally, FCHVs. They were also required to assist the grassroots volunteers with logistics, such as determining sites where supplementation would take place and how to conduct promotions, providing every support the FCHVs needed on that day and supervising the process.

Further, the District Health Officers would undertake the training of trainers tasks, to enhance knowledge and practice of health workers in vitamin A case treatment for children in special needs. They would also coach FCHVs with ways to identify night blind pregnant women for referrals, and provide a high-dose capsule to mothers immediately or up to six weeks after delivery.

The responsibility of the District level officials, apart from their public health counterpart’s, revolved primarily on coordination. The education office could offer village schools as a venue for vitamin A supplementation, the local development office could inform village and ward leaders to encourage families’ participation, the agriculture office could assist with vegetables and fruits promotion, the local NGOs and INGOs active in the district could help with identifying fixed sites where schools were not conveniently located. In addition, all of them could go around motivating parents or caretakers to turn up on supplementation day.
In eliciting their commitment, NTAG trainers skillfully utilized the principle of “self” as a motivating factor. The pitch began with the officials and leaders’ own children: “Think of your own children, it’s good for their health, it spares them the scourge of blindness, diseases, and even the risk of premature death!” was the tagline used throughout the three-day orientation. The immediate association with one’s own progeny instantly brought the cause to the personal realm. The psychological approach, according to NTAG, was invariably effective with parents’ intrinsic sense of care and obligation toward their own children’s well-being. And throughout the training, NTAG personalized the nutrition knowledge imparted by asking questions about participants’ own daily habits. It ranged from the most common such as daily food source, to general ignorance about colostrum for their children, and whether they had started home gardens to grow vegetables.

The tenor of discussion changed and took on a new meaning when information was made relevant to one’s own lives. Vitamin A and NVAP ceased to be a technical subject measured by Relative Risk, IU, retinol equivalence, etc., however important these were. The matter assumed a personal significance, sufficient to kindle interest in health not just for one’s own but also health for others – the public.

With support garnered, NTAG trainers swiftly moved into operational issues. Participants were divided into two working groups to address the following:

1. Vitamin A capsule distribution
2. Nutrition education

Each one was asked to proffer ideas to move the two programme issues forward through their respective chains of command. In other words, what could they and their department do within its existing means and resources, to buttress capsule distribution and public knowledge of nutrition and vitamin A? The activities proposed were instantly recorded and became a work plan.

The end of the orientation was marked by the formation of a District Coordination Committee, comprising the following members, to implement the work plan:

Chairman  Local Development Officer (LDO)
Secretary  District Health Officer (DHO)
Members  District Public Health Officer (DPHO)
          District Agriculture Officer (DAO)
          District Education Officer (DEO)
          Women’s Development Officer (WDO)
          NGO Programme Officers

4.2 The second tier – Health Post level training

There were, on the average, between 100 to 140 villages in each of the 32 districts (number of districts are higher in the Terai compared to the mountainous regions), and 900 to 1,260 wards (9 wards to a village). The plan, formulated at the first tier meeting, clustered some 20 – 30 villages, organized by geographic proximity, into one group and NTAG trainers would conduct four to five workshops over a period of 12 to 15 working days to cover the HP level training.

In Nepal, the most basic level of health services was in the village, provided by Health Post (HP) and the Sub-Health Post (SHP) whose numbers had increased over the year to cover all 3,915 villages in the country. Each health post consisted of 6 health technicians: a health
assistant, two auxiliary health workers (AMN), two assistant nurse-and-midwives and one village health worker (VHW). The role of HP in-charge was to provide primary health care services, supervise and evaluate the activities of SHPs.

Each SHP was run by 3 staff: one auxiliary health worker, one village health worker, and one maternal and child health worker (MCHW). The SHPs delivered a range of primary health care services to families in 9 wards. These included vaccination, treatment of diseases such as malaria, leprosy and tuberculosis; family planning, maternal and child health, nutrition and health and environmental education. And SHPs were also the FCHVs’ first line of contact with the health system, serving as the link between health workers and mothers as well as families.

Table 5: Types of participants at Health Post level training

<table>
<thead>
<tr>
<th>HP Level Training</th>
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</thead>
<tbody>
<tr>
<td>MOH</td>
</tr>
<tr>
<td>MOE</td>
</tr>
<tr>
<td>MOA</td>
</tr>
<tr>
<td>Women’s Division</td>
</tr>
<tr>
<td>I/NGOs</td>
</tr>
<tr>
<td>Assistant Health Workers (AHW)</td>
</tr>
<tr>
<td>Auxiliary Nurse &amp; Midwives (ANMs)</td>
</tr>
<tr>
<td>Sub Health Post In-Charge (SHPs)</td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Jr. Red Cross Circle Ilaka Supervisors</td>
</tr>
<tr>
<td>Other NGO representa-tives</td>
</tr>
</tbody>
</table>

Training at the HP and District Levels were largely similar as NTAG adhered to the principle of fun-learning. All discussions were interspersed with facts, figures and graphs in transparencies, in particular, introduction to the field trial results in Sarlahi District.

4.3 The third tier – community level training

Community level training centered around the FCHVs. These quiet heroines, drawn from the very ward they live, knew little about their nation’s commitment to the World Summit for Children Goals. The majority of them had not even set foot in Kathmandu, the capital, where political drama unfolded, and where ten changes of political leadership had taken place in the decade since NVAP’s inception in 1993. None of them had assumed public office, they were merely mothers who demonstrated daily kindness, amiability and initiatives to resolve problems. And
problems in every impoverished rural household came by the ton, ranging from snake bites to sudden illnesses and swelling debt.

In encouraging FCHVs to take on a larger responsibility for their community, the task, foremost, was to change their self-perception, distorted by gender biases rooted in the patriarchal society. Having been taught to suppress their needs and desires since childhood, most Nepali women did not believe they had a choice in life and very few believed they could make a difference through their own efforts. The negative self-image bred passivity and inhibition, limiting women’s ability to participate in decision-making at home and community action.

NVAP through its training aimed to bring out the dormant self in each FCHV through psychosocial competence building, focusing on self-awareness and critical thinking skills, to cultivate a strong sense of self-worth and self-efficacy in these grassroots volunteers. Many FCHVs needed to discover their innate power, be motivated to solve problems and overcome daily hurdles in carrying out their community tasks. Greater self-confidence also enabled them to lobby for more support from various sectors, build an alliance with other grassroots workers, and communicate with families to change their dietary practice and bring their children to the supplementation site.

Table 6: Types of participants at Community level training

<table>
<thead>
<tr>
<th>Community Level Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOH</td>
</tr>
<tr>
<td>Village Health Worker (VHW)</td>
</tr>
<tr>
<td>Maternal &amp; Child Health Worker (MCHW)</td>
</tr>
<tr>
<td>Female Community Health Volunteers (FCHV)</td>
</tr>
<tr>
<td>MOLD</td>
</tr>
<tr>
<td>Ward Chairman</td>
</tr>
<tr>
<td>MOE</td>
</tr>
<tr>
<td>Farmer Leader</td>
</tr>
<tr>
<td>MOA</td>
</tr>
<tr>
<td>Female Field Workers</td>
</tr>
<tr>
<td>Women’s Division</td>
</tr>
<tr>
<td>Field Workers</td>
</tr>
<tr>
<td>I/NGOs</td>
</tr>
</tbody>
</table>

Source graph:"slides for VitaminA(whole) – clt.ppt” Nepali Technical Assistance Group

4.3.1 Creative learning – teaching a complex subject to illiterates

Technical training that focused on imparting knowledge of vitamin A, capsule administration and nutrition to FCHVs was strewn with challenges for over 60% of them were unable to read and write. NVAP had to devise a different curriculum, using creative, participatory learning methods – employing pictures,
songs, stories, role plays, games to the fullest – throughout the three days to transform these volunteers’ understanding of food, nutrition and vitamin A. Participants were asked beforehand to bring a small sample of the vegetables and yellow fruits they kept at home. The anticipation of what’s up the trainers’ sleeves generated excitement before the first session commenced. The answer was revealed when everyone took out bits and stems of garden produce, legume, edible roots and fruits the next day. The opportunity was created for NTAG staff to explain the food sources of vitamin, which most Nepalese understood as an “energy booster”.

The trainers then used a flip chart specially prepared for FCHVs, which contained only drawings to explain why families were not eating sufficient vitamin A-rich food and its consequences. As many as three hundred flip charts, made of thick cardboard papers to improve durability, were transported in advance to the village training sites by traders in the most ancient of caravans, donkeys and mules, several weeks before the workshop.

Each FCHV was given the flip chart as a “text book” to be used later for their regular meeting with mothers in their ward. NTAG adorned the training hall with green leafy vegetables and pumpkins to create a lucid reminder of sources of carotenoids, a derivative of vitamin A, which were affordable and available locally. A map was then shown by the trainers, pointing to the very district the training was conducted where vitamin A deficiency disorders was endemic. Participants learned, for the first time, that this health malaise was partly responsible for high death rates of young children and mothers during childbirth. They were also told the uncomfortable fact that it could increase the risks of children’s death from measles and diarrhea, diseases that were all too common in villages. It helped trainers introduce the topic of why the need for a National Vitamin A Programme, and the critical role that FCHVs and communities would play.

4.3.2 The use of vernaculars and colloquial

Communicating in nine major languages – Nepali, Maithili, Bhojpuri, Newari, Gurung, Tamang, Awadi, Tharu or Magar – these trainers, who spoke at least a couple of these vernaculars, used colloquial that FCHVs could understand and illustrated their points with daily examples. Night blindness was variably described as “ratauni” (Maithili), “rataunjii” (Tharu) or “rataundho” (Nepali), and generally understood to mean “no vision at night, after sunset or in the evening”38. Bitot’s spot, explained the trainers, was traceable to the depletion of vitamin A in the body, especially among preschool children. And administering capsules containing the fat-soluble substance was the quickest way to cure. Not only that, it also prevented unnecessary deaths. As the term had no equivalent in Nepali or local languages, “Vitamin A” was repeated exhaustively until everyone could memorize it in English. Even an exclusive line: “Vitamin A Namaste! (Hello)” was devised, for FCHV to greet mothers and children on Supplementation Day.

4.3.3 Maintaining a record of children

FCHVs were each given a pair of scissors to learn how to cut the tip off the red capsule, and administer the two different dosages to children between 6 – 12 months old and those above 12 months. The workshop was also an occasion for FCHVs to receive all of the vitamin A capsules they needed for the supplementation day. The amount required was usually estimated by the Sub-Health Post in-charge, who could tell roughly the number of eligible children in each ward. The volunteers were then given a register book to maintain a record of all children under five and above six months old, including date of birth, father’s name and living location (there’s no address system in Nepal). FCHVs collected these names by visiting each household before the round, and tick marked each one when the children turned up on supplementation day, indicating capsule rendered. The record also enabled FCHVs to trace and follow up on the next day with families who did not turn up.

The writing tasks were normally carried out by the FCHVs’ older children, their husband or helpful and literate members of the village. At the back of the register, NTAG, with the agreement of MOH, had very strategically printed a “Supervisor’s Comments” page as a way of motivating FCHVs to fulfill their duty. Supervisors – the Village Health Worker (VHW), Sub-Health Post In-

charge, or any monitors from the government, USAID, UNICEF, NGOs as well as ambassadors and diplomats, observing the supplementation day – could put in remarks on this page, often kudos applauding the volunteers’ dedication, and valued by the FCHVs as proof of their worthy contribution. The VHWs were, however, mandated to monitor the register after each round to ensure that no children were missed, and if so, why and how to keep track of the hard-to-reach cases.

An FCHV proudly showing her register that provides a tidy record of children who receive vitamin A capsules and deworming tablets during supplementation day

Feedback of various supervisors – usually encouraging remarks for FCHVs - at the back of the register
4.3.4 Songs and cooking demonstrations to make learning fun

One of the most creative aspects of NVAP’s training was the use of songs and rhymes to enhance FCHVs’ memory of vitamin A and types of food to promote. Few of them were able to take notes, but most of them were able to sing and recite melodic verses. The sight and sound was accompanied by cooking demonstrations to appeal to FCHVs what simple, delicious vitamin A-rich meals could be conjured up for the family. Those from the hilly regions, for instance, were used to feeding pumpkins to buffaloes rather than human beings. Recipes were offered along with actual pan-fry to show how, with some spice and salt, the yellow fruit could contribute to the health of children and mothers in spite of its “inferior” status. Other examples, less affordable, including liver, milk and eggs, were highlighted with the message to prioritize. Families with pregnant women should go for a higher portion of liver on the rare occasion when meat was consumed. Yoghurt or curd was good substitute for milk, and children needed it for growth.

