Nepal Child Survival Case Study

Technical Report

BASICS II

MOST

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UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
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Abstract
Nepal has a long history of successful child survival and reproductive health programs that were implemented at scale and at the community level. The *Nepal Child Survival Case Study: Technical Report* reviews the processes and events that influenced expansion of the programs and achievement of results in several technical areas, including pneumonia treatment, control of diarrheal diseases, vitamin A supplementation, immunization, malaria control, and family planning. This report provides an overview of the context and evolution of programs; trends in mortality and malnutrition in Nepal; a description of intervention programs; a discussion of cross-cutting components such as the use of female community health volunteers, behavior change communications, information systems, and logistics and supplies; and lessons learned. The report is part of a package of materials intended for adaptation and replication in other countries.

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Photo credit: Nepal. A Traditional Birth Attendant (TBA) with her two children in an extremely remote area. Photographer: Caroline Jacoby.

BASICS II
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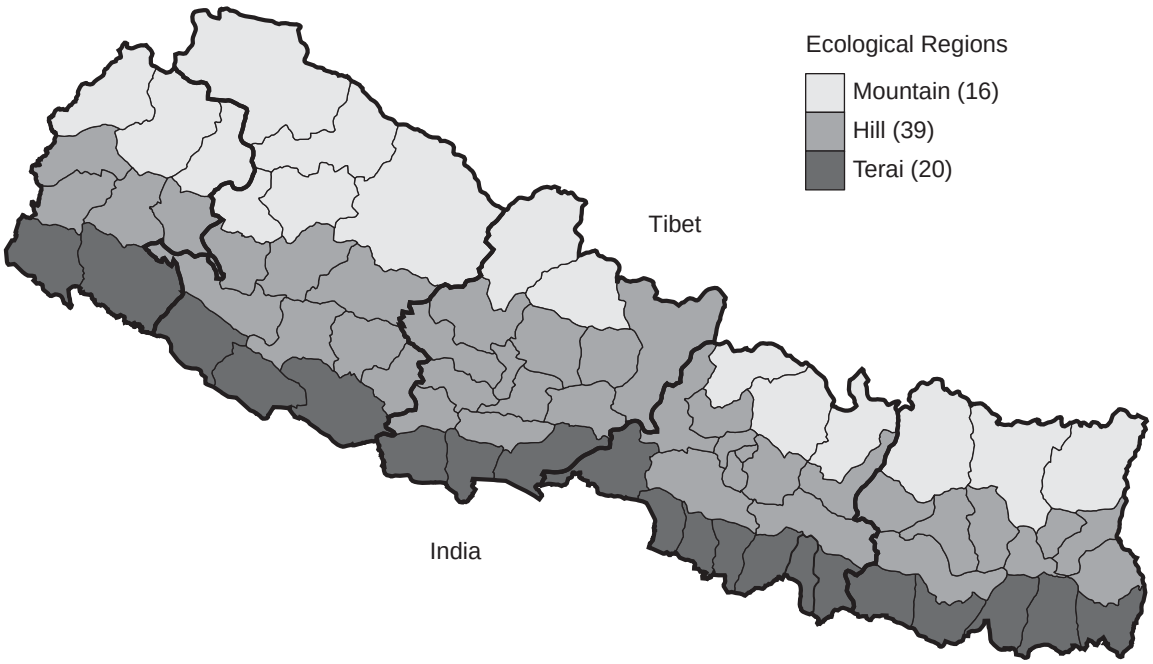
Nepal


Ecological Regions
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This report captures two lines of work undertaken during November 2002–November 2003 on the topic of child survival in Nepal. One line of work focused on secondary analysis of infant and child mortality trends. The investigators were J. Sullivan, S. Thapa and collaborators, S. Rutstein and collaborators, T. Taylor, and R. Houston. The reviewers of the mortality analysis papers included S. Becker and T. Pullum. The second line of work focused on capturing lessons learned from the evolution of child survival intervention programs, and in particular, how to work at scale with high-impact interventions. This team included M. Taylor, R. Houston, L. Brown, M. Siddiqi, E. Rossi, and M. Lediard. Their work was reviewed by P. Dawson, T. Pullum, R. Steinglass, D. Kraushaar, I. Narayanan, and S. Diène. T. Sanghvi synthesized the results from the mortality analysis and information from the program review to prepare this report. K. Breese provided logistics and program assistance and drafted the annotated bibliography.

A large number of dedicated public health workers in Nepal worked tirelessly to achieve the improved conditions of children's health and survival that is described in this report. A number of external agencies supported their efforts and the staff of these agencies played an important role.

Acronyms

ABER	Annual Blood Examination Rate
AD	Auto-disable
ADRA	Adventist Development and Relief Agency
AIDS	Acquired Immunodeficiency Syndrome
ARI	Acute respiratory infection
BASICS II	Basic Support for Institutionalizing Child Survival II
BCHIMES	National survey
BCC	Behavior Change Communications
BCG	Bacillus of Calmette and Guerin (tuberculosis vaccine)
CBAC	Community-based ARI and CDD
CB-ARI	Community-based Acute Respiratory Infection
CB-IMCI	Community-based Integrated Management of Childhood Illness
CDC	Centers for Disease Control and Prevention
CDD	Control of Diarrheal Diseases
CFR	Case Fatality Rate
CHD	Child Health Division
CHL	Community Health Leader
CHV	Community Health Volunteer
CHW	Community Health Worker
CPR	Contraceptive Prevalence Rate
CRS	Contraceptive Retail Sales
DDC	District Development Committee
DFID	Department for International Development
DHS	Demographic and Health Survey
DoHS	Department of Health Services
DPHO	District Public Health Office/Officer
DPT	Diphtheria, Pertussis, and Tetanus vaccine
EDCD	Epidemiology and Disease Control Division
EHP	Environmental Health Project
EPI	Expanded Program on Immunization
EWARS	Early Warning and Reporting System
FCHV	Female Community Health Volunteer
FHD	Family Health Division
FP	Family Planning
FPAN	Family Planning Association of Nepal
FPLM	Family Planning and Logistics Management
GAVI	Global Alliance for Vaccines and Immunization
GON	Government of Nepal
GTZ	German bilateral development agency
HF	Health Facility
HIMD	Health Institution and Manpower Development Division
HIV	Human Immunodeficiency Virus
HMG	His Majesty's Government
HMIS	Health Management Information System

HP	Health Post
IBDC	Insect-borne Disease Control
ICC	Interagency Coordinating Committee (on immunization)
ICHP	Integrated Child Health Program
ICP	Inventory Control Procedures
IEC	Information-Education-Communication
IMCI	Integrated Management of Childhood Illness
IPPF	International Planned Parenthood Federation
IUD	Intrauterine Device
JNSP	Joint Nutrition Services Project
JSI	John Snow, Inc.
KfW	German development bank
LMD	Logistics Management Division
LMIS	Logistics Management Information System
LSIP	Logistics System Improvement Plan
MCH	Maternal and Child Health
MG	Mothers' Group
MOLD	Ministry of Local Government
MNT	Maternal and Neonatal Tetanus
MOF	Ministry of Finance
MOH	Ministry of Health
MOST	USAID's Micronutrient Project
NCDDP	National Control of Diarrheal Diseases Program
NCP	National Commission on Planning
NCP	*Nun Chini Pani* (homemade oral rehydration solution)
NDHS	Nepal Demographic and Health Survey
NEPAS	Nepal Pediatric Association
NFCC	Nepal Fertility Care Center
NFFPHS	Nepal Fertility, Family Planning, and Health Survey
NFHS	Nepal Family Health Survey
NGO	Non-governmental Organization
NHTC	National Health Training Center
NID	National Immunization Day
NMEO	National Malaria Eradication Organization
NMIS	Nepal Management Information System
NMSS	Nepal Micronutrient Status Survey
NNS	Nepal Nutrition Survey
NORAD	North American Aerospace Defense Command
NTAG	National Technical Assistance Group
NVAP	Nepal Vitamin A Program
NWO	Nepal Women's Organization
ORS	Oral Rehydration Solution
ORT	Oral Rehydration Therapy
PFAD	Planning and Foreign Aid Division
PHC	Primary Health Center
PSSN	Network of private medical practitioners
RAM	Repair and Maintenance (of surgical contraception equipment)
RCP	Radio Communication Project

RRT	Rapid Response Team
RSO	Regional Surveillance Officer
SDP	Service Delivery Points
SHP	Sub-Health Posts
SFR	Slide Falciparum Rate
SPR	Slide Positivity Rate
TAG	Technical Assistance Group
TFR	Total Fertility Rate
TT	Tetanus Toxoid
UCI	Universal Childhood Immunization
UN	United Nations
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VBDRTC	Vector-Borne Disease Research and Training Center
VDC	Village Development Committee
VHW	Village Health Worker
VAC	Vitamin A Capsule
VAD	Vitamin A Deficiency
VSC	Voluntary Surgical Contraception
WHO	World Health Organization

Executive Summary

The report first summarizes the program context and evolution of health activities; mortality trends and associations based on analyses of DHS data; descriptions of selected programs by intervention-family planning, malaria control, immunization, diarrheal disease control/oral rehydration therapy (ORT), vitamin A, and pneumonia treatment; and cross-cutting components. It finally describes the lessons learned about major program influences that determined how programs evolved. The documentation team also produced a more detailed report on program evolution, an annotated bibliography, and a CD-ROM containing selected tools and various reports.

This review of child survival programs in Nepal was conducted for the following reasons:

- Nepal has a long history of successful child survival and family planning program implementation;
- Programs have succeeded at national scale despite significant economic and geographic challenges;
- Interventions have strong community-based components;
- The Demographic and Health Surveys (DHSs) offered a parallel opportunity to review factors affecting mortality; and
- The United States Agency for International Development (USAID) was reviewing similar programs in other countries, thereby providing the opportunity to compare and contrast experiences.

Processes and events that influenced the expansion of the program and achievement of results were reviewed. The scope covered acute respiratory infection (ARI), vitamin A, immunization, family planning, diarrheal disease control, malaria, water and sanitation, infant feeding, polio eradication, control of iodine deficiency disorders, and maternal health interventions—all over a period of 40 years. A series of study questions (Sanghvi et al., 2002) developed for multi-country documentation and adapted for Nepal established the framework. A structure was developed with and for the team in Nepal to ensure consistency in the review of each program. The methodology involved developing timelines and identifying turning points and factors that led up to milestones. Conclusions were drawn on the basis of common factors across programs that presented as barriers or as facilitators. A special effort was made to clearly identify experiences that had relevance to other countries.

Pneumonia Treatment

This intervention program was also initiated following research and pilot projects done in Nepal. The community component was found to be critical but required a comprehensive approach requiring integrated training, close monitoring of quality of care, and good logistic support. The program proceeded with permission from the Government of Nepal (GON), but without an explicit policy for community workers to treat pneumonia cases with antibiotics. This program benefited from a strong national task force. Now, it is synergistic with the vitamin A program in empowering Female Community Health Volunteers (FCHVs) and gaining community support. The proportion of pneumonia cases treated improved substantially, with health facilities (HFs) and community health workers (CHWs) playing important roles.

Vitamin A

Nationwide vitamin A supplementation was initiated as a result of two key studies on child mortality in Nepal. The program was implemented for the GON by a local Nepal non-governmental organization (NGO), the National Technical Assistance Group (NTAG). The strategy, which focused on training and support, resulted in significant empowerment and community ownership for a pre-existing but weak cadre (FCHVs). The program was scaled up in phases that covered groups of new districts. Each district was given intense support for the first two distribution rounds and continuing oversight for capsule logistics. One unique characteristic of this program was the use of monitoring data for program advocacy; use of data in this way helped obtain resources and motivated staff to maintain high coverage.

Immunization

The national immunization program implemented global recommendations early. By 1988, all districts, with strong donor support, were engaged in the Expanded Program on Immunization (EPI). Initially, the program received its primary support from donors; as the program evolved, its primary supporter became the government. The program developed vertically and achieved good rural outreach. It involved extensive training and logistics to manage the cold chain and outreach, with coverage—except that for measles and tetanus toxoid (TT)—reaching greater than 80% by 1990. However, following a major push to achieve global targets under Universal Childhood Immunization (UCI), and because of structural changes at the Ministry of Health (MOH), coverage later declined. The program is reportedly self-sufficient for diphtheria, pertussis, and tetanus vaccine (DPT), TT, and measles vaccines and supplies.

Control of Diarrheal Diseases

The MOH in Nepal adopted World Health Organization (WHO) guidelines early (1982) and moved from case management to prevention of dehydration deaths. The national program needed early logistic support for oral rehydration solution (ORS) packets, in addition to behavior change communications (BCC) activities for the use of home fluids. The program used a standard training approach with limited (and late) development of a community component. Two control of diarrheal diseases (CDD) components were implemented—ORT corners and salt-sugar-water or *nun-chini-pani* (NCP). These were not well received in that the degree of community acceptance did not seem to be high; this may have been due to inability to address incidence. ORT use levels did not increase beyond approximately 50%.

Malaria

Comprising one of the earliest health programs, malaria interventions were expanded as part of the global malaria control effort, and they achieved rapid success. The program engaged a large cadre of vertical workers (slide readers and sprayers) but was not sustained. Resources and political commitment declined as malaria indicators rose following a change from attempts at eradication to less ambitious goals. Recently, there have been renewed malaria control efforts and a change in focus.

Family Planning

The family planning program in Nepal was large and well-supported. It began in the 1950s, initially with the aid of NGOs, but was later operationalized through the government health

system. It had the full support of the royal family and government, with charismatic leadership in early years and throughout its evolution. The program involved a gradual shift in policy from sterilization camps to integrated reproductive health services, and later to a focus on birth spacing. More recently, the program moved toward greater community involvement. Over 25 years, contraceptive prevalence steadily increased.

Main Lessons Learned Across Programs

Community Level

Enabling factors at the community level included having simple and focused guidelines for the community and community-based workers to follow; participatory training and emphasis given to improving quality of care at the community level; "visible" success in the eyes of communities and providers; application of broad, resource-intensive social mobilization strategies using media, partnerships with other sectors, volunteers, and celebrity spokespeople; and mobilization of thousands from many sectors, building ownership to support and monitor activities.

National Level

Enabling factors at the national level were research in-country, often followed by pilot implementation; global priorities, leadership, and sustained flow of external resources for the introduction and expansion of programs; strong national leadership with access to resources and ability to get permission for technical innovations; and effective donor coordination.

Systems Level

Enabling factors at the systems level included the development of logistics management and information systems; good monitoring, based on routine data and on specialized systems; use of mechanisms that reliably got resources through to programs outside the main government channels; and the ability of some programs to influence or drive change in other programs.

In Nepal, there remains a sizable unfinished agenda—to maintain gains already made, to raise coverage with ORT and ARI treatment, and to address malnutrition and neonatal health.

1. Introduction

Nepal was selected as a site for documentation as part of the United States Agency for International Development's (USAID's) effort to document and accelerate large-scale programs for child health. Reasons for this choice include:

- Evidence that infant and child mortality in Nepal declined substantially in the past two decades;
- Nepal's long history of health sector investments that involved systems strengthening, communications and behavior change, and community approaches;
- Varied experience with community organization and community participation in child health activities, including community health agents—Female Community Health Volunteers (FCHVs)—performing community education, vitamin A supplementation, (limited) treatment, and referral as part of the health system;
- Substantial investments in child health by USAID as well as by the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), other bilaterals, and private foundations;
- Urgency for transferring lessons from more mature programs to currently under-invested components of child survival in Nepal (e.g., nutrition and neonatal health); and
- Importance of lessons for other countries from high-impact interventions in Nepal.

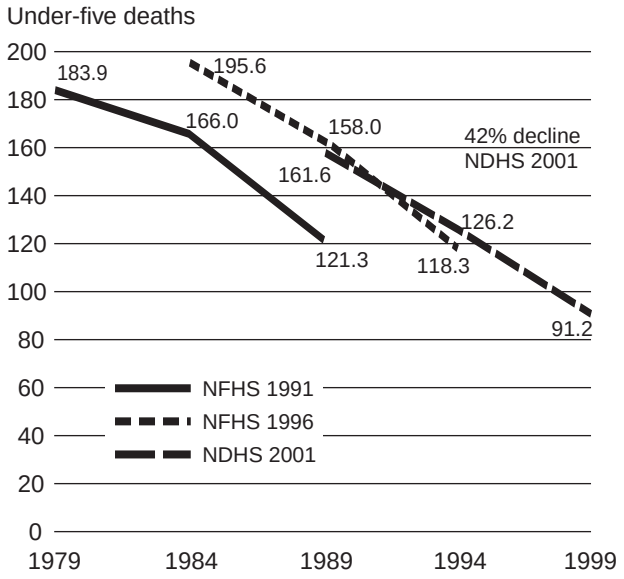
The Nepal case study is particularly relevant to other high-mortality countries because it has a very low level of development and a challenging environment. Nepal is one of the poorest countries in the world, with an annual per capita income of US $210 per year. Landlocked between India and China, Nepal is divided into five regions (Eastern, Central, Western, Mid-Western, and Far-Western), 14 zones, and 75 districts. Nine out of ten Nepalis live in rural areas with underdeveloped roads and transportation, communication, and water and sanitation. The majority of citizens rely on subsistence agriculture, but arable land is limited. Nearly 40% of Nepal's population lacks access to primary health care and education. Political changes, including a Maoist insurgency that has gained momentum since 1997 and a declaration of a state of emergency in 2001, have reduced the availability of basic services at the district level.[1]

Infant and under-five mortality are high at 64 per 1000 and 91 per 1000, respectively. In Nepal, children die from preventable or treatable causes that include neonatal problems (e.g., asphyxia, sepsis, and tetanus), pneumonia, diarrhea, and measles. Malnutrition remains a dominant underlying cause of death among Nepalese children; there has been less than a 1% reduction in stunting per year over the past two decades.

Although child morbidity and mortality rates remain high, Nepal has made notable progress in implementing programs for child health and family planning. In the past two decades, substantial declines occurred in both childhood mortality (see Figure 1.1) and fertility at the national level. From the early 1980s to the present, infant mortality in Nepal declined by 40% and under-five mortality by 42%, while coverage of a number of child health interventions increased. During the same time period, the total fertility rate (TFR) declined 20%, while the contraceptive prevalence rate (CPR) increased almost fourfold. While some of the improving health trends reflect secular trends, their magnitude and speed of change were likely associated with health behavior changes and higher coverage brought about by intervention programs.

1. For an overview of the government health service structure, see Annex A.

Figure 1. Trends in Under-Five Mortality, 1979–1999



Data collection and preliminary analysis for the documentation of Nepal's child survival and nutrition programs was conducted during November 2002–January 2003 by a team comprised of USAID, the Basic Support for Institutionalizing Child Survival (BASICS II) Project, and MOST (USAID's micronutrient program). The team reviewed documents and interviewed more than 75 key actors at the national and district levels.[2]

2. For a complete review of the team's work, see Taylor et al., 2003. *Nepal Child Survival Case Study: Program Evaluation and Lessons Learned*. BASICS II, MOST, USAID. This longer report provided the foundation for this report. Additional information was drawn from a WHO review of community-level treatment of acute respiratory infection (ARI) (WHO, 2002); a cost analysis of the Nepal vitamin A program (Fiedler, 2001); detailed substantive comments on a first draft of this report by P. Dawson (2003); and a summary of mortality studies that draw from secondary analysis of Demographic and Health Surveys (DHSs) by Houston and Brown, (2003). The *Nepal Child Survival Case Study* is accompanied by other products such as an annotated bibliography and CD-ROM containing reports and selected program implementation tools.

2. Program Context and Evolution

Significant external assistance to the health sector in Nepal began in the 1950s, with resources to fight malaria and other communicable diseases as well as to support basic health systems development. These initiatives reflected donor and government priorities at the time. By the mid-1960s, family planning became a priority, and over the following two decades specific child survival interventions received attention as both public health practice and development experience increased. By the early to mid-1980s, basic health services, including the Expanded Program on Immunization (EPI) and family planning (FP), were available in all 75 districts, although access was often limited to larger population centers.

During the 1980s and 1990s, there was considerable controversy over the relatively high funding levels for FP services—especially sterilization—compared to substantially lower levels of support for other public health initiatives such as combating infectious disease and maternal and child health programs. These issues continue to be important.

Turning Points and Catalysts

Changes in Nepal's development strategy influenced the country's health system and child survival programs as summarized below.