The hands-on training – highly relevant to real life – not only enhanced adoption of the new practice, but also ensured that FCHVs quite enthusiastically shared their new knowledge and cooking tips with mothers in their ward. The mandatory household duties of mothers provided an easy entry for community talks about vitamin A and above all, capsule supplementation in the coming round for their children.

The community-level training, combining both technical and psychosocial skills, had a fundamental impact on FCHVs; with their newly-built self-confidence and self-efficacy, they in turn inspired their peers – women and mothers in their community, to make informed choices about their own, and their children’s health, and take effective action to change their circumstances.
5. Behaviour change communication – Combining knowledge with service

5.1 FCHV – the trust factor

Behaviour change communication took place largely at the ward level, through the work of the FCHVs, who maintained daily contact with families, especially mothers.

As early adopters of the vitamin A supplementation approach and deliverer of millions of capsules to Nepalese children, the FCHVs were the most vital bridge to success for the programme. Though a creation of the public health system, they were also a part of the community they represented. As volunteers, they were not paid a single cent while being loaded with greater responsibilities than others.

And more than being a change agent with the service they rendered, the FCHVs were a builder of trust from communities in the health system’s responsiveness. The NVAP had earned its credibility by its consistent distribution of capsules twice a year, regardless of weather conditions, local elections, change of political leadership and increased civil strife when schools were, at times, forced to close. On occasions when capsules did not arrive on time, FCHVs reportedly went to the Sub-health post to follow up. “I cannot let my community down because the families place so much trust in my service,” said 52-year-old Sundar Watidev Shah, an FCHV of 15 years at Ward No. 9, Birendra Bazaar Village, Saptari District.

For villagers who used to find the Sub-health posts locked after a two-hour walk, or queuing up under scorching heat simply to be told that vaccines had run out, the public health system was hardly a hallmark of care. The attitude molded by an entrenched caste tradition among the ‘privileged’ also generated a gulf between health staff who were often of higher caste, and the communities they were supposed to serve. Many poor families chose to turn to private practitioners or quark doctors for curative care, using their meager earnings despite the cost. Free service was perceived to be of poor quality, while the health sector itself was grappling with chronic issues of low funding, inadequate human resources, and operational inefficiency, among other things.

The engagement of FCHVs in supplementation – a mother like anyone else – and the regularity with which capsules were delivered to children had altered the public’s perception somewhat. Though a poll had yet been conducted, the impression was visible after several rounds, when families begin to speak fondly of NVAP and enquired the exact date of the next supplementation day. It also showed through proxies – feedback from the FCHVs themselves, which indirectly reflected the view of communities:
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“People are now more aware of their children’s health after the implementation of the programme, and I am delighted about it.”

“After the implementation of the National Vitamin A Programme I become involved in every programme of the village. I have earned a lot of respects.”

“After the implementation of this programme, I have learnt a lot and I have prevented many family members from getting sick. This has encouraged me a lot.”

“This is a different type of programme, and it is fun working in this programme.”

“I am happy because we have succeeded in containing cases of night blindness and diarrhea in the village after the supplementation of vitamin A.”

“When I see all the mothers with their children assembling at the instructed place on capsule distribution days, I am motivated to work.”

“And FCHVs had earned the trust – an important factor in behaviour change communication, in particular, interactions between individuals – critical to the adoption of new practices. If there is no trust in a product, one would not buy it. When the source of information and knowledge were not trustworthy, the message would fall on deaf ears. And one’s trust and attitude toward an object was often shaped by past and immediate experiences. The regular supply of capsules engendered trust in FCHVs of the health system, and their consistent delivery of capsules yielded trust in communities of the programme that was created to benefit their own children.

39 Conversations recorded by NTAG during field observations. Names of the FCHVs interviewed were not mentioned in the audio tapes.
Trust had enabled FCHVs to persuade mothers to bring children for capsule supplementation and change dietary practices more convincingly. The eminent role of administrating vitamin A doses for their community not only boosted the public image of FCHVs, but also energized the FCHV programme.

5.2 FCHV Programme – the history

The FCHV initiative came into being largely in response to families’ limited access to health services over the years, and to Nepal’s high rates of infant mortality, maternal mortality and fertility, at 102 per 1,000 live births, 850 per 100,000 live births, and 2.1%, respectively. The creation of an organized, voluntary network of health promoters, with the MOH and UNFPA driving it at the initial stage, was a measure to meet the demand of villages and wards for primary health care and the need for family planning.

Volunteers were selected by a local mothers’ group, formed in every ward for a monthly gathering to discuss health care issues. The criteria for selecting an FCHV were:

1. A resident of the ward
2. Is willing and capable of serving the community as a volunteer
3. At least 20 years old

Preferences were given to married women with one or two children, literate and already involved in some form of social work or health-related activities. The Mother’s Group, however, was not functioning or did not exist in many wards, and the FCHV was often designated by the Village Health Worker, Ward Chairman, VDC leader or by the chief of health post.

5.2.1 Contention over medical supplies

The FCHV programme, managed originally by the Nepal Women’s Primary Committees of the Nepal Women’s Organization (NWO), one of six organizations formed under the Panchayat constitution, provided a modular basic training for FCHVs totaling 24 days in three segments (12 days + 6 days + 6 days). It covered a range of topics: prevention of diarrheal dehydration, improved nutrition, immunization, family planning, child care, first aid and acute respiratory infections. They were each paid a monthly allowance of Rs. 100, and after the training, equipped with a set of reference materials and a basic kit containing essential drugs, first aid supplies, which were to be replenished regularly. To cover the cost, the Committee decided to deduce Rs. 250 from FCHVs’ training allowance for use as seed money to refill medical supplies.

FCHVs’ training allowance for use as seed money to refill medical supplies.

The programme was revised in September 1990, when the Panchayat system was dissolved and Nepal began a multi-party, parliamentary democracy. Basic training for the new FCHVs was reduced from 24 days to 20 days and divided into two modules (10 days + 10 days), and the provision for FCHVs’ monthly allowance was withdrawn. And in 1991, with the introduction of a new health policy, the duration of basic training was reduced from 20 days to 15 days, followed by a 2-day refresher training course twice a year. A training allowance of Rs 75 per day was issued but the practice of ‘charging’ FCHV Rs 250 from their training allowance was suspended. The basic kit, with essential commodities and drugs, continued to be supplied nonetheless.

Medical supplies were linked to FCHVs’ basic training right from the beginning. While the seed money was collected in the form of reduced allowance, the replenishment of drugs had not been regular. Older FCHVs who joined the programme from the start had raised concerns with the district health authorities, but some were simply told they should start selling those supplies to ‘reclaim’ their allowance. Contrary to the advice, community members were unwilling to spend money on medicine provided by the volunteers. A survey showed that only 13% of families paid for medicine after the FCHV visited their home for emergency care.

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42 HIV/AIDS were added to the curriculum in the 1990s

43 “National FCHV Programme Revised Strategy”, Family Health Division, Department of Health Services, Ministry of Health, HMG Nepal, 2003

44 Ibid

45 “Assessment of Female Community Health Volunteers Programme: Nepal”, Ministry of Health & Valley Research Group, Nepal, April 1997
Later, as responsibility for refilling medical supplies – at no cost to FCHV – was transferred to the VDC and health post, the issue was not resolved either. As few as 14% of VDCs had provided supplementary drugs to FCHVs, and the majority cited the lack of budget as well as the absence of clear instruction from central government as reasons for not doing so. The volunteers’ kit bag, as a result, was rapidly depleted of essential supplies with some unappreciative families accusing them of charging fees to make money. The FCHVs were largely left to their own devices. The better-offs at times resorted to buying basic supplies such as band-aids out of their own pocket.

Table 7: Percentage distribution of FCHVs reporting problems in replenishing kit bag and by type of problems

<table>
<thead>
<tr>
<th>Description</th>
<th>Mountain</th>
<th>Hills</th>
<th>Terai</th>
<th>Total (n = 400)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems in replenishing kit bag</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>69.4</td>
<td>20.5</td>
<td>55.3</td>
<td>45.5</td>
</tr>
<tr>
<td>No</td>
<td>30.6</td>
<td>79.5</td>
<td>44.7</td>
<td>54.5</td>
</tr>
<tr>
<td>Type of problems</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No drug received after basic training</td>
<td>96.0</td>
<td>69.2</td>
<td>67.2</td>
<td>71.4</td>
</tr>
<tr>
<td>Delay in/inadequate drug supply</td>
<td>-</td>
<td>15.4</td>
<td>26.7</td>
<td>21.4</td>
</tr>
<tr>
<td>Kit-bag given after deducting allowance for training</td>
<td>4.0</td>
<td>3.8</td>
<td>7.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Health facility is too far away to collect medicine</td>
<td>-</td>
<td>3.8</td>
<td>0.8</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Source: Assessment of Female Community Health Volunteers Programme: Nepal, Ministry of Health & Valley Research Group, Nepal, April 1997

5.2.2 Free drugs – the draw to communities?

When NVAP came into being in 1993, there were about 24,000 FCHVs in 58 districts. Although the volunteers continued to perform their duties, the operational issues they confronted had affected the quality of their service and credibility, in particular, where free drugs supplies became an issue with communities. There were also questions about the sustainability of this programme: just how much could the FCHV, largely illiterate like most mothers in the ward, offer by way of new knowledge out of her 15-day basic training? How long could she sustain their interest – given that the range of topics covered in her pictorial flip chart could easily run out after a year of monthly meetings? Moreover, when she exhausted her medical supplies, what else could she offer to her neighbours?

5.2.3 Biannual Review and Refreshers Training for FCHVs

Envisaging these questions, the FCHV Programme had incorporated in its design a two-day Review and Refresher Meeting, twice a year. It was also a forum where implementation issues of NVAP were dealt with after NTAG handed over its training to the health system. Technical knowledge of FCHVs on different aspects of family health such as family planning, maternal and neonatal care, child health, infectious diseases, HIV/AIDS/sexual transmitted infections and nutrition knowledge were updated and reinforced.

The meeting was an occasion for FCHVs to provide feedback on community health problems and various activities, such as mothers’ concern about measuring the exact quantity of water to mix Oral Rehydration Salt, size of cups, and other issues where the Health Post In-Charge and his staff were to help resolve. Participants also brought their register containing names and number of children given vitamin A capsules and deworming tablets, and those of women receiving iron folate tablets for discussion. For the Health staff, the register served as a good source of data on capsule coverage, number of children under five in each ward and newborns in each ward. It was also enormously useful to determining capsules allocation for each districts.

46 Ibid
47 Deworming tablets were introduced in 1999 by UNICEF as an integrated supplement of NVAP, and is discussed in later sections of this paper.
The meeting was timed within a month before the vitamin A distribution round to help FCHVs review problems in the previous round, and issue new capsules for the next. Supplies in the drug kit were supposedly replenished, and activities for next six months, including promotion of supplementation day, planned.

For the FCHV’s supervisors, the VHWs and MCHWs, it was an opportunity to review programme activities and FCHV’s performance with the Health Post In-Charge (HPIC), who convened and conducted the meeting. The HPIC would then report the outcome to his supervisors, the District Health and Public Health Officers (DHO and DPHO), who would then compile a report to the Regional Medical Officer, who in turn report to the Chief of Family Health Division (FHD), Department of Health Services (DHS), Ministry of Health. The district information were shared with the Female Community Health Volunteer Coordinator within the FHD, responsible for monitoring and coordinating with other Divisions within the MOH on interventions involving FCHVs.

5.2.4 Operational bottleneck

While the design was robust, as it took care of FCHVs’ need to regularly refresh their knowledge, skills and ability to conduct outreach activities, the implementation tended to go in fits and starts. HPIC was missing in most of the review meetings, leaving training responsibility to their subordinates, the VHWs and MCHWs. Supervision was conspicuously lacking, neither was there conceptual clarity among VHWs and MCHWs on the actual purpose of review. While nearly all of the FCHVs attended these training, there were questions as to how effectively their knowledge could be renewed in absence of systematic coaching.