- **1982. The Basic Minimum Needs Policy.** This policy established the government's commitment to providing basic services, including primary health care to all populations in Nepal. While overall financing may have continued to favor higher level care and more privileged, urban populations, the policy nevertheless highlighted the principle of reaching all children and their families with proven interventions. The policy was also communicated to donors.
- **1987. Integration and the establishment of district public health offices.** Integration of all vertical health programs into one district public health office (DPHO) run by public health-trained managers was ordered by the Secretary of Health, and its implementation started immediately. This enabled rationalization of the role of health workers and their tasks; brought in additional support and efficiencies for systems strengthening; and allowed district-level leadership to make decisions. In the early days of the shift from vertical to integrated work, the motivation, skills, and accountability of vertical workers carried over into integrated work with good results.
- **1988. The initiation of the Female Community Health Volunteer initiative.** The FCHV initiative enabled effective entry of adult women into the health system and established the beginning of "local expert" links with communities, households, and, more recently, governance structures. The interface between provider and client became more intimate, more frequent, and more effective, even if limited to a few intervention areas with uneven implementation. While the program was brought rapidly to scale over the objections of donors, it has nevertheless produced some of the most impressive national-level results. A second turning point in the FCHV program came in the mid-1990s, when FCHV roles were expanded to include more visible service provision tasks, especially the distribution of vitamin A capsules and the treatment of ARI.
- **1990. The national scale achievement of universal childhood immunization by the Expanded Program on Immunization.** The EPI program demonstrated unequivocally to communities, the MOH, the central government, and donors that a primary health care program could reach

"everyone" (80% of the population) with modern services that include vaccinations. While enormous resources were required and dependence on mobile services was high, a large cadre of motivated and skilled health workers was deployed to difficult-to-reach areas and vulnerable populations. Technical problems such as cold chain maintenance and sterilization were viewed as challenges, with problems identified and addressed. The EPI program set the standard for having a results focus, plans for scale, and detailed strategies, by which other interventions would be judged.

- **1991–1993. The shift to democracy, the promulgation of the new national health policy, and the establishment of Sub-Health Posts.** The change to a new democratic, parliamentary government in 1990 introduced possibilities for participation and engagement of the voluntary (non-governmental organization) and private sectors on a larger scale and in a greater range of technical areas. This change expanded the range and quality of services and allowed national technical experts to function in new arenas in partnership with government colleagues. It also provided additional channels for applying resources to community-based programs. The new national health policy restructured the MOH at both central and district levels; began to define relationships with local governance authorities; and extended access to services through the Sub-Health Post (SHP) system. The relative stability of technical programs within the Department of Health Services (DoHS) allowed greater attention to the more challenging problem of providing quality services versus providing a large quantity of services. In tandem with community engagement through FCHVs, the SHPs created a tangible presence for primary health care services at the local level.
- **1993. The advent of behavior change communications.** The Radio Communication Project (RCP), begun in 1993, applied a rigorous, more behaviorally oriented approach to Information-Education-Communication (IEC). This project launched activities designed to change the behaviors of both providers and clients and aligned methods and channels more appropriately. Subsequently, more creative and effective components were developed within intervention programs such as vitamin A. For example, responsibility for developing locally appropriate materials shifted to district levels. Now, many programs have integrated communications strategies that support program objectives.
- **1993. The establishment of the health management and logistics management information systems.** The health management and logistics management information systems (HMIS and LMIS) cut across almost all programs and became useful tools, serving important integrating functions. Using HMIS data to identify problems and make improvements was established despite continuing issues with data quality. Central-level analysis and documentation practice may have contributed to the development of operational leaders. The LMIS, in conjunction with the Logistics Management Division (LMD), not only provided information to forecast and distribute commodities, but led to improved availability of stock in local health facilities. Previously, facilities had the reputation of stocking out for three months in any one year.
- **Post-1998. Potential turning points.** Recent actions may eventually be recognized as turning points, but cannot be adequately judged at this time. For example:
  - Laws and policies that protect women's rights have been implemented recently. These laws and policies are intended to broaden service availability, access, and, most importantly, quality.
  - Decentralization received a strong push in 1999 with the passage of the Local Self-Government Act. It is possible that meaningful community and district management of resources will therefore continue to grow, and that problems of inequity will be more effectively addressed.
  - Coordinating mechanisms for donors and the government have increased especially at the

technical program level in the last three years. These mechanisms may consolidate individual instances of effective coordination into broader efficiencies and better allocation of resources.

- The prevalence of HIV/AIDS increased significantly in recent years, although it is not yet at levels that over-tax the health system. With predictions of an exploding epidemic in India, however, it is not clear if or when high prevalence rates will occur.
- The Maoist insurgency, which has been gaining intensity since 1997, has disrupted services, particularly in more remote, rural areas. The conflict has not yet been reflected in declines in health service statistics or in health status measures; however, food and agricultural production have been affected, which in turn may lead to greater malnutrition of vulnerable populations such as women and children and to social instability. In addition, the local governance system has been affected. Local leaders and community members, teachers, and health workers are threatened, and extortion and intimidation are common practices. Hopes for decentralization and strengthening of local self-government may be negatively affected until there is a resolution.

3. Trends in Mortality and Malnutrition

Three nationally representative surveys of Nepal indicated substantial declines in infant and child mortality during the decades of the 1980s and 1990s. These surveys were conducted at five-year intervals:

- The Nepal Family Health Survey (NFHS) in 1991;
- The Nepal Family Health Survey (NFHS) in 1996; and
- The Nepal Demographic and Health Survey (NDHS) in 2001.

Each survey collected data on demographic events from female respondents, as well as maternal and child health characteristics for recent live births. Sullivan (2002) used the DHS data to estimate mortality trends for Nepal.

Trends in Mortality

A high TFR of 4.1 births per woman in the reproductive age group ensures that a large number of children are born in Nepal every year—860,000 by one estimate (SNL, 2002). Table 1 shows mortality rates as determined by the three surveys. The current estimates are for 1997–2001. The under-five mortality rate is 91 per 1,000, which means that 1 child in 11 dies before reaching age five. The infant mortality estimate is 64 per 1,000, with about 60% of infant deaths occurring in the neonatal period (39 per 1,000). An indication of the accuracy of the mortality estimates for Nepal is shown by the similar estimates for the same time periods in the different surveys.

Table 1 also shows recent mortality trends. The 2001 NDHS indicates that under-five mortality fell from 158 to 91 per 1,000 over a 10-year period (1987–1991 to 1997–2001), a decline of 42%. The decline in infant mortality is from 107 to 64 per 1,000, a decline of 40%. Mortality in the neonatal and post–neonatal periods declined to about the same degree, about 40%. These very substantial mortality declines in a short period of time speak well for the implementation of health programs in Nepal. The impact of other developments, such as women's education and access to information, also cannot be ruled out. Declines of this magnitude are not unique. Recent surveys in other countries indicate similar declines in under-five mortality over a 10-year period: Bangladesh (38%), Egypt (47%), and Turkey (39%). The decline in mortality was less dramatic in Uttar Pradesh, India (28%) and much less dramatic in Bihar, India (9%) (DHS/MACRO, 2002).

Specific program interventions can have a differential impact on the pace of mortality decline at different ages of childhood. For example, of every 1,000 newborns, 39 die within the first month of life (NDHS, 2001) from such causes as birth asphyxia, sepsis, prematurity, and neonatal tetanus. The mortality decline in Nepal may have been influenced by program interventions (e.g., tetanus toxoid (TT) immunization and emphasis on hygienic conditions at delivery) that could have impacted neonatal mortality, and by immunization, ORT, pneumonia treatment, and vitamin A supplementation, interventions that could have had an impact on under-five mortality.

Overall access to health care, women's education, and incomes are likely to have played parts in the mortality declines. A study on the correlates of mortality (Thapa and Luther, 2003) used multivariate regression analysis and ranked the relative strength of association for a variety of contextual, family, and individual variables. Infant and child mortality were found to be higher in the Mountain region than in other regions. Infant mortality is relatively high in the Western Terai, the Mid- and Far-western Hills, and the Eastern Hills. Household economic status played a large

role, especially in child mortality. For example, the poorest of the poor (bottom 20%) had an under-five mortality rate of 159 per 1,000, whereas the top 20% had a rate of only 128 per 1,000. The effects of mother's and father's education on infant and child mortality were large and statistically significant as were the effects of mother's age at childbirth and child's birth order. Whether mothers are exposed to mass media, and whether the parents, particularly the mother, are literate or educated, make substantial difference in childhood mortality.

Table 1. Childhood Mortality Rates in Nepal

Years Preceding the Survey	*Approximate Time of Mortality*	*Components of Mortality*			
		Neonatal Period	*Postneonatal Infant Mortality*	*Total Infant Mortality*	*Under-Five Mortality*
		2001 NDHS			
0–4	1997–01	38.8	25.6	64.4	91.2
5–9	1992–96	56.5	33.5	90.0	126.2
10–14	1987–91	63.1	44.0	107.2	158.0
% Change		–39	–42	–40	–42
		1996 NFHS			
0–4	1992–96	49.9	28.6	78.5	118.3
5–9	1987–91	66.9	41.4	108.3	161.6
10–14	1982–86	72.2	54.5	126.7	195.6
% Change		–31	–48	–38	–40
		1991 NFHS			
0–4	1987–91	45.9	34.2	80.1	121.3
5–9	1982–86	67.0	47.8	114.8	166.0
10–14	1977–81	68.6	53.8	122.5	183.9
% Change		–33	–36	–35	–34

Source: Sullivan, J M, 2002, *Infant and Early Child Mortality: Estimates from Three National Surveys of Nepal (Draft)*. November 25, 2002. ORC/MACRO.
Note: Results are for the 15-year period preceding each survey.

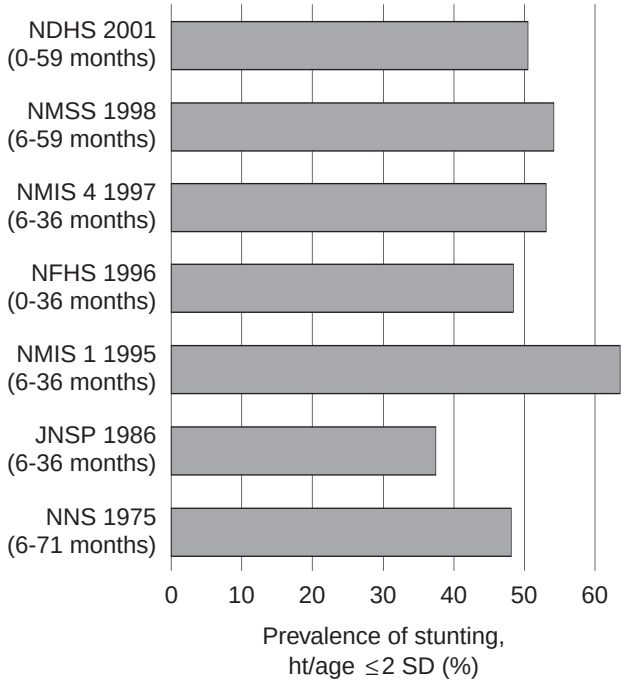
Trends in Malnutrition

Malnutrition is associated with 60% of under-five mortality (*Lancet*, 2003). In Nepal, data from surveys show that while mortality declined in the last 15 years, malnutrition remained at high levels (Figure 2). Over half of all children less than five years of age are stunted according to the 2001 NDHS, up from 48% in 1996 (DHS). The 1998 Nepal Micronutrient Status Survey (NMSS) showed that 54% of children under five were stunted. The age groups with the most rapid rise in malnutrition are between 4 and 18 months. This points to the importance of infant feeding practices and common childhood illnesses such as diarrhea.

Unlike child health interventions, programs that could have reduced child malnutrition (underweight and stunting), such as the promotion of infant and young child feeding practices, did not achieve scale in Nepal. Experience in other countries suggests that unless specific interventions

are targeted to reduce malnutrition, declines in child mortality are likely to plateau (Clausen, 1999).

Figure 2. Child Malnutrition in National Surveys 1975–2001



Source: National surveys.

4. Intervention Programs

The following intervention programs are reviewed in this section:[3]

- Recognition and treatment of ARI;
- Vitamin A supplementation;
- Routine immunization;
- Control of diarrheal diseases (CDD);
- Malaria control; and
- Family planning (FP).

Each of these intervention programs is described here in detail because it reached significant coverage, involved innovations that are potentially applicable to other countries, provided insight into what works and what does not work in other countries' approaches, and had the potential for rapid and substantial impact on child mortality.

The scope of the programs in Nepal ranged from several districts to nationwide. The time period covered is the last two decades. Detailed timelines of the programs are in Annex B. The programs began at different times and were subject to fluctuations in interest and resources. In general, the 1980s were characterized by vertical, intensive projects, while the 1990s saw more coordinated, linked (integrated), and decentralized programs with greater attention to reaching communities. As new or improved interventions were developed, the number of interventions increased.

Recognition and Treatment of Acute Respiratory Infection

Program Overview

Pneumonia has been recognized as one of the two leading causes of child mortality for some time in Nepal. Basic training for health workers included management of pneumonia, but relatively few pneumonia cases reached health facilities, and those that did failed to do so in time. For this reason, alternative ways to improve pneumonia case management in Nepal were explored.

Research established that services could be brought closer to communities through the use of trained community health workers (CHWs) and that using trained CHWs could improve case management; and that community-based treatment reduced child mortality (Pandey et al., 1991). The intervention in the two districts of the research study expanded to two additional districts and ultimately led to a controlled operational research program. The operational research program facilitated comparison of a *referral model* against a *treatment model*, using FCHVs for case management. Past efforts to combat ARI were limited to treatment at facilities, and FCHVs had no role in ARI case management.

In 1986, studies were initiated in the districts of Pharphing and Jumla. These studies investigated the role of "ARI workers" trained to recognize and treat pneumonia through active case detection (Pandey et al., 1991). These studies were important for Nepal because they demonstrated that lay workers could manage pneumonia using the WHO-recognized diagnosis

3. The detailed report by Taylor et al. (2003) also includes nutrition (breastfeeding, weaning foods, maternal nutrition), maternal care and Safe Motherhood, water and sanitation, and iodine deficiency control.

(counting respiratory rates) and using standard treatment protocols. Neither study showed significant inappropriate antibiotic use. In fact, the Jumla study showed increases in community use of services and a significant reduction in child mortality. Experience in two additional districts, Dang and Chitwan, highlighted the importance of training with attention to both supportive supervision and refresher meetings, as well as to cotrimoxazole supply. These studies, like those studies that led to development of the operational research program, demonstrated that community-based treatment could be done. Moreover, quality of care was maintained.

Broader application of these sentinel efforts was delayed by policy debates and funding difficulties. In 1992, however, the establishment of a core group to facilitate planning, budgeting, and leadership pushed the ARI program forward. This group was initially referred to as the ARI Working Group. It comprised representatives from the MOH, donors, and NGOs, and was involved in policy development, guideline review, program assessment, and all major decisions as the program evolved.

In 1995, the ARI Working Group expanded to include other technical experts. This working group helped inaugurate the ARI Strengthening Program and launched the program in the first four districts. The data from these districts compared two districts in which FCHVs were trained to diagnose and refer with two districts in which FCHVs were trained to diagnose and treat. The study looked closely at quality of care, including the degree to which FCHVs followed the WHO diagnosis and treatment protocol, their diagnostic accuracy, their decisions regarding referral, and, in treatment districts, their adherence to age-appropriate dosing and appropriate treatment. An external assessment of the studies concluded that the treatment model was more effective than the referral model and that it should be cautiously expanded. The stage was set for community-based management of ARI by FCHVs.

Community-based treatment of ARI by FCHVs evolved from the early pilot studies to ARI programs in 14 districts (the Community-based ARI Program or CB-ARI), to inclusion of diarrhea interventions (Community-based ARI and CDD or CBAC), and finally to other interventions included in the Integrated Management of Childhood Illness (IMCI) package (Community-based Integrated Management of Childhood Illness or CB-IMCI). The ARI Working Group evolved into the CB-IMCI Working Group following adoption of IMCI by the MOH. In line with the IMCI strategy, the ARI program expanded facility-based training, with less effect on community level activities. This is where the two components—community-based and facility-based—were developed. Although the program focused on community based treatment, it always included some training at health facilities because of the need to improve management of referred cases. Thus, it was possible to rearrange facility based training to incorporate the IMCI approach, which, it should be noted, is more comprehensive, requires more time, is more costly, and takes longer to scale up.

The focus of training activities followed the evolution of the program. Initially, WHO's health facility (HF)-based training curriculum for ARI was used. Later, interactive and highly participatory training for the semi-literate/illiterate FCHVs was implemented. Different mechanisms were used to ensure quality of training. For example, the program worked with the Nepal Pediatric Association (NEPAS) to conduct HF-based trainings, and in later years, NTAG trained CHWs because it had proven itself to be effective in training and motivating this cadre of workers. With the coming of IMCI to Nepal, the basic IMCI course was adopted in a modified format. The standard 11-day training was modified to 9 days for formal, clinical IMCI and 2 days for management training. Management training prepared staff to manage program commodities, support CHWs, supervise and monitor, and collect and manage data.

Accurate data collection and management were always an area of emphasis. The routine HMIS compiled ARI morbidity and mortality data, including classification (e.g., no pneumonia,

pneumonia, severe disease). The routine LMIS included information on stock-outs of cotrimoxazole at the health facility level. These two routine mechanisms provided some basic trend information for the HF-based program. The community-based program depended on supervisory visits for data on indicators such as the number of cases treated, the proportion with correct dose for age recorded in FCHV registers, the proportion completing a third-day follow-up visit, and assessment of diagnostic skills. FCHVs used pictorial treatment charts and referral books; village health workers and maternal/child health workers used slightly more complex forms. With the coming of IMCI, a constellation of childhood disease indicators was added to the ARI tools (e.g., charts, referral books, and forms) using the same supervisory visit system for data collection.

The ARI program, now in 21 districts, includes strong supervision and close attention to appropriate treatment. All quality-of-care indicators are strong, with no evidence that FCHVs contribute to inappropriate use of antibiotics or delays in referral of very severe cases. Although it has not been possible to measure child mortality, the proportion of expected cases receiving treatment has increased dramatically in program districts, and the proportion of severe cases seen at health facilities may have decreased. Quality-of-care indicators suggest that antibiotics are appropriately used and that the program is accepted in communities.

Policy Framework

In 1992, when the ARI Working Group was first established, there was a national ARI program but no national ARI policy. As plans for the community-level intervention developed, the working group prepared a draft document that became the national policy statement. This document covered all areas of ARI case management. It stated that in well-supervised situations, community-level workers, including FCHVs, may use cotrimoxazole for the treatment of pneumonia and refer cases of more severe illness.

WHO, USAID, and UNICEF experts supported the MOH in the development of the document. Although the document received MOH approval in January 1994, it was thought to comprise "technical guidelines," not policy. The guidelines have not been revised since 1994; however, when new districts are added for community-based pneumonia treatment, work plan documents and budgets must receive MOH approval, in spite of the fact that the guidelines acknowledge the need for community-based treatment. Implementation may be delayed as the documents are reviewed and the issues rehashed. Within the MOH, there is still some debate over the use of antibiotics by peripheral health workers.

The MOH Department of Health Services Annual Report (His Majesty's Government of Nepal, 2000/2001) defines the current indicators used for monitoring progress with ARI management. These include the ARI-specific mortality rate, the ARI case fatality rate (CFR), and pneumonia incidence. The general strategies include education of mothers; training of health workers, including CHWs; and use of "operational studies to define local ARI problems and to measure the effect of introducing new ARI approaches."

The policies are clear regarding the importance of ARI and the need for improved facility-based case management. They are less clear, however, for long-term case management by community volunteers. Despite this lack of clarity, decision-makers have supported the program in several ways. First, the WHO guidelines and training materials were adopted early and by the 1990s were incorporated into all aspects of training. Second, while structural changes within the MOH, such as the creation of a Child Health Division (CHD), may have changed training implementation, the changes did not affect the basic mechanisms for ARI training and subsequent IMCI training. Third, while policies affecting FCHVs have the potential to influence the community-based segment of the program, the policies have not yet prevented slow expansion of CB-IMCI, including treatment by FCHVs.

Scale and Coverage

The program has been successful, although it has not yet reached all 75 districts. By June 2002, implementation was completed in 16 districts, covering 33% of Nepal's population less than five years of age. Since 1997–1998, more than 1,500 district- and HF-level health workers, more than 9,000 CHWs, more than 8,000 locally elected leaders, and 133,000 mothers' group (MG) members have participated in trainings and orientations.

FCHVs keep simple pictorial treatment records from which certain quality-of-care indicators can be measured. Two indicators have been used by the ARI program: (1) the percentage of treated cases receiving a follow-up assessment on the third day of treatment and (2) the percentage of cases in which the correct dose of cotrimoxazole for the child's age is recorded. In 2000–2001, in more than 90% of cases, health workers recorded that they followed up on the third day of treatment and marked consistent ages and doses of cotrimoxazole. Quality-of-care indicators suggest that there is almost no inappropriate use of antibiotics, and that the program is well accepted in communities.