In many villages, the bi-annual FCHV Review Meeting did not take place at all. And where it did, communication to FCHVs was frequently inadequate. Few of them had bought their registers, vital to monitoring and data collection. The duration of meeting was often cut down to 2.5 hours, starting at 11 am, followed by lunch and ending at 2.30 pm daily. The only constant was vitamin A capsules and subsequently, deworming tablets, which were handed over to the FCHVs during these meetings. However, there was no discussion of the target for supplementation based on registration in the previous round. For some, new register books, contraceptives and ORS packets were also replenished, but it did not happen in most cases.

For FCHVs in villages where review meetings did not happen, alternative ways had to be sought to ensure capsules arrived in time for distribution.

The situation, which persisted until now, marked the difficulties with which FCHVs confronted in their aspiration to make themselves useful to their communities. The NVAP improved the FCHV standing with mothers and families by placing trust in her ability to administer a perceived drug – vitamin A capsules – to children. No adverse event of physical reactions to the capsule had been reported since vitamin A supplementation was introduced and faithfully carried out by these volunteers. By engaging them in supplementation, the FCHVs also ceased to be a mere ‘talker’, but demonstrating the health education they preached by doing it. The central role she played on Supplementation Day, cutting up each capsule and determining dosage for children of two major age groups to a long queue of caretakers, set her apart from ordinary mothers and villagers. The new role put her a notch up in communities and earned her a degree of respect.

5.2.5 Motivation – community’s appreciation

The changed perception and new found respect of communities were a major motivating factor that kept the FCHVs going. “I feel elevated when I distribute vitamin A capsules and

give advice to the people, even though it is a difficult job,” said an FCHV. “Villagers do not allow me to discontinue this job,” added another, proudly.

“Before this programme not many people knew me as a FCHV. Now everybody knows me and respects me.”

“The government and the villagers have trusted and chosen me for this job. I am proud of it and this keeps me going.”

“I meet many mothers when I distribute vitamin A, and I am delighted to teach them.”

“This (vitamin A) programme has made us more active. We undergo training every six months and people come to visit so often for advice.”

“People, including local medical attendants also come to me for advice. This encourages me to work harder even if I do not get paid. It also gives me an opportunity to learn many new things.”

These opinions – expressed by FCHVs themselves – reflected their changed status accorded by an act of trust. For the educated FCHVs, the prospect of getting a permanent job as an MCHW at the sub-health post – under a policy that gave preferential treatment to FCHVs – provided a good incentive. For the MOH, the policy was one way to attract educated women, who tended to demonstrate higher problem solving capacity – to become a volunteer. It is estimated that roughly one-quarter of all MCHWs were formerly FCHVs. Even then, many educated FCHVs were genuinely interested in their voluntary role, less inhibited about reaching out to families of the lowest castes that were at highest risk of all types of nutritional deficiencies. There were also wives of landowners and entrepreneurs who willingly took on the FCHV role because it gave them a sense of identity.

5.3 Promotional activities

One of the most important means of diffusing new knowledge and practices is awareness-raising through mass media, which could infiltrate a message to the entire populace over time. But mass media, however pervasive, was less effective in inducing behaviour change when faced with a largely illiterate population who was poor, and unable to benefit from the advent of digital or information age.
Radio, a medium with the most extensive geographic reach in Nepal, was accessible in 75% of all districts in 1990 and 90% in 2000. Television, introduced in 1985 expanded from a geographic coverage of 18% in 1990 to 44% in 2000. TV ownership grew much slower from 2 sets per 1,000 population to 6 per 1,000 over the decade, whereas radio ownership climbed slightly from 34 sets per 1,000 to 38 per 1,000 in the same period. The slow rate of progress was partly hampered by Nepal’s limited electricity coverage and inadequate road infrastructure. According to the World Bank, only 15% of Nepal’s population, mostly urban, enjoyed electricity in 1996, and rural poor lived on the average more than 5 hours away from the nearest dirt road. With 9 million people surviving on less than $1 per day, knowledge and information were for the most part, a luxury.

Interpersonal communication (IPC) was thus the most dominant promotional strategy for NVAP, relying on words of mouth. It also befitted the rural setting of Nepal where everyone in a village knew each other, and where road-side teashops or a community talk could spread the message faster – locally – than the electronic media that had yet to arrive in every home. The NVAP was fortunate to be able to ride on an existing IPC structure – the Female Community Health Volunteers – all 48,549 of them by 2003, to reach out to families in virtually every corner of the landlocked country. It was thus spared the initial investment in an IPC channel, even though the FCHV programme was also supported by the same agencies: USAID and UNICEF which, along with UNFPA, put in more than $1 million per year on the average to finance its operation, with 80% on FCHVs’ training since its inception.

The existence of this channel gave NVAP, and in fact, most other preventive health programmes in Nepal, a ready means for behaviour change communication.

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51 Ibid
53 “Plan of Action for Strengthening the Female Community Health Volunteers Programme,” Family Health Division, Department of Health Services, MOH, His Majesty’s Government of Nepal, 2002 - 2003
Promotional activities centered around awareness raising of the date of vitamin A supplementation. Turnout of caretakers with target children was the major indicator of programme success, and behaviour change reflected in families’ willingness to go to the fixed site, letting FCHVs administer the capsule to their children.

A string of persuasion efforts was set off with a colonnade of support from the line departments and health authorities, spearheaded by the District Coordinating Committee, formed after the three-tier trainings. FCHVs leapt out of their small circle of mothers’ group (usually from the neighbourhood) to visit schools, talk to principals, teachers and students about vitamin A. Commitment from the top allowed FCHVs to enter classes, give a session on vitamin A, cheered them on with jingles, songs and rhymes, raising enthusiasm among the young promoters. Many had passed on the new information to parents, uncles and aunts back home and to neighbours. Once the words were out, the rhythm of communication assumed a life of its own, moving from one change agent to another, and the message began to diffuse.

School children were also activated as “calling parties” the day before and during supplementation, reminding parents of the date and venue.

Graph 7: Type of community members extending help to FCHVs, 1994-2002

The FCHVs also worked with VHWs to organize rallies, leading a procession of women, children and students, raising banners, pumpkins and vegetables, to announce the capsule supplementation day. In some districts, town criers were engaged to move about every settlement, reminding families of the date. NTAG, which was also responsible for promotion, assisted in coordination with district and village communities. All of its 50 staff would be out in the new districts came April and October, running around with loudspeakers and recorded messages on vans, to magnify publicity generated by local rallies. Even a passerby was not spared. Any men and women on the street would be acknowledged on loudspeakers in moving vehicles, reminding them to inform neighbours and friends to bring children to the supplementation site.

Other than announcements, entertainment was used. A professional magician was brought in to beguile villagers young and old with funny tricks that led to a single message: Vitamin A. Clad in a shiny black cloak and silvery turban, the entertainer juggled pumpkins, vegetables, milk and eggs, and conjured up a red vitamin A capsule to send the message home: bring your kids to the FCHV on supplementation day. He would also pour milk into a rolled sheet of newspaper, fling it to the air and startle his audience to show nothing in there. And children were invited up to experiment with magic, winding up eating an egg to the amusement of all. In the rural milieu where events out of the ordinary, whether held under a tree or by the road were few and far between, the magic show at times attracted two to three thousand onlookers.
The conjurers’ troupe – essentially a two-men team with the other manning the stereo on full blast to draw attention – usually set off three weeks before the distribution day, and whirled their way across 6 – 8 new districts and hundreds of villages to stage the show.

The messages around local promotional events were strategically crafted to highlight FCHVs’ role in supplementation. “Don’t forget to take your children to the FCHVs for vitamin A supplementation”; “Ask your FCHVs when is the next vitamin A Supplementation Day?”, were standard slogans to draw communities to the volunteers. The message was simple, and the easier it was for caretakers to follow, the quicker they would adopt the practice. While such messages streamlined the actions for families, they helped build a sense of identity and provide much needed motivation for FCHVs to do the job.

Complementing local activities was the broadcast of general message on the micronutrient, capsule distribution and food source on radio and TV. The dates were not announced because NVAP had not covered every district until 2002. Radio spots were transmitted at prime time nationwide as well as through Radio Nepal’s regional stations to improve penetration in areas that spoke several major local languages: Maithili, Bojburi, Awadi, Tharu and Gurung. TV spots, targeting mostly at urban residents, encouraged parents to go to the nearest health facilities, or municipal-based FCHVs, for the capsules.

5.3 Nutrition education

The slow rate of change in female literacy, poverty and environmental conditions colluded to make nutrition education more challenging than supplementation. But it was an important,
non-negotiable intervention, to promote long-term improvement of dietary practices, and to fulfill the right of families to knowledge for health.

An important aspect of FCHVs’ work was to conduct nutrition education to improve dietary intake of vitamin A-rich food. For the FCHVs, the challenges were enormous. The invisible nature of nutrient loss was a nebulous concept that eluded most, especially ordinary people, and above all, illiterate mothers. The monthly Mothers’ Groups (MG) meeting served as an entry point, in the hope that the number gathered at the neighbourhood would eventually spread the knowledge to other mothers. The MGs were formed with all mothers in mind, but geographic distance and heavy household burdens did not always allow every mother the luxury of time-off to improve her knowledge.

Following the pictorial flip chart developed by the National Health Training Center and NTAG, FCHVs conducted the monthly session by pointing to pictures that showed children with diarrhea, contaminated sources, hygiene, infectious diseases including measles, followed by food, dark green leafy vegetables, yellow fruits, milk, liver, fish, egg and consequences of not consuming enough of these. The table below shows an overall improvement in mothers’ knowledge of dietary sources over the years, with the number citing “don’t know” steadily coming down:

### Table 8: Knowledge of dietary source of vitamin A, Nepal, 1996 - 2002

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>% Dark Green Leafy Vegetables</th>
<th>% Fruit</th>
<th>% Pumpkin</th>
<th>% Milk</th>
<th>% Liver</th>
<th>% Fish</th>
<th>% Egg</th>
<th>% Others</th>
<th>% Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>3346</td>
<td>38%</td>
<td>18%</td>
<td>10%</td>
<td>15%</td>
<td>2%</td>
<td>5%</td>
<td>3%</td>
<td>1%</td>
<td>57%</td>
</tr>
<tr>
<td>1997</td>
<td>2668</td>
<td>54%</td>
<td>23%</td>
<td>17%</td>
<td>20%</td>
<td>2%</td>
<td>8%</td>
<td>4%</td>
<td>3%</td>
<td>41%</td>
</tr>
<tr>
<td>1998</td>
<td>4697</td>
<td>62%</td>
<td>34%</td>
<td>21%</td>
<td>16%</td>
<td>3%</td>
<td>7%</td>
<td>5%</td>
<td>15%</td>
<td>31%</td>
</tr>
<tr>
<td>1999</td>
<td>3990</td>
<td>73%</td>
<td>42%</td>
<td>28%</td>
<td>19%</td>
<td>7%</td>
<td>6%</td>
<td>7%</td>
<td>8%</td>
<td>24%</td>
</tr>
<tr>
<td>2000</td>
<td>2525</td>
<td>73%</td>
<td>42%</td>
<td>24%</td>
<td>24%</td>
<td>7%</td>
<td>11%</td>
<td>10%</td>
<td>35%</td>
<td>20%</td>
</tr>
<tr>
<td>2001</td>
<td>3920</td>
<td>86%</td>
<td>57%</td>
<td>28%</td>
<td>37%</td>
<td>10%</td>
<td>16%</td>
<td>15%</td>
<td>34%</td>
<td>10%</td>
</tr>
<tr>
<td>2002</td>
<td>2974</td>
<td>91%</td>
<td>60%</td>
<td>35%</td>
<td>45%</td>
<td>11%</td>
<td>15%</td>
<td>18%</td>
<td>15%</td>
<td>8%</td>
</tr>
</tbody>
</table>

*Source: NVAP Mini Surveys 1996 – 2002, NTAG*
Although recent studies had begun to question whether dark green leafy vegetables (DGLV) was a good candidate for vitamin A compared to liver, FCHVs continued to emphasize the former. Firstly, the findings were still a matter of debate in the international research community. Secondly, while research shows it takes only 0.8 gram of liver per day to cure a pregnant mother of night blindness within 5 days\(^\text{54}\), liver is simply too remote from daily consumption of poor households, subsist on meager family income, living from hand to mouth. Whereas for the landless, one solution was at least available: growing pumpkin leaves ("Pasiko Munta" in Nepali) that crawled around their ramshackle shelter with a little seedling donated by families in the neighbourhood or the FCHVs themselves.

The complexity of vitamin A deficiency disorders, with its multiple effects on diseases leading to death was, in most instances, a difficult concept to explain to mothers. Most FCHVs, except the educated ones who were capable of using a wider range of vocabulary, emphasized the nutrient's overall benefit in good health and disease prevention. The daily foreboding of sudden illnesses in the family, which meant incurring another debt, 

\(^{54}\) Effect of daily supplementation with locally available vitamin A-rich foods or vitamin A fortified UltrariceTM on dark adaptation and vitamin A status in pregnant, nightblind Nepali women, MJ Haskell, P Pandey, JM Graham, JM Peerson, RK Shrestha, and KH Brown, Program in International Nutrition, Dept. of Nutrition, University of California-Davis and Nepali Technical Assistance Group, Kathmandu, Nepal, March 2002
made disease prevention an idea attractive to the poor, according to some FCHVs. It also helped garner a sense of urgency for adopting new dietary practice, as well as the willingness to receive capsule supplementation.

The emphasis on benefits to the eyes and prevention of night blindness were thus not given equal focus, partly because it was yet perceived as a life-threatening disease. The mini-surveys conducted by NTAG and district health staff over the years therefore revealed an interesting trend. Mothers’ knowledge of vitamin A for good health had gone up from 10.5% in 1993 to 65.7% in 2002, whereas its effect on the eyes had fluctuated from 13% in 1993 to 6.7% in 1996 and back to 14% in 2002.

Table 9: Knowledge of benefits of vitamin A, Nepal, 1993 - 2002

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>Good for child’s health</th>
<th>Prevent disease</th>
<th>Useful, helpful</th>
<th>Good for the eyes</th>
<th>Is of no use</th>
<th>Others</th>
<th>Prevent night blindness</th>
<th>Don't know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>2309</td>
<td>10.5%</td>
<td>15.6%</td>
<td>35.6%</td>
<td>13.0%</td>
<td>0.1%</td>
<td>7.2%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>1994</td>
<td>3101</td>
<td>11.0%</td>
<td>12.5%</td>
<td>26.4%</td>
<td>9.6%</td>
<td>0.0%</td>
<td>22.5%</td>
<td>0.0%</td>
<td>38.0%</td>
</tr>
<tr>
<td>1995</td>
<td>4515</td>
<td>50.3%</td>
<td>35.4%</td>
<td>17.3%</td>
<td>16.7%</td>
<td>0.2%</td>
<td>11.5%</td>
<td>7.9%</td>
<td>26.0%</td>
</tr>
<tr>
<td>1996</td>
<td>3346</td>
<td>35.0%</td>
<td>26.2%</td>
<td>10.0%</td>
<td>6.7%</td>
<td>0.3%</td>
<td>13.3%</td>
<td>2.2%</td>
<td>30.1%</td>
</tr>
<tr>
<td>1997</td>
<td>2668</td>
<td>45.8%</td>
<td>42.7%</td>
<td>14.6%</td>
<td>9.7%</td>
<td>0.3%</td>
<td>20.5%</td>
<td>4.6%</td>
<td>15.4%</td>
</tr>
<tr>
<td>1998</td>
<td>4697</td>
<td>39.8%</td>
<td>45.7%</td>
<td>8.6%</td>
<td>6.6%</td>
<td>0.1%</td>
<td>33.4%</td>
<td>2.5%</td>
<td>13.2%</td>
</tr>
<tr>
<td>1999</td>
<td>3990</td>
<td>56.2%</td>
<td>53.3%</td>
<td>12.0%</td>
<td>8.4%</td>
<td>0.2%</td>
<td>22.1%</td>
<td>2.9%</td>
<td>11.1%</td>
</tr>
<tr>
<td>2000</td>
<td>2525</td>
<td>49.0%</td>
<td>58.3%</td>
<td>13.3%</td>
<td>11.2%</td>
<td>0.2%</td>
<td>31.7%</td>
<td>3.4%</td>
<td>8.4%</td>
</tr>
<tr>
<td>2001</td>
<td>3920</td>
<td>65.9%</td>
<td>61.7%</td>
<td>12.1%</td>
<td>11.7%</td>
<td>0.1%</td>
<td>22.4%</td>
<td>3.9%</td>
<td>5.0%</td>
</tr>
<tr>
<td>2002</td>
<td>2974</td>
<td>65.7%</td>
<td>68.7%</td>
<td>8.6%</td>
<td>14.0%</td>
<td>0.2%</td>
<td>10.5%</td>
<td>7.7%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Source: NVAP Mini Surveys 1993 – 2002, NTAG

Graph 9: Caretakers’ opinion about usefulness of vitamin A

Source: NVAP Mini Surveys 1993 – 2002, NTAG

After a decade of interventions, the mini-surveys showed consistently high coverage of capsule supplementation even in the remotest of districts in Nepal. Though dietary change was not measured, there was strong indication that mothers’ knowledge of vitamin A-rich food had improved.

A survey of Nepal’s north-western Karnali zone, commissioned by the Helen Keller International (HKI) in 1996, was quite revealing. Long deprivation of nutritious food had
shot up prevalence of night blindness to 30% among mothers, and 3% among children, with another 1.6% of children who had difficulty seeing in day time. Since NVAP was introduced, capsule coverage – as shown in the October round – had attained 89%. The most often cited source of information about distribution day was FCHVs, along with Village Health Workers, followed by neighbours, family members and radio (there was no breakdown of the difference between FCHVs and VHWs).

**Table 10: Source of information about capsule distribution programme, Karnali Zone, Nepal, 1996**

<table>
<thead>
<tr>
<th>Source of information</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCHV/VHW</td>
<td>339</td>
<td>79.4</td>
</tr>
<tr>
<td>Neighbours/family members</td>
<td>135</td>
<td>31.6</td>
</tr>
<tr>
<td>Radio</td>
<td>101</td>
<td>23.7</td>
</tr>
<tr>
<td>Teachers/Students</td>
<td>42</td>
<td>9.8</td>
</tr>
<tr>
<td>VDC/Ward Chairman</td>
<td>24</td>
<td>5.6</td>
</tr>
<tr>
<td>Announcement in the weekly market</td>
<td>12</td>
<td>2.8</td>
</tr>
<tr>
<td>Other health workers</td>
<td>13</td>
<td>3.0</td>
</tr>
<tr>
<td>Others</td>
<td>10</td>
<td>2.3</td>
</tr>
</tbody>
</table>


More than half of the mothers interviewed were able to name dark green leafy vegetables as food rich in vitamin A, and more than a quarter mentioned milk/ghee/yoghurt, pumpkin and yellow fruits.

**Table 11: Source of vitamin A-rich foods, Karnali Zone, Nepal, 1996**

<table>
<thead>
<tr>
<th>Source of Vitamin A-rich Foods</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green vegetables</td>
<td>243</td>
<td>56.9</td>
</tr>
<tr>
<td>Milk/ghee/yoghurt</td>
<td>125</td>
<td>29.3</td>
</tr>
<tr>
<td>Pumpkin</td>
<td>115</td>
<td>26.9</td>
</tr>
<tr>
<td>Yellow Fruits</td>
<td>105</td>
<td>24.6</td>
</tr>
<tr>
<td>Eggs</td>
<td>30</td>
<td>7.0</td>
</tr>
<tr>
<td>Small whole fish</td>
<td>29</td>
<td>6.8</td>
</tr>
<tr>
<td>Liver</td>
<td>25</td>
<td>5.9</td>
</tr>
<tr>
<td>Legumes</td>
<td>18</td>
<td>4.2</td>
</tr>
<tr>
<td>Meat</td>
<td>13</td>
<td>3.0</td>
</tr>
<tr>
<td>Potato</td>
<td>11</td>
<td>2.6</td>
</tr>
<tr>
<td>Other</td>
<td>26</td>
<td>6.1</td>
</tr>
<tr>
<td>Don’t know</td>
<td>174</td>
<td>40.7</td>
</tr>
</tbody>
</table>


**6. Expansion of the National Vitamin A Programme (NVAP)**

By 1997, vitamin A capsule supplementation had been introduced in all 32 districts as planned. Surveys conducted after each round showed a consistently high coverage – evidence of new knowledge being diffused to more than 88% of population in the priority districts. For practitioners in the communication discipline, it was interesting to note how the initial conversion of early adopters of the vitamin A supplementation strategy, in this case, the FCHVs, district and village officials from different sectors, had provided a necessary “critical mass” to popularize the practice. Critical mass is the smallest number of adopters needed to sustain the subsequent wide diffusion of an innovation, and according to Everett Rogers, interpersonal communication appears essential to achieving it. In the case of NVAP, it was essential.

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Graph 10: Coverage by number of years in the programme, in districts that started vitamin A supplementation, 1993 – 1997, Nepal

Graph 11: Cumulative adoption curve for an innovation (% of a population adopting over time)

The high implementation rate had presented a strong case for expansion. The projected number of child deaths averted, based on calculations at that time, demonstrated the payoff. At a meeting of policymakers in 1997, USAID and UNICEF pointed out that NVAP had saved tens of thousands of lives. The positive outcome, essentially extrapolated from the community trial results, was presented partly to overcome resistance among certain partners to large-scale supplementation. The argument against this invention was that vitamin A deficiency could be corrected by changing dietary practice alone, which was deemed by some as more cost-efficient in the long run. The discussion was important as it clarified the immediate benefits of capsule supplementation, and more importantly, the faster rate of progress compared to changing people’s eating habits and economic conditions. Vital as they were, the latter when pursued as the only strategy, would take a much longer time to show results.

The meeting led to the decision to expand NVAP to all 75 districts of Nepal. Implementation of the new phases, as in the past, was to be jointly supported by USAID and UNICEF. Both agencies were starting anew five-year plan, with the commitment to HMG Nepal to go national with vitamin A capsule supplementation.
7. Immunization Plus

1997 also saw the introduction of National Immunization Day (NID) to Nepal, and a further decision was taken to ride on OPV vaccination to supplement Vitamin A in districts where NVAP was not yet implemented. The following map showed the 38 districts that started vitamin A supplementation through NID since 1997 with VHWs administrating OPV and FCHVs promoting vaccination. Children in these districts would receive one capsule through the annual NID to provide some protection from vitamin A deficiency. Once NVAP was in place in a set of new districts, however, children would receive the capsules through the twice yearly supplementation rather than through NID, which was deemed a temporary measure. For as soon as polio was eradicated, NID would no longer be necessary, but vitamin A supplementation had to go on until the deficiency disorders was eliminated.

Graph 12: NVAP’s implementation by 1997 when NID was introduced

Source: DHS/MOH & UNICEF Nepal

Thus as the majority of developing countries was adopting the idea of Immunization Plus – using routine immunization and NID as a vehicle to begin national vitamin A supplementation – the scenario in Nepal was rather different. It was mainly because NVAP came into existence long before NID, and strived to deliver capsules twice rather than once a year to children between 6 – 59 months. In the meantime, routine immunization was perceived as offering a narrow window – when a child was 6 to 9 months (measles vaccination in the 9th month) – for capsule supplementation to make a real impact on controlling vitamin A deficiency disorders.

Graph 13: A narrow overlap between routine immunization and vitamin A capsule supplementation by age of children

Source: “Immunization Plus or Vitamin A Plus?.ppt”, P.O.
Blomquist, UNICEF Nepal, 1999
8. Impact and spin-offs

National prevalence for night blindness among preschool children was brought down to 0.27%, and for Bitot’s spot, 0.33% midway through NVAP’s implementation in 1998. The latter was reduced by half compared to the prevalence rate of 0.64%, and night blindness from 0.37% in 1981, based on the first National Blindness Survey. The notable difference in prevalence between districts covered by capsule supplementation and those not yet reached by NVAP showed the programme was making its impact felt (see graph below).

Graph 14: Comparison of districts with and without vitamin A capsule supplementation, 1998, Nepal

The findings, through a National Micronutrient Status Survey conducted in 1998, were gathered from clinical examination (physical eye checks) of Bitot’s spot and recall of night blindness among 17,455 preschoolers, selected randomly in a clustered sampling. The drastic decline in national prevalence showed the remarkable effect of capsule supplementation. The reduced symptoms, brought down to a level below WHO’s recommended cut-off point, were attributable to the consistently high coverage of 88% – 91% capsule supplementation in NVAP districts. And it applied to conflict areas, most of them in the northwestern region.