Over the period of the project, it was estimated that 17,000 deaths were averted. In 2000–2001, more than 160,000 children in the 13 program districts where 12 months' data were available received pneumonia treatment, with 91,248 (56%) of these children treated by CHWs. In the remainder of the country's 62 districts that provided pneumonia treatment solely at health facilities (HFs), 173,564 additional cases of pneumonia were identified and treated. Though this number (cases treated per district) is lower than in program districts, the numbers show that the HFs in the all districts are also making a significant contribution.

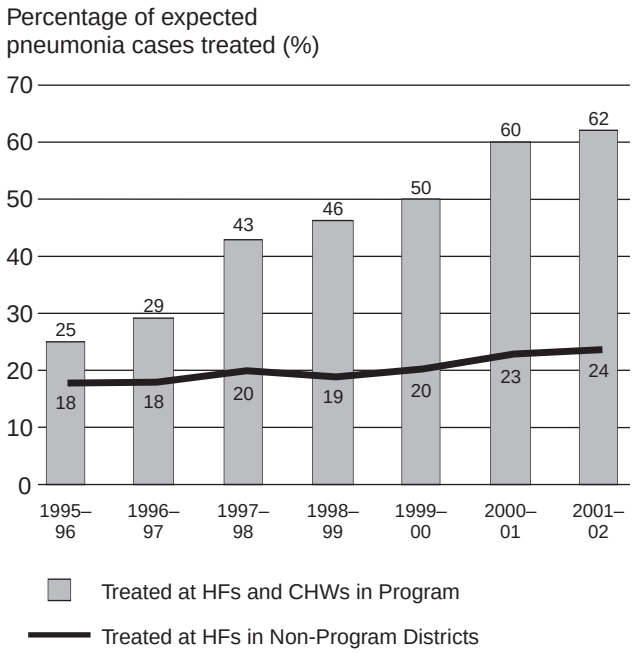
The community component of the program has evolved along a parallel track with the HF component, always linked but somewhat independent, with different needs for supervision and monitoring. This component has made a complete progression from controlled research to pilot programs to gradual expansion. The MOH has closely monitored the expansion, paying particular attention to appropriate case management by lay workers. The complexity of the community-based component has required careful introduction to districts and a gradual phasing-up. The program therefore has not been introduced in all 75 districts and is not likely to be so introduced for a number of years.

Trends in Indicators

Although it has not been possible to measure child mortality, the proportion of expected cases receiving treatment increased dramatically in program districts (Figure 3). The total population at risk is known from census or district-specific information. Expected pneumonia cases are derived by taking estimates of the lowest pneumonia incidence from previous work in Nepal and cross checking these estimates with those from studies in the region. These data are then used to calculate the total number of pneumonia cases expected for each district. The expected figure is used as the denominator to calculate the proportion receiving treatment. The proportion receiving treatment is equal to the total recorded cases seen by FCHVs and HFs divided by the expected number of cases. In 2001–2002, the percentage of all cases of pneumonia estimated to be occurring in the community that were treated in program districts was 62%; in non-program districts this figure was 24%. The number of cases seen by FCHVs rose each year.

In addition, the proportion of severe cases seen at HFs appears to have decreased. The percentage of all cases classified as severe pneumonia or very severe disease and seen at HFs declined to about 8% in 2000–2001. Five years earlier, in 1995–1996, the percentage of these cases seen at HFs was 16%.

Figure 3. Percentage of Expected Pneumonia Cases Treated in Program Districts

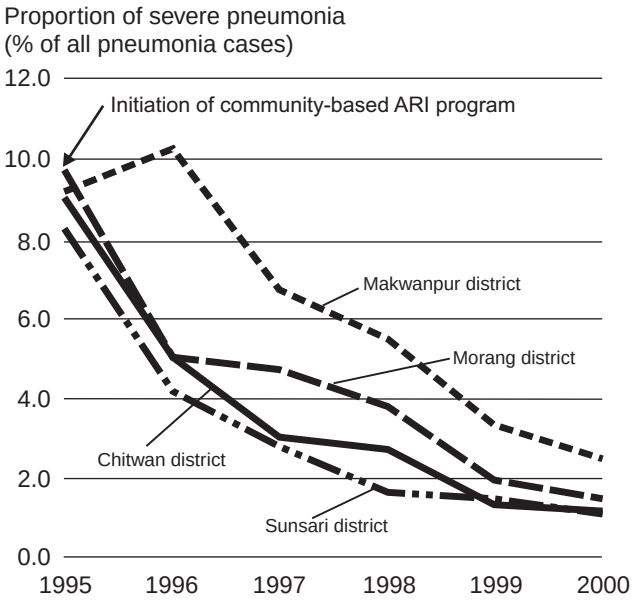


Source: Derived from routine program statistics, ARI morbidity estimates, and population census. See report text for details.

A number of factors, such as the incidence of pneumonia, changes in population, seasonality, and a secular decline in two-week prevalence, affect the number of expected cases. For example, the DHS conducted in Nepal in 1996 showed 34% of HFs reported ARI cases in the past two weeks compared to 23% of HFs in the 2001 NDHS. This secular decline means a larger proportion of all expected cases are receiving treatment even if the total number of cases treated is not rising rapidly. Furthermore, the vitamin A program (discussed below) reached national coverage and may have affected the severity of disease, reducing the number of cases seeking referral. Finally, the pneumonia program now covers a large proportion of the population, and the program itself has likely reduced the frequency of severe ARI by reducing child frailty through earlier treatment of ARI. Hence, the expected cases may have declined.

The number of expected cases was used to make comparisons across program and non program districts, thus correcting for factors other than the program itself. There has not been much improvement in the percentage of expected cases treated in non program districts, compared to a marked improvement in the percentage of expected cases treated in program districts. The program may therefore be having the expected effect, and this effect may be stronger than the other influences. Figure 4 shows that a declining proportion of all pneumonia cases is classified as severe.

Figure 4. Proportion of Severe Pneumonia Cases Recorded in Program Districts



Current Issues

The following issues currently face Nepal's community-based management of ARI program:

- There is no explicit policy for community-based treatment of

pneumonia, although MOH technical guidelines endorse this approach when FCHVs are supervised closely. Some in the MOH are still concerned about the use of antibiotics by lay workers.

- The program requires continuous supplies at the community level, close supervision, and intensive monitoring. It is difficult to launch in districts, and when combined with IMCI health facility training, it is costly.
- The program has been less successful in addressing other childhood problems such as nutritional deficiencies (excluding vitamin A), low measles immunization rates, and inadequate birth spacing.
- The amount of oversight and support needed over time is not known. It is not clear whether the program can become self-sufficient with minimal external input to supplement the inputs provided by the government and districts.

Vitamin A Program

Program Overview [4]

The MOH established the Nepal Vitamin A Program (NVAP) in 1993. The MOH implements the NVAP with the assistance of the NTAG. USAID, UNICEF, and AusAID (Australian Agency for International Development) provide financial assistance to the program. NVAP consists primarily of a supplementation program that distributes high-dose vitamin A capsules (VACs) to all children 6 to 59 months of age during twice yearly, two-day campaigns. FCHVs distribute the capsules. NTAG developed and refined a strategy for implementing the program that includes training, cultivation and maintenance of multi-sectoral support, logistic support, supervision, monitoring, and promotion, with specific approaches and specific sets of activities for each of these components. When phasing a new district into NVAP, NTAG start-up activities consist of two vitamin A training sessions. Only limited monitoring and advocacy support is provided to districts that have "graduated" from the program, and this support appears to be adequate to sustain the high (in excess of 80%) VAC distribution coverage levels of these districts.

The program's resources have been focused overwhelmingly on training. NVAP provided two distinct types of training. First, the program provided curative case treatment protocol training for health professionals. And second, it provided a package of three levels of training—district, health post (HP), and community/FCHV. Through this latter level of training, FCHVs are empowered and trained to provide nutrition education and to carry out the supplementation component of the program using a mass campaign approach. FCHVs constitute a network that has served as the principal program implementation vehicle. The capsule distribution and training components of the program are implemented using a unique multi-sectoral approach. The Ministries of Health, Agriculture, Education, Culture and Local Development, NGOs, and other agencies are involved initially as training participants, and subsequently as organizers and supporters of VAC distribution and education activities.

NTAG works on an ongoing basis with the MOH to oversee VAC logistics and monitoring. Two or three weeks after the distribution days, NTAG conducts a "mini-survey" to monitor the implementation of the program and to measure its coverage. Once a district completes one round of distribution, NTAG continues to provide limited follow-up supervision and coordination, focusing primarily on the multi-sectoral district coordinating committee (developed as part of NTAG district-level training) with the aim of sustaining multi-sectoral support of FCHVs, the NVAP, and particularly VAC distribution-day activities. In the districts that are randomly selected to be in the mini-survey sample, NTAG continues to conduct mini-survey monitoring.

4. Also see Fiedler, 2001.

National Vitamin A Program Training Approach

NVAP training consisted of a number of elements:

- Introductory multi-sectoral training that built awareness and introduced the basic elements of the national program;
- District HF staff training that helped build support for logistics management and for FCHVs, and incorporated clinical case management;
- FCHV training that built skills in community mobilization, capsule distribution, and nutrition education; and
- Refresher training to help with logistics and supplies and to advocate for the program.

Several characteristics of training in the NVAP were unique:

- A multi-sectoral approach to training, including the training of local politicians and FCHVs' immediate superiors within the MOH, contributed to the high visibility of the program. By bringing together local, community-level decision-makers and providing them with a largely set agenda focused on the logistics of how to help the FCHV carry out the next campaign day distribution, the orientation training and a District Coordinating Committee created a group and a setting that produced "peer pressure" to do what is right—that is, to help support the NVAP. This jump-started distribution planning activities of the campaign day, and concomitantly, empowered FCHVs.
- The participatory and supportive training philosophy, together with the structure and process of its training program, cultivated the self-respect, trust, and commitment of FCHVs.
- NTAG's ability to encourage and maintain FCHV confidence, trust, and dedication stems from its development of a well-planned and highly structured program, and from its consistently doing what it says it is going to do.
- Introduction of NVAP to a district has been gradual in part because of the importance placed on orientations for a wide variety of community groups. As a result, the program is well-known at the community level, with the role of the FCHV clearly defined. This approach, moving from a standard training to comprehensive involvement of the whole community, has been one of the key elements of the success of the program.

Policy Framework

The growing evidence of the importance of micronutrients and the high prevalence of blindness in Nepal led to an interest in the distribution of vitamin A for nutritional blindness. The role of vitamin A in child survival programs changed dramatically with the demonstration that correction of the deficiency also reduced child mortality (Daulaire et al., 1992; West et al., 1991). One of the sentinel studies showing this additional link was in Sarlahi, Nepal. This study was followed by a community-based supplement program in Jumla, which also showed mortality reduction. A large field trial conducted under less controlled conditions compared the costs and effectiveness of food-based approaches with supplementation. These studies, combined with several studies estimating prevalence, provided a clear mandate for addressing vitamin A deficiency through a national program. Toward that end, a national workshop was convened in 1992.

The workshop resulted in the establishment of a multi-sectoral task force that developed policy and technical guidelines for the national program. The guidelines included supplementation as a short-term strategy, and dietary diversification as a long-term goal. Thirty-two priority districts were identified as a focus for initial efforts. Although the Nutrition Section of the MOH had fewer than 10 staff members, significant support from higher Ministry levels allowed the program to be launched in 1993. Additional support came from both local and international NGOs, from the USAID-funded Vitamin A Field Support Project (VITAL), and from UNICEF, which provided VACs. Implementation was carried out through a newly formed Vitamin A Technical Assistance Group (TAG), which subsequently became NTAG. NTAG continues to implement the program throughout the country.

The vitamin A program was fortunate in the relative lack of difficulty it faced with policy development and acceptance. Given the results of the Sarlahi (West et al., 1991) and Jumla (Daulaire et al., 1992) studies, Ministry officials were prompt in turning the research findings into technical program guidelines and developing national policy. International guidelines for management of nutritional blindness and eye findings were accepted early, and given the early mortality studies, it was not difficult to include supplementation. Thus, policy issues were not an impediment to the early eye programs or to programs using supplementation during the Sarlahi and Jumla studies.

In 1992, following the National Vitamin A Workshop, the MOH approved two policies—one for supplementation of children 6 to 60 months of age, and the second for treatment of children with measles, severe malnutrition, prolonged diarrhea, night blindness, or ocular signs of deficiency. These policies, with minimal modifications, have remained in place, with Nepal incorporating policy improvements and new recommendations based on revised international guidelines.

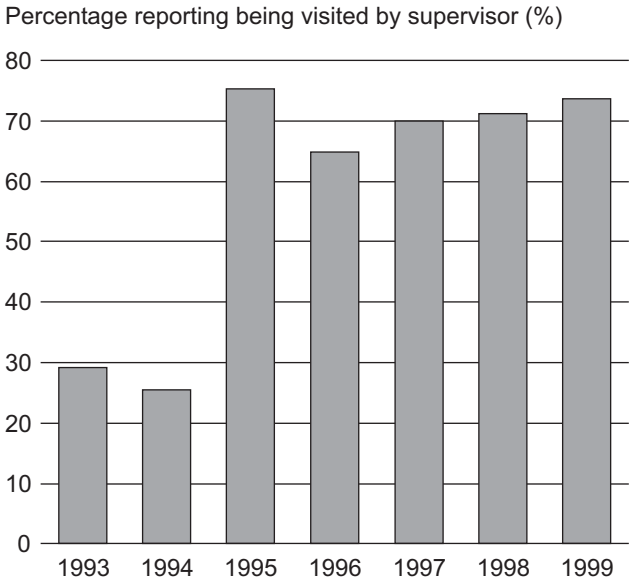
In-country policies and guidelines that sanction vitamin A supplementation by FCHVs have been key to program success. These policies were more readily accepted than others, such as FCHV distribution of antibiotics for ARI. While policies affecting the logistics of medication distribution to HFs have generally supported treatment protocols, the twice-yearly distribution of vitamin A meant that it was initially difficult to include capsule logistics as part of the overall HF supply system. Similarly, it was difficult to fully incorporate capsule distribution by FCHVs in HMIS monitoring because a clear mechanism to move FCHV register data to the HF-based reporting system was lacking.

Scale and Coverage

The NVAP began in 8 of the country's 75 districts. Since then, it has expanded to an additional 8 to 10 districts each year. By October 2002, it covered the entire country. At national scale, the program has been successful in achieving over 80% supplement coverage in all districts. There has been no decline over time, even in districts with minimal input from NTAG. The program appears to be associated with the continued reduction in child mortality, as is demonstrated by the NDHS in 1996 and the NDHS in 2001.

There are a number of innovative elements in the development of NVAP. It evolved from basic research to its phased implementation until all districts were included. The program capitalized on the initial research (which demonstrated high levels of deficiency and reduced mortality with supplementation) by shaping a national policy and then launching a program to implement that policy, starting with districts where vitamin A deficiency (VAD) was endemic. The program gradually expanded.

Figure 5. FCHVs Reporting Being Visited by Supervisor



Source: Houston R, 2002. Presentation of the Nepal Vitamin A Program, The MOST Project.

Motivation of Female Community Health Volunteers

Early in the program, and in some places FCHVs were compensated for their work. Compensation of FCHVs created a different dynamic relationship with their communities, which appeared to threaten the long-term sustainability of the program. Review of these experiments suggested that the real motivator for FCHVs was not necessarily financial (which would not be affordable for the MOH), but rather support of the communities they served. It became clear that for the program to be sustained, some effort needed to be devoted to building community support mechanisms. Careful attention was given to financial management with regard to FCHVs. This included discouraging compensation, while at the same time working with community groups to secure support for FCHVs.

NVAP developed a system to generate endowment funds managed by the village development committee (VDC) to generate interest that can be used for tea and other supports for FCHVs in recognition of their work. Endowment funds are savings accounts that generate interest and are established at the VDC level to support FCHVs and their work. These funds are under the control of an Executive Committee that is comprised largely of FCHVs, with support from the VDC chairperson and health post (HP) or sub-health post (SHP) representative.

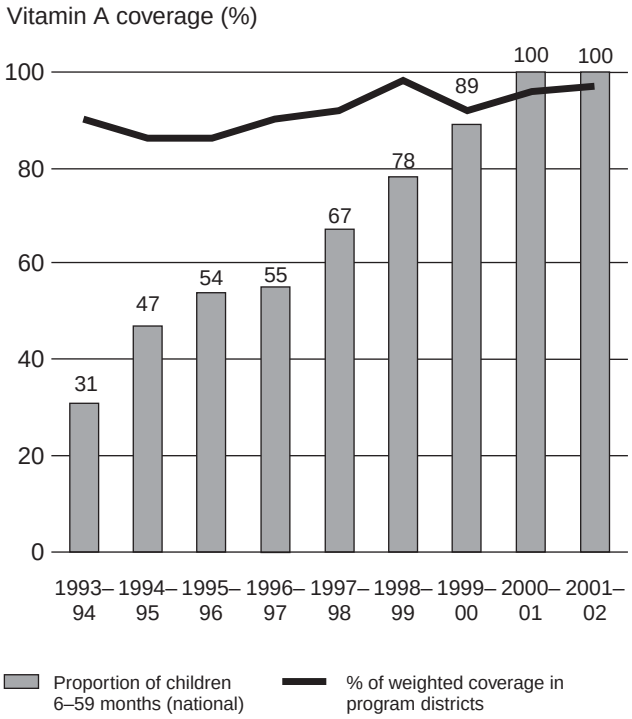
NVAP developed a set of tools and methods for training, supervision, and monitoring that remained consistent as the program was established in successive districts. Figure 5 shows that FCHVs consistently received supervision visits. This was made possible in part by the consistency of NTAG and its sustained collaboration with the MOH. With each distribution, NTAG evaluated its own performance in regard to training effectiveness, community involvement, and, ultimately, coverage. NTAG thus developed and refined an approach that worked and applied it until all districts were included. In particular, the approach stressed quality—quality of training, quality of supervision, and quality of monitoring—and used the results to successfully advocate for the program's expansion.

The program generated ownership at the community level. This was done in part through continued lobbying for support for FCHVs, and through the multi-sectoral orientation of community members. In addition, MGs played an important role, helping to select and then support the FCHVs. While the nature of the intervention undoubtedly contributed to such community-level commitment, NTAG also made a contribution by stressing that the program was carried out by and for community members. And, although NTAG operated somewhat independently at the central level, perhaps reducing initial government ownership, commitment was strong at the district and community levels. The strength of community commitment is seen in the dedication of the FCHVs, who continue to work without compensation. This strength is also illustrated by the increasing number of Village Development Committees (VDCs) that are establishing endowment funds in support of the FCHVs. (See text box, "Motivation of Female Community Health Volunteers.")

The program did not rush to expand. After the initial 32 districts were completed, there was some pressure to expand rapidly, with the goal of reducing the time that children with VAD would carry a higher mortality risk. However, there was concern that rapid expansion would not allow an adequate foundation to be built in terms of district and community support. In addition, accelerated expansion would have required greater manpower, which could have undermined attention to the quality of program elements and reduced the level of sustainability achieved.[5]

5. Unlike the Expanded Program on Immunization (EPI), there was no pressure to achieve global coverage targets. Nepal therefore had "breathing room" to develop and expand the National Vitamin A Program (NVAP). EPI also started out with a gradual expansion plan and was making steady progress, but it was forced to move too fast starting in 1985–1986 to satisfy global 1990 targets, only to see coverage drop just as fast after 1990 (R. Steinglass, personal communication).

Figure 6. National Vitamin A Coverage



Sources: NTAG/MOH Postdistribution mini-surveys.

The program has been sustained for several years. Coverage has remained high, with no evidence of decline thus far. Nor has NTAG support decreased. Over time, supply has improved, with NTAG devoting less time to emergency logistics management. Districts continue to support the distributions, with greater involvement of HF staff and ongoing commitment by FCHVs, in spite of FCHVs' increasing number of responsibilities.

Trends in Indicators

The critical indicator of NVAP success is capsule coverage. This indicator shows high coverage was achieved in implementing districts and was maintained for several years (Figure 6). From the beginning of the program, population-based district mini-surveys were developed to ascertain coverage, and these have continued. The surveys use an EPI cluster methodology and a well-tested household algorithm to determine the proportion of children who have received a capsule during the last distribution. All "new" districts were surveyed following their first distribution, with a random selection of other districts completed after each distribution. The program has been able to complete an average of 15–20 districts each year. There has been some controversy about the validity of this means of coverage assessment, completed as it is by those responsible for the program, because of potential bias. However, from the beginning, the training of the enumeration teams completing the mini-surveys has stressed accuracy and data quality. To address these concerns, a number of independent assessments of coverage have been completed (e.g., assessment in the Karnali zone in 1997, the NMSS in 1998, the UNICEF BCHIMES survey in 2000, and the recent NDHS in 2001). These coverage assessments have all confirmed the NVAP's basic coverage estimates.

Current Issues

Continuously importing VACs is an issue but has not impeded progress so far, perhaps due to the low cost of capsules and the willingness of donors and the MOH to procure them. An assessment of the replicability of the NVAP (Fiedler, 2001) concluded that the Nepal MOH's network of more than 45,000 FCHVs, a network that pre-dated NVAP, was a critical element in the success of the program. While the pre-existence of the FCHV network facilitated the initial organizational development of NVAP, the FCHV network was moribund at that time. Several attributes of NTAG's training and follow-up approach appear to have contributed to Nepal's success.

The absence of an FCHV-like platform may not be an insurmountable impediment to developing a similar vitamin A program in another country. Many countries have networks of health promoters that might serve a similar function. The complete absence of such a network,

however, does suggest that the start-up phase of a program modeled on that of Nepal will be more expensive and take considerably longer. Whether the same high and relatively stable participation rates attained in Nepal could be replicated is uncertain. Nepal's success is due to a host of factors, only one of which is NTAG and its training approach. Countries desiring to improve child survival from interventions such as vitamin A supplementation and community-based treatment for ARI may wish to invest in developing a cadre of community-level implementers using similar approaches.

Expanded Program on Immunization

Program Overview

Nepal introduced EPI in 1977 with diphtheria, pertussis, and tetanus (DPT) and tuberculosis (BCG) vaccines in three districts. By 1988, the program had expanded to six antigens and to all 75 districts in the country. By 1990, Nepal had achieved 80% coverage for all antigens except measles and TT. This level of success was followed by a period of difficulty in maintaining routine immunization systems and subsequent declines in coverage.

In 1996, Nepal joined the global polio eradication initiative and successfully implemented National Immunization Days (NIDs), reaching 3.8 million under-five children with two rounds of oral polio vaccine. NIDs are now held every year. The data from the surveillance system indicate that Nepal is moving toward polio eradication in the near future. In the meantime, implementation of routine immunization has improved and is being revitalized under increased government investment and support from the Global Alliance for Vaccines and Immunization (GAVI)/The Global Fund.

In 1987, the GON decided to integrate the implementation of key vertical project activities for child health and FP in the districts. A District Public Health Officer (DPHO) was given responsibility for overseeing primary health care, which was managed through district public health offices. The government identified 675 *Ilaka* HPs, and adjusted staffing and strengthened services through combining tasks and cross-over training. Thus, DPHO and HP staff became responsible for immunization, delivered not through one-purpose vaccinators, but through multipurpose village health workers (VHWs).

After the installation of a democratic government in 1991, EPI was reorganized. It lost its vertical structure at central levels and was merged with the Family Health Division (FHD). The number of central-level personnel was reduced—from more than 200 supervisors, cold chain workers, training officers, and monitoring staff to a handful. Beyond a significant impact on supervision, training, and follow-up, considerable institutional memory was lost. In 1994, the CHD was created within the DoHS. EPI was included as a section within CHD and held responsible for policy, guidelines, and general strategies. The section is headed by a Chief and supported by a Public Health Officer. Other functions of EPI are carried out by the Epidemiology and Disease Control Division (EDCD); the Planning and Foreign Aid Division of HMIS; the Logistics Management Division for Supplies; the National Health Training Center; the National Health Education, Information and Communication Center; and the General Administration Division. These five regional health service directorates support 61 district health offices and 14 zonal DPHOs in 75 districts. Lack of manpower at the central level has remained a major obstacle to effective operation of EPI programs.

Policy Framework

The Local Self-Governance Act of 1999 brought the health system closer to the community in terms of use of health services and cost sharing of primary health care services. The local government is increasingly involved in the management of the health system, particularly at the

VDC level. The VDC mobilizes resources and volunteers for special campaigns, including those for maternal and neonatal tetanus (MNT) and NIDs. The health management committee at the VDC level provides the link between the community and the health system, as well as the mechanism for dealing with issues related to health care provision. Thus, for the first time, the public health system is more local and more accountable.

International agencies and development partners supported EPI, both technically and managerially. Therefore, most EPI guidelines were drawn from global experience, although studies were conducted to collect country-specific data for incidence and prevalence of vaccine-preventable diseases.

The vertical nature of EPI, the magnitude of project resources and geographic scope, and intense donor scrutiny for more than a decade created an environment that fostered local public health leaders. Thus, for several years, strong champions, able to mobilize development partners and communities and influence government policies, headed EPI.

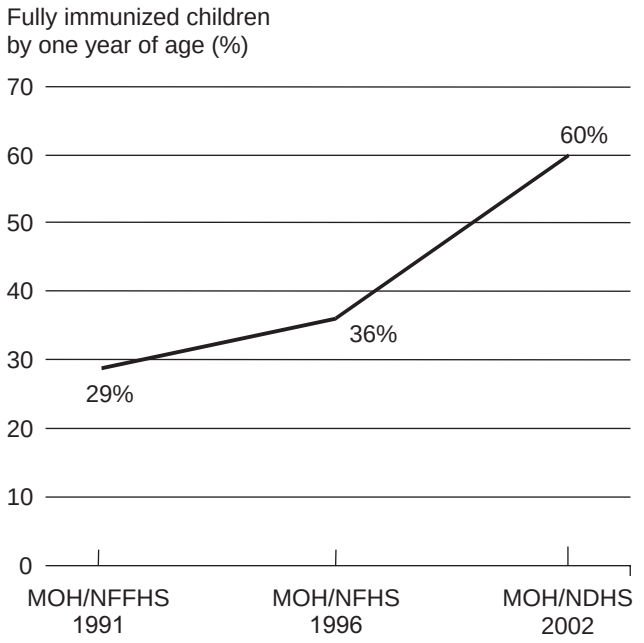
Scale and Coverage

The true success of EPI lies not in coverage but in its effectiveness in preventing morbidity and mortality in a sustained manner. EPI started as a donor-driven program in the 1980s with all vaccines, most cold chain equipment, and kerosene contributed largely by UNICEF to the GON. Over the last 10 years, there has been a gradual but significant increase in contribution from the government, which now funds more than two-thirds of vaccine procurement. GON funding increased from 56% in 1995 to 70% in 2000.

The GON started allocating funds for the purchase of vaccine in 1993. Nepal is now self-sufficient in national requirements for TT, DPT, and measles antigens. Since 1999, the GON has paid for some BCG vaccines. Since 1996, donor contributions have been primarily in the area of polio eradication; the GON has provided approximately 10% of the cost of polio activities. From a financial perspective, EPI is one of the most sustainable programs in the country.

The GON applied for GAVI funding in 1999 for the introduction of hepatitis B vaccine. After two rounds of applications, Nepal received funding and introduced hepatitis B in two districts. Notably, auto-disable (AD) syringes were used for the first time. The Interagency Coordinating Committee (ICC), comprised of donors and partners, continues to evolve as a coordinating and leadership body.

Figure 7. Trend in Immunization Coverage, 1991–2002



Source: National surveys.

Trends in Indicators

Routine data on coverage of immunization and survey data indicate a rise in immunization coverage from 1991 to the present (Figure 7).

Current Issues

In the 1980s, the EPI program extended a standard service into remote and

undeserved areas, often beyond other primary care interventions. While extraordinary (and ultimately unsustainable) investments were made as part of Universal Childhood Immunization (UCI)—the UNICEF-led global initiative to raise immunization coverage worldwide, EPI raised expectations by demonstrating that vaccinating children even in hard-to-reach areas could be accomplished. During the mid-1990s, some of these gains were reversed, largely due to structural changes within the MOH and the diversion of donor attention to other important child health problems. Even so, the GON has increased investment in vaccines, and EPI remains a top-priority program. More recent improvements in coverage and the introduction of GAVI funding have built on some of the early foundations, and the ICC is now grappling with the long-term issues of stable financing, injection safety, and quality of services.

Control of Diarrheal Diseases Program

Program Overview

The National CDD Program (NCDDP) began in 1982. Standard case management of diarrhea in HFs and promotion of ORT at home were the main strategies of the NCDDP. The program developed standard training modules and trained a critical mass of health personnel throughout the country. A working group comprised of development partners and the MOH served as the driving force for planning, budgeting, and pre-packaged ORS supply (Jeevan Jal packets).

After a comprehensive review in 1991, the NCDDP was reinvigorated through district-level planning and community mobilization. District Development Committees (DDCs) and VDCs were included in social mobilization activities for the promotion of ORT. Similarly, peripheral-level health workers and FCHVs were given training on home management of diarrhea. By 1996, with FCHVs distributing pre-packaged ORS supplied by the district health system, the accessibility and availability of ORS in the community had increased markedly. Currently, more than a third (1.4 million ORS packets) of all ORS distributed nationally is distributed through FCHVs.

Policy Framework

Policies affecting the NCDDP were designed to facilitate widespread use of ORT. The first CDD policy, which lasted more than a decade, emphasized case management within HFs. Use of ORS in the home was added in the mid-1980s through national promotion of *nun-chini-pani* (salt-sugar-water) or NCP. Apart from problems with the availability of ingredients, preparation was often imprecise and resulted in ineffective or sometimes dangerous solutions. The NCDDP subsequently abandoned NCP promotion. The program component aimed at establishing "ORT corners" at health was largely unsuccessful because diarrhea is highly seasonal, many facilities did not have a continuous water supply, and equipment and manpower were insufficient. The approach worked mainly in hospitals where the diarrhea caseload is typically high throughout the year.

In 1991, the MOH, WHO, and UNICEF performed a comprehensive review of the NCDDP. This review resulted in reinvigoration of the program; the new program built on earlier program components but decentralized planning to district levels. The focus areas of the new program were:

- Standard case management by health workers, including VHWs;
- Promotion of ORT;
- Establishment of ORT corners in health centers and hospitals;
- Involvement of district health managers in planning, training of health workers, and orientation of community leaders.

In 1996, case management was further decentralized to focus on VHWs, FCHVs, and local community structures such as VDCs. Policies emphasized improved home management of diarrhea

by providing ready access to ORS packets through FCHVs. In addition, drug sellers and traditional healers were trained, since they were often the first-line health providers sought by families.

In 1998, the NCDDP was merged into the ARI program and was referred to as the CBAC program. This merger was designed to allow the programs to expand efficiently together, particularly at the community level, and did not represent any major change in interventions. However, in the CDD component, even more emphasis was placed on the correct preparation of ORS and the involvement of community leaders in promoting the distribution of a standard measuring device, the Blue Plastic Cup. These were distributed nationwide to all FCHVs (over 40,000), but only limited follow-up studies were conducted to evaluate the impact. In 1999, the CBAC program merged with IMCI to become CB-IMCI. CDD is now addressed in facilities through IMCI policies and in communities through CB-IMCI. The CB-IMCI Working Group, chaired by the CHD, now provides a venue for identifying policy and implementation issues and for developing solutions.

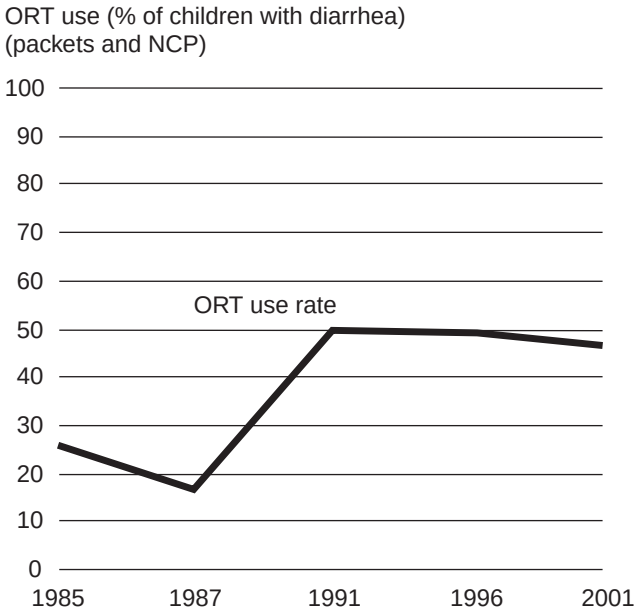
Scale and Coverage

Despite program continuity, the rate of ORT use has remained at 47–50% since 1991. Contributing factors require further investigation. What is clear is that promoting NCP in the 1980s and establishing ORT corners in HFs in the mid-1990s were unsuccessful strategies.

Trends in Indicators

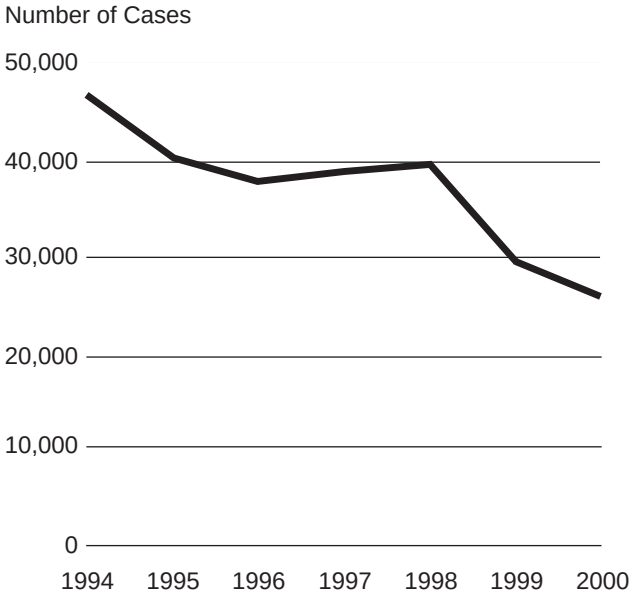
The rate of ORT use has not increased in many years (Figure 8), but reporting of severe dehydration cases and case fatality for diarrhea have declined since 1995. Since 1994, the number of severe dehydration cases presenting to HFs has gradually decreased (Figure 9). Some

Figure 8. Trend in ORT Coverage



Sources: 1985 Diarrhea Case Management Survey; 1987 NCP; 1991 Evaluation; 1996 MOH/NFHS; 2001 MOH/DHS.

Figure 9. Trend in Cases of Severe Dehydration with Diarrhea in Nepal, 1994–2000



Source: Health records, MOH.

experts suggest that these declines may be attributable to the influence of vitamin A supplementation.

Current Issues

The GON is committed to CDD as a priority program. It has kept the CDD agenda active by increasing its budget allocation every year. But ORT use levels have remained stagnant. Currently, the GON supports roughly two-thirds of the CDD program, including the purchase and distribution of over four million ORS packets every year. As the program has evolved over time, the community and FCHVs have become more active, extending access and case treatment to the home, where most diarrheas can be managed appropriately. Whether the "integration" of CDD with ARI and subsequently with CB-IMCI will lead to further improvement in the coming years in the promotion and use of ORT and home management of diarrhea remains to be seen.

Malaria Control Program

Program Overview

Malaria has played a significant role in Nepal's history because of its endemicity in the most agriculturally productive part of the country. The entire Terai zone, the southern area of Nepal that borders India, was so affected it was nearly uninhabitable. The first documented study, in 1925, showed 80% of children had enlarged spleens, and there were an estimated two million cases of malaria out of a population of five million.

After King Tribhuvan assumed control of the country in 1950, many vertical development projects, including efforts to control malaria, began. These efforts evolved rapidly, with the establishment of the Nepal Malaria Eradication Organization (NMEO) in 1958. Over the next few years, eradication efforts started in the entire endemic area of the country.

Eradication in 1958–1977 focused primarily on insecticide spraying, other vector control measures, and distribution of anti-malarials. With the failure of the global malaria efforts that aimed at eradication, the program changed to the Malaria Control Program, with a reduction in spraying accompanied by aggressive case detection to reduce transmission and a focus on selective spraying and case management to reduce morbidity. After 1986, the malaria program was administered through primary health care centers, with further de-emphasis of spraying and a focus on prevention of mortality, control of epidemics, and containment of *p. falciparum*. In 1993, the Malaria Control Division was dissolved and activities were then carried out under the Epidemiology and Disease Control Section.

Policy Framework

Policy changes related to malaria control have been dramatic. The government passed the Infectious Diseases Act of 1964, providing the legal framework for the program. By 1965, the program had a permanent staff of 2,349 in 83 differently titled positions. There were an additional 4,500 people employed seasonally from November to December and from March to June. By 1970, there were nearly 3,200 permanent staff and more than 16,000 temporary staff.

The 1983 policy shift toward integration of child health programs and primary health care services marked the beginning of a decline in staffing for malaria efforts. With the decrease in spraying, reported malaria cases increased from 14,000 in 1980 to 42,000 in 1985, and slide positivity also increased. In addition, the number of reported *falciparum* cases increased dramatically. The first three indigenous cases resistant to chloroquine occurred in 1984.

Decentralization of activities to Regional Health Services Directorates in 1987, caused further staffing decreases, although "vertical" staff remained at each regional center and at the district

level. Central and regional staffing decreased again when malaria activities were finally incorporated under the Epidemiology and Disease Control Division in 1993. At this time, there were four vector-borne disease control posts at the central level, three to four posts in each region, 12-member regional malaria teams, and three to four vector-borne disease control posts at district offices. VHWs carried out active case detection, while volunteers carried out passive detection.

Changes in operational strategy reflected policy shifts. During the eradication years, IEC was secondary, and the program carried out activities in villages without substantial involvement of community members. Malaria teams mapped villages, numbered houses, measured houses to compute spray volume needed, and later sprayed houses. In addition, parasite surveys were done on children, with nearly 700,000 slides collected by 1967, and over a million slides by 1973. In essence, the program was brought to the community level through a substantial, centralized, vertical program.

Scale and Coverage

In 1950, there was no malaria control program. The initial Insect-borne Disease Control program was active in only 17 districts, with spraying reported to protect a maximum of 882,000 people in 1957. By 1966 a program had been initiated in all of Nepal's endemic zones. The program established spraying mechanisms and active and passive case detection designed to stop transmission. The program changed the definition of its mandate as it evolved. By 1974, the NMEO program was initiated in 40 districts, carrying out activities in all endemic areas up to an altitude of 4,000 feet.

Issues

The malaria program's mandate changed recently with markedly reduced activities in endemic districts and greater emphasis on focal outbreaks and containment of *falciparum* malaria. Although the reduction in prevalence achieved during the NMEO remains, the current limitation in integrated program activities is associated with worsening of other indicators. In addition, these limitations affect surveillance, resulting in reduced data with which to assess progress. The program is currently trying to address these limitations through improvement in sentinel surveillance and reporting.

Significant malaria policy changes were driven by structural changes within the MOH, by the global change from eradication to control, and by a change in disease pattern—from highly endemic in the entire Terai zone to focal endemic areas following the massive initial eradication effort. Today, the problems facing the malaria program—increases in falciparum malaria, emergence of resistance, focal outbreaks against a background of slowing increasing endemicity—are different from those that faced the program at its inception. Then, the focus was on how to stop transmission in a large geographic area.

Even without eradication, the program had a large impact on prevalence. Current efforts are quite modest, contributing only to outbreak containment and prevention of rapid increases in incidence. Evidence suggests that these efforts are not preventing a gradual rise in incidence or an increase in *falciparum* malaria.

Family Planning Program

Program Overview

Population and FP programs began in the 1950s and have enjoyed major inputs from donors over the course of five decades. Initially, the Ford Foundation and USAID were the sole international organizations involved; United Nations agencies and international NGOs became involved in the 1960s. By 2000, more than 20 multilateral, bilateral, and private organizations supported Nepal's

family health program in a variety of ways. Throughout, USAID has usually been the largest single provider of both technical and financial resources to the FP program.

While increases in the availability and use of contraceptives have been steady, targets set by the government and donor partners were often unmet in the early decades of the program. By the 1990s, government objectives were more realistic, linked to planned and funded programs, and supported by established policy and a physical infrastructure. By 2000, NGO, government, and private sector activities enabled Nepal to meet targeted CPR increases and fertility rate decreases.

NGO Sector. FP service delivery in Nepal began in 1959 with the establishment of the Family Planning Association of Nepal (FPAN), an International Planned Parenthood Federation (IPPF) affiliate. Closely linked to the royal family, it worked under the guidance of the Social Services National Coordination Committee, which is traditionally headed by Her Royal Majesty the Queen of Nepal. Like all IPPF affiliates, it has a Board of Volunteers; during several key periods, the Board Presidency was held by influential female members of the royal family.

In close collaboration with the MOH, FPAN provided both temporary and permanent contraceptive methods. In addition, until 1989, FPAN operated a Repair and Maintenance (RAM) Center for voluntary surgical contraception (VSC) equipment under contract to the MOH's Family Planning/Maternal and Child Health (FP/MCH) project. By 2002, FPAN was delivering services in 34 districts from its own fixed sites and through coordination with the MOH in a variety of VSC camps and outreach activities. In the 2001 NDHS, almost 5% of current FP users cited FPAN as the source of their method.