Graph 15: Districts declared Phase III emergency as of 23 June 2003

The map, used for UN security planning, is shown here merely to indicate conflict situations in the country. Districts under Phase III (in red) are those where conflicts are escalating to the extent that field staff stationed there should be relocated to safer areas within the country. The suspension of development activities usually ensue when the situation deteriorates further, and that Phase IV is declared (note: none of the districts are at Phase IV at the time of writing).


Source: UN Field Security Office

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57 The map, used for UN security planning, is shown here merely to indicate conflict situations in the country. Districts under Phase III (in red) are those where conflicts are escalating to the extent that field staff stationed there should be relocated to safer areas within the country. The suspension of development activities usually ensue when the situation deteriorates further, and that Phase IV is declared (note: none of the districts are at Phase IV at the time of writing).
Between 1999 and 2002, the programme made a major breakthrough by entering the stronghold of Maoist rebels – Rolpa, Rukum, Jajarkot, Pyuthan and Salyan districts – where Nepal’s resurgent groups were active. District government offices, health staff and FCHVs took part in the same training package, and magic show was staged to promote knowledge of vitamin A to villagers and children. NTAG staff had shouldered enormous risks to their own security by entering these conflict zones to initiate training with the communities, often taking great caution to stay away from politics and focus on vitamin A. Coverage evaluation conducted after the rounds, except for Rolpa, which was not included in the random sampling, showed that capsules were reaching more than 90% of children in these districts.

**Graph 16: Supplementation coverage in conflict areas, Nepal, 1999 – 2002**

The high coverage and reduced prevalence were solid indicators that vitamin A deficiency disorders were no longer a significant public health problem among preschool children. Nepal could be considered to have achieved the World Summit for Children’s Goal of virtual elimination of this micronutrient deficiency.58

The scenario was rather different, however, for children older than five. Xerophthalmia prevalence remained high among school-age children, who were not the target group for vitamin A supplementation. And night blindness among women who reported the symptom in their last pregnancy was as much as 16.7% nationwide.59

**Graph 17: Age-specific prevalence of mild xerophthalmia**


While the twice yearly supplementation exercise had succeeded in controlling symptoms of xerophthalmia in preschool children, and contributed to the remarkable reduction of under-five mortality in Nepal, it was, by itself, inadequate to fully eliminate the biochemical measure of vitamin A deficiency. The 1998 Survey showed that one out of three preschoolers of all districts was still found to be deficient of vitamin A, although the figure included those not yet benefiting from NVAP. Nutrition education could clearly play a role, but the change in dietary practice would take time and could not by itself rapidly alter the mortality trend without supplementation. The graph below showed how little Nepalese children derived the necessary retinol equivalent from animal and vegetable sources each day, and how far apart it still was from the recommended standard:

**Graph 18: Intake of vitamin A-rich food among preschool children, Nepal**

![Graph showing intake of vitamin A-rich food among preschool children in Nepal.](image)


### 8.1 Vitamin A Plus – Deworming

While the need for continued capsule supplementation was apparent, the government, with the active support of UNICEF, began to introduce another intervention: deworming. Riding on the NVAP’s capsule supplementation infrastructure, deworming tablets were brought to children receiving vitamin A from October 1999. The 1998 NMSS survey revealed a startlingly high rate of anaemia in preschoolers, affecting nearly 60% of children under four years old, 70% under three, 75% under two, 87% under one and 90% among those 6 – 12 months old. The lack of iron intake in food was a major contributing factor, but the level of severity was brought on by hookworm infections, which also weakened the effect of vitamin A. The situation thus called for a Vitamin A Plus rather than Immunization Plus strategy.

**Graph 19: Prevalence of anaemia among preschool children**

![Graph showing prevalence of anaemia among preschool children.](image)

Three major studies undertaken in Nepal provided the evidence, showing an astounding prevalence of worm infestation among school children. With these parasites vying for iron and retinol in the blood, few supplementation programmes would make a major dent if worms of all kinds were not cleaned out of children’s guts.

Table 12: Prevalence of worm infestation among children and women, Nepal

<table>
<thead>
<tr>
<th>Study</th>
<th>Prevalence (%)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Roundworm</td>
<td>Whipworm</td>
<td>Hookworm</td>
</tr>
<tr>
<td>1996 WHO/WFP study</td>
<td></td>
<td>22%</td>
<td>19%</td>
<td>65%</td>
</tr>
<tr>
<td>(711 school children)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998 JICA study</td>
<td></td>
<td>43%</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>(905 school children)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998 NNIPS study</td>
<td></td>
<td>56%</td>
<td>8%</td>
<td>78%</td>
</tr>
<tr>
<td>292 pregnant women</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003 Four-district study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The existing FCHVs network as well as District Vitamin A Coordinating Committees set up to promote vitamin A would in fact provide a ready channel for deworming. A single dose of Albendazole 400mg was given to children aged 2-5 years during the biannual vitamin A capsule supplementation day. UNICEF supported orientations for district level health staff, who then introduced the new initiative to health post staff as well as FCHVs at their regular review meeting. A training manual for health workers, a deworming guide and a flip chart for FCHV were printed and dispatched to districts planned for expansion in a similar phase-wise manner.

Those in the new NVAP districts would be trained by NTAG, involving the learning of new procedure and creating a new column in the FCHV register – tick marking deworming tablet against a child’s name, in addition to vitamin A. FCHVs’ impressive performance under the active support of the DCC, health staff and community members laid a solid ground for a rapid start-up. With trust in FCHVs, caretakers now brought children to the volunteers and received a new white tablet, gulped down with water, to “get rid of worms in the stomach.”

Anecdotal evidence suggested that parents were pleased with the new move, and felt it an improvement of the health system’s responsiveness to their children’s needs. Worms, for one, were visible and every family could tell after each deworming exercise what amount of parasites was eroding their children’s health. “I was so happy when my daughter also got deworming tablet with vitamin A. After getting the tablet, I feel she has become stronger. I am extremely thankful to our FCHV Didi,” said Indira Gurung, a mother in Syanja district. Community’s demand for deworming was in fact, high, and the dual intervention had spawned a win-win situation for vitamin A. “In the past distributions, I had
to do house visits to provide vitamin A capsule to ensure no child is missed. With deworming added, I no longer have to visit as many families as before. It has made my work lot easier,” said Sita Chaudhary, a FCHV in Rupendhi district.[61]

By 2002, children in 40 districts were dewormed and their health buttressed with vitamin A twice a year, at very little additional cost other than the tablets and the printing of materials for training as well as promotional activities. Each tablet costs one US cent and the one-time training as well as IEC materials cost 16 US cents, making the total price for integrating biannual de-worming just US$ 0.17 cents per child. Further, since 2001, the MOH had borne the entire cost of tablets purchase, reflecting a high level of commitment to deworming and the Vitamin A Plus strategy.[62]

Graph 20: No. of NVAP districts combined with deworming tablets supplementation, 1999 – 2004, Nepal
Source: MOH and UNICEF Nepal

The deworming initiative was reaching an impressive number of preschool children and achieving up to 97% coverage as vitamin A in the most recent rounds. While there were initial concerns that the introduction of deworming would affect vitamin A coverage, mini surveys have demonstrated that the latter was maintained at above 95% in both de-worming districts and non de-worming districts. In fact, there was evidence that adding de-worming had made the biannual vitamin A distribution even more popular, and that FCHVs reported receiving improved recognition of their services in the community.[63]

Graph 21: % coverage of children with deworming tablets, 2000 – 2002, Nepal
Source: NVAP Mini Surveys 2000-2002, NTAG

[61] Ibid
[63] Ibid
to do house visits to provide vitamin A capsule to ensure no child is missed. With deworming added, I no longer have to visit as many families as before. It has made my work lot easier,” said Sita Chaudhary, a FCHV in Rupendhi district\textsuperscript{61}.

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**Graph 20 :** No. of NVAP districts combined with deworming tablets supplementation, 1999 – 2004, Nepal \textit{Source: MOH and UNICEF Nepal}

![Graph 20](image)

The deworming initiative was reaching an impressive number of preschool children and achieving up to 97% coverage as vitamin A in the most recent rounds. While there were initial concerns that the introduction of deworming would affect vitamin A coverage, mini surveys have demonstrated that the latter was maintained at above 95% in both de-worming districts and non de-worming districts. In fact, there was evidence that adding de-worming had made the biannual vitamin A distribution even more popular, and that FCHVs reported receiving improved recognition of their services in the community\textsuperscript{63}.


![Graph 21](image)

\textsuperscript{61} Ibid
\textsuperscript{62} Ibid
\textsuperscript{63} Ibid
A recent impact study, conducted jointly by MOH, UNICEF Nepal and WHO Geneva, showed a visible reduction of anaemia – 38% – after preschool children were dewormed. In the mean time, efforts were made to improve the condition of another major target group: women. Anaemia prevalence among women was glaringly high, at 67%, and went up further to 75% when haemoglobin level was tested during pregnancy.
8.2 Vitamin A and deworming - pregnant women

The grim anaemic status among women was worsened by hookworm infections. Three out of four pregnant women were infected with worms and the second Nepal Nutrition Intervention Project (NIPPS-2), the community trial led by the NIPPS team in Sarlahi District pointed to 78% of pregnant women infected with hookworms. One-third of iron deficiency anaemia, according to another study, was attributed to infections from these parasites. And it was a factor that could be addressed with greater immediacy than measures to tackle the underlying and basic causes: poverty, food insecurity, unhygienic practice and gender discrimination.

A new policy was introduced by MOH in 2001 to deworm all pregnant women. A single dose of albendazole 400mg or mebendazole 500mg would be issued to women after their 1st trimester of pregnancy. By cleaning out worms to control anaemia and a greater likelihood of hemorrhage during delivery, the risk of maternal death would be reduced. Lactating mothers would also benefit from the full effect of vitamin A, and pass on the nutrients through breast milk to their child. The result went beyond vitamin A – it also enhanced the effect of iron supplementation, another initiative underway to combat malnutrition in Nepal.

Deworming was followed by another MOH policy to issue a weekly low dose of 25,000 IU vitamin A to night-blind pregnant women, combined with deworming tablets, after the 1st trimester. The dual intervention, being piloted in three districts, was based on findings of the NIPPS-2 trial that vitamin A and beta-carotene prevented 38% and 16% fewer pregnant women, respectively, from night blindness. The condition of deficiency exacerbated infections and anaemia, and exposed them to higher risk of birth complications and death. Vitamin A was known to be essential for the effective functioning of the immune system that reduced the severity of infection. Death from infection was one important cause of high maternal mortality rates, and MMR in Nepal, at 1,500 per 100,000 live births in 1990, was over a thousand times more than the average of 13 per 100,000 live births in industrialized countries.

The two new drugs for pregnant women were administered by health workers rather than FCHVs whose role was to detect and refer cases for treatment. As the initiative for women was introduced, NVAP was making headway in its continued expansion to the entire country.

By October 2002, NTAG had delivered its training to all 75 districts of Nepal. NVAP had penetrated every ward and every village of the country with vitamin A capsules, and catching up with deworming tablets. Computation from the Health Management Information System maintained by the MOH combined with NVAP’s mini surveys showed coverage of over 90% consistently since 1993 and reaching 98% or 3.2 million of targeted children by 2002.

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66 “Hookworm control as a strategy to prevent iron deficiency,” Rebecca J. Stoltzfus, Ph.D., Michele L. Dreyfuss, MPH., Hababuu M. Chwaya, MD., and Marco Albonico, MD., Nutrition Reviews, Vol 55 No. 6, June 1997
In slightly less than 10 years, the fruit of important researches had been distributed to millions of children in this Himalayan nation through a well planned, well implemented strategy involving tens of thousands of individuals. The critical mass built up over the years was reflected in the number of people trained – more than 100,000 – including the FCHVs, who diffused the research’s conclusion - vitamin A in a capsule to reduce death by 23% to 30% - to the population in need of this intervention.

The programme’s strong dependence on interpersonal communication (IPC), in particular, through FCHVs, and the district and village departments activated to support them, made a national programme not far from the reach of each family. The identity of FCHVs as homophilous, “just like one of us”, allowed the message to be diffused through a medium that spoke a similar lingo, and which reduced the communication gap. The fact that the FCHV was trained, and thrust into the central role of supplementation, gave them an edge in gaining mothers’ trust. Coverage evaluations over ten years demonstrated the effectiveness of this IPC strategy: FCHV was consistently cited as the biggest source of information on vitamin A supplementation day.

<table>
<thead>
<tr>
<th>Year</th>
<th>n</th>
<th>FCHV</th>
<th>TV</th>
<th>Radio</th>
<th>Neighbours/ Family members</th>
<th>Teachers/ Students</th>
<th>VDC/ Ward members</th>
<th>Advertisements</th>
<th>Leaflets</th>
<th>Farmers</th>
<th>Others*</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>2309</td>
<td>87.9%</td>
<td>0.4%</td>
<td>0%</td>
<td>1.8%</td>
<td>0.7%</td>
<td>0.2%</td>
<td>0.4%</td>
<td>0.3%</td>
<td>0.1%</td>
<td>2.3%</td>
<td>5.2%</td>
</tr>
<tr>
<td>1994</td>
<td>3101</td>
<td>87.6%</td>
<td>0.4%</td>
<td>0%</td>
<td>4.0%</td>
<td>0.7%</td>
<td>0.4%</td>
<td>0.1%</td>
<td>0.6%</td>
<td>0.4%</td>
<td>1.7%</td>
<td>8.8%</td>
</tr>
<tr>
<td>1995</td>
<td>4515</td>
<td>82.4%</td>
<td>0.2%</td>
<td>0%</td>
<td>7.9%</td>
<td>1.8%</td>
<td>4.9%</td>
<td>0.3%</td>
<td>0.2%</td>
<td>0.5%</td>
<td>5.6%</td>
<td>8.4%</td>
</tr>
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<td>1996</td>
<td>3348</td>
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<td>0.4%</td>
<td>20%</td>
<td>12.7%</td>
<td>1.6%</td>
<td>3.9%</td>
<td>0.5%</td>
<td>0.2%</td>
<td>0.4%</td>
<td>5.6%</td>
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<td>32%</td>
<td>18.0%</td>
<td>2.1%</td>
<td>4.0%</td>
<td>2.0%</td>
<td>0.3%</td>
<td>0.3%</td>
<td>13.3%</td>
<td>2.9%</td>
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<td>1998</td>
<td>4697</td>
<td>64.7%</td>
<td>3.3%</td>
<td>54%</td>
<td>16.9%</td>
<td>6.0%</td>
<td>8.6%</td>
<td>5.9%</td>
<td>1.7%</td>
<td>0.1%</td>
<td>27.3%</td>
<td>1.3%</td>
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<td>3990</td>
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<td>2.5%</td>
<td>55%</td>
<td>21.7%</td>
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<td>14.4%</td>
<td>6.1%</td>
<td>1.4%</td>
<td>0.2%</td>
<td>13.6%</td>
<td>1.5%</td>
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<tr>
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<td>4625</td>
<td>66.6%</td>
<td>12.7%</td>
<td>51%</td>
<td>25.3%</td>
<td>6.9%</td>
<td>5.7%</td>
<td>6.8%</td>
<td>1.4%</td>
<td>0.0%</td>
<td>6.0%</td>
<td>2.8%</td>
</tr>
<tr>
<td>2001</td>
<td>3919</td>
<td>74.0%</td>
<td>18.8%</td>
<td>59%</td>
<td>20.6%</td>
<td>9.2%</td>
<td>8.9%</td>
<td>8.1%</td>
<td>1.6%</td>
<td>0.1%</td>
<td>14.8%</td>
<td>1.8%</td>
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<tr>
<td>2002</td>
<td>2974</td>
<td>84.0%</td>
<td>10.2%</td>
<td>61%</td>
<td>19.8%</td>
<td>10.1%</td>
<td>4.6%</td>
<td>7.4%</td>
<td>0.7%</td>
<td>0.1%</td>
<td>14.3%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

* Others include poster, miking, TBA, procession
Source: NVAP Mini Surveys 1993 – 2002, NTAG

The complexity of the science of micronutrient deficiency was certainly, in this case, distilled into the simplest of messages: “go to the FCHV for vitamin A capsule on this day.” Given that 64.5% of illiterates in Nepal were women and girl children, it was a wonder that FCHVs were able to fulfill their communication task to mothers and caretakers. Even for a simple message it would require explanation, and much credit would go to NTAG, which had imparted the knowledge to this critical group in the most entertaining and informative of ways. Radio, the next highest source of information, primarily fulfilled the function of raising awareness en masse. It was vital in helping create an enabling environment for the programme, and make it known far and wide.

A critical factor that worked was the convergence of communication and service in the volunteers. Communication had ensured caretakers heeded the message, adopted new behaviours, converted by words of mouth or simply by conformity to group behaviours. And the service, coming from the same source and delivered regularly, affirmed the message and brought it closer to home. As the pool of adopters grew, the benefit of this innovation was diffused to a larger majority until it reached the last group of adopters.

The Diffusion theorists quantified the stages – in a normal statistical bell curve – into the first 2.5% who in this case, were the innovators in JHU and people closest to the innovation, the aid agencies and government departments that recognized the vitamin A researches’ significance. It was then brought on to 13.5% of the population, including district and village officials as well as FCHVs trained by NTAG, who formed the critical mass necessary to bring off an exponential growth. Besides FCHVs, community leaders, department officials, health staff and teachers trained would also spread the words around, and it grows from a pool of early adopters into a large majority. Through the FCHVs, the new knowledge was passed on to women attending the mothers’ group, who would then talk to other mothers, who would then spread the message to more caretakers, so on and so forth.
Graph 27: Normal distribution of behavioural adoption

Source: Adapted from “Diffusion of Innovation”, Rogers E. M., 1995

* The original graph by Rogers E.M. does not contain the dotted triangle, inserted here to illustrate the point in which a critical mass of adopters is reached to begin an exponential growth.

In looking at the limitation of communication – what communication can and cannot do, the convergence with service could reduce the likelihood of a wedge or deadweight loss. A wedge occurred when service was not rendered to the target group who was aware of it and demanded it, or when service was delivered to the target group who was unaware of it and would not use it. Both scenarios were frequent when services were irregular, health workers were unmotivated to perform, or forecasting of capsules or other drugs was inaccurate. In short, it resulted in a public programme with apparent disinterest in people’s needs.

Graph 28: Economic wedge when services and communication do not converge

The NVAP, as a public programme, is unique by the dual role assigned to FCHVs. The consistent supply of capsules is certainly another important factor and one that has kept coverage high and soaring as the public increasingly learn of the regular service. For the FCHVs, there is no monetary profit to speak of but community’s trust and respect gained. Because their service is free, the NVAP has achieved a success at a cost lower than most in other countries. It is protecting every child at the initial expense of $0.67 each kid per year, including two capsules, training, promotion and coverage surveys. When NVAP was fully implemented in 2002, training was no longer a part of the cost equation, and unit cost was brought down to $0.22 per child, making it one of the most cost-effective health interventions in the world.68

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Based on a rough annual number of deaths of 42,089 of children between 6 – 59 months old, USAID Nepal estimated that the 30% reduction in mortality, as a result of NVAP, would have averted the death of some 12,000 Nepali children in this age group each year. Although it would take a complex series of multivariate regression analyses to isolate the impact of NVAP in reducing child deaths in actuality, the trends reported in Nepal’s Family Health Surveys from 1991 – 2001 were reflecting a pattern of decline:


The reductions, it should be noted, were only crude calculations with a view to observe trends rather than attribute the impact to vitamin A alone. Further, the IMR reduction here was a blanket calculation that included deaths of children between 0 – 6 months old, who were not the target of NVAP. However, it was clear that child mortality rate among children between ages 1 – 4, showed the greatest reduction of 35% between 1991 – 2001, followed by children under five years of age (U5MR), registering a decline of 24% in the same period.

Estimation of the 12,000 deaths prevented enabled USAID to put the least cost per life-year (DALY) at $197 per death averted through NVAP. Vitamin A intervention was deemed efficient compared to other primary health care interventions, based on the analysis of USAID-funded Partnerships for Health Reform in 2000:

Table 14: Comparison of the cost-effectiveness of primary care interventions: cost per death averted

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Cost per death averted (in Y2000 US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding promotion</td>
<td>$190</td>
</tr>
<tr>
<td>Nepal National Vitamin A Programme</td>
<td>$197</td>
</tr>
<tr>
<td>Measles immunization</td>
<td>$243</td>
</tr>
<tr>
<td>Rotavirus immunization</td>
<td>$375</td>
</tr>
<tr>
<td>Malaria vector control</td>
<td>$1,411</td>
</tr>
<tr>
<td>Cholera immunization</td>
<td>$3,405</td>
</tr>
<tr>
<td>Oral rehydration therapy</td>
<td>$3,832</td>
</tr>
</tbody>
</table>

Source: “The Nepal National Vitamin A Programme: Cost Estimates for 2000 and Alternative Configurations of a Nationwide Program”, Dr. John L. Fiedler, Partnerships for Health Reform, 14 March 2001, except for the NVAP cost which was recalculated based on a different estimate of no. of death averted.
Most important, the public’s access to health services had grown substantially with the services offered by FCHVs. Notwithstanding the gradual formation of 3,912 sub-health posts, one for each village, health services were accessible by only 45% of the population in 1998. The ubiquitous presence of these volunteers had broadened the reach of families to health information and in fact, a number of new health services, including the treatment of acute respiratory infections.

8.3 Community-based ARI treatment programme

The FCHVs’ performance in vitamin A supplementation and later, in deworming, had engendered greater trust in their ability to fulfill more complex duties. With training conducted by MOH and partly, by NTAG, the volunteers in 18 districts had by 2002 learned how to use a stopwatch supplied by UNICEF to conduct breathing test, and administer cotrimoxazole paediatric tablets to treat ARI cases, by far the biggest killer of children under five in Nepal. Earlier, FCHVs were allowed only to refer ARI cases to health facility after danger signs were detected. On a pilot basis, a select group was trained in 4 districts to diagnose and provide case treatment. An evaluation conducted by MOH and WHO recommend-ed in 1997, the expansion of FCHVs’ “treatment model” throughout the country, albeit cautiously, to tackle frequent incidences of pneumonia in young children. Since then the scope of FCHVs’ services had been broadened from health promotion to capsule supplementation and now ARI treatment.

The additional duty contributed much to the empowerment of this group of women who were once at the bottom rung of the society by virtue of their gender. Their demonstrated potential for tasks that normally fell within the realm of medical science not only raised the volunteers’ confidence but also motivated them to go on. “After starting treating cases of pneumonia, I have become more popular!” quipped Nanlata Dangi, an FCHV for 12 years in Kaseni village, ward no. 4 of Morang District. “I have treated a total of 250 cases of pneumonia, and I feel I am really serving the community and saving children’s lives,” she added.

As an additional incentive, the MOH introduced a pilot cost recovery scheme in 10 districts that allowed FCHVs to sell selected drugs. FCHVs would initially receive free supply of cotrimoxazole paediatric tablets from health facilities, and then sell them to families after providing ARI case treatment. They would replenish their stock at cost price through a network of 10 wholesalers set up by Save the Children USA, and resell them at a higher

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margin as profit. That way, the FCHV would be compensated somewhat for the free
diagnosis she delivered.

9. Support to FCHVs

As NVAP progressed into a routine activity of primary health care, the question that became
increasingly critical was one of continued motivation, especially of the FCHVs. All 48,000 of
them had been trained dutifully to conduct capsule supplementation and nutrition education.
But how long could their goodwill last given a history of faltered interest among these
volunteers, as shown in the early days of the FCHV programme? It was the primary concern
of all partners, in particular, NTAG, the Nepalese NGO that had ventured deep into
mountains, over the hills and Terai to train as well as listen to voices coming out of the
grassroots. FCHVs needed incentives, even a token of appreciation, as much as support to
quietly deliver what few people would take on without monetary returns.

9.1 Endowment Fund

In the unflagging spirit of
innovation, the partners had
reinvigorated a long
forgotten idea: formation of
an Endowment Fund for
FCHVs, mooted in the early
days of the FCHV
programme. Building on the
current structure of
community engagement,
Village Development
Committees began to
earmark a small portion
from their annual budget, to
be used as a principal for
FCHV Endowment Fund
Savings Account. The
interest accrued, depending
on the amount, could go into
covering snacks for the
volunteers during supplementation day, as emergency loans, or even paying for a sight-seeing
trip to Kathmandu! Utilization of the interest would depend entirely on the nine FCHVs of
each village, who would select three representatives to manage the account for the group
under an Executive Committee, chaired by the VDC leader or Mayor of a municipality. The
principal would not be touched for any initiatives, however meaningful, such as creating a
dental clinic for communities as some FCHVs had aspired to do, but deposited in the bank to
grow into a bigger sum.

The fund marked the start of a serious effort to generate some sort of financial incentive for
the volunteers, who had not only taken on vitamin A and deworming, but also a range of other
routine services, including iron tablets supplementation, promotion of iodized salt and
gradually, case treatment and referral of acute respiratory infections (ARI), besides
conducting nutrition and health education.

With a start-up grant from a number of VDCs, the idea of the Endowment Fund began to take
shape in 2001. Amounts ranging from Rs 5,000 to Rs. 50,000 (the recommended sum) had
been set aside from the village government’s coffer for the FCHV savings account. More
than Rs 3,000,000 (approx. US$40,000) was raised in 243 VDCs so far, and in a manner that
characterized the advocacy spirit of NVAP, high-level endorsement was obtained from the MOH, Ministry of Local Development and the National Planning Commission. The leaders’ call to action had energized the initiative and an increased number of VDCs were showing interest. While the recognition for FCHVs’ contribution was unanimous, concerted efforts were still needed to translate it into solid commitment to the volunteers’ welfare, beginning with the Endowment Fund.

“This is the first time we have ever had a bank account. We feel very excited and proud about it,” said an FCHV in Banke District. “It’s not only me, but all FCHV feel great that our Village Development Committee has done something to improve our welfare,” said another FCHV in Ilam District.

“We need some indication from the VDC or district that they value our contribution to health, we will feel more committed to our task,” said another in Kathmandu.

10. Lessons Learnt

By end 2002, the NVAP had touched the life of nearly every child under five in Nepal with vitamin A and achieved a major milestone in micronutrient deficiency control. As it became a full national programme, delivering capsules twice a year regularly, the challenge was obvious: sustaining the high coverage nationwide and community’s involvement from now until vitamin A deficiency disorders was eliminated. The remarkable decline in Bitot’s spot and night blindness prevalence was direct indicator of the intervention’s success, and telling proxy to the researches’ conclusions: prevention of 23% - 30% mortality among children 6 – 59 months old.

The programme, with its strong social mobilization feature, was also the fruit of a close partnership between the MOH, NTAG, USAID, UNICEF and more recently, AusAid. As partner in this collaborative effort, UNICEF had provided millions of capsules, supported training, promotional activities and coverage evaluation surveys over the years. It also enlisted substantive financial contribution of donors such as the Canadian CIDA, the Micronutrient Initiative, as well as worked with a number of INGOs – John Snow Incorporated, Helen Keller International, VITAL and the US-based National Family Health Programme, who each played a role in making NVAP a people’s programme, one that was fulfilling a critical need and right of Nepalese children and women.

Graph 30: Contributions of major NVAP partners, 1999 – 2004, Nepal

The high coverage sustained over the decade has proven that a national programme can work when community ownership is strong, its operational quality regularly monitored and the services consistent. NVAP instills ownership in communities by the manner which the programme is positioned and marketed. It is a “Children’s Programme”, not that of the MOH or NTAG or USAID or AusAID or UNICEF, and it does not belong to anybody but one’s children and grandchildren. NVAP focuses singularly on children; it is being promoted precisely this way.

The communication messages sent out over the years are consistent with the theme. They address what is utmost in the mind of each parent – be it an ordinary mother, a district official, or a village leader – “the health and wellbeing of my children”. The benefits of prevention from infectious diseases and robust growth are highlighted round after round to the point that demand for capsule supplementation, after traversing the growth curve, now reaches a high plateau.

The public communication messages are, most importantly, kept simple and straightforward. Unlike a number of public health media spots, the NVAP public service announcements do not attempt to explain the intricacies of vitamin A deficiency disorders within 30 seconds or one minute. The messages that go out of radio and TV, as well as through local promotional activities, emphasizes vitamin A as a boon to children’s health, and the identity of FCHV as the deliverer of capsules in Baisaikh (April) and Kartik (October). The simplicity of the pitch, packaged in creative and attractive ways, targeting clearly the common concerns of parents, enhances message acceptance and retention efficiently.

The public’s right to knowledge is fulfilled by riding on the existing FCHV health education mechanism. Mothers’ group meeting becomes the launch pad for daily discussions among caretakers, where words will spread to a wider group of caretakers. Collective acknowledgement tends to generate the pressure to act, when even a mother who does not know exactly how vitamin A works will take her children to the FCHV for the capsule.
But all communication and marketing tactics, however effective, will not yield genuine public support if the service is irregular, and its quality falling short of expectation. A major element of NVAP's success is the consistency of supplementation service that takes place invariably, year after year, on Baisaikh 6 – 7 and Kartik 2 – 3, right from its inception in 1993. There have been potential disruptions such as conflicts, national strike, elections, flood, landslides and localized earthquakes around these dates. But not once has NVAP, and most importantly, the FCHVs, changed the scheduled date and time of supplementation. The service has been so regular that it is winning public trust and credibility as a programme that truly serves children, whether in good times or bad.

The regularity of service is matched by the consistency of capsule supplies, right from the moment the order is placed to the Micronutrient Initiative through UNICEF's Supply Division in Copenhagen, to its arrival in Kathmandu, distribution to the MOH Regional Medical Stores, and on to the district health posts, village sub-health posts and finally, to the FCHVs. The distribution process, crucial to the quality implementation of NVAP is not, however, a formula that can be automatically and neatly applied. While the distribution chain is clearly established, the operation itself can be compromised by lapses and oversights. Much of NTAG's preoccupation after a district “graduated” from training has been to ensure that capsules are delivered to FCHVs two weeks before the supplementation day. Even FCHVs themselves refuse to go around reminding parents of the day when they do not receive the capsules in time. Public demand has become so strong that many FCHVs say they will be “ashamed” if vitamin A capsules are not delivered as expected.

The on-going Mothers Group Meeting is the launch pad of daily discussions of health issues among caretakers, where words will spread to a wider group of caretakers. It helps build up a critical mass of support for NVAP.

Just how much could public expectation continue to provide checks and balances to the health system to ensure consistent delivery of capsules is certainly an area still to work on. In many districts, the planned government bi-annual Review Meeting where FCHVs are to receive capsules and deworming tablets in advance has not taken place. Up until now, NTAG has been managing the process by calling every district before each round to monitor distribution, and identify and resolve operational hitches. Separate delivery of capsules is undertaken for FCHVs in a great number of districts where no Review Meetings are held or
scheduled. There are instances when special dispatches of vitamin A are arranged via military helicopter on its routine flight to remote districts such as Humla and Jumla simply because the scheduled supply has not shown up.

While the FCHVs are always there in their ward, and their dedication has ensured supplementation can happen, the supply of capsules is an issue beyond their control. For even as the coverage has reached impressive height, the programme in all respects, does not remain static. Implementation issues call for dynamic responses and problem solving at every step and at every level. Continued supervision of the process is crucial to NVAP’s long-term credibility and viability.

Responsiveness of the health system as a whole will be key to maintaining public perception and acceptance of the programme and its health benefits. The social mobilization process, instituted through the three-tier training, has buttressed the support structure for NVAP. But the locus of management ultimately lies with the public health sector, not the NGOs, education sector or others, even though they are important partners who contribute to NVAP’s overall success.

The expansion of NVAP by phase has paved the way for the transfer of the programme from NTAG into local management, the district health office, in particular. Batches of districts that “graduated” from training are given time to adapt to a new programme in the absence of NTAG’s direct coordination, until NVAP reaches every corner of the country end 2002. The time invested has allowed the programme’s modus operandi to sink in, and become an integral part of routine public health services. The process has also allowed NVAP to take root in the face of a galaxy of barriers, such as poor morale of health staff, the lack of accountability, etc. common among public health programmes in developing countries.

The clarity of objectives and operational strategy, neatly worked out from the start, provides the formula by which NVAP is implemented and expanded. However, the programme can by no means be expected to run on its own even as the formula is applied. Continued management of not only capsule supplies but also NVAP’s stalwart: the FCHVs, is crucial to sustaining high coverage in the future. Strong grassroots ownership is closely tied to the performance of FCHVs who serve as a conduit between the community and the health system. The volunteers are, most often than not, waging a lonely battle and left on their own to tackle the needs and demand of their own community. The health system’s responsiveness, at least to this group of women, is vital to sustaining their motivation to perform.

“We need more training. We used to have review meeting twice a year, and it is not consistent these days. This type of training is our source of inspiration, it is useful to our community and relevant to our work,” said an FCHV in Parbat District.

“Supervisors from the health post/DHO should attend the Mothers’ Group meeting to understand what is going on,” said an FCHV in Kathmandu.
“If Health Post In-charge can supervise the Mothers’ Group meeting, then all the mothers will be more attentive and will take the health issues even more seriously,” said an FCHV in Ilam District.

“We are working hard but nobody really takes note. Performance evaluation should be carried out,” said an FCHV in Lalitpur District.

The gradual disappearance of xerophthalmia among young children rings a convincing tone that vitamin A supplementation is working. But the FCHVs will continue to need encouragement and assistance from the health system, the district and village authorities. The road to eliminating vitamin A deficiency disorders will be strewn with high hurdles if the volunteers’ motivation is neglected, allowed to slide over time and turn toward dejection. The growth of the Endowment Fund is critical, so is the resumption of the FCHV review meetings, ensuring capsules will arrive and addressing operational issues when FCHVs gather biannually. And these are the least that local authorities can do to preserve the energy and strength of this impressive voluntary force.

“The groundswell of support for the programme, like vitamin A’s might for death prevention, does not happen by chance,” said Ram Shrestha, Director of NTAG, who received the prestigious Best Practices in Global Health Award, an honor conferred by the Washington-based Global Health Council in 2000.

“The sinews of NVAP were its layers of community building blocks, and the force that binds lies in the values created, the knowledge of nutrition for health, the value for FCHVs’ tireless participation, which multiplies into a greater number of lives saved. And what value was greater than preventing a life from needless suffering and death?” said the man who dedicated his whole life to promoting the capsule and nicknamed the ‘Vitamin A King of Nepal’.

“But the continued ‘maintenance’ of this programme, ensuring its quality, is key to sustaining the NVAP brand in the clients’ mind for a long, long time, until vitamin A deficiency is eliminated from Nepal”
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>AMN</td>
<td>Auxiliary health worker</td>
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<tr>
<td>ANM</td>
<td>Auxiliary Nurse Midwife</td>
</tr>
<tr>
<td>ARI</td>
<td>Acute Respiratory Infection</td>
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<tr>
<td>CHD</td>
<td>Child Health Division</td>
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<tr>
<td>DDC</td>
<td>District development committee</td>
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<td>DHS</td>
<td>Department of Health Services</td>
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<tr>
<td>DHO</td>
<td>District health officer</td>
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<tr>
<td>DPHO</td>
<td>District public health officer</td>
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<td>FHD</td>
<td>Family Health Division</td>
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<td>EPI</td>
<td>Expanded Programme for Immunization</td>
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<td>FCHV</td>
<td>Female community health volunteer</td>
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<td>HEICC</td>
<td>Health Education, Information and Communication Center</td>
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<td>His Majesty’s Government of Nepal</td>
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<td>Health post</td>
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<td>Non-government organization</td>
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<td>INGO</td>
<td>International non-government organization</td>
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<td>IU</td>
<td>International Unit</td>
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<td>IVACG</td>
<td>International Vitamin A Consultative Group</td>
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<td>JHU</td>
<td>John Hopkins University</td>
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<td>Maternal and child health worker</td>
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<td>Management Information System</td>
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<td>Ministry of Agriculture</td>
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<td>Nutrition Section</td>
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<td>OPV</td>
<td>Oral polio vaccine</td>
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<td>NVAP</td>
<td>National Vitamin A Deficiency Prevention and Control Programme</td>
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<td>PHCO</td>
<td>Primary Health Care Office</td>
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<tr>
<td>SHP</td>
<td>Sub-health post</td>
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<td>TU</td>
<td>Tribhuvan University</td>
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<td>VAD</td>
<td>Vitamin A Deficiency</td>
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<td>Village development committee</td>
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<td>VHW</td>
<td>Village health worker</td>
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<tr>
<td>WDO</td>
<td>Women’s Development Officer</td>
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<td>United Nations Fund for Population Activity</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>WHO</td>
<td>World Health Organization</td>
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</table>
Nepal National Vitamin A Deficiency Control Programme

Guidelines for Implementation

Nutrition Section
Child Health Division
Department of Health Services
Ministry of Health
His Majesty’s Government of Nepal

(Revised January 1996)

November 1992
Kathmandu, Nepal
INTRODUCTION/RATIONALE

Since 1988 three vitamin A research studies based on different assumptions and approaches have been conducted in Nepal. The National Nutritional Intervention Project Sarlahi, NNIPS I study, conducted through Johns Hopkins University in collaboration with Nepal Netra Jyoti Sangh (NNJS), determined a 30% reduction in mortality among pre-school children with a high dose supplementation of Vitamin A every 4-6 months.

The ARI intervention trial in Jumla found a considerable risk reduction in children after receiving a single high dose vitamin A supplement. The Vitamin A Child Survival Project (VACSP) conducted through the University of Michigan in collaboration with NNJS, examined cost effective interventions at the district level for the recommendation of appropriate implementation strategies for a national vitamin A program.

In accordance with two earlier surveys, the National Blindness Survey, 1981 and the Xerophthalmia Study, Tribhuvan University, 1981, these recent studies also found a consistently high prevalence of vitamin A deficiency in their study sites. The prevalence of vitamin A deficiency is not uniform across the country. An unacceptably high prevalence of vitamin A deficiency is indicated throughout the terai, except for Chitwan, and in the hills of the Far and Mid-western regions of Nepal. This calls for a program of immediate action.

The date generated during the implementation of the three studies was discussed among His Majesty’s Government (HMG), national and international agencies during a workshop held in Kathmandu on February 11-12, 1992. During the workshop HMG expressed its commitment to initiate the implementation of a national program for the prevention and control of vitamin A deficiency in the country. It was clear that this task would require the involvement of different sectors and ministries, with the Ministry of Health (MOH) taking the lead role in the implementation of vitamin A program activities.

OBJECTIVES

The primary objective of the National Vitamin A Deficiency Control Program is to reduce child mortality and prevent xerophthalmia through supplementation of children 6-60 months with high-dose vitamin A capsules and to reduce vitamin A deficiency to a level that no longer constitutes a public health problem.

The secondary objective is to bring about a change in behavior so as to increase dietary vitamin A intake of the target group through nutrition education, increased home production, consumption and preservation of vitamin A-rich foods, proper breastfeeding and child feeding practices and increased maternal literacy.

STRATEGY

Three program implementation strategies have been identified to address vitamin A deficiency in Nepal:

1. Distribution of high-dose vitamin A capsules to children on a semi-annual basis as a preventative measure in priority districts.

2. Nutrition education, increased maternal literacy, promotion of improved breastfeeding and child feeding practices, and increased production and consumption of vitamin A-rich foods.

3. Training of health care providers in vitamin A case treatment for xerophthalmia, measles, severe malnutrition and prolonged diarrhea. Provide an adequate supply of
vitamin A capsules to all hospitals, health centers, health posts, sub health posts and clinics throughout the country.

The national program implements the three strategies concurrently with the expectation that the capsule distribution will be gradually phased out as the long term strategy takes effect.

In accordance with the recommendation of the vitamin A workshop and the National Health Policy of HMG of Nepal, the control of vitamin A deficiency will be achieved through a multi-sectoral approach which will mobilize not only different ministries of the government, but also various non-governmental organizations (NGOs and INGOs) and donor agencies.

ACTIVITIES

BASIC ACTIVITIES

1. High dose supplementation in 32 priority districts through mass distribution of vitamin A capsules twice a year according to the following schedule:

   Baisakh (March/April) during the peri-measles season and before the beginning of the high risk season for xerophthalmia.

   Kartik (October/November) prior to the harvest season, to boost vitamin A stores for the acceleration in growth that often follows.

   • Children 6 to under 12 months of age – one oral vitamin A dose of 100,000 IU two times per year during the capsule distribution campaign.

   • Children 12 to 60 months of age – one oral vitamin A dose of 200,000 IU two times per year during the capsule distribution campaign.

   • Special emphasis will be given during the campaign for severely malnourished children in order to be sure they will receive one megadose of vitamin A, and that their mothers will receive special attention from the Female Community Health Volunteers (FCHVs).

   • Women immediately following child birth, or as soon as possible up to six weeks post-partum, should be given one oral dose of vitamin A 200,000 IU.

2. Nutrition education activities and promotion of home gardening to be carried out utilizing various communication media, including community-level health workers, and agricultural extension workers.

   • The target population for the nutrition education activities will be all the mothers of children 6-60 months, as well as pregnant and lactating mothers. This population will also be the priority target for adult literacy and post-literacy activities.

3. Case treatment in all 75 districts with vitamin A capsules for xerophthalmia, measles, severe malnutrition and prolonged diarrhea, in accordance with WHO/UNICEF/IVACG guidelines.

   For treatment of children with these illnesses, the following protocols for the use of vitamin A should be observed:

   Dosage:
   Children 6 to under 12 months receive 100,000 IU of vitamin A.
Children above 12 months receive 200,000 IU of vitamin A

**Treatment Protocols:**

**Xerophthalmia**
(Nightblindness, Bitot’s Spots, Keratomalacia, etc.)
- Three doses
  - One dose upon diagnosis
  - One dose the following day
  - One dose one month later

**Measles**
- Two doses
  - One dose upon diagnosis
  - One dose the following day

**Prolonged diarrhea**
(>14 days duration)
- One dose
  - Immediately upon diagnosis

**Severe malnutrition**
(Undernutrition)
- One dose
  - Immediately upon diagnosis

**IMPLEMENTATION**

The program will be implemented through the existing infrastructure of the Primary Health Care (PHC) network of the District Health Offices (DHO) (i.e. Health Posts, Sub-Health Posts, Village Health Workers (VHWs), Maternal Child Health (MCH) workers and Female Community Health Volunteers (FCHVs) and will become part of their routine activities. At the district level, NGOs and other organizations working on nutrition or vitamin A related activities will also be involved as facilitators to the PHC system collaborating with the District Health Office.

The key personnel for delivery of the vitamin A package to the community are the FCHVs, assisted by VHWs and MCH workers.

1. **Area:**

   The strategy proposed by the MOH until July 1997 is to cover 32 districts (See Annex I). The selection of districts will be done according to the following criteria:
   
   - Prevalence of xerophthalmia
   - Presence of FCHVs already trained in the district
   - Presence of active NGOs and other projects to support the program in the district
   - Size of target population
   - Activities of other ministries which are complementary to the vitamin A program

2. **Training:**

   Vitamin A and nutrition education training will be integrated into the regular PHC training of the MOH. Three levels of training will be undertaken: District Level, Health Post Level and Community (FCHV) Level. Training will be done in successive steps with the district level coordinating the multisector integration of vitamin A activities. The Health Post In-charge will give training to the Health Post staff; and the Health Post staff will train the VHWs and FCHVs.

   The MOH will conduct and supervise trainings at all the levels with the support of the Technical Assistance Group (TAG) and related Ministerial personnel. The TAG is responsible for giving the introductory and refresher trainings at the district, health
post and community (FCHV) levels. The TAG provides assistance to the MOH during the regular FCHV refresher trainings. The TAG also supervises and/or carries out monitoring and evaluation activities which are described below. It is intended that the TAG provide assistance to the MOH not only in conducting trainings but as needed, and to develop the capacity of MOH staff to administer and maintain the National Vitamin A Program.

ASSESSMENT, MONITORING, AND EVALUATION

Central to the approach to establish a viable National Vitamin A Deficiency Control Program in Nepal is the need to assess the risk for xerophthalmia among some districts within the country. This will help the Ministry of Health to plan program expansion in the future, and ensure available resources are best utilized in the most cost effective way.

This task will be addressed by carrying out surveys in up to fifteen different districts to determine the magnitude of xerophthalmia. The assessment will take place over a five month period, April-August, which has been demonstrated to be the high risk time of year for xerophthalmia. Within three years a total of 15 districts can be assessed. Expansion of program activities to the districts with high prevalence of xerophthalmia will follow the assessment. By the end of the second year, ten districts (Bardiya, Kailali, Kanchanpur, Surkhet, Achham, Doti, Dadeldhura, Dolpa, Humla And Bajhang) had been surveyed for the prevalence of xerophthalmia. The data was used to help prioritize the order which districts are included in the National Vitamin A Program.

Monitoring is needed for assessing actual coverage of the program as well as taking timely corrective actions to improve implementation. The current monitoring system focuses on monitoring the coverage of the capsule distribution and nutrition education activities through three separate monitoring components:

1. Monitoring the capsule distribution during the days of the campaign. The Supervisors’ Monitoring component is conducted during the two days of the capsule campaign by supervisors from the MOH primary health care system, TAG and NGOs. During the campaign days the supervisors visit as many FCHVs in their wards as possible. Supervisors are distributed among all districts included in the distribution.

2. Monitoring coverage rates by tabulating FCHV vitamin A registers.

3. Evaluating the coverage of the distribution through a survey of a random 5% sub-sample of the total number of wards currently being covered by vitamin A capsule distribution. This mini-survey provides invaluable programmatic feedback and information for policy-makers, program managers and the donors. The mini-survey enumerates FCHVs, mothers, and health post in-charges. FCHVs are interviewed to evaluate program inputs such as training, logistics and supervision. For mothers, the monitoring system assesses whether a child received a capsule, the mother’s knowledge about the National Vitamin A Program, compliance and demand for capsules, prevalence of nightblindness and where the mothers learned of the campaign. Health Post in-charges are interviewed to evaluate if treatment protocol cards have been received and used, and to determine program inputs such as training, logistics and vitamin A capsule supplies.

MANPOWER DEVELOPMENT
**Workshops**

Before implementation of the program in new districts, an annual planning meeting will be held in the central level to orient the multisectoral partners to the strategy of the program. The outcome of the workshop will be to deliver a well coordinated program package to the district. Similarly, a district level planning meeting will be held to orient the concerned partners to deliver the coordinated package program to the communities. An annual meeting of the central and district levels will be held to review program performance and to take timely corrective action for program implementation and multisectoral coordination.

**Training of Trainers**

Training of trainers at central level will be organized as necessary to orient MOH staff and NGOs on the program activities.

To increase collaboration, supervision and effectiveness of vitamin A activities within the districts, a training course within the country will be arranged. Participants will be identified by the MOH from those persons who are involved in vitamin A activities.

**SUPPORT TO THE NUTRITION SECTION/CHD/DHS**

A Health Education, Information, and Communication Center has been established in the DHS/MOH. HEICC will be responsible for reviewing, modifying and producing education materials.

The Nutrition Section/CHD will be the focal point for the National Vitamin A Program. It will be supported by: Logistics Division, HEICC, NHTC, MIS, and FHD-FCHV.

Staff of the MIS section will work in close collaboration with the NGOs or supporting agencies in the collection and analysis of data from the monitoring and assessment activities.

**ROLE OF NGOs AND OTHER FIELD PROJECTS**

As elaborated in HMG’s Eighth Five Year Plan (1992 – 1997), the Government will rely more on initiative, enterprise and innovation in the private sector and non-governmental organizations. In line with this approach the MOH will look for involvement of NGOs and other field projects to support the National Vitamin A Program.

The major contribution of NGOs is in introducing small scale innovations which can become self-perpetuating and sustainable, providing multiple benefits. These projects can serve as pilots for which follow-up funding can be provided by the government or by donors. All the NGOs which are willing to follow the Guidelines set by the NS/CHD/DHS/MOH will be given autonomy to operate in priority areas. Some NGOs and projects have developed extensive and effective delivery networks that could be used as entry points for distribution of vitamin A capsules, to create awareness and educate mothers and caretakers about the importance of vitamin A for child health and to increase production and consumption of foods rich in vitamin A and other micronutrients.

**NGO ACTIVITIES**

A resources and adequate field infrastructure for delivery of services become available, the following vitamin A activities are recommended.
1. Promotion of maternal literacy, as far as possible, coordinating with the District Education Offices.

2. Strengthening prevention and treatment of vitamin A related diseases such as prolonged diarrhea, malnutrition, measles, and xerophthalmia. Promotion of measles immunization should also be included.

3. Expansion of vitamin A supplementation to older children (61 to 120 months) as recommended by the vitamin A workshop.

4. Promotion of food production and preservation activities to increase the availability and consumption of vitamin A-rich foods by the target population.