The Nepal Fertility Care Center (NFCC), founded in 1988, implements a number of projects and programs with support from a variety of funding sources. These projects focus on the quality of reproductive health services and expansion of access to quality services through key partnerships with the MOH, the Contracteptive Retail Sales (CRS) Company, and private drug stores. Also participating is the PSSN, a network of private medical practitioners. In addition, the NFCC took over management of the RAM Center and now provides support in maintaining both public- and private-sector VSC and infection-prevention equipment. A variety of other NGOs, including the Red Cross, Marie Stopes International, and the Adventist Development and Relief Agency (ADRA), currently provide FP services. Together, NGOs provide almost 8% of FP services in Nepal.

Government Sector. The MOH began providing FP services in 1966, and by 1985 it provided at least some services in every district through fixed sites and VSC camps. For more than a decade, however, program reach was limited by shortages of available qualified staff. This issue was addressed in the early 1980s, when a large number of female health workers were recruited to focus on client recruitment, community mobilization, and education. On the community level, *panchayat*-based health workers and community health volunteers (CHVs) primarily based at or near local government HPs were active in recruiting clients and providing information. Mothers' groups also played an important role in some geographic areas, as did NGOs such as the Nepali Red Cross, the Labour Organization, and the Nepal Women's Organization (NWO).

In the mid- to late 1980s, implementation of the national FP program began to reflect greater concern with quality of services, including choice of methods, counseling, and demand creation activities in line with King Birenda's Basic Needs Initiative, which specifically cited both child survival and FP as national priorities.

Despite these advances, the MOH and key donors acknowledged in 1986 that gains in the FP program were having a limited effect on the fertility rate, largely because of the age at which most couples were choosing sterilization. While the CPR continued to rise, albeit more slowly than

desired, the TFR decline was much slower than anticipated, because most VSC acceptors were in their thirties and had already completed their families. The results of the 1986 Nepal Fertility, Family Planning, and Health Survey confirmed the trend. In combination with international pressure to consider issues of program quality, a greater effort was placed on expanding access to more methods and appropriate counseling and on improving the quality of already-existing services. Additional strategies to increase information and education through mass media, community education, counseling, and outreach were developed and implemented.

When vertical programs were integrated under a single department starting in 1987 at the MOH, the FP/MCH project began to provide consistent support for service delivery through District and Regional Health Directorate programs. The central and peripheral authorities together became responsible for the phased-in integration of FP services into all hospitals and HPs. In 1988, the MOH began a program of "institutionalization" of FP services through a "systematic effort geared towards developing the infrastructure required to make a full range of FP services available through the MOH's existing health network."[6]

By 1990, leadership at the MOH—with the support of key donors—was already considering new approaches for a "beyond the health post" extension to reach more of the predominantly rural population with both information and services. In that same year, the MOH completed much of the integration process by transforming the remaining vertical projects, including FP/MCH, into divisions of the MOH. FP was among the last programs to be integrated and in the process, resources—and perhaps momentum and certain privileges and authority—were lost.

In 1993, 15 districts had institutionalized FP sites and by 1997 a total of 21 districts were covered by the FP/MCH program and continued to receive support from USAID. Institutionalized districts received a significant amount of training and systems support, including improved systems for logistics, monitoring, and reporting.

One important element of supporting quality clinical care in FP services was the 1991 development of *National Medical Standards for Contraceptive Services (first edition)*. By 1993, dissemination of the standards was underway. In addition, USAID provided support to establish and maintain a National Quality of Care Management Center at the MOH, which, while focused on the institutionalized districts, also trained a whole cadre of health professionals in new ways of addressing quality of care.

After the change to a democratic government in 1991 and the completion of MOH integration, the number of active donors and technical partners at the central level increased. For example, USAID-funded agencies provided important levels of technical and financial assistance. The United Nations Fund for Population Activities (UNFPA), The World Bank, new bilateral agencies, including the Department for International Development (DfID) (Great Britain) and the German development bank (KfW), increased their involvement in family health.

The World Bank's Population and Family Planning Project, implemented by the MOH, was launched in 1994 and reached 72 districts with some MOH inputs. MOH programs in 24 districts benefited from intensive support, including funding and facilities construction as well as support to overall manpower and strengthening of systems. The end-of-project assessment in 2000 documented many positive trends, including increased CPR, which was later verified by the 2001 NDHS. These trends reflect the investments of the government and a number of development partners, several of which worked in multiple districts during this period.

Other ministries received, and continue to receive, donor and private funding in support of a variety of activities related to FP and the implementation of national population policies. Through these programs, school curriculum and literacy courses include population and FP information. In

6. Excerpts from Nepal MOH, 1993–1994. *Workplan for Family Planning and MCH Activities, Nepali Fiscal year 2050–2051.*

addition, the programs support population policy discussions and encourage the involvement of labor and other parastatal organizations in population education.

Above the ministerial level, donors have supported national dialogue on key development policy issues, including population, in such government institutions as the National Commission on Planning (NCP) and the Parliament.

The Private Sector. In 1978, the CRS Company was founded. This event marks the beginning of large-scale private sector involvement in FP work in Nepal. In the late 1980s, USAID's Enterprise Project helped a number of manufacturers integrate FP services into the health package offered to their employees, extending the reach of the national program into the workplace. More recently, a growing number of Nepali men and women have been procuring FP services from the private sector, including private doctors, clinics, and hospitals, as well as drug stores. The overall contribution of this sector to FP service delivery grew from 4.7% in 1991(Nepal FFPHS, 1991) to 7.3% in 2001 (Nepal DHS, 2001).

Policy Framework

Over time, the policy framework for national population programming, including FP and, more recently, reproductive health services in Nepal, became more reflective of international standards. For more than 40 years, USAID and UNFPA have supported a number of initiatives to create and nurture high-level government committees to pursue needed population policies and monitor demographic trends. In 1982, the National Commission on Population (NCP) was created as a result of the reorganization of the policy structure. Under the direct leadership of the Prime Minister, the NCP renewed national-level commitment to FP and, in 1983, directed the promulgation of a revised population policy. Although hopes were high that the NCP would remain viable over the long run, it was not meeting regularly by the mid-1990s. Nevertheless, several important legal reforms affecting family welfare and reproductive health, such as the Eleventh Amendment and the revised Reproductive Health Policy of 2001, were enacted during this time.

Service delivery has also long benefited from approved policies and guidelines. The Nepal Family Planning Policy of 1965 gave specific authorization for the delivery of FP services by the governmental sector, and services began in 1966. Informal and formal standards and guidelines were developed and revised between 1966 and the present. The 1990s were a critical period for improvements, including overall raising of the national goal. Nepal's National Health Policy (1991) states that the goal of the Reproductive Health and Family Planning Program is to "expand coverage and sustain adequate family planning services down to the village level through all health facilities."[7]

The 1998 National Reproductive Health Strategy reaffirmed the GON's continued move away from target-driven national plans and toward human development and individual well-being. The GON, a signatory of the 1994 Plan of Action of the International Conference on Population and Development, acknowledges the need to do more to involve women and youth in programs and services, and to reach out to poor and marginalized groups. In practice, annual "targets" are still an important element of annual planning and reporting, but they are used in the same way they are used throughout the world. These annual indicators focus on expanded use of all methods, and new indicators related to quality of care and access to services are now also monitored. The National Adolescent Health and Development Strategy of 2000 reflects the revised Reproductive Health Policy and confirms that unmarried men and women now have legal access to FP services.

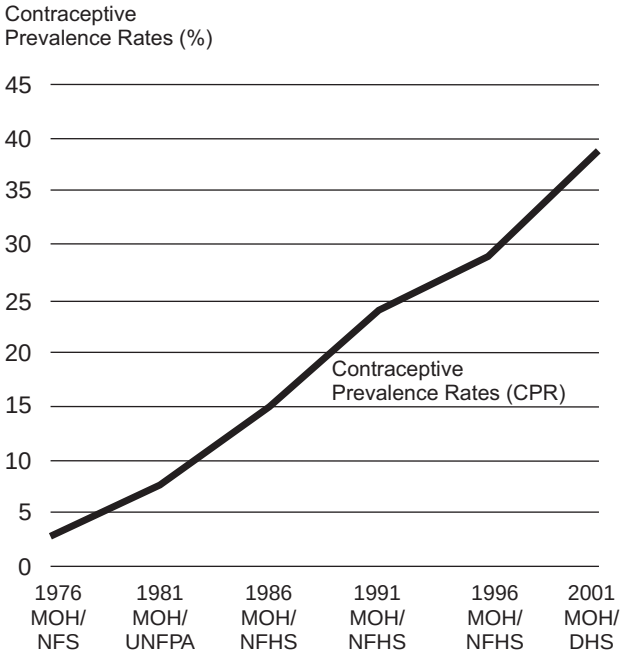
7. Excerpts from Department of Health Services, His Majesty's Government of Nepal. *Annual Report, 1997/1998*.

The Tenth Plan, including its Medium-Term Strategic Plan (HMG, 2002) now under implementation, notes that FP and other key reproductive health components are First Priority Programs under the plan. While most components of this ambitious program are donor-funded, the government contributes to the purchase of contraceptives and funds a proportion of recurring costs.

Scale and Coverage

The evolution and expansion of the national FP program in Nepal reflects decisions made at key crossroads, such as a national push for sterilization camps, an emphasis on improvement of logistics, and a focus on regional training centers. In spite of difficult physical conditions, the Nepal FP program provided some services to clients in every district as early as 1982. While steady progress was made from 1976 onward, it took until 1986 for real momentum and a solid program to reasonably increase the CPR.

Figure 10. Trend in Contraceptive Use



Sources: 1985 Diarrhea Case Management Survey; 1987 NCP; 1991 Evaluation; 1996 MOH/NFHS; 2001 MOH/DHS.

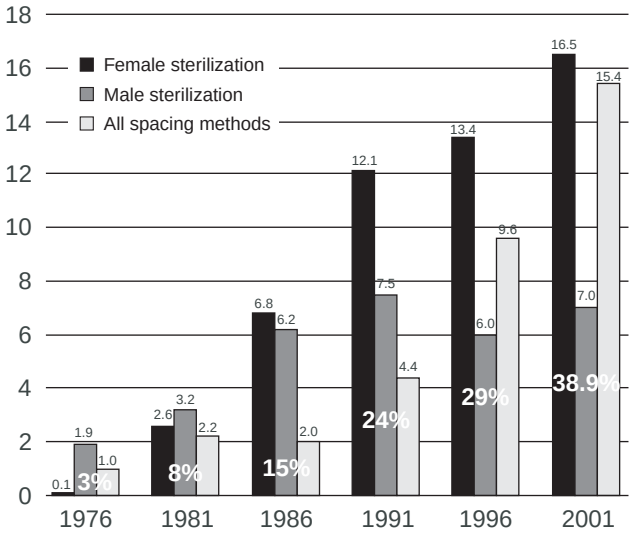
Trends in Indicators

As shown in Figures 10 and 11, the use of contraceptives increased from 1995 to 2001. These figures represent the expansion of use of services by Nepalese women and men over time, but also show the notable expansion in use of non-permanent or spacing methods since 1986.

Current Issues

Nepal's FP program encountered obstacles that required corrections of some magnitude: the sterilization incentive program was one, and the lack of balance between FP and other health service delivery programs was another. One evaluation of the FP program noted, "The project devoted most of its funds and attention to FP, and more specifically to VSC. Child spacing and

Figure 11. Trends in Family Planning Coverage, by Method, 1976–2001



Source: USAID/Nepal, updated with data from 2001 from the DHS.

other health interventions received very little attention from the project until 1985–1986 . . . Since then, while substantial progress has been made in promoting temporary methods, progress in meeting other basics needs such as CS (child survival) services has been much slower . . .” (Pratt et al., 1988).

While issues of scale have been addressed in some cases—for example, access to sterilization services in all districts—others still need work, including rolling out high-quality counseling services and quality monitoring, increasing access to acceptable long-term methods, and finding a viable and sustainable solution to community-based service delivery.

5. Cross-cutting Components

This section describes cross-cutting components that played an important role in operationalizing child survival programs in Nepal.[8] These components—the use of FCHVs, behavior change and communications, information systems, and logistics and supplies—were selected for discussion here because they are:

- Innovations relevant to programming in other countries;
- Activities that typically consume a substantial proportion of child survival resources in country programs worldwide, therefore lessons learned from the Nepal experience would be of particular benefit; and
- Activities that contributed to the effectiveness of intervention programs, according to child health experts in and outside of Nepal.

Use of Female Community Health Volunteers

Historical Perspective

The FCHV initiative of 2002 is an outgrowth of community volunteer programs that began in Nepal in the late 1970s. The move toward community participation and volunteers was stimulated by the 1978 Alma Ata conference, "Primary Health Care for All," and was reinforced by donor interest and resources that were made available to the MOH immediately afterward. The MOH was in the process of extending health care services into rural areas and saw volunteers as a useful way to move forward. This resulted in policy guidelines to train and place 30,000 volunteers during the Sixth Five-Year Plan (1980–1985). The result was the launch of a program with few operational guidelines and with minimal planning and written directives to train people at local levels. In 1980, the Community Health Leader (CHL) program was started in three districts as a pilot project. Over the following five years, it was expanded to 16 districts, with an emphasis on basic training.

CHLs were chosen in consultation with elected village (*panchayat*) leaders and trained by district and HP staff. Nearly all were male, with the exception of the Baitadi District, where the decision to recruit only females was made. The lengthy job description of the CHL covered activities for all major primary health care-related services and behaviors. It was estimated that the CHL would donate six hours per week to perform his or her role. Some became active in such areas as motivating for VSC camps or distribution of ORS. However, CHLs were found to be largely inactive in a 1985 evaluation; they failed to interact effectively with mothers and children and received little supervision or support from the HP.

In 1988, leadership at the MOH was transferred to a female Minister with a strong commitment to women's empowerment and political participation. With her influence and a strong champion at the Secretary level, the FCHV program was launched. The FCHV program was initially a special unit under the supervision of the Additional Secretary in cooperation with the Public Health Division. The Additional Secretary provided the impetus for commissioning a group of well-known and respected trainers to develop the program. The program specified that an MG be established in every ward, that each MG select one respected and willing female over the age of 25 years to be trained, and that each MG begin to address common health problems and encourage villagers to use preventive services, with the help of VHWs. The original objective

8. A number of other components (e.g., advocacy, data management, planning, and budgeting) are described by Taylor et al., 2003.

of the FCHV program was to promote the active involvement of community women in the motivation, education, delivery, and use of MCH and FP services in order to reduce mortality and fertility. From the outset, FCHVs were to be both empowered and competent to carry out their assigned health-related tasks, and their success was to be measured on the basis of health results.

During the following decade, the FCHV program continued to expand rapidly to cover the country. In the last several years, as recognition of the FCHV contribution to the success of community-based health interventions has increased, many core primary health care programs have sought to use them. This has raised questions of work burdens on the FCHV and why they are more successful with some interventions than with others. At the national level, there has been some retrenchment of attitude toward using paid health staff with longer training, and shifting FCHV roles back toward health education and away from service provision. The program is now at a crossroads and is undergoing a strategy review that will look at job descriptions, roles, systems, incentives, and financing. This is timely; since the inception of the program, there have been shifts in health problems and community needs, changes in community participation in the public sector health system, expansion of the system to include a tier closer to communities, and a significant amount of experience and understanding of actual FCHV contribution to community health.

The program went rapidly to scale over a six- to eight-year time period that included major political changes. In contrast to the rest of the health system, FCHVs have experienced relatively low turnover. Aging FCHVs have refused to retire or turn over responsibilities to daughters-in-law, as they are reluctant to lose their position in the community—recognized as they are for their contributions and valuable advice.

Policy Guidelines

When the FCHV program was initiated in 1988, policy guidelines specified that they be females over 25 years of age from the ward they would serve and preferably, but not necessarily, literate. This was the first time that the largely non-literate village women were given the opportunity to participate in primary health care programs at national scale. Without government insistence that they be female, it is likely that VDCs and wards would have put forward male candidates, as they had in the past. Policy also specified the establishment of an MG in each ward to mobilize and educate a broader group of village women.

Another notable aspect of policies at this juncture was that the leadership unit in the MOH published and distributed a "Yellow Book" that clearly explained all the guidelines, rules, and procedures for the FCHV program. This publication was critical for ensuring that the program was implemented as intended, especially given the breadth and rapidity of expansion. Even so, there were problems at the outset with selection of FCHV candidates who tended to be politically important or connected rather than willing volunteers.

Following an evaluation by a local firm (New Era) in 1992, the MOH decided to implement a population-based, rather than a ward-based, FCHV strategy. Since population densities and distances between houses and villages vary by ecological zone, FCHVs were to be distributed accordingly:

- 1 per 400 population in Terai districts;
- 1 per 250 population in Hill districts; and
- 1 per 150 population in Mountain districts.

Distributing FCHVs in this way was intended to make the their workload more feasible and to provide better coverage of vulnerable populations. There has been some debate over the relative costs and benefits of the population-based strategy. On the one hand, it is costly because it greatly

expands the need for training, supervision, and re-supply. On the other hand, it is an attempt to provide better access in Nepal's widely varying topography. Perhaps the biggest question still to be answered is whether access is actually improved with the application of a generic population formula.

Major Milestones in the Female Community Health Volunteer's Role in Child Survival

- In 1993, a critical policy development occurred when Female Community Health Volunteers (FCHVs) were authorized to distribute vitamin A capsules in twice-yearly campaigns.
- In 1994, the Ministry of Health (MOH) granted permission for specially trained FCHVs to treat childhood pneumonia with cotrimoxazole. This greatly expanded community access to timely treatment. Ongoing monitoring of FCHVs provides evidence that quality has been maintained. Senior officials are currently questioning this policy, and thus potentially undermining continued expansion of the program.
- In 2001, guidelines for FCHV endowment funds were promulgated by the government based on early experience supported by the National Technical Assistance Group (NTAG). Endowment funds are savings accounts that generate interest and are established at the Village Development Committee (VDC) level to support FCHVs and their work. The funds are under the control of an Executive Committee that is comprised largely of FCHVs, with support from the VDC chairperson and health post (HP) or sub-health post (SHP) representative. While work with incentives for FCHVs has been undertaken since the beginning of the program, this is the first mechanism to show widespread

A recurring theme in discussions with both the DoHS and donors is that the FCHV program is expensive. Donors want the government to invest more budgetary resources and to decrease their own funding in the interests of sustainability. The program's scale and the need for ongoing supervision and monitoring, which enables FCHVs to be effective, reportedly drive expenses. The government has drastically decreased budgets for supervision as the cost of managing the political crisis increases. Thus, current negotiations between donors and the government have been reduced to "Who will pay?" as both sides face less flexibility and fewer resources. Notably, discussions of cost are rarely accompanied by discussions of program benefits.

FCHVs were originally supplied with a box that contained simple first aid supplies, ORS, and paracetamol. They were required to buy the box with their training allowance funds and were instructed to sell their supplies to clients prior to obtaining additional supplies through HPs. The early system was poorly planned and did not work well, although some re-supply was done through local shops and HPs. The supply system was redesigned, and in the late 1990s, HPs distributed commodities such as ORS, oral contraceptives, and condoms to FCHVs. HP-supplied cotrimoxazole was added in CBAC/CB-IMCI districts, although this program experienced stock-out problems in early years. Since stock-outs seriously undermined community trust and use of FCHVs for child pneumonia, special efforts were made to improve the system. Currently, in 14 districts, the availability of supplies with FCHVs is relatively good for ORS (67%) and cotrimoxazole (56%),[9] but relatively low for pills (28%) and condoms (33%) as per LMIS reports. Experiments with cost recovery for cotrimoxazole were carried out in Makwanpur and Siraha districts with good results.

9. This survey did not differentiate between "treatment" FCHVs who should have cotrimoxazole on hand and "referral" FCHVs who do not treat but simply assess cases and refer those who require treatment. Other small studies have found cotrimoxazole availability with "treatment" FCHVs to be considerably higher.

Selection and Training

The early FCHVs were primarily non-literate, older women. Therefore, both literate training manuals and materials strong in visual content were developed in 1988–1989. The non-literate manual was developed through an unusual partnership between the MOH (when provided expertise in health), World Education (expertise in non-formal education), and local artists (experience in visual literacy). The literate manual used the same artwork and built on the messages in the original manual. Training focused on a limited set of subjects—first aid; diarrhea/ORT; FP, including small, child-spaced families, condoms, and re-supply of pills; immunization; nutrition; pregnancy/delivery; sanitation; how to conduct an MG meeting; and referral. In most cases, the role of FCHVs was to educate, promote, and motivate to carry out healthy behaviors in the home and to use HP services. They also provided first aid treatment.

Training guidelines were developed, and a cascade training design was implemented. One FCHV per ward was selected, and over a six-month period in early 1989, more than 4,000 FCHVs completed 12 days of basic training. By the end of 1989–1990, more than 13,000 had been trained. Coverage continued to expand rapidly. By 1991, training in 58 districts was completed; by 1994, training in all 75 districts was completed. In 1993, training was shifted to a National Health Training Center (NHTC) and a new strategy was implemented. The original 12-day basic course was extended to 15 days, and refresher trainings were reconfigured as refresher/review meetings, conducted for two days, two times per year. Altogether, 58,786 village women have been trained to date, with 48,549 considered still active in their communities.

As health problems and FCHV roles have evolved over the past decade, FCHVs have been trained in new subject areas with additional modules. These include ARI treatment, vitamin A, polio eradication, HIV/AIDS, malaria, and visceral Leishmaniasis, or *kalaazar*. Often these trainings have been conducted on individual subjects by program staff in the relevant subject areas, and not through the NHTC.

Motivation for Volunteering

The most controversial part of the early FCHV program was the decision to provide a stipend of 100 rupees per month as an incentive for volunteering. Some observers felt this was a only a token amount that demonstrated support, while others felt it would undermine the selection process and set the FCHV apart as a paid employee. The issue of sustainability was raised within the MOH and Ministry of Finance (MOF) and by donors, many of which declined to provide support for it. FCHVs received the stipend for approximately one year; when leadership changed, it was discontinued. Over a decade later, the financial incentive is still raised as an example of a past problem with the FCHV program.

Changes were made in local self-government, and authority and ownership of SHPs and local health activities devolved to VDCs. The status and perceived effectiveness of FCHVs increased with the achievements of the vitamin A and ARI programs. In this more positive environment, the FCHV Endowment Fund was established as a pilot program in one VDC of the Ilam district. As of 2001, 144 VDCs in 15 districts had contributed to an endowment fund. Experience demonstrates that stakeholders believed FCHVs need the funds to support their work, that FCHVs are using the funds to improve service delivery rather than as a personal salary, and that the guidelines and logistics of executive committees and accounting work effectively. FCHV endowment funds are thus viewed as a growing and successful efforts to improve the sustainability and effectiveness of FCHV work.

Supervision and Reporting

Early evaluations of the FCHV program identified system weaknesses in the areas of supportive supervision and reporting. There were also performance problems in more complex areas, such as

advising women about the side effects of oral contraceptives. In the early 1990s, attempts to improve supervision through district health systems ran into the same problems as most vertical programs:

- Budgets were believed to be insufficient;
- Supervisory contacts were often punitive in nature and limited to checking on targets and reported data; and
- Designated supervisors were not recognized or rewarded for implementing a supportive approach.

However, evidence suggested that increased contact with VHWs resulted in higher levels of knowledge and activity on the part of FCHVs. When vitamin A and ARI program interventions were implemented, supervision and refresher/review meetings were strengthened for those activities. The vitamin A program insisted on a respectful, supportive approach that involved local authorities and health staff. Both the vitamin A and ARI programs incorporated local collection and use of data as the foundation for understanding performance. In these instances, supervision improved.

Standard supervision in the form of refresher/review meetings conducted by district and HP staff remains a systemic problem. Budgets have been severely cut or are used for alternative purposes, changes to travel and per diem allowance rules for SHPs have eliminated monetary incentives, and the conflict situation has introduced yet another barrier to staff travel.

Behavior Change Communications

Historical Perspective

Beginning in 1975 with the first Long-Term Health Plan, Nepal has participated in the evolution of the field of what is currently called "behavior change communications" (BCC). Over the years, its multi-ethnic and multi-lingual villages and districts have been virtual laboratories for the evolving strategies of health education; IEC; social marketing; social and community mobilization; enter-education (education through "entertaining" channels); and, most recently, BCC. Through these successive chapters, Nepal has influenced its population to make a myriad of changes. From virtually no knowledge of FP, it has managed to bring nearly universal knowledge of modern contraception to a marginally literate population. In addition, despite chronic malnutrition, Nepal has had a major impact on child mortality through a world-class vitamin A supplementation program. And it has mobilized some of its faith healers to complement their traditional practices with promotion of ORT and child-survival technologies. Its prestigious Gurkha soldiers have marketed FP, as have its itinerant troubadours and Brahmin priests. Most importantly, thousands of marginally literate village women—the FCHVs—now mobilize mothers and communities to adopt healthful behaviors. Despite Nepal's daunting terrain and limited communications infrastructure, there have been impressive results in changing health knowledge, although major challenges remain to address the gap between awareness and practice.

Effective Models

The Radio Communication Project. The most methodologically sophisticated IEC/BCC initiative in Nepal is that undertaken by the Radio Communication Project (RCP) and its GON and NGO partners. Formative research into the barriers to desired health behaviors was applied to the development of targeted messages that were delivered in a regular, sustained media strategy. The strategy integrated message themes into an entertainment-oriented social drama. A significant investment in evaluation research permitted program designers to assess the impact and re-plan

subsequent phases in light of the findings. The need for such a comprehensive strategy stemmed partly from the complexity of the behaviors to be changed among multiple target audiences, and partly from a need to overcome a legacy of problems associated with a wide range of FP beliefs and practices. Ongoing pre-testing and focus group discussions are used to continually identify such issues as media behavior patterns, key benefits, and messages with maximum appeal, as well as linguistic patterns for use in mini-dramas and spots. The components of the strategy are integrated to achieve synergistic effects for maximum impact. In addition, the strategy has been progressively expanded to incorporate new content.

The attitudes of many health workers toward their clients have been an obstacle to creating the climate of trust and respect required for persuasive communication. RCP content focused on both sides of this equation, using a systematic approach to translate values into identifiable and achievable steps. Programs targeting clients encouraged them to value their rights to informed choice, as well as to participate in a counseling process. Parallel distance-education programs for providers modeled a step-by-step approach to counseling. The desired behaviors were carefully analyzed and broken down into understandable parts of a whole. While respecting creativity and originality, programs have also been rebroadcast periodically over the life of the project, serving both to increase the number of listeners exposed and to reinforce learning for listeners who may have heard only some of the broadcasts.

Working in collaboration with NGOs, RCP built in interactivity with listeners and further reinforced messages through locally available print materials as supplementary learning aids. The aids allowed providers to deepen their specific knowledge of how contraceptive methods work and how to minimize the spread of incorrect information. Radio listeners were regularly encouraged to write to the production team to share their responses, creating regular feedback that is applied to future program design. RCP assured both widespread support and transferred methodological skills by involving a broad spectrum of participation in the successive design phases of the project.

The Vitamin A Project. The vitamin A project—NVAP—was managed by NTAG. The main behavioral objective of the vitamin A program—having parents bring their children for twice-yearly distribution of capsules—was considerably simpler than the FP objectives. Nonetheless, the communication and mobilization approaches for the FP and vitamin A programs shared certain values, and the wide-scale success of the vitamin A program bears witness to the efficacy of the approach. As an example, the NTAG leadership insisted on treating the primary outreach workers, the FCHVs, with maximum respect, using an honorific title in Nepalese (*Jyu*) when addressing them. Although not a common practice, this small but potent gesture of respect characterized the way the program treated its collaborators, and the way mothers were to be treated in turn.

The program featured creative media and communication approaches to popularize desired behavior. These included creating innovative program elements such as *tikas* (small religiously symbolic forehead stickers) with fruits and vegetables to stimulate awareness of the nutritional messages accompanying vitamin A promotion. In addition, cinema halls were important venues for projection of promotional slides. An innovative feature of this promotion was involving cinema hall managers in discussions about the importance of the slides, which were delivered and then collected later by NTAG staff. The message to the cinema hall managers was that the projection of the slides was a valuable community service and needed to be treated accordingly.

At the community level, NTAG staff conducted special outreach efforts to hard-to-reach communities often neglected by local programs. Training for field workers was highly participatory, involving extensive role-plays designed to build confidence, support, and a sense of

ownership of the program. FCHVs were trained to work with local leaders to plan capsule distribution at the micro level. The information requirements for the vitamin A program were not overly demanding. Emphasis in the training programs for FCHVs and their collaborators was on developing the confidence and commitment needed for program success. The training approach was made highly entertaining and also empowering for participating women, many of whom had never taught others before. Women were urged to chant together, rally-style, proclaiming that the vitamin A program was their program, not the NGOs' or the government's. As simple as it may seem, this set of attitudes and approaches led to high levels of motivation for those who needed to motivate and organize others.

As described in the previous chapter, the program carefully developed and tested a range of training and educational materials, paying careful attention to local planning strategies. In addition, it is worth noting that the innovative breakthroughs in respect-based empowerment added considerable vitality and zest to a program that achieved high levels of coverage and produced epidemiologically significant outcomes.

The Expanded Program on Immunization's Information-Education-Communication Strategy. The EPI program's IEC strategy was based on a disciplined, intensive adherence to its core messages and careful attention to the source of the messages. Although grassroots organizations were mobilized to support EPI activities, the program enjoyed unequivocal and regular top-down support. The former King, a major advocate of the program, endorsed it vigorously and often. A cascade of endorsements and exhortations from the heads of national, regional, and local establishments accompanied the royal support of the program. The message was exceedingly clear and simple: Immunization is an important service, and it should be delivered at a specified time, place, and date. These times have been adhered to year after year in a way that ritualized the service. Fortunately, logistics and supply were generally in step with the creation of demand, and this simple IEC strategy has been appropriate and adequate.

Social Marketing Approaches. The use of social marketing approaches was led by the Nepal CRS project. Prior to the mid-1970s, the private sector had never been mobilized for a social aim. Today, a growing number of FP services are available through the private sector, with an estimated 7% of contraceptive clients receiving services privately. CRS introduced modern approaches to advertising and marketing when it "branded" contraceptives and commissioned a major marketing initiative. It also opened up wider distribution of contraceptives and ORS packets by reaching out to a nationwide network of small commercial outlets for these products.

The CRS contribution to the distribution of ORS packets is especially remarkable. In 2001, CRS sold 2,391,309 ORS packets. This is more than twice as many as were sold at the peak of the previous distribution program in 1988. CRS discontinued sales for five years, resuming in 1998–1999, when it immediately sold nearly 2.4 million packets. It has had an average sales volume of over 2 million packets in the four years since it resumed distribution. Although management and organizational problems have persisted, CRS' results over many years suggest that the social marketing approach still warrants consideration as an adjunct to government- and NGO-led health and FP programs.

In Nepal's unique circumstances, experts note that the IEC/BCC process for child health must be integrated with advocacy, community mobilization, and strengthened interpersonal communication and counseling. The programs that have done so are those that are achieving the most significant results.

Information Systems

Historical Perspective

Nepal's child health programs used information from several routine systems, as well as from active field-level monitoring, surveys, and other studies. Although collectively these sources provided extensive data, they were not complementary, coordinated, nor integrated and still are, for the most part, poorly linked. Historically, from the country's early days of development in the 1950s until roughly 1990, the impetus for gathering and using information came from individual vertical projects such as NMEO, EPI, and a series of FP projects. Since staffing and infrastructure for health services were limited, both in capacity and geographical coverage, routine reporting of management or clinical data on a national scale would not have been feasible for most of that 40-year period. Instead, systems were developed for highly specific purposes, in externally funded projects that were often time-bound and restricted in scope.

Although some of these projects invested considerable resources and effort in their information systems and uses data produced for their own purposes, there were barriers to sharing that data. Practical barriers existed, of course, given the limitations of technology: carbon paper and mimeograph machines were state-of-the-art for reproduction and, even in the 1980s, data were typically compiled in large, bound ledgers. Before the advent of personal computers with spreadsheet and database software, the Internet, photocopiers, inexpensive printing, and storage media other than paper, any attempt to manage or disseminate information was an ordeal.

Territorial barriers to cooperation and information sharing were also an important factor. The value of knowledge in gaining and maintaining power was well recognized in Nepal, as in other parts of the world. Withholding information from people outside one's immediate sphere also had its value, or at least did in the past—this was the case for individuals and for institutions as well. The staff of vertical projects often worked hard to achieve project goals, but they also worked to preserve their jobs as long as possible. The information they shared might be used against them, either to question their performance or to reduce dependency on their expertise. Donors, each with their own agendas and funding realities, also tended to maintain separateness of projects and initiatives and, with some exceptions, did not go out of their way to collaborate or promote a free flow of information. In short, until the 1990s, the incentives for sharing information were often outweighed by the disincentives.

Since development of systems using routinely reported data made slow progress, the GON and its partners depended primarily on surveys and other one-time studies to obtain the information they needed. These efforts, although often costly and time-consuming, provided data of acceptable quality and of specific relevance to program managers. For a given point or period of time, survey results represented the situation nationally and within households. Since no system was in place that could offer as much, the incentive to conduct one more survey was always strong. With all they had invested in this approach, donors were not eager to commit additional funds to build systems that would take years to become viable and might then fail, even if such systems were to provide dependable data of the most desirable kind.

Around 1990, several trends began to converge and the pace of change accelerated, greatly affecting the management, use, and dissemination of information. Among these trends, the most significant included:

- **Democracy.** The creation of VDC and DDCs throughout Nepal added to the growing demand for information, and helped foster its use for decision-making by people directly affected, or at least by their representatives.

- **Integration.** Reorganization within the MOH, with establishment of the DoHS and the dismantling of formerly vertical programs, led to an increased sense of common interest and willingness to share information.
- **Decentralization.** Health services were administered through Regional Directorates in each of the five development regions and through DPHOs and their respective offices in all 75 districts. These changes helped provide the structure and increased the need for routine reporting of service delivery data and other health information.
- **Donor Coordination.** All parties, the GON and donors alike, insisted on greater transparency in the use of resources and results achieved. Further investment in information systems has been one favorable outcome of this trend.
- **Information Technology.** The availability of computers and software accelerated the collection, analysis, presentation, and use of information and made it more relevant for guiding program decisions.

Although these trends helped create an enabling environment for change, including the development of information systems, the territorial legacy still prevailed. Separate initiatives led to the creation of several distinctly different systems. These included:

- Health Management Information System;
- Logistics Management Information System;
- The Human Resource Development Information System (HuRDIS);
- Finance;
- Early Warning and Reporting System (EWARS); and
- Acute Flaccid Paralysis (AFP) Surveillance.

Health Management Information System. HMIS provides for routine monthly reporting of service delivery data from SHPs to HPs, and from HPs and other facilities to the district level, in all 75 districts. DPHOs and their staff consolidate reports from all HFs and submit their summaries to an HMIS section within the DoHS Planning and Foreign Aid Division (PFAD), sending copies to their respective Regional Health Directorates. HMIS data are further summarized in annual reports, published by the DoHS toward the end of each fiscal year (July) and reporting on the previous year (a full 12-month lag). The system includes an annual review process, with meetings held at facility, district, and regional levels (from August 1 onward), that culminates in a national-level review meeting in late September or early October.

HMIS tools include 30 registers (numbered 1–30); four reporting forms (31–34) for use by SHPs, HPs, and PHCs; and three reporting forms for hospitals (35–37). The system was drastically streamlined from earlier days when vertical projects were at their peak. Prior to 1993, a total of 113 recording and reporting forms were completed each month, contributing to an excessive paperwork burden for staff at HF and district levels (CDMS, 2001).

HMIS has several strengths in that it:

- Operates at national scale, with monthly reporting from government HFs at all levels throughout the country;
- Promotes a comprehensive set of standard service delivery indicators for measuring performance;
- Incorporates a progressive annual review process, beginning at the facility level and continuing at the district, regional, and national levels; and

- Enhances the capacity of DoHS staff at each level, helping them develop the skills and most of all the mindset for performance monitoring.[10]

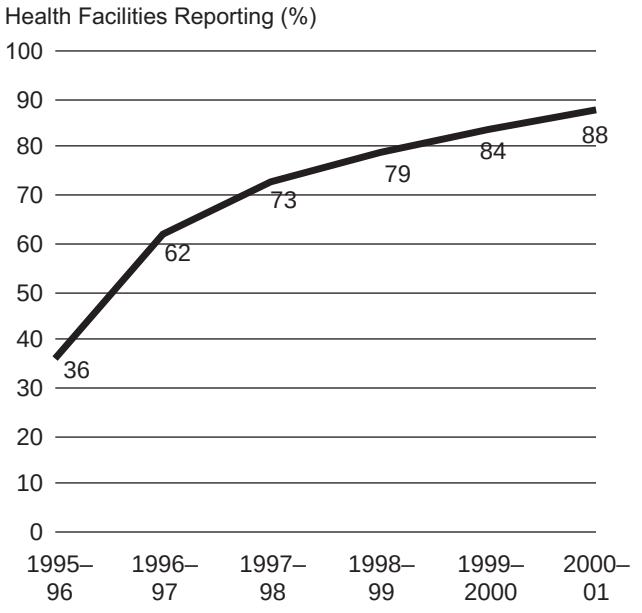
Some weaknesses have kept HMIS from realizing its full potential, however. For example, HMIS:

- Prolongs the lag between when data are reported by HFs and when they become available for decision-making at any level;
- Provides inadequate feedback to—and inadequate first-hand supervision of—staff at district and facility levels, thus contributing to poor quality of reported data that are perceived by managers as unreliable, incomplete, and late to arrive;
- Is not used for program management at any level of the health system, despite the progress mentioned above and due, in part, to limitations noted here (CDMS, 2001);
- Combines HF data with data representing services provided by FCHVs, making it hard to determine what FCHVs contribute to programs and service delivery; and
- Includes only rarely programs that were not operationalized nationwide; as a result, the ARI/IMCI data have developed a somewhat parallel system.

Logistics Management Information System. LMIS provides data on stocks of essential commodities at each level of the health system, based on quarterly reports from individual HFs, and from district, regional, and central stores. These reports provide managers with updates of stock on hand, losses and adjustments, and quantities dispensed to clients. An LMIS Unit at the national level, located within the LMD, is responsible for tabulating data from the reports and creating summaries for program managers. An assessment conducted in 2000 found LMIS to be "functional, with sound reporting and record systems countrywide" (FPLM, 2000; p. 9). The proportion of HFs submitting LMIS forms to the district level each month was maintained above 80% for the past three years, up from a baseline of 36% in 1995 (Figure 12).

At the same time, shortcomings are evident. The assessment team noted that "within. . . record systems inaccuracies and errors were common, and. . . reports were not being used for decision-making" (JSI, 2002; p. 22). Although calls for integration of the LMIS with the HMIS have been made, the idea is unrealistic on its face, because the systems are quite different in purpose and design. Closer linkage might be feasible,

Figure 12. Health Facilities Submitting LMIS Forms (Nationwide)



Source: JSI/Nepal 2001 Logistics Annual Report.

10. This kind of comprehensive, phased review process was institutionalized, however, only within the MOH—no other GON Ministry or agency attempted to assess performance on an annual basis, or with such wide participation of staff (CDMS, 2001).

and such a linkage has been a stated intention of the DoHS in recent years. However, attempting to combine the systems could jeopardize the demonstrated usefulness of LMIS and exacerbate delays in HMIS reporting as well.

Human Resource Development Information System. The HuRDIS database is managed by the DoHS Health Institution and Manpower Development Division (HIMD). First introduced in 1997 with the support of a German bilateral development agency (GTZ) and other donors, HurRDIS was designed to compile and maintain records on the identity, qualifications, performance, and current status of DoHS staff in all sanctioned posts of the health service delivery system. This information, if it were accurate and accessible to managers for purposes of planning and other decision-making, might have been valuable. However, because of delays in reporting and updating the database, in addition to chronic problems of frequent transfer of staff and extended absences from posts, the dependability of HuRDIS data has been limited and its use is poor (His Majesty's Government of Nepal, 2001). Linkage between HuRDIS and HMIS data remain tenuous to date (His Majesty's Government of Nepal, 2001).

Finance. The finance section of DoHS maintains a system for tracking detailed "regular" and "development" budgets for all divisions, sections, and programs. Budget allocation, distribution, release, and expenditure are monitored and reported on an annual basis, as are the financial status of development programs at central and district levels. Updates on the proportion of funds expended are sent to donor agencies (His Majesty's Government of Nepal, 2001).

Early Warning and Reporting System. EWARS is a 24-site, hospital-based sentinel surveillance system, developed under the DoHS Epidemiology and Disease Control Division (EDCD) with support from the USAID-funded Environmental Health Project (EHP). Designed to complement HMIS and provide more timely reporting and prompt detection of potential outbreaks, EWARS tracks the occurrence of three priority vector-borne diseases (malaria, Japanese encephalitis, and *kalaazar*), as well as neonatal tetanus, measles, and acute flaccid paralysis (AFP) to detect wild poliovirus cases in the quest for eradication.

First established in 1995 with eight sites, the system was expanded in 1998 to include 24 district and zonal hospitals in Terai districts across all five regions of Nepal. Cases are reported by fax on a weekly basis to the VBDRTC in Hetauda. The data are compiled and sent to EDCD, and a weekly bulletin is issued from there, with a summary of all cases reported and indicators that show completeness and timeliness of reporting. The development of EWARS further promotes the involvement and strengthening of diagnostic laboratories and the organization of Rapid Response Teams (RRTs) for the control of outbreaks in each of the districts with reporting sites.

An assessment of EWARS, carried out in April 2001, found the weekly reporting process to be timely and with reasonable accuracy and completeness of data, although malaria was considered to be under-reported due to poor sensitivity of laboratory diagnosis and the inherent limitations of a sentinel system that excludes cases unless they are detected in one of the participating hospitals. Recommendations for enhancing the effectiveness of EWARS included (a) improving the flow of information through the system, (b) taking steps to strengthen ownership and coordination of the system at both national and district levels, and (c) taking consistent follow-up action on the information collected, thereby requiring greater involvement of DPHOs and other members of the RRTs (Weeks and EHP, 2001).

Acute Flaccid Paralysis Surveillance. The eradication of polio requires a high level of sensitivity in detecting cases of AFP and wild poliovirus wherever and whenever they occur. In 1998,

recognizing that neither HMIS nor EWARS data would be adequate for this purpose, the WHO polio eradication unit in collaboration with Nepal's DoHS began developing an extensive system for AFP surveillance. The system, which includes 260 sites in all districts of the country actively reporting on a weekly basis, depends on proactive technical and operational support provided by 15 Regional Surveillance Officers (RSOs), who visit all districts regularly. The current focus, however, is on districts in the Terai region, located adjacent to the Indian border and at highest risk for continued transmission of wild poliovirus. Financial and technical support for developing and maintaining the system came from a wide partnership that included USAID, the Centers for Disease Control and Prevention (CDC), North American Aerospace Defense Command (NORAD), DfID, the Netherlands, the United Nations (UN) Foundation, and Rotary International, as well as WHO.

With sufficient resources and intensive effort, international performance standards for AFP surveillance were achieved in the first year of operation and have been maintained over time. A review of Nepal's polio eradication initiative, conducted in April 2001, observed that the non-polio AFP rate had consistently exceeded the benchmark of 1 case per 100,000 children less than 15 years of age, reaching 1.93 in 2000. Over the same time period (1999–2001), the collection rate for adequate stool specimens had risen from 40% to nearly 80%. RSOs had investigated and completed 60-day follow-up on 95% of the 211 AFP cases reported (WHO/SEARO, 2001). By June 2002, a total of six wild poliovirus cases had been virologically confirmed, two in 1999 (Type 1) and four in 2000 (Type 3) (WHO/SEARO, 2000).

Along with these achievements, the review team also found some deficiencies, such as an inadequate understanding of AFP and the need for prompt reporting of cases at some sites. This deficiency was in part due to transfer of previously trained staff and to a lack of clarity in roles and procedures that led to delays and omissions. The team noted that AFP was seldom included in monthly HMIS reporting, and although EWARS sentinel sites did include AFP in their routine weekly reports, these reports were not consistently sent to the RSOs. Although national targets for surveillance were being met, performance among the five regions was variable, and several districts had yet to report any AFP cases. Data were not always being used to improve reporting or to guide immunization activities in the areas of highest risk for wild poliovirus transmission, and indeed, linkages to routine immunization were found to be weak. Acting on recommendations of the review team, WHO and DoHS have since taken steps to correct these problems.

Effectiveness

The greatest direct benefit—and potential for impact—must be attributed to LMIS, which was crucial in improving logistics management and led to greater availability of essential commodities. Commodities have been a key factor in the results achieved by Nepal's successful programs (i.e., vitamin A, FP, EPI, ORT, and pneumonia treatment).

Logistics and Supplies

Historical Perspective

In Nepal, logistics management was for decades among the weakest links of the health service delivery chain. Rugged mountain terrain, floods and landslides during the monsoon season, inadequate transport infrastructure (with a number of districts still without roads), and impaired communication have all contributed to the isolation and supply difficulties of Nepal's hinterland.

These constraints, in combination with bureaucratic inefficiency, limited motivation, and lack of management capacity, contributed to the chronic failure of the MOH to supply adequate quantities of essential commodities when and where needed. HPs and other peripheral facilities

often received their annual allocation of medicine and supplies months late, which meant running out of essential items such as antibiotics within three months and facing empty shelves the rest of the year. Failure to maintain or repair equipment or to store supplies appropriately often led to premature deterioration. Stores at central, regional, and district levels were burdened with accumulations of obsolete equipment, outdated medicines, and other damaged or useless commodities.

Vertical programs such as the NMEO, the EPI, and a succession of projects providing FP services with some MCH care, succeeded in overcoming many of the constraints and did produce positive results. The existence and, for some years, dominance of these programs was partly justified by logistic needs. With dedicated staff, focused effort, and intensive use of resources, obstacles could be overcome, enabling priority services to be delivered on a wide scale. Vertical programs reached a crescendo of activity in the late 1980s. By the early 1990s, they were being integrated as prescribed by the new National Health Policy (1991). Although vertical programs were clearly not sustainable and reform was overdue, the process of integration proved costly in its own way: information and logistics systems that performed quite well for specific purposes were dismantled or abandoned. Qualified staff were reassigned or dismissed, and their hard-won experience was, in many cases, forgotten or lost.

In 1993, however, the MOH began to take decisive steps to strengthen and rationalize logistics management. The LMD was established to take responsibility for selection, procurement, distribution, and monitoring of commodities used by HFs throughout Nepal. The LMD, with technical assistance from John Snow, Inc. (JSI) and other partners, prepared a Logistics System Improvement Plan (LSIP) in order to "institutionalize a sustainable, effective and efficient health logistics system" (Kinset et al., 2001; p. 3). This plan called for steadily phased implementation, with design and field-testing of new policies and procedures followed by preparation of training materials and reference manuals, training of trainers, and intensive training in basic logistics and Inventory Control Procedures (ICP), conducted region by region. The initial training covered all health and FP commodities, introducing an indent or "pull" system for essential program commodities, augmenting annual allotments from an existing "push" system when shortfalls were identified. Vaccines, syringes, and other immunization supplies were still being procured and distributed separately, however.

Completing the process of integration, with assistance from UNICEF and JSI, the LMD organized further rounds of training in cold chain management and vaccine logistics. From mid-1994 to mid-2000, more than 15,000 storekeepers and other health staff had been trained (JSI, 2002). The NHTC and its five regional training centers were also involved in these activities, and their staff has been able to carry out further logistics training as needed over time.

In 1994, the LMD and JSI also began development of an LMIS that was to provide data on stocks of essential commodities at each level of the system, based on quarterly reports from individual HFs or service delivery points (SDPs), and from district, regional, and central stores.

Project-specific activities that contributed to improved logistics management during this period included:

- Seeking out collaboration between the MOH and donors in consensus forecasting for contraceptives;
- Use of data from HMIS and LMIS to project future needs;
- Maintenance of a sufficient annual commodities supply;
- Construction of 36 new district store facilities based on a standard, appropriate design, with funding from the DfID and German development bank KfW, with oversight by the LMD and JSI; and

- Clean-up of central, regional, and district stores, with the disposal of broken-down vehicles, obsolete equipment, outdated medicines, and damaged supplies.[11]

This 10-year effort has been characterized by determined advocacy on the part of USAID and JSI, convincing the GON and other donors of a simple truth: "No commodities, no program."

Several contextual factors (in addition to the project-specific actions noted above) contributed to the strengthening of logistics management:

- Political will and decisive action within the DoHS and, following its creation, the LMD of the MOH, to initiate and then carry forward the process of reform.
- Vision, determination, and a sustained commitment of funding from USAID, motivated above all by a long-term commitment to FP, with a desire to protect its investment and enhance the results of ongoing programs (FP, CDD, ARI, vitamin A, and malaria control).
- Vision, determination, and high-quality technical assistance from JSI through USAID-funded bilateral projects, in collaboration with the FPLM project and its successor, DELIVER.
- Responsiveness of other donors (particularly UNICEF, KfW, and DfID) in recognizing the benefits of improved logistics management and making substantial funding commitments of their own to support aspects of the process. (These are recent developments.)
- The LSIP, which provided a clear statement of intent and, to some degree, a route map for reform and further development of logistics systems in Nepal.
- LMIS, which has been providing valuable data to program managers and other stakeholders, as well as serving as a vital means of monitoring the progress of logistics improvement throughout the country.
- The successful institutionalization of competency-based logistics management training through the NHTC and regional training centers—one of the most promising signs of sustainability for this program to date.

And several factors impeded logistics management:

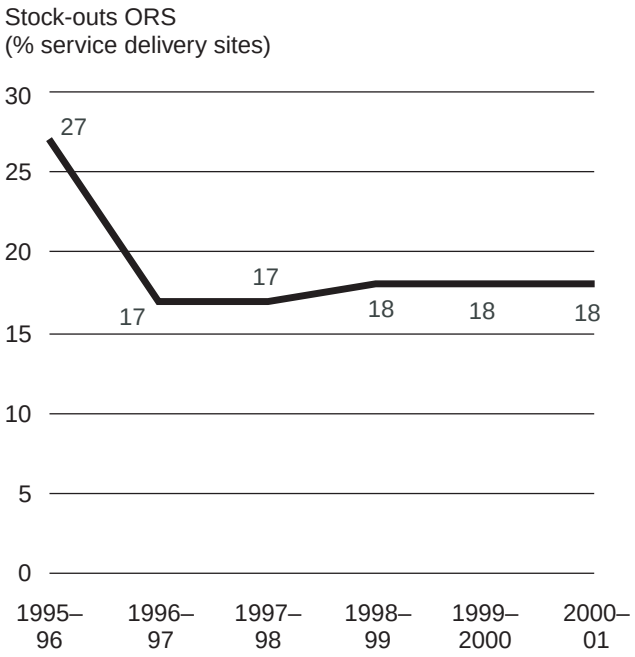
- Inadequacy of supervision, both in quality and quantity, at all levels of Nepal's health service delivery system. To maintain strong levels of motivation and reinforce the standards of practice introduced through training, fresh approaches to supervision must be found, with more courageous leadership from the DoHS.
- Limited prospects for sustainability of LMIS, given an unrelenting dependency of the LMD on donor funding for support of the LMIS Unit staff, as well as other recurring costs.
- Still-limited use of LMIS data for management decision-making. Despite some progress in promoting the use of these data, routine review of LMIS reports has not been fully institutionalized, and only a few managers at each level give any thoughtful analysis to the data.

For the seven commodities routinely monitored by LMIS and essential for FP and MCH programs, the trend in stock-outs has been encouraging. Pills, condoms, Depo-Provera, ORS packets, and iron-folate tablets have been available in most facilities most of the time, with stock-outs maintained at levels lower than 20%, and dropping as low as 10%, over a period of years (see Figure 13). Cotrimoxazole and vitamin A have been subject to more stock-outs, with increases since 2000, but these recent problems occurred in part because of rapidly expanding program

11. This latter initiative led to a recovery of nearly 165 million rupees through public auction of vehicles and equipment and freed up more than 100,000 square feet of floor space in storage facilities.

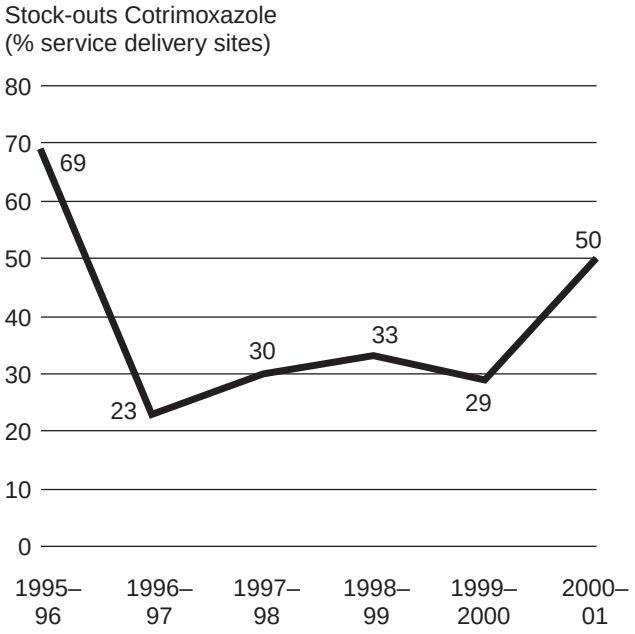
coverage, consistent with increasing amounts of commodities dispensed (see Figure 14). The DoHS and the LMD have demonstrated their commitment to correcting problems with these commodities, and progress has been made. While the impact of logistics cannot be measured separately from that of the interventions it supports, its outstanding contribution to FP and child health programs over the past 10 years is readily apparent.

Figure 13. Stock-outs: Oral Rehydration Solution (ORS packets)



Source: JSI/Nepal 2001 Logistics Annual Report.

Figure 14. Stock-outs: Cotrimoxazole, 100/20 mg



Source: JSI/Nepal 2001 Logistics Annual Report.

6. Conclusions: Major Program Influences

The decades of rapid decline in infant and child mortality in Nepal also witnessed rapid expansion and high coverage of proven mortality reduction interventions such as vitamin A supplementation, immunization, pneumonia treatment, and FP services. Socio-economic conditions were also changing during this period and some may argue that the declining mortality resulted from overall improvements in incomes, education, and access to social services. However, evidence from carefully conducted operational research and field trials in Nepal that measured mortality outcomes (Pandey et al., 1991, West et al., 1991) combined with evidence of successful scaling-up of these programs clearly indicate that some substantial proportion of mortality decline can be attributed to child survival programs. What types of investments led to the expansion of these intervention programs? What influenced these investments, and what lessons were learned about how to achieve similar success in other countries?

This section attempts to answer these questions by summarizing lessons learned across Nepal's different programs about the use of field research, leadership, and delivery strategies that relied on community implementers, and about the importance of clearly defined guidelines, strong systems support, resources, and coordination.

Community Level

- Programs with simple and focused guidelines for the community and with community-based workers were more successful. For example, global guidelines on vaccination schedules and cold chain management were adapted and implemented by VHWs for EPI and helped achieve marked improvement in coverage. Nutrition programs (other than vitamin A) lacked workable activities and clear roles for health workers, and these interventions failed to gain the confidence of workers or caregivers.
- Programs that focused on participatory training and improving quality of care at the community level were more successful. For example, NVAP concentrated on participants' active involvement in training at all levels, and closely monitored quality of care provided by FCHVs. Community-based management of pneumonia established expectations for quality during initial training and consistently improved measures.
- When program success became "visible" to communities and providers, results improved more rapidly. For example, communities quickly recognized that FCHVs provided timely treatment of child pneumonia. This recognition resulted in a relatively rapid increase in the proportion of expected cases receiving treatment. By contrast, use rates for ORT stabilized and never exceeded 50%. Despite social mobilization and clinic demonstration, people remain unconvinced of results (or use ORT only for more severe cases).
- Two kinds of social or community mobilization efforts were effective at generating demand for services. The EPI/UCI (and polio) programs applied broad, resource-intensive social mobilization strategies using media, partnerships with other sectors, volunteers, and celebrity spokespeople. NVAP mobilized thousands from all sectors, building ownership to support and monitor supplementation. Similarly, NGOs successfully applied intensive community mobilization strategies that included the use of change agents and behavior change methods, but results were limited in scope.

National Level

- Research in-country, often followed by pilot implementation, helped generate confidence in scaling-up, and increased government and donor support. Vitamin A research in Sarlahi and pneumonia research in Jumla provided excellent data that were used to visibly demonstrate success at the community level. The vitamin A program was initiated in high-priority districts, and community-based pneumonia management was piloted in four districts before scaling-up.
- Global priorities, leadership, and external resources drove the introduction, scale, and often the progress (or lack thereof) of programs. There was ongoing support for FP activities for over three decades, although support for temporary and permanent methods fluctuated. Key indicators show continued improvement. Similar support existed for malaria until the eradication effort was clearly not possible. Subsequent support diminished over time, with gradual worsening of indicators.
- Programs were more successful if they had strong national leadership. Leaders were more effective when they had access to resources. Both EPI and FP programs had charismatic, effective leadership during key time periods (for UCI and VSC development). Some of these leaders are now in regional public health leadership positions. The FCHV program was initiated under a dedicated Minister and visionary health department leadership. The program was brought to national scale rapidly.
- Effective donor coordination contributed to the scaling-up and sustainability of some interventions. If sufficient resources existed with one donor, coordination was not necessary. The EPI/UCI program primarily funded by or through UNICEF achieved 80% coverage in 1990 without an effective ICC or coordinated long-term planning. More recently, this coordination for immunization activities was addressed through meeting GAVI funding requirements. Donor coordination for logistics, especially contraceptive security and VAC procurement, resulted in timely, sufficient supply and distribution of essential commodities.
- Certain key permissions rather than policies allowed rapid, initial implementation of programs. Formal policies or guidelines followed early implementation. The ARI/IMCI program, which relied on FCHVs, was begun as an operational study in four districts where MOH permission to diagnose and treat was given. Expansion was based on that permission. The policy for FCHVs to distribute vitamin A was given in 1993–1994, allowing the planned scale-up to all 75 districts.

Systems Level

- The development of logistics management and information systems was critical to improving results. Attention to logistic supply with the establishment of the LMD dramatically reduced stock-outs in HPs and for health workers.
- Good monitoring, based on routine data and on specialized systems, built awareness and belief in program success and helped with advocacy. NVAP used mini-surveys to determine coverage so successfully that information for other programs was piggy-backed on these surveys. Routinely reported HMIS data, though of uneven quality, provided some trend information that is used in the MOH annual program review.

- Mechanisms that reliably delivered resources to programs outside main government channels were essential to achieving results. Mechanisms used by all donors and programs at different times over the past two decades include supplementary work plans, provision of funds directly to districts through the Ministry of Local Development, grants to NGOs, subcontracts with administrative organizations, outsourcing to the private sector, and direct funding of activities such as training.
- Some programs clearly influenced or drove change in other programs. The "driving" programs were more successful at scale.

Sustaining the observed gains in child survival will determine whether the reduced levels of mortality witnessed in the past two decades will be maintained. Economic instability and security problems currently threaten the ability of Nepal to provide access to basic health services. Further improvements will depend upon protecting gains already made in addition to successfully scaling up community-level treatment of pneumonia and improved ORT use, as well as by addressing two additional components of childhood mortality—malnutrition and neonatal mortality.

The decline in the infant mortality rate has served to highlight the greater contribution of neonatal mortality to total infant mortality, with NMR currently accounting for more than 60% of all deaths in infancy. Further reduction in IMR is thus increasingly dependent on saving more newborn lives.

In conclusion, it was not possible to associate all program influences with variations in key indicators. This documentation of Nepal's child health programs attempted to go beyond an investigation of factors in individual programs and instead focused on common factors across all programs. Many of these factors influenced the success experienced by child survival and FP programs in Nepal and may be applicable to other settings.

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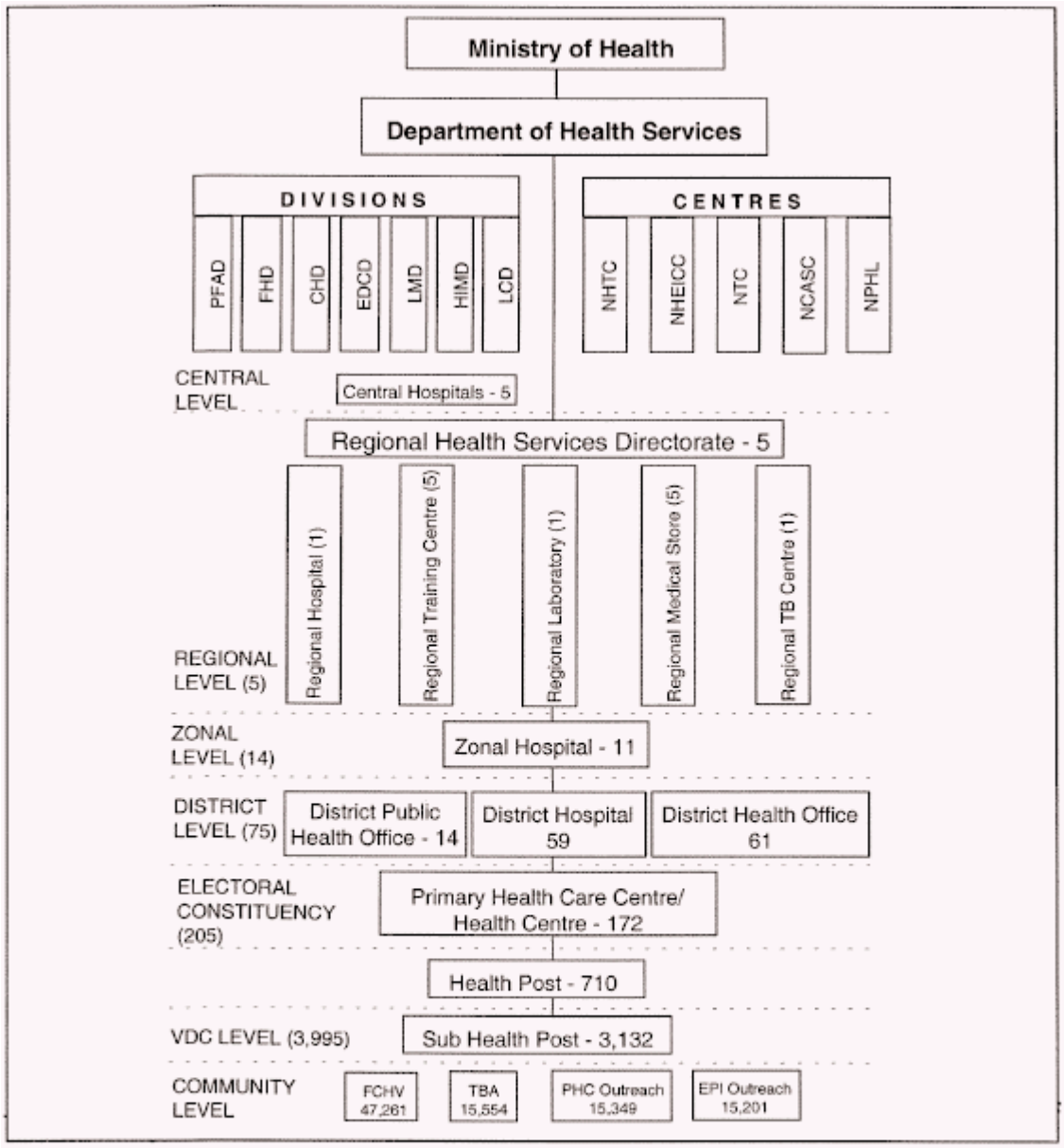
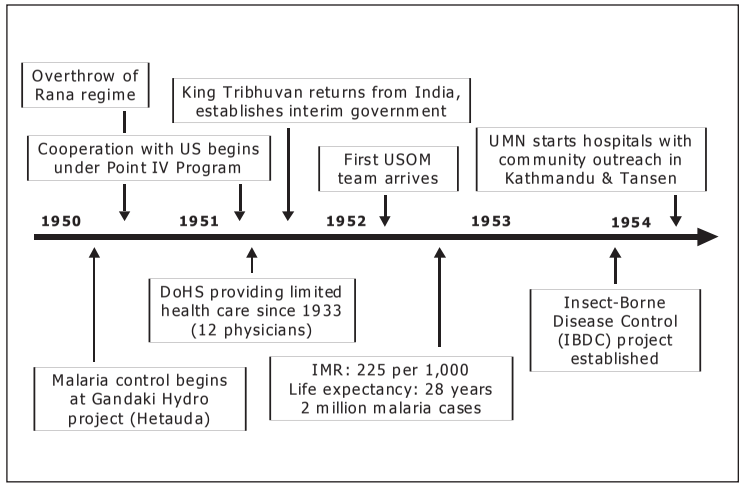
Annex A
Organizational Structure of Nepal's Ministry of Health



PFAD	*Planning and Foreign Aid Division*	*NHEICC*	*National Health Education, Information and Communication Centre*
FHD	*Family Health Division*	*NTC*	*National Tuberculosis Centre*
CHD	*Child Health Division*	*NCASC*	*National Centre for AIDS and STD Control*
EDCD	*Epidemiology and Disease Control Division*	*NPHL*	*National Public Health Laboratory*
LMD	*Logistics Management Division*	*FCHV*	*Female Community Health Volunteer*
HIMDD	*Health Institution & Manpower Development Division*	*TBA*	*Traditional Birth Attendant*
LCD	*Leprosy Control Division*	*PHC*	*Primary Health Care*
NHTC	*National Health Training Centre*	*EPI*	*Expanded Programme on Immunisation*

Annex B
Timeline of Nepal's Child Health Programs 1950–2003
(by Lyndon Brown)

1



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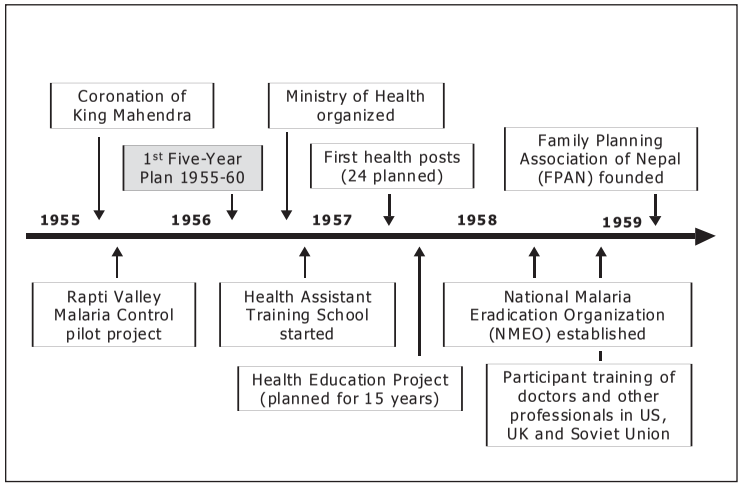

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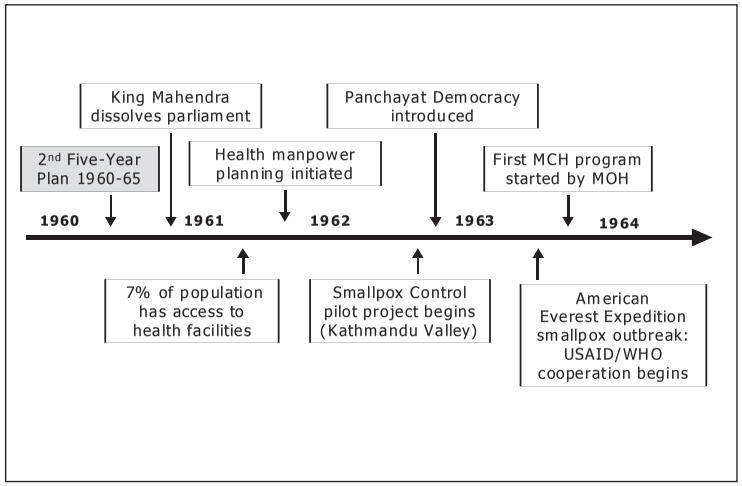

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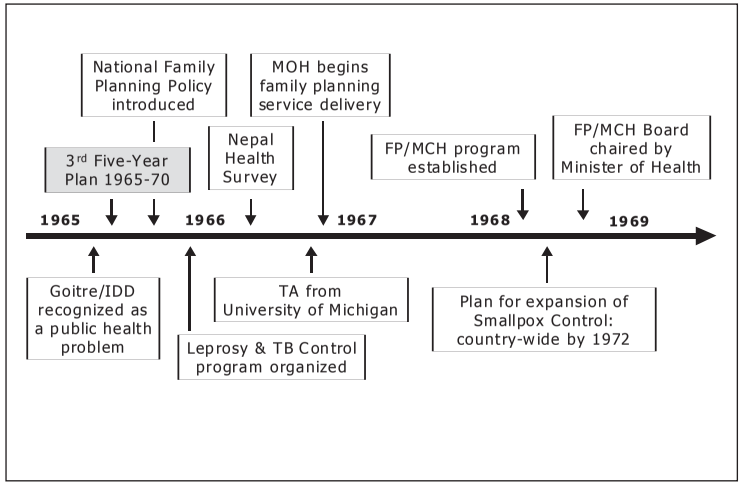
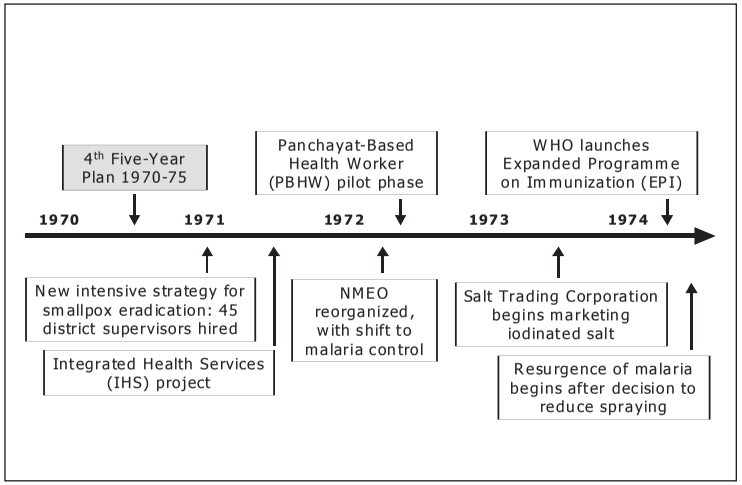
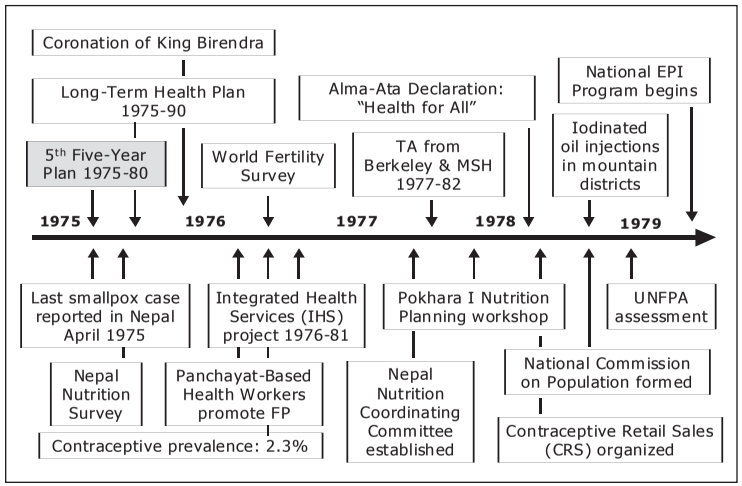
4


National Family Planning Policy introduced
MOH begins family planning service delivery
3rd Five-Year Plan 1965-70
Nepal Health Survey
FP/MCH program established
FP/MCH Board chaired by Minister of Health
1965
1966
1967
1968
1969
Goitre/IDD recognized as a public health problem
Leprosy & TB Control program organized
TA from University of Michigan
Plan for expansion of Smallpox Control: country-wide by 1972

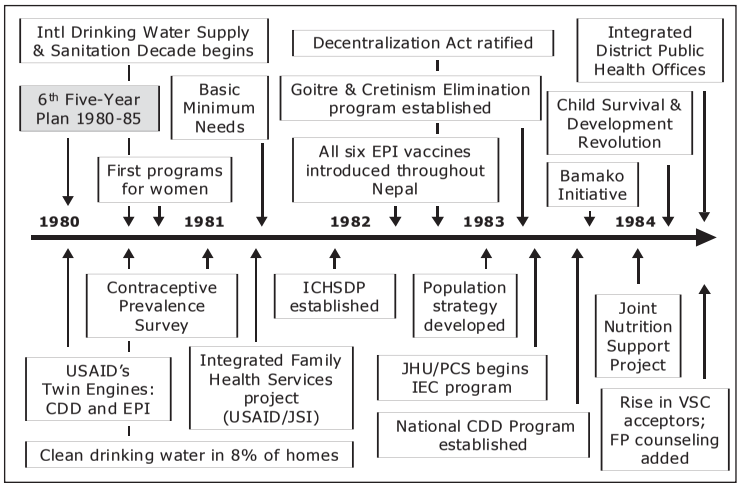
5


4th Five-Year Plan 1970-75
Panchayat-Based Health Worker (PBHW) pilot phase
WHO launches Expanded Programme on Immunization (EPI)
1970
1971
1972
1973
1974
New intensive strategy for smallpox eradication: 45 district supervisors hired
Integrated Health Services (IHS) project
NMEO reorganized, with shift to malaria control
Salt Trading Corporation begins marketing iodinated salt
Resurgence of malaria begins after decision to reduce spraying

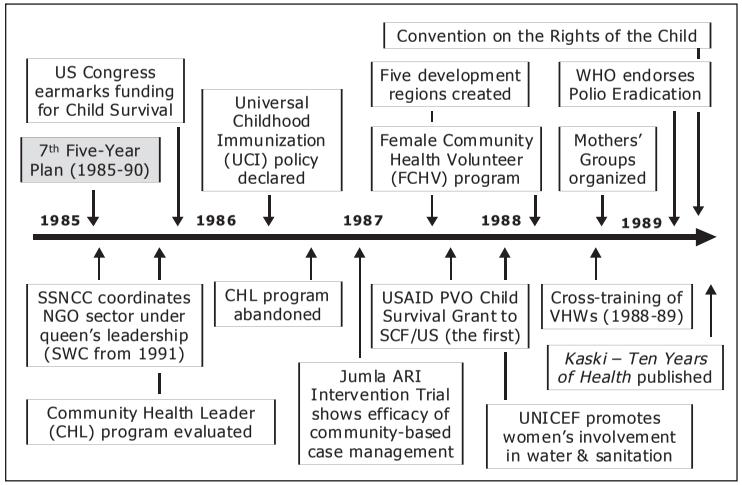
6


Coronation of King Birendra
Long-Term Health Plan 1975-90
Alma-Ata Declaration: "Health for All"
National EPI Program begins
5th Five-Year Plan 1975-80
World Fertility Survey
TA from Berkeley & MSH 1977-82
Iodinated oil injections in mountain districts
1975
1976
1977
1978
1979
Last smallpox case reported in Nepal April 1975
Integrated Health Services (IHS) project 1976-81
Pokhara I Nutrition Planning workshop
UNFPA assessment
Nepal Nutrition Survey
Panchayat-Based Health Workers promote FP
Nepal Nutrition Coordinating Committee established
National Commission on Population formed
Contraceptive prevalence: 2.3%
Contraceptive Retail Sales (CRS) organized

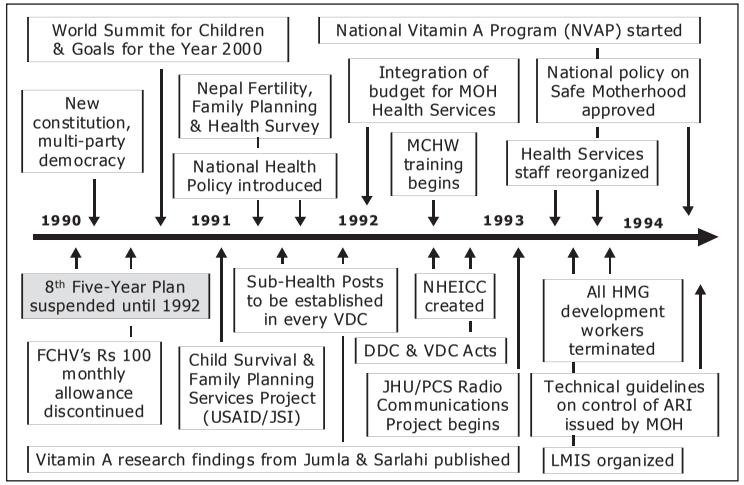
7


Intl Drinking Water Supply & Sanitation Decade begins
Decentralization Act ratified
Integrated District Public Health Offices
6th Five-Year Plan 1980-85
Basic Minimum Needs
Goitre & Cretinism Elimination program established
Child Survival & Development Revolution
First programs for women
All six EPI vaccines introduced throughout Nepal
Bamako Initiative
1980
1981
1982
1983
1984
Contraceptive Prevalence Survey
ICHSDP established
Population strategy developed
Joint Nutrition Support Project
USAID's Twin Engines: CDD and EPI
Integrated Family Health Services project (USAID/JSI)
JHU/PCS begins IEC program
National CDD Program established
Rise in VSC acceptors; FP counseling added
Clean drinking water in 8% of homes

8


Convention on the Rights of the Child
US Congress earmarks funding for Child Survival
Universal Childhood Immunization (UCI) policy declared
Five development regions created
WHO endorses Polio Eradication
7th Five-Year Plan (1985-90)
Female Community Health Volunteer (FCHV) program
Mothers' Groups organized
1985
1986
1987
1988
1989
SSNCC coordinates NGO sector under queen's leadership (SWC from 1991)
CHL program abandoned
USAID PVO Child Survival Grant to SCF/US (the first)
Cross-training of VHWs (1988-89)
Kaski – Ten Years of Health published
Jumla ARI Intervention Trial shows efficacy of community-based case management
Community Health Leader (CHL) program evaluated
UNICEF promotes women's involvement in water & sanitation

9


World Summit for Children & Goals for the Year 2000
National Vitamin A Program (NVAP) started
New constitution, multi-party democracy
Nepal Fertility, Family Planning & Health Survey
Integration of budget for MOH Health Services
National policy on Safe Motherhood approved
National Health Policy introduced
MCHW training begins
Health Services staff reorganized
1990
1991
1992
1993
1994
8th Five-Year Plan suspended until 1992
Sub-Health Posts to be established in every VDC
NHEICC created
All HMG development workers terminated
FCHV's Rs 100 monthly allowance discontinued
Child Survival & Family Planning Services Project (USAID/JSI)
DDC & VDC Acts
JHU/PCS Radio Communications Project begins
Technical guidelines on control of ARI issued by MOH
Vitamin A research findings from Jumla & Sarlahi published
LMIS organized

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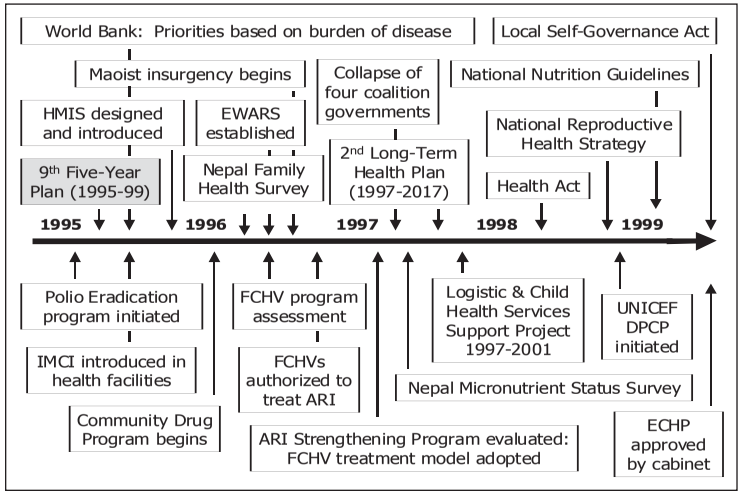
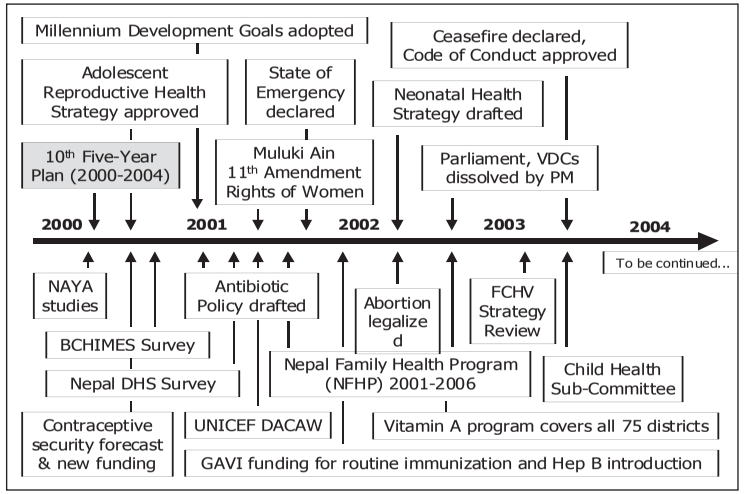

World Bank: Priorities based on burden of disease
Local Self-Governance Act
Maoist insurgency begins
Collapse of four coalition governments
National Nutrition Guidelines
HMIS designed and introduced
EWARS established
National Reproductive Health Strategy
9th Five-Year Plan (1995-99)
Nepal Family Health Survey
2nd Long-Term Health Plan (1997-2017)
Health Act
1995
1996
1997
1998
1999
Polio Eradication program initiated
FCHV program assessment
Logistic & Child Health Services Support Project 1997-2001
UNICEF DPCP initiated
IMCI introduced in health facilities
FCHVs authorized to treat ARI
Nepal Micronutrient Status Survey
Community Drug Program begins
ARI Strengthening Program evaluated: FCHV treatment model adopted
ECHP approved by cabinet

11


Millennium Development Goals adopted
Ceasefire declared, Code of Conduct approved
Adolescent Reproductive Health Strategy approved
State of Emergency declared
Neonatal Health Strategy drafted
10th Five-Year Plan (2000-2004)
Muluki Ain 11th Amendment Rights of Women
Parliament, VDCs dissolved by PM
2000
2001
2002
2003
2004
To be continued...
NAYA studies
Antibiotic Policy drafted
Abortion legalized
FCHV Strategy Review
BCHIMES Survey
Nepal Family Health Program (NFHP) 2001-2006
Child Health Sub-Committee
Nepal DHS Survey
Contraceptive security forecast & new funding
UNICEF DACAW
Vitamin A program covers all 75 districts
GAVI funding for routine immunization and Hep B introduction

USAID
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT