

Understanding Immunization and Vitamin A Communication in Rural Cambodia: a Formative Research Study

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Disclaimers

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The research protocol for this study was submitted to the National Ethics Committee for Health Research, Ministry of Health, Kingdom of Cambodia

ACRONYMS AND ABBREVIATIONS

AD	Administrative District
BASICS	Basic Support for Institutionalizing Child Survival
BCG	Bacille Calmette-Guèrin Vaccine
BTC	Belgian Technical Cooperation
CSHGP	Child Survival and Health Grants Program
CRC	Cambodian Red Cross
CVCG	Community Volunteer Care Group
DHS	Demographic and Health Survey
DTP	Diphtheria, Tetanus, Pertussis Vaccine
DTP-HepB	Diphtheria, Tetanus, Pertussis, Hepatitis B Vaccine
DQA	Data quality audit
EPI	Expanded Programme on Immunization
FGD	Focus Group Discussion
GAVI	Global Alliance for Vaccines and Immunization
HepB	Hepatitis B
HC	Health Center
HKI	Helen Keller International
HMIS	Health Management Information System
HSSP	Health Sector Strategic Plan
ICC	In-country Coordinating Committee
ICH	Integrated Child Health
IDI	In-depth interview
IEC	Information, Education, and Communication
ISS	Immunization Services Support (GAVI funding)
ITN	Insecticide Treated (Bed) Net
KPC	Knowledge, Practices, and Coverage
LLIN	Long-lasting Insecticide (Treated Bed) Net
M&E	Monitoring & Evaluation
MOH	Ministry of Health
MPA	Minimum Package of Activities
NGO	Non-Governmental Organization
NCHADS	National Center for HIV/AIDS, Dermatology and STDI
NIP	National Immunization Program
OD	Operational Health District
OPV	Oral Polio Vaccine
PHD	Provincial Health Department
PATH	Program for Appropriate Technology in Health
RACHA	Reproductive and Child Health Alliance (local NGO)
SIA	Supplemental Immunization Activity
TBA	Traditional Birth Attendant
TT	Tetanus Toxoid
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VHSG	Village Health Support Group
WHO	World Health Organization

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I. Executive Summary

Background

Immunization and Vitamin A are relatively successful public health programs in Cambodia. The number of children being immunized against seven preventable diseases has increased over the past six years. Vitamin A coverage has dramatically increased over that same time period. However, from 2004 to 2005 routine service statistic coverage estimates for BCG, DPT3, measles, polio3, and vitamin A have stagnated.

As vaccination rates approach their 80-percent targets, remaining pockets of unvaccinated children typically become more difficult to reach. Well-developed and targeted communication strategies can play an increasingly important role in achieving and maintaining coverage targets.

The development of an effective behavior change communication strategy requires an in-depth understanding of the many stakeholder viewpoints, perceptions, and norms. There is considerable evidence that focused messages to inform parents about where and when to go for complete immunization is the most important and effective communication strategy.¹ However, it is critical to understand the social-communication environment for maximum effectiveness of both community mobilization and interpersonal communication approaches.

Study objective and design

The study's primary objective is to inform the development of a communication strategy to improve immunization coverage in Angkor Chum Operational Health District while supporting the National Immunization Program's efforts to enhance national level programming.

The study was designed in collaboration with various stakeholders. Five modules were developed focusing on different aspects of vaccination and vitamin A service delivery including: (1) best practices and system constraints, (2) communications, (3) inter-personal communications, (4) barriers, and (5) key benefits and messaging. Data collection methods included in-depth interviews, service delivery observation, convenience sample, and focus group discussions.

Findings

Interpersonal communication with each mother through home visits is a critical factor to motivate immunization-seeking behavior and achieve high coverage. However, village leaders and VHSGs do not have time to visit each house. Caregivers want to be reminded in their home about health center outreach one day prior to service. Caregivers also report that they often share information about health center outreach sessions with their family and neighbors once they learn about it. Buddhist monks and nuns, as well as schoolteachers, are highly respected community members; however, their participation in promoting immunization services is presently limited.

¹ Rasmuson M. HEALTHCOM Project, *Sustaining EPI: What Can Communication Do?*, 1990.

Advance notification of the outreach schedule to the village varies and is often not adequately timed so as to permit proper dissemination of information throughout the village by VHSGs and village leaders.

Health center and outreach staff consider their primary achievement to be the completion of "full coverage." By contrast, village leaders and VHSGs had difficulty identifying their achievements. Additionally, immunization record keeping in the village is a critical factor as this information permits both village leaders and VHSG to easily identify those households needing follow-up.

Good planning and cooperation, as well the development of a positive relationship with villagers, village level volunteers, and village leaders, as identified by health center staff, is also critical to ensure high immunization coverage. However, roles and responsibilities of immunization stakeholders is not clear or well understood, thus limiting their potential in promoting immunization services

As most births occur in the village, the administration of the Hepatitis B (HepB) birth dose is challenging. Furthermore, the traditional practices of "*ang-pluhgn*" or អាំង ភ្លើង and "*chrab chewan*" or ច្រាប ជាន់ deter post-partum women from going to the health center or outreach services for seven days following childbirth. There is no uniform system for tracking and reporting newborns to the health center. Key immunization stakeholders agree that the HepB birth dose should be administered by health center outreach staff (midwives).

Outreach staff consider their most important achievement to be their contribution to the development of the village leaders' strong belief that vaccinations are important. This conviction was corroborated when talking with village leaders as they consistently demonstrated an extremely positive perception of vaccinations. Village leaders commonly reported that people in their village no longer suffer from different illnesses such as measles and night blindness. However, the benefits of tetanus toxoid (TT) are not well understood among caregivers; TT coverage rates among pregnant women are low.

Some health centers offer free health services to VHSGs and village leaders as an incentive for collaboration. This is a highly valued and appreciated benefit.

Outreach sessions are almost exclusively focused on immunization services and vitamin A distribution (during expanded outreach). The growth-monitoring chart on the back of the yellow card immunization record is not used. Outreach staff report they do not have enough time to provide health education or growth-monitoring during outreach sessions.

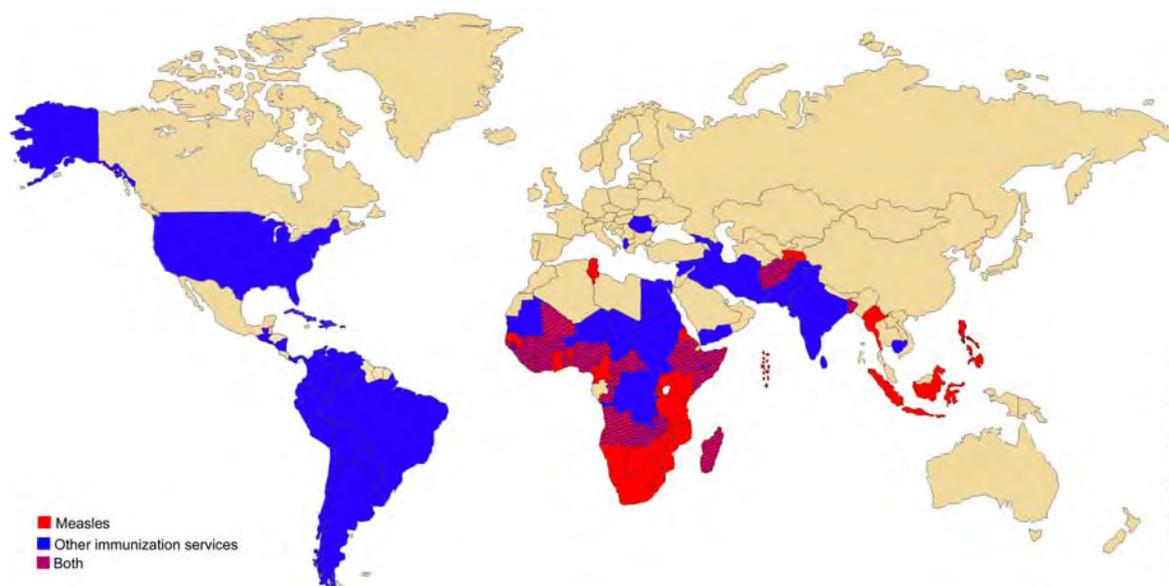
Health center outreach staff did not directly observe oral ingestion of mebendazole distributed during expanded outreach. This task was not assigned to village leaders, VHSG member, or village-based volunteers. It is not clear how many children provided with mebendazole consumed the medication.

II. Red Cross involvement in vaccination efforts worldwide

Mobilizing around the world

The Red Cross has been an active partner in the global effort to control vaccine-preventable diseases. Red Cross and Red Crescent national societies in at least 80 countries, working closely with their respective interagency coordinating committees (ICCs), have supported a variety of immunization activities, primarily through their extensive networks of volunteers at the local level. Red Cross volunteers have been instrumental in mobilizing communities to improve turnout for supplemental immunization activities (SIAs) as well as routine vaccination outreach services. Several Red Cross national societies are also involved in vaccination provision and cold chain support. Annex F includes a summary of immunization activities by country.

Figure 1. Red Cross and Red Crescent participation in vaccination efforts (2000 - 2006)



Additionally, the Red Cross has demonstrated the potential of increasing vaccination coverage by linking insecticide-treated bed net distributions to measles campaigns when appropriate.^{2,3} As insecticide-treated mosquito nets protect children from malaria infection, this equity-based innovation has the added benefit of saving one life per year for every six insecticide-treated bed nets distributed.⁴

² Grabowsky M et al. Distributing insecticide-treated bednets during measles vaccination: a low-cost means of achieving high and equitable coverage, *Bull WHO* 2005;83:195-201

³ American Red Cross and the CORE Group, *Partnerships in Action: An Integrated Approach to Combining a Measles Campaign with a Bed Net, Vitamin A and Mebendazole Campaign in Zambia*, July 2004

⁴ Lengeler C. *Insecticide treated bednets and curtains for preventing malaria*, Issue 2, 2004

Measles is one of the leading vaccine-preventable childhood killers in the world. In 2004, it was estimated that there were 454,000 measles deaths globally, which translates to more than 1,200 deaths every day; 50 people die every hour from measles. The overwhelming majority of these deaths, that is 410,000 out of 454,000, are children under the age of five who, often die from secondary complications related to pneumonia and diarrhea.

A safe and highly effective vaccine has been available for more than 40 years. It costs less than US \$1 to protect a child against measles, making measles vaccinations one of the most cost-effective public health interventions available for preventing deaths. Despite this, millions of children still remain at risk.

The Measles Initiative

The Measles Initiative partnership, launched in 2001, is a long-term commitment among public health leaders to support the goal of reducing measles deaths globally by 90 percent by 2010.

Largely attributable to the technical and financial support of the Measles Initiative and the commitment from many African governments, 213 million children have been vaccinated against measles, and 1.2 million lives have been saved since 1999. The initiative also supports integrated child health campaigns in which health workers provide not only measles vaccines, but also insecticide-treated nets for malaria prevention, vitamin A, deworming medication, and polio vaccines.

Since 2001, the Measles Initiative has mobilized more than \$150 million and supported high-quality measles campaigns in more than 40 African countries as well as in three Asian countries. As a result, global measles deaths have dropped by 48 percent--from 871,000 in 1999 to an estimated 454,000 in 2004. The largest reduction occurred in Africa, the region with the highest burden of the disease, where estimated measles cases and deaths dropped by 60 percent.

The American Red Cross leads the U.S.-based partnership. Key coalition partners include the United States Centers for Disease Control and Prevention (CDC), the United Nations Foundation (UNF), United Nations Children's Fund (UNICEF), the World Health Organization (WHO), and the International Federation of Red Cross and Red Crescent Societies (Federation).

The American Red Cross assists national Red Cross societies by providing technical assistance and financial support to build their local capacity to mobilize and recruit volunteers, including strengthening volunteer networks and improving operating systems. Since the formation of the measles partnership, the American Red Cross has contributed US\$10 million in core funding to the effort. The organization has earmarked an additional \$62 million to expand immunization activities to tsunami-affected countries.

The American Red Cross core areas of involvement in the measles initiative have been to:

- ▶ Lead and sustain the US-based coalition of the global measles partnership;
- ▶ Attract substantial financial and technical resources to the coalition;
- ▶ Ensure involvement of national Red Cross/Red Crescent societies;
- ▶ Integrate measles with other initiatives.

Red Cross and Red Crescent national societies coordinate with their respective ministries of health to implement country-level vaccination campaigns and are the primary forces behind social mobilization. Social mobilization ensures that all children get to the vaccination sites. It includes community activities and house-to-house visits by Red Cross volunteers.

The Federation provides technical support and coordination to national societies and advocates for measles outside the United States.

The incredible success of the measles partnership has resulted in the planned expansion of activities into Asia where the high total of measles deaths ranks second only to sub-Saharan Africa. The measles partnership will expand support in the World Health Organization's 47 priority countries to support the Global Immunization Vision and Strategy. The initiative will heavily focus on the three countries that account for the majority of global measles deaths: India, Pakistan, and Nigeria. Countries with planned measles initiative activities in 2006 are included in Figure 1 above.

Mobilizing in Cambodia

Presently, the American Red Cross is providing technical and financial support to the Cambodian Red Cross (CRC) to implement an Integrated Child Health (ICH) Project in the Pourk, Angkor Chum, and Varin Districts of Siem Reap Province. The ICH Project, funded by the United States Agency for International Development (USAID), is working alongside the ministry of health and numerous non-governmental organizations to reduce infant and child morbidity and mortality. The ICH Project focuses on the child survival "scorecard" interventions identified as priorities during the December 2004 National Child Survival Partnership Workshop in Phnom Penh, Cambodia. These interventions have been demonstrated to have the greatest impact on child mortality⁵ and include increasing vaccination coverage rates. This is being achieved by focusing on improved community participation and turnout for routine health services. Additionally, the ICH Project will link long-lasting bed net distribution to immunization services for pregnant women with the aim of improving tetanus toxoid coverage.

⁵ Jone G, Steketee R, Black R, Bhutta ZA, Morris SS, How many child deaths can we prevent this year? *The Lancet* Vol 362, July 5, 2003

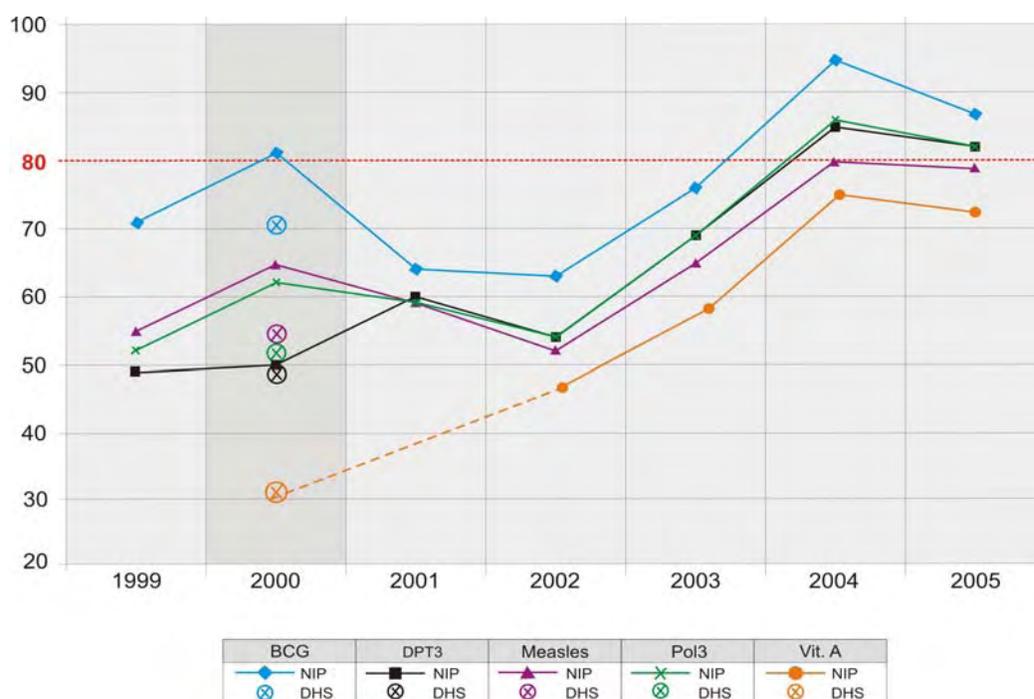
III. Cambodia Situational Analysis

Overview

Both immunization and vitamin A are relatively successful public health programs in Cambodia. Recent achievements of the National Immunization Program (NIP) include eradication of polio, a reduction in reported measles cases, and the introduction of a combined hepatitis B-DTP (*DTP-HepB*) vaccine.⁶ The number of children being provided with vitamin A and immunized against seven preventable diseases has increased over the past six years.

Immunization coverage targets set out in the *Health Sector Strategic Plan 2003-2007* aim to fully immunize 80 percent of children below one year of age by 2007. Overall, routine service statistics from the Ministry of Health's National Immunization Program and National Nutrition Program show a trend towards increased coverage. However, routine service statistic coverage estimates for BCG, DPT3, measles, polio3, and vitamin A have reached a plateau at around 80 percent from 2004 to 2005. The graphic below illustrates selected vaccination and vitamin A coverage statistics from 1999 through 2005.

Graphic 1. Vaccination service statistics and DHS survey coverage data



Sources: WHO/UNICEF, Review of National Immunization Coverage 1980-2004, Cambodia, August 2005; National Immunization Program, Annual Workshop on Program Achievement 2005, 16-17 February 2006; Cambodia Demographic and Health Survey 2000; WHO, Western Pacific Region, *Child Survival Profile: Cambodia*, 2006

⁶ PATH, Cambodia Child Health Strategy Development, *Delivery Modalities and Systems Constraints*, Immunization, Version: 13 May 2004.

Routine immunization data in Cambodia is considered highly valid. A 2001 data quality audit indicated 83 percent verification of national immunization data (i.e. an 83-percent match between health center data and national level data). By 2003, this figure improved to 98 percent, the second highest in a group of 13 countries studied using this same methodology.⁷

Despite high data quality for routine service statistics, the proportion of the population protected against vaccine-preventable diseases should be estimated using a valid, population-based survey.⁸ Routine service statistics, based on facility tallies, frequently overestimate coverage rates. A comparison of immunization coverage estimates for year 2000 reveals that routine service statistics, using the more restrictive indicator of children under 1 year of age, are higher than the population-based demographic and health survey (DHS) for the same year. The latter measured coverage among children 12-23 months (see Graphic 2 on previous page). One would expect the DHS point estimate, using a more inclusive age range, to be the higher estimate.

According to national service statistics for 2005, based on facility tallies, dropout rates are low: 4 percent for OPV 1-3, and 4 percent for DPT 1-3.⁹ Correcting for negative dropout rates (adjusting all negative rates to the lowest possible dropout rate of zero, thus assuming that all children completed the course on schedule) puts both rates at 5 percent.

However, seven operational health districts, primarily remote districts, have higher rates in the range of 10 to 22 percent. Dropouts are considered to reflect a problem with service barriers, such as missed opportunities to vaccinate or consumer barriers such as lack of correct information and fear of side effects.¹⁰ Higher dropout rates among remote districts suggest that distance and poverty are important factors related to access. Other research indicates that poor populations are far less likely to be immunized than their urban and better educated counterparts.¹¹

The positive trend in immunization coverage and low dropout rates may be attributed to a range of factors. Several key areas have been associated with improved service performance in Cambodia. Over the past several years the National Immunization Program has developed several strategies including the *Monitoring and Management Support Strategy* (June 2003), *Strategy for Training* (November 2003), and the *National Communication Strategy* (July 2004). These strategies outline common agendas and approaches to guide stakeholders as they work to improve vaccination services.

⁷ PATH, Cambodia Child Health Strategy Development, *Delivery Modalities and Systems Constraints*, Immunization, Version: 13 May 2004.

⁸ USAID, *Immunization Essentials: A Practical Field Guide*, Chapter 4: Monitoring, Evaluation, and Information Management, October 2003.

⁹ National Immunization Program, *Immunization Coverage for Children under 1 year of age by ODs, 2005*, Annual Workshop on National Immunization Program Achievement 2005, 16-17 February 2006.

¹⁰ Rasmuson M. HEALTHCOM Project, *Sustaining EPI: What Can Communication Do?* 1990.

¹¹ PATH, Cambodia Child Health Strategy Development, *Delivery Modalities and Systems Constraints*, Immunization, Version: 13 May 2004.

Other positive factors that have been identified as contributing to coverage increases are: (1) secure financing for outreach, (2) performance-based contracts and supportive management, (3) strengthening of local area micro-planning skills, and (4) implementation of local area social mobilization strategies.¹² Additionally, financing through the GAVI Immunization Services Support (ISS) has been credited with enabling (1) Information, Education and Communication (IEC) materials production, (2) supervision and monitoring, and (3) quarterly review meetings. These all have been cited as important contributing factors in recent coverage achievements.¹³ Maintenance of these successes is an ongoing challenge.

Other Challenges: Tetanus Toxoid and Wastage

According to national service statistics, only 49 percent of pregnant women, and 19 percent of women of childbearing age have completed TT2+.¹⁴ This reveals a serious need to develop strategies focused on improving tetanus toxoid coverage among women of reproductive age.

In 2005, national wastage rates were high for all seven vaccines: BCG (86 percent), HepB (26 percent), OPV (45 percent), DPT (46 percent), DPT-HepB (33 percent), measles (73 percent), and TT (55 percent).¹⁵ It is recognized that some so-called “wastage” is not wastage at all but rather a predictable and acceptable cost of providing immunization services. One common cause of unavoidable loss of vaccine is reduced or limited vial yield: it is impossible to get all the vaccine out of a multidose vial. For example, a 20-dose vial does not yield 20 doses, but only 17 or 18. However, wastage rates over 20 percent need further investigation as it may indicate repeated instances of lower-than-planned attendance during vaccination sessions or other issues.¹⁶

Immunization and Vitamin A Service Delivery Mechanisms

Supplementary Immunization Activities are essentially vaccination campaigns. These efforts focus on increasing coverage against a single antigen (e.g., measles or polio). They are generally centralized, vertical, and implemented with high levels of reliable funding. Although this approach proved to be highly effective against targeted diseases, there have been concerns about disruption of routine vaccination services when local human resources are mobilized through centralized planning to focus exclusively on SIAs. Previous recognition of this inherent competition or tension between centralized management for

¹² PATH, Cambodia Child Health Strategy Development, *Delivery Modalities and Systems Constraints*, Immunization, Version: 13 May 2004.

¹³ Abt Associates, Inc. *Evaluation of GAVI Immunization Services Support Funding Case Study: Cambodia*, June 2004.

¹⁴ MOH/MCHC/NIP, Annual Workshop on National Immunization Program Achievement 2005, 16-17 February 2006.

¹⁵ MOH/MCHC/NIP, Vaccination Wastage Report for 2005, February 2006.

¹⁶ USAID, *Immunization Essentials: A Practical Field Guide*, Chapter 4: Monitoring, Evaluation, and Information Management, October 2003.

SIAs and decentralized management for routine vaccination services has led to attempts at collaborative activity planning that permits integration of service delivery. When possible, SIAs efforts are now complemented with attempts to vaccinate children against all target diseases.¹⁷ However, the need for targeted, single antigen SIAs, is recognized as a necessary tool to ensure coverage increases for specific antigens.

Outreach is the primary delivery mechanism for immunization and vitamin A in Cambodia 70 to 80 percent of immunization services are provided through outreach sessions from the health centers.^{18,19,20} A total of 929 health centers provide regular outreach services to more than 13,000 villages across Cambodia.²¹ Villages within one-hour travel distance from the nearest health center receive an outreach visit from health center staff once per month, and those farther than one hour from the health center receive one visit every two months.²²

Routine outreach activities have been led and resourced sub-nationally through the network of provincial health departments, operational health district offices, and health centers. Many NGOs also provide per diem and travel cost support to health center outreach teams. Despite this piecemeal funding approach for routine outreach services, the ministry of health consistently achieves a high number of annual outreach service contacts/outreach visits in villages. In 2005, the total number of vaccination sessions reported was 176,860; averaging 13.9 sessions per village that year.²³ This represents a 97 percent completion rate of planned sessions.

The NCHADS/URC *Health Facility Assessment in Seven Provinces of Cambodia* confirms high numbers of outreach sessions. Eighty-nine percent of MPA health centers reported monthly community outreach activities in each village of their catchment area.

However, a cursory review of quarterly data shows that outreach EPI activities are not equally distributed throughout the year, suggesting that outreach activities to each village are not conducted on a monthly or bimonthly basis. Likewise, a comparison with vitamin A coverage also suggests that villages are not being followed up through health center outreach activities each month. It would be expected that provision of immunization and vitamin A would be more evenly distributed across each month, as new cohorts of children

¹⁷ PATH, Cambodia Child Health Strategy Development, *Delivery Modalities and Systems Constraints*, Immunization, Version: 13 May 2004.

¹⁸ Abt Associates, Inc. *Evaluation of GAVI Immunization Services Support Funding Case Study: Cambodia*, June 2004.

¹⁹ PATH, *Immunizations and the Introduction of Hepatitis B Vaccine: A qualitative study of Villagers', Health Workers' and Significant Community Members' Knowledge, Attitudes and Practices towards Immunization Services in Kompong Chhnang*, July 2002.

²⁰ PATH, Cambodia Child Health Strategy Development, *Delivery Modalities and Systems Constraints*, Immunization, Version: 13 May 2004.

²¹ PLAN, *Situation Assessment: Health Issues and Health Services in Angkor Thom & Banteay Srey Districts*, Siem Reap Province (October 2004).

²² *Guidelines for Health Center Outreach Services* (2004).

²³ According to the National Institute of Statistics, Labour Force Survey of Cambodia 2001, the number of villages in Cambodia is 12,739; see <http://www.nis.gov.kh/SURVEYS/LFS2001/introduction.htm>

need these services, and each village in the catchment areas of the health center are visited by an outreach team.²⁴

There has been much discussion about the potential of shifting vaccination services from the village (delivered through outreach) to the health center as a fixed site. Socio-economic factors, poor communication, expectation of outreach visits, and lack of integration between immunization programs and referral systems for child health have all been cited as barriers to the successful implementation of a fixed-site strategy.²⁵ The table below summarizes the benefits and drawbacks of outreach and fixed-site vaccination services.

Table 1. Benefits and drawbacks of outreach and fixed-site vaccination services

Delivery Mode	Benefits	Drawbacks
Outreach	Services are brought closer to families, increasing access; opportunity for participation in health service delivery from community stakeholders; strengthen community cohesion and social pressure thru group participation.	High costs for per diem and transportation for HC staff; disincentive to HC staff to complete outreach when per diem support is not available.
Health Center / fixed site	Opportunity to immunize children during visits to HC for other reasons (however, must consider that not all children will be vaccinated during any service contact to control wastage); lower wastage rates; increased access to a wider range of services at the HC.	Families may not come as HC is too far, costly, and/or inconvenient; expectation of outreach visit; people may wait in village for outreach.

WHO has funded a fixed-site vaccination pilot to explore its efficiency and effectiveness as an alternative to outreach. Presently, 84 health centers offer fixed-site vaccination services across the kingdom. Health centers providing vaccinations on location are typically located in areas with high population densities. Within the catchment areas of the 83 health centers operating the fixed-site strategy, outreach is still undertaken in 43 percent of villages.²⁶ These villages are found to be too far (more than 2 to 3 kilometers) to motivate caregivers to come to the health center.

²⁴ NCHADS and URC, *Health Facility Assessment in Seven Provinces of Cambodia*, 2004.

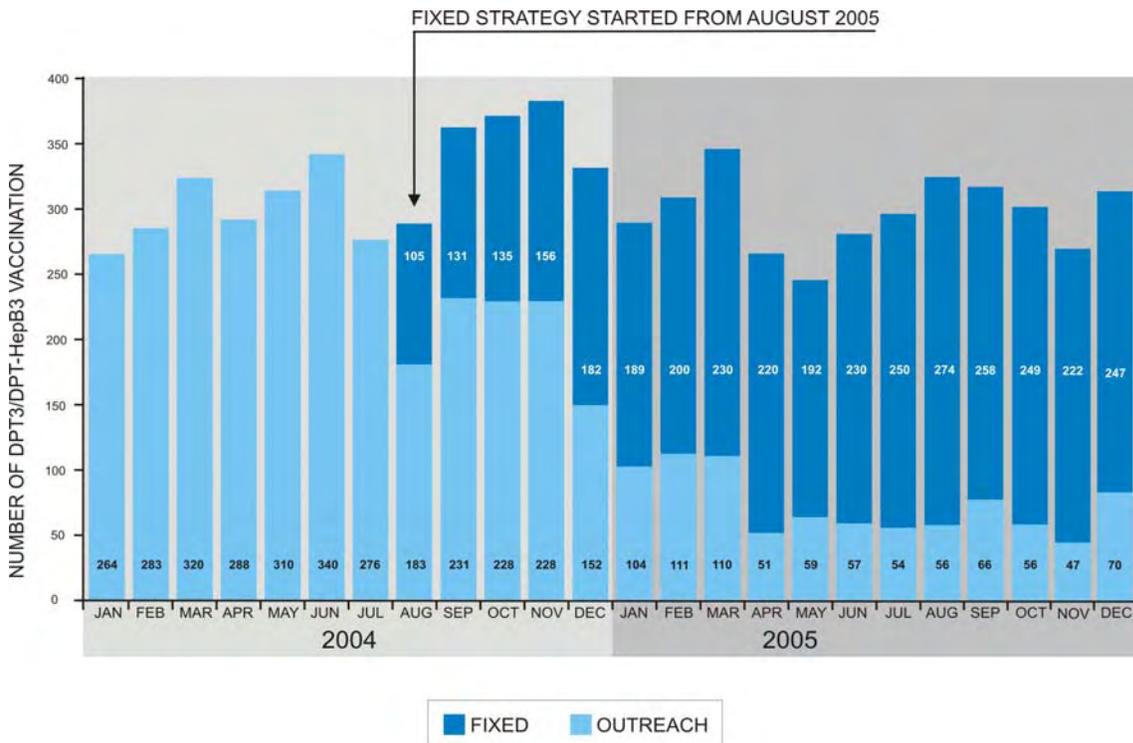
²⁵ PATH, Cambodia Child Health Strategy Development, *Delivery Modalities and Systems Constraints*, Immunization, Version: 13 May 2004

²⁶ National Immunization Programme, Report on Fixed Strategy for Vaccination at Health Centers, NIP Annual Workshop, 16-17 February 2006

The fixed-site strategy focuses on improved coordination and communication between the village and health center through monthly meetings between health center staff and village health support group (VHSG) members. VHSG members and village leaders are responsible for making villagers aware of fixed-site vaccination times and days, as well as ongoing review and follow up of children needing immunization in the village.

Monitoring data indicate that the total number of vaccinations administered both at the village (via outreach) and at the health center (via fixed-site services) are similar to the level of vaccinations administered only through outreach before the pilot project implementation.

Graphic 2. DPT3/DPT-HepB3 coverage by delivery modality (fixed and outreach)



Source: National Immunization Program, Annual Workshop on Program Achievement 2005, 16-17 February 2006

Over a 7-month baseline period (January to July, 2004), 11 health centers vaccinated (DPT3/DPT-HepB3) a monthly average of 297 children through outreach. The 11 health centers began implementation of the fixed strategy in August, 2004. From August 2004 through December 2005 the monthly DPT3/DPT-HepB3 vaccinations average was 313 (see graphic 2). Additionally, there is a noticeable increase in the number of vaccinations delivered through the health center compared to the outreach number during that time.

By the end of 2003, 89 percent of all planned health centers (823 of 929) were functioning. The ministry of health aims to improve health care and health equity by providing a basic package of services called the Minimum Package of Activities (MPA) through each health center. The MPA consists of a number of curative and preventive services:

- ▶ Primary curative consultation for treatment of the most common health problems, such as malaria, respiratory infections, diarrheal disease, sexually transmitted infections, etc.
- ▶ Emergency care and simple (minor) surgery
- ▶ Treatment of chronic diseases: tuberculosis, and leprosy
- ▶ Consultation for healthy children, including vaccinations, management of malnutrition, prevention of vitamin A deficiency
- ▶ Care for pregnant women, including antenatal and postnatal care, vaccination against tetanus, prevention of anemia, delivery, and referral of complicated deliveries
- ▶ Birth spacing
- ▶ Referral of patients
- ▶ Outreach activities

However, due to a lack of qualified staff only 24 percent of these (823) health centers are able to provide the full package of MPA services. Health center understaffing, especially for qualified midwives in the most remote areas, is the most acute problem.²⁷ Approximately 20 to 25 percent of health centers are without a qualified midwife.²⁸ This issue has been identified in the Health Sector Strategic Plan 2003-2007.

Other unresolved issues related to human resources include staff motivation, quality of performance, productivity, and distribution by geographical area. Persistent low wages have continuously undermined efforts to improve human resources management and performance in the public sector. Attempts to increase revenue through service fees at public sector referral hospitals and health centers have been unsatisfactory and have had a negative impact on the poor. Since 1996, there has been a 10-percent decrease in the number of midwives and a 5- percent decrease in the ministry of health workforce.²⁹

Another system constraint relates to the mostly unfunded operational cost of basic health service provision. This has been shown to negatively affect health managers' and staff members' motivation.³⁰ Health center contracting arrangements, which pay health centers

²⁷ PLAN, *Situation Assessment: Health Issues and Health Services in Angkor Thom & Banteay Srey Districts*, Siem Reap Province, October, 2004.

²⁸ NCHADS/URC, *Health Facility Assessment in Seven Provinces of Cambodia*, 2004.

²⁹ *Cambodia Child Survival Strategy*, 6.1.06 draft.

³⁰ Grundy J. personal communication March 20, 2006.

that are able to meet minimum service and quality standards (e.g., complying with operational hours, following the fee schedule, etc.), have shown promising results in mitigating this effect.

Despite these human resource limitations, a 2004 survey of MPA health centers in seven provinces showed that staff knowledge of the immunization schedule for children under one year of age is high: 87.8 percent of staff knew when to give BCG; 98.8 percent knew when to give ORV1/DTC1; and 97.6 percent knew when to give ORV2/DTC2 and ORV3/DTC3. The proportion of MPA health center staff who had the necessary knowledge to fill out the immunization cards for children less than 2 years of age was 79.3 percent.³¹

However, the URC Health Facility Assessment also noted that "less concern is given to reviewing the immunization cards of all children under five years of age that come to the health center, providing immunizations, and updating the card." This suggests missed opportunities for fixed-site vaccination and vaccination communication.

Focus on the Community: Effective Communication

It is widely recognized that increasing community participation can further augment vaccination coverage and cost-effectiveness. Community identification, follow up, and mobilization of caregivers with children needing immunizations can make the most of limited health center staff members' time, permitting them to focus on quality vaccination provision as well as other health services. Effective communication can reduce missed opportunities for vaccination both during outreach and at fixed sites as well as increase information accuracy. This includes dissemination of information on the vaccination schedule as well as the benefits of immunization, thus motivating caregivers to get their children immunized.

As vaccination rates approach their 80-percent targets, remaining pockets of unvaccinated children typically become more difficult to reach. Well-developed and targeted communication strategies can play an increasingly important role to go the last mile in achieving coverage targets. Health communication can also address complex issues of long-term sustainability as well as negative repercussions of high rates (related to reduced concerns about the seriousness of disease).³² Again, targeted communication strategies can counteract these issues.

Communication for behavior change includes three approaches or channels: mass media, community mobilization, and interpersonal communication. Each approach offers benefits for increasing vaccination coverage. Mass media, such as radio and television advertisements, are generally effective at mobilizing populations and rapidly increasing coverage, particularly when linked with a supplemental immunization activity or campaign. Community mobilization, the engagement of community opinion leaders in the process of

³¹ NCHADS/URC, *Health Facility Assessment in Seven Provinces of Cambodia*, 2004.

³² Rasmuson M. HEALTHCOM Project, *Sustaining EPI: What Can Communication Do?* 1990.

dialogue, planning, and action,³³ creates an enabling environment to empower communities so that they may assume responsibility for sustained demand for vaccination services. Interpersonal communication, including individual and group dialogue, focuses on motivating and negotiating improved health practices with each caregiver. Interpersonal communication is especially effective at identifying each consumer's particular barriers and resistances and developing a personalized solution.

Both community mobilization and interpersonal communication are appropriate and effective approaches to sustain a demand for routine vaccination services, both outreach and fixed-site.

The Cambodian Ministry of Health recognizes the important role of communication within the community. The *Policy on Community Participation in the Development of the Health Center* (2003) describes the primary structure for community participation as the Village Health Support Groups. The VHSG's main role is to ensure the regular flow of information between the community and the health center, including keeping the community informed about health center activities such as vaccination outreach services.

Research suggests that VHSGs are currently functional. Among MPA health centers, nearly four in five (78 percent) report the use of feedback from the VHSGs to monitor and evaluate outreach activities.³⁴ Furthermore, there are examples of good use of village health volunteers and VHSGs to reach populations in remote and hard-to-reach areas.³⁵

However, as VHSGs are made up of only two volunteers per village, there are limitations on their time. Village leaders and community-based health activists including Cambodian Red Cross volunteers may also provide critical support to the VHSG members and village leaders, and HC staff make the maximum use of community participation through village communication networks.

The Cambodian National Immunization Program's *National Communication Strategy* (2004) identifies priority activities for behavior change communication, promotion, and social mobilization. These activities include development and implementation of pilot health-promotion activities specifically targeted to health centers and VHSGs as well as exploration and identification of key partner groups with which to increase health promotion activities. Another NIP priority is increasing community awareness and demand for immunization through IEC activities.

The development of an effective behavior change communication strategy requires an in-depth understanding of the many stakeholder viewpoints, perceptions, and norms. There is considerable evidence that focused messages to inform parents about where and when to go for complete immunization is the most important and effective communication strategy.³⁶

³³ The community mobilization process is also commonly referred to as Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA).

³⁴ NCHADS/URC, *Health Facility Assessment in Seven Provinces of Cambodia*, 2004.

³⁵ Sarath Svay, National Immunization Program, National Immunization Review *presentation*, March 2005.

³⁶ Rasmuson M. HEALTHCOM Project, *Sustaining EPI: What Can Communication Do?* 1990.

However, it is critical to develop an understanding of the social-communication environment to ensure the effectiveness of both community mobilization and inter-personal communication approaches.

IV. Study Objectives

The qualitative study's primary objective is to inform the development of a communication strategy to improve immunization coverage in the Angkor Chum Operational District while supporting the National Immunization Program's efforts to enhance national-level programming.

The study's eight sub-objectives are detailed below.

1. Document best practices, successful approaches, and recommendations implemented by health center directors, outreach teams, village leaders, and village health support groups.
2. Document system constraints for outreach service delivery--especially those related to vaccinations.
3. Map communication channels related to health center outreach and immunization.
4. Document immunization information and messaging that is communicated by health center staff, outreach teams, village leaders, village health support groups, and Buddhist monks.
5. Evaluate inter-personal communication relating to vaccinations by outreach staff during outreach.
6. Understand community perceptions of the benefits of vaccinations and vitamin A as well as motivating factors for seeking vaccinations.
7. Understand community perceptions of the barriers and resistances to child and mother (TT) vaccination both at the health center and during outreach.
8. Assess community recognition of and receptivity to key immunization and vitamin A messages.

V. Definitions

For the purposes of this study, "on-schedule" refers to women or children who have received all required vaccinations per the National Immunization Program policy and schedule. "Not-on-schedule" refers to women or children who are not up-to-date per the policy.

Health Center staff are those people who work primarily in the health center. Outreach staff refers to health center staff whose primary work responsibility is provision of health services to villagers through outreach sessions. VHSG members are ministry of health volunteers who live and work in their own village. Their primary role is to serve as the communication link between the village and the health center.³⁷

³⁷ Ministry of Health, Bureau of Policy, Planning & Health Sector Reform. (February 2003) *Policy on Community Participation in the Development of the Health Center*

VI. Methodology

The methodology section describes the study modules, sampling, recruitment, team training, and logistics, in addition to recording and analysis.

Five modules were developed to collect information relating to research objectives defined above by the research team (see Section X). Qualitative focus group discussions (FGD), in-depth interviews (IDI), purposive sampling, and observation were used. The table below summarizes each module's corresponding target groups, completion rates, and methodology.

Table 2. Research modules, target groups, completion rates, and methodology

Module	Target Groups	Number Plan/Completed	Methodology
1-Best practices, system constraints	1. Health center staff	13 /13	In-depth interviews
	2. Outreach teams	13 /13	
	3. Village leaders	15 /13	
	4. Village health support groups	15 /11	
2-Communications	1. Outreach teams	13 /12	In-depth interviews
	2. Village leaders	15 /15	
	3. Buddhist monks/school teachers	15 /12	
	4. Village health support groups	15 /15	
	5. Caregivers of children <2	30 /31	
3-Interpersonal communication	1. Outreach staff	15 /13	Observation
4-Barriers	1. Female caregivers of children <2 "not on-schedule"	38 /34	Convenience sample
	2. Married men with children <2 "not on-schedule"	38 /18*	
5- Key benefits and messaging	1. Female caregivers of children <2 "on-schedule"	4 /4	Focus group discussions
	2. Female caregivers of children <2 "not on-schedule"	4 /4	
	3. Married men with children <2 "on-schedule"	4 /4	
	4. Married men with children <2 "not on-schedule"	4 /4	

*The reduced number of interviewees was due to difficulty in locating this target group

Modules 1, 2, 3, and 5 are based on guidance found in *Communication for polio eradication and routine immunization: Checklists and easy reference guides* (2002). However, section 2 of Module 1 was copied (with no changes) from the PATH questionnaire originally used as part of "A Qualitative Study of Villagers, Health Workers' and Significant Community Members' Knowledge, Attitudes and Practices towards Immunization Services in Kompong

Chhnang,” 2002. Module 4 is based on "Guidelines for Community Feedback on Immunization" found in *Increasing Immunization Coverage at the Health Facility Level* (2002). Several questions were repeated in different modules, serving to validate responses through triangulation. English versions of each module are included as Annexes A-E.

Vaccination technical experts from the American Red Cross, the Angkor Chum Operational Health District, BASICS, Helen Keller International, National Immunization Program, the Provincial Health Department, UNICEF/Cambodia, and WHO/Cambodia reviewed draft modules. Individual meetings were held with each organization to solicit technical input. Additionally, a mini-workshop was conducted at the National Immunization Program office in Phnom Penh to review and edit the research protocol including the questionnaires.

The survey tools were pretested in a village near the ICH project office in the Angkor Chum administrative district. All feedback was incorporated into the final survey tools. Other documents consulted in the development of the research protocol and writing of this report are included in Section IX. All modules are included as appendices to this report.

Training

The study team conducted a one-day training on December 19, 2005 that covered a review of qualitative interview skills including facilitation of focus group discussions and note taking. The training also encompassed a review of the study objectives as well as discussion and final editing of the survey tools. The training ended with logistics planning.

Related to Module 3, a two-hour refresher training was completed on the morning of March 6. Following review of the questionnaire, the survey team completed a practice observation in a village near the ICH project office in the Angkor Chum administrative district.

Sample and Logistics

Field-level data collection for modules 1, 2, 4, and 5 was undertaken from December 20-23, 2005. Two four-person teams were accompanied by the research supervisor, one field observer, and two drivers to visit all thirteen health centers in Angkor Chum OD. NIP staff were designated as the team leaders; other team members included professional staff from ARC, CRC, HCs, AD, and the OD. The research team list is detailed in Section X.

The Operational Health District facilitated communication with the health centers to set up a visit schedule and interview times. In addition to visiting each health center, one village from each of the 13 health center catchment areas was visited. Villages were randomly selected to reduce proximity bias.

The teams split up to permit up to four health center visits every day. On the morning of the first day, interviewing and recording tasks were divided among team members for both individual interview and focus group discussions. However, this proved to be too time

consuming. Therefore, interviewing and recording responsibilities were combined for individual interviews.

Each morning and afternoon one sub-team of two people stayed at the health center to interview health center staff and outreach teams. The remaining research team members proceeded to the randomly selected village. After completing interviews at the health center, the sub-team joined the other team members in the village. This permitted each team to visit up to one health center and one village in the morning as well as one health center and one village in the afternoon each day.

Module 3, the outreach staff observation checklist, was completed on March 6 and 16 by the ARC monitoring and evaluation officer, one health center staff and two operational district staff. Two two-person teams were deployed to thirteen villages, one in each health center catchment area. The teams went to villages where the health center had scheduled expanded outreach on the survey day to observe the vitamin A / mebendazole campaign in addition to vaccination services. Following the outreach session, as a quality control measure, both observers discussed the result. Although the observation checklist was not shared with outreach staff, it is likely that observations recorded are positively biased as staff members are likely to be more conscious of their performance in the presence of other health professionals due to the Hawthorne effect (where individuals' behaviors may be altered because they know they are being observed).

Recording and Analysis

Each team leader was responsible for joint review of the notes and tally sheets (see appendices) before submission to the ARC monitoring and evaluation officer at the end of each day. The ARC monitoring and evaluation officer tracked progress on completion of the modules to ensure sufficient inclusion of each target group.

Study data was cleaned, organized, tabulated, and processed by hand to permit completion in Khmer (Cambodian language). The intent was to reduce the time involved with translation as well as minimize the potential for loss of information. Data analysis involved classification of interviewer notes by topic and target group. More than 900 of pages of interviewer notes were entered onto spreadsheets and organized into tables to facilitate analysis. Tables were randomly checked against field notes to control for quality and accuracy. Data entry took 21 days from March 9 through April 8, 2006.

Summary tables were developed in Khmer for comparison and cross-referencing of data. These were reviewed and discussed in detail by the ARC monitoring and evaluation officer and the primary investigator for production of this report. To improve understanding of the findings as well as the readability of this report, research findings from different modules have been integrated where appropriate.

Quantitative data used to produce the graphics was taken from module 1, section 2.

VII. Findings

Best Practices

Individual in-depth interviews were conducted with health center staff, outreach team members, village leaders, and VHSG members to identify best practices and system constraints related to vaccination service provision. Overall, health center staff and village leaders provided much more detailed responses when compared to their respective colleagues (outreach teams from health centers and VHSG members in the villages). The research team suggested that this finding may be attributable to the both the higher social status and capacity of health center staff versus outreach staff; and village leaders versus VHSG members.

Best practices identified from the perspective of each key informant group highlight a variety of elements that are necessary to achieve results at each step along the vaccination service delivery chain.

When asked to identify best practices, all health center staff identified good planning, including scheduling and cooperation with local authorities (e.g., village leaders). Another important element identified as essential to achieve high vaccination coverage, according to health center staff, is a good understanding among villagers of the importance of vaccinations. "Support from people in the community is the key" stated one health center staff. "Villages that use existing communication channels to promote immunization, as well as follow up and motivate parents to bring children needing vaccinations are essential to achieve high coverage," he explained. Health center staff vaccination knowledge and the development of a positive relationship with villagers were also noted as important factors by several health center staff.

Outreach staff frequently mentioned the importance of clear record keeping in the village. Village leaders and VHSGs are responsible for maintaining these records. "Records should include the names and vaccination status of women of reproductive age and newborns. This is important so that village leaders and VHSGs can go directly to households to follow up with those registered as needing vaccinations," explained one outreach staff member. Outreach staff members also commonly noted their role in educating and promoting vaccinations as important to improve coverage. They also identified the need to have a clear schedule or plan including details such as the date, time, and location of outreach sessions as an important element to achieve high coverage rates.

Village leaders commonly noted that success depends on all stakeholders working together to help the villagers understand the importance of and "believe in" vaccination. Various village leaders commented that they take advantage of village meetings to talk about the importance of vaccinations with their fellow villagers.

All VHGS members interviewed as part of the study stated that the critical factor for high vaccination coverage is direct contact with each mother. "The best way to get people to come to outreach is to go house-to-house and physically bring people to the meeting point

when the health center outreach staff come here." However, it was also noted that this is a big responsibility and a lot of work. "There are only one or two of us in each village; going to more than 100 houses can make you tired," said one VSHG member.

VHSG members also mentioned the importance of promoting vaccination services in advance of the outreach team coming to the village. They frequently emphasized that they need two days advance notification that the outreach team is coming. VHSG members reported that the common practice is to be informed either the day before or the same day as the outreach session. Several VHSG members reported that the outreach team will come in the morning to say that they will return that same afternoon. VHSG members reported that this does not allow them adequate time to get people to come to outreach.

Also of related interest, caregivers reported during focus group discussions that they prefer to receive information or be reminded of outreach services either the same day or only one day before. Caregivers explained that it is difficult for them to remember if they receive information too far in advance (e.g., one day).

Key informants were asked what they consider to be their most important achievement. Responses varied for each target group. Health center staff commonly cited their primary achievement to be the completion of full coverage.³⁸ One health center chief stated, "We have a success rate of around 90 percent." Health center staff also considered completion of their plan to be their primary achievement. (The "immunization plan" refers to the number of planned vaccine doses administered and number of outreach sessions completed.)

Outreach staff consider their most important achievement to be their contribution to the development of the village leaders' strong belief that vaccinations are important. This conviction was corroborated when talking with village leaders as they consistently demonstrated an extremely positive perception of vaccinations. All were convinced of vaccinations' effectiveness and importance. Village leaders commonly reported that people in their village no longer suffer from different illnesses. One village leader specifically recalled that "not so long ago, people became sick and died from measles; many people in this village were blind. Now with vaccinations and vitamin A, these are no longer problems for us."

Outreach staff also identified cooperation and participation with NGOs to improve service quality as an important achievement; they frequently mentioned their enjoyment in working with various stakeholders.

Village leaders, however, had difficulty identifying their achievements related to vaccinations. A few village leaders noted that they provided clear information to villagers relating to dates and times of outreach sessions. Although limited in number, some mentioned the control or tracking of newborns and completion of home visits to search for children needing vaccinations as achievements.

³⁸ Site vaccination service statistics for Angkor Chum OD (2005) show coverage to be between 80 to 87%.

VHSG had even more difficulty than village leaders in communicating their vaccine-related achievements. One VHSG member mentioned effectively communicating that vaccination is a free service. Another VHSG stated that motivating villagers to participate was an important achievement. A third VHSG cited calling meetings before outreach to make sure villagers know about planned outreach sessions.

Each key informant target group was asked, "Many people have told me that few people in the village come for outreach; why do you think that is?" All respondents questioned the validity and source of the information that suggested low turnout. All respondents firmly disagreed with this comment.

Constraints

The major constraint to completing vaccination services identified by health center staff is the lack of staff. Also identified as issues were the following: lack of transport (specifically motorcycles), fuel, and distance as many villages are geographically dispersed throughout the health center catchment area. Irregular per diem payments, identified by the operational health district as a problematic issue, were not specifically identified by the health center or outreach staff as a barrier to completing outreach.

Obstacles and challenges identified by the outreach staff include rainy and harvest seasons, long travel distances to remote villages, and no travel budget.

Several village leaders mentioned that outreach staff do not take time to educate the community on health issues. Village leaders perceive that outreach staff only stay in the village for a short time and focus exclusively on vaccination.

Village leaders and VHSG members frequently agreed that villagers are sometimes very busy (usually related to the seasonal sowing/harvest cycle). This reduces turnout for health center outreach. Also mentioned by village leaders, but not as a major issue, is fear among villagers of side-effects (primarily post-vaccination fever).

Mentioned by VHSG members was the difficulty in disseminating vaccination information to the entire village in a timely manner.

Using focus group discussions with different target groups, villagers were asked what factors prevent "people like you" from going for vaccinations at the health center. FGDs with caregivers of children "not-on-schedule" frequently cited that newborns should not go out from the house because of fear of retribution by the spirit, which could result in sickness and death. This fear is linked to traditional Khmer post-partum practices described by FGD participants. "*Ang-pluhgn*" or អាំង ភ្លើង is the practice whereby new mothers stay in bed for seven days; charcoal is burnt under the bed. The smoke and heat from the charcoal causes sweating which is believed to remove impurities and thus makes the mother stronger following partum. Also relevant is the practice of "*chrab chewan*" or ច្រាប ជាន់ whereas one

ties a string around the circumference of the house after childbirth. This practice is believed to protect the new baby and mother from bad spirits (not people) from entering the house. This practice also lasts for seven days.

Although caregivers of children "on-schedule" frequently described this practice during focus group discussions, it was not recounted as a factor that prevented them from getting to the health center for vaccinations. By contrast, they focused on poor road conditions, access, difficulty in finding the way, the long waiting time, services not being what they want, and no money for transport.

Target groups were also asked what prevents "people like you" from coming to vaccination outreach sessions. Parents of "on-schedule" children cited being busy or unaware of the outreach visit. Also mentioned was the practice of "*ang pluehgn*" or អាំង ភ្លើង and "*che-al pluehng*" or ឆើភ្លើង. One person mentioned that they didn't understand the purpose of the HepB vaccination. Parents of "not-on-schedule" children were unable to provide any substantive response.

Using a convenience sample (module 3), caregivers of children not immunized and caregivers of children fully immunized were identified. They were asked to explain the reason for their child's vaccination status. Table 3 below summarizes the responses.

Table 3. Comparison of caregivers of children fully-vaccinated vs. not-vaccinated

Caregivers of fully-vaccinated	Caregivers of not-vaccinated
<p><i>Vaccination is useful for my kids.</i> <i>Take care of my child's health.</i> <i>Understand the advantage of vaccination because it can prevent diseases such as measles, etc.</i></p> <p><i>Always bring my children to get vaccine when the outreach team comes</i> <i>Keep the yellow card until fully immunized</i> <i>Always check the yellow card to get fully vaccinated</i></p>	<p><i>The baby is too young.</i> <i>Outreach team rarely come to provide vaccination</i> <i>Waiting for the next vaccination, so require outreach team to come regularly</i> <i>Can't find yellow card, so I dare not bring the children to get vaccine</i></p> <p><i>Busy with farming / field work</i> <i>Gave birth in the forest, very isolated and difficult to get to HC</i> <i>In the forest while outreach team comes to provide vaccine</i> <i>Far away from HC</i> <i>Father rarely stays at home (so he cannot bring the child to outreach)</i> <i>Mother is sick</i></p>

Responses from caregivers of fully vaccinated children may be grouped into two categories: (1) those people who value the attributes of vaccinations or (2) those people with a sense of responsibility either to see the outreach team or complete the yellow card. Responses from

caregivers of non-vaccinated children may also be grouped: (1) those people with false beliefs, and (2) those people citing long distance as the primary barrier.

During FGDs, female caregivers with children "on-schedule" most commonly cited benefits of immunization to be prevention against disease, measles, and paralysis. Most women in these groups were knowledgeable that seven kinds of diseases are vaccine preventable. Also mentioned as a motivating factor was concern about criticism or gossip from the outreach team if their children are not fully vaccinated.

Caregivers of children "not-on-schedule" more generally noted "*disease prevention*" and a "*reduced trend of child sickness*". However, responses from these groups were less specific when compared to mother's with children "on-schedule".

Overall, all women perceived several negative effects of vaccinations including fever, pain, swelling, difficulty breathing, and children crying for a long time following vaccination. Tetanus toxoid was reported to cause skin irritation and fever. However, these effects were not considered very serious as several mothers reported that they can use a pill/paracetamol or apply hot water for relief.

Related to tetanus toxoid, female caregivers of children "on-schedule" frequently stated that women of reproductive age should be vaccinated. There was repeated reporting that unmarried or 'virgin' women do not want to be vaccinated for "fear of the needle". They also noted that one issue is that the outreach team focuses efforts on pregnant women and children, and not on women of reproductive age.

Women not vaccinated against TT, located using the convenience sample, cited that the vaccine is not available at the health center; they never got information about that; too busy with farming or in the forest (not at home); or, were ill when the outreach team came.

Mentioned exclusively by caregivers with children "not-on-schedule" was concern about "*arrus m'die dam*" or អរិសម្ពាយដើម. This term refers to the bearing of many children who die shortly after birth. Also commonly used is the word is "*skon*" or ស្កន់; a general term referring to any disease provoking "*arrus m'die dam*". Previously, neo-natal mortality was attributable to spirits, however most women now recognize that some of these diseases are preventable with a vaccine. This relates to the popular belief that new mothers should stay in the compound following childbirth for no less than seven days, but up to one month.

In relation to overall knowledge of immunizations, the survey teams perceived a correlation between remoteness and understanding of the importance of vaccinations.

Responses from male caregivers of children "on schedule" and "not on schedule" had common responses related to prevention of child and mother illness, disease prevention, and making the child healthy. All not-on-schedule interviewees were not able to mention any negative effects.

Men commonly stated that they are not involved with vaccination; they frequently suggested to the interviewer that they speak with their wife as the person more knowledgeable about the subject.

Vaccination messaging

Focus group participants were read key immunization messages (see table 4 below) and asked if they had heard this information previously and their thoughts about each message.

Table 4. Key immunization messages

1	Immunization protects your infant from certain diseases
2	Ensure that your infant completes the basic series of vaccinations by his or her first birthday
3	It is your responsibility as a parent to know when and where to take your child for his or her next immunization
4	Keep your baby's immunization card
5	To be protected against many diseases, people need to be vaccinated more than once
6	All women of childbearing age should be sure to receive enough tetanus vaccinations to protect themselves and their babies. Ask your health worker to check weather you need additional vaccination
7	It is normal for some injections to cause mild side effects such as light fever, soreness and redness. Consult with a health worker for advice about what to do if this happens

Women were familiar with these messages from radio, television, health center staff, and VHSGs. All respondents (both men and women) agreed that all messages are very important. Some respondents emphasized the importance of the yellow card. One mother reflected back, "I understand that the information of the vaccination prevents seven diseases is very important for children and infants because prevention can allow children to have good health." Another mother added, "This is accurate information, what is important is that children receive complete vaccinations; it is also important to take care of the yellow card as the yellow card can identify about the health problem."

Women also reported that they were familiar with and know how to use the yellow card. "Health center staff always ask me about the both the pink and yellow cards." Women perceive this card to be important as they are frequently asked for the card by other health organizations to see that card.

Men reported that they heard this information before from health center staff. However, they had no further comment on the messages. Women suggested additional messaging that focus on prevention of the seven diseases and "keep your child health to not lose money."

However, when asked what they consider to be the least important message, the only response was about message 7 related to side-effects. It is not considered important because "everybody knows the child will get fever, and everyone knows this is not very serious," according to one mother. However, this comment is not universal as several caregivers (particularly in Varin) stated that their child is healthy until they get vaccinated, which is when they become sick.

Focus group participants were asked, "If you had to convince your neighbor to bring your child for vaccinations what would you tell them?" One on-schedule mother suggested that she tell her neighbors to "please bring the child to vaccination sessions to prevent the disease such as fever and difficult breathing." Another mother noted that "when we receive the information, we continue to disseminate the information to help people to believe in vaccinations."

One father of children "on schedule" suggested to "explain the usefulness of the vaccination, if they are missing some vaccinations, they will not be effective. Please bring the child to get vaccinated against diseases and make the child have good health."

Vitamin A messaging

Focus groups participants were asked about the benefits and negative effects of vitamin A. In relation to benefits, participants identified the prevention of blindness and "clear seeing". No negative effects were mentioned.

Table 5. Key vitamin A messages

1	Your child requires vitamin A for proper growth and health
2	Vitamin A helps the body fight infections like measles and diarrhea
3	Lack of vitamin A can cause night blindness
4	Take all children over age six months and under age five years to receive vitamin A capsule
5	Vitamin A is safe, free, and effective
6	Ask your health worker about where and when to take your children for their next vitamin A capsules
7	Each child 6 months to 5 years should receive a vitamin A capsule every six months
8	Postpartum mothers should receive vitamin A capsule within two months of delivery

The question "What do you tell people about why they should come to the health center or outreach for vitamin A?" elicited responses mostly related to timing. Villagers commonly

mentioned that they are not clear about the month when the health center provides vitamin A to children. All respondents are aware that vitamin A is administered two times per year, but people had difficulty recalling which months.

The question "how they would convince their neighbor to bring their child for vitamin A?" did not elicit any responses. Several interviewees stated that they have no idea what they would say to promote vitamin A, possibly indicating that people have not yet internalized messaging related to vitamin A, as they have with immunizations.

Despite this finding, focus group participants seemed to be equally familiar with immunization and vitamin A messages when the key vitamin A messages were read out loud (see table 5). FGD participants were asked if they had ever heard this information before and what they thought about each message. All respondents reported having heard all messages from health center staff, radio, or television. Everybody believed that this information is "good" and "accurate." Some respondents do not consider message 4 to be as critical because they are ready and willing to bring children for vitamin every six months (caregivers), or whenever it is available from the health center outreach team. Women also noted that they liked the "free" aspect of vitamin A. Men did not recognize the message that vitamin A is safe, free, and effective. Women considered message 3 to be the most important, as they have seen before people with night blindness but since the introduction of vitamin A, they have seen a reduction in cases.

When asked if there are "any other messages that you believe are important to inform people about immunizations and vitamin A?" no messages were added.

Communication channels

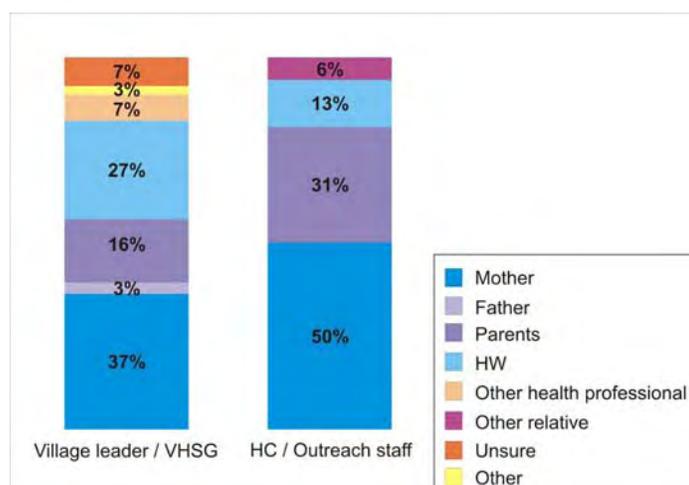
FGD participants were asked if there is "anything that anybody in this village could do or say to you that would want to make you take your child to get vaccinated?" Women caregivers of "on-schedule" children stated that they only needed to be informed by the village leader or volunteer.

Mothers of children "not-on-schedule" emphasized that that they needed somebody to come to their house to remind them to come. They also frequently talked about VHSG members as very important and the need for them to explain more about vaccinations and motivate people to come for outreach.

By contrast, fathers' (of children both "on-schedule" and "not-on-schedule") responses focused more on the role of health center staff. They mentioned that the health center staff are best suited to explain the effectiveness of vaccination, thereby motivating people to come for this service. Some fathers of children "on-schedule" also noted that grandparents have influence in encouraging mothers to take their children for vaccinations. There was no mention of VHSGs among male caregivers.

Graphic 3. Who is responsible for making sure a child has their immunizations?

Graphic 3 illustrates different perceptions about responsibility for ensuring child immunizations. Village leaders and VHSGs place less responsibility on the parents (a cumulative total of 56 percent) compared to health center and outreach staff (a cumulative total of 81 percent). By contrast, 34 percent of villager leaders and VHSGs cited health workers or other health professionals as responsible, compared to 13 percent of health center and outreach staff who stated that health workers are responsible. Seven percent of village leaders and VHSGs were not sure who is responsible.

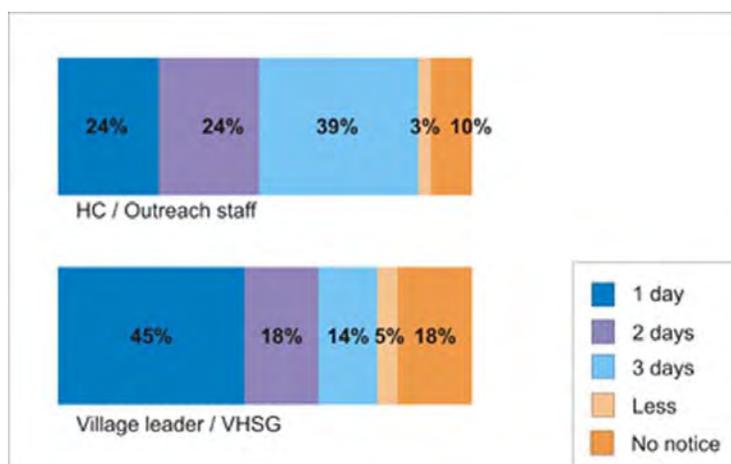


Scheduling outreach sessions

Health center and outreach staff members were asked to explain how they go about scheduling outreach sessions and what they take into consideration with planning outreach. Outreach staff reported that they meet with VHSG and/or village leader to set up the monthly schedule; this schedule is submitted to the HC staff who check the plan against the quarterly and annual work plan. The outreach schedule also includes other services such as HIV/AIDS, ante-natal care, etc. The final schedule is then signed by both the health center director and the outreach staff and forwarded to the OD.

Village leaders reported that they usually get a letter in addition to being informed verbally from the health center. Occasionally, village leaders receive information from the VHSG. VHSGs report getting their information directly from the health center during the monthly planning meeting which takes place at the health center.

Graphic 4. How much notice does the outreach team give before they come?



Graphic 4 clearly demonstrates different perceptions between health center/outreach staff and village leaders/VHSGs related to notification before arriving in the village for outreach sessions. Nearly 40 percent of health center/outreach staff reported giving three-days notice. Only 14 percent of village leaders/VHSGs also reported three days.

Outreach staff members consider that they are flexible in responding to village requests and needs. Specifically mentioned was arriving in the village very early morning to catch people before they may leave to the forest and, if necessary, returning to the village when needed.

Health center and outreach staff members were asked what they do when they cannot go to the village as scheduled. They stated that canceling planned outreach is not common. Sometimes missed outreach sessions are rescheduled, but at other times they are not, and the outreach teams visit the missed villages only the following month. When an outreach session must be canceled (usually due to a meeting), they contact the village leader and VHSG at least one day before the planned session. They are contacted by phone if possible or send the message through someone. Health center staff also reported that they commonly provide a letter to the village leader and VHSG member if they must cancel. It was noted that delays in receiving letters in the village have annoyed authorities and villagers.

Disseminating the schedule in the community

Using in-depth interviews, key opinion leaders and caregivers were asked, "Where do you get your information about health center outreach and immunizations? For example, how do you know when and where to go for health center outreach activities? How do you remember the day or date that vaccination service is available?"

Within the community, information is disseminated by word of mouth as well as by promotional banners (not as common). Village leaders reported that they always share information with the VHSGs so they may proceed to inform villagers house-by-house. Village leaders reported that they tell VHSGs only once. By contrast, VHSGs reported informing outreach session information to the villagers one, two, or three times.

Monks reported getting immunization information, either from the village leader or VHSG who hang immunization promotional banners on the village leaders' houses or, in some cases, on the pagoda. There was no mention of broadcasting information over the pagoda loudspeaker system by monks. Some teachers stated that they disseminate information to school students. One teacher noted that they also inform their neighbors when casually chatting with them.

This question generated a lot of conversation among caregivers. They reported getting information primarily from the village leaders and VHSGs. Midwives and traditional birth attendants were also commonly mentioned as information sources. There was no mention of getting information from monks, teachers, neighbors, children, friends, or family. Interestingly, caregivers stated that they share information about health center outreach with their neighbors, husband, and family two to three times. One theme among caregivers was encouraging their neighbors with small children to go together to the outreach session.

All target groups reported that the information they receive is reliable, believable, and trustworthy.

Perceptions about services provided at the health center

Key informants had divergent viewpoints when asked if they thought that people would come to the health center for vaccinations if outreach stopped.

VHSG members generally believed that if outreach were to stop, the result would be mixed: some people would seek services at the health center; some would not. They believed the primary reason not to go to the health center would be the long distance to the health center as well as a lack of understanding of the importance of vaccines.

By contrast, village leaders believed that it would be very difficult or impossible for villagers to go to the health center for vaccination services. All village leaders stated that the people in their village are very poor and that it would be very difficult to convince them to go for immunization services at the health center. One village leader estimated that "for every 10 people needing vaccines, only 2 would come to the health center because the village is far away from the health center, no money for transportation and people are too poor."

Through FGDs, caregivers were asked about concerns related to service at the health center. Their input focused on long waiting times for service at the health. One mother explained, "I used to wait for half or the whole the morning before I get service." Another mother corroborated, "Some times I wait for a long time, and the few tablets they give me are the same pills I can buy at the market without waiting."

Caregivers did not complain about poor treatment from health center staff. However, generally caregivers perceive that they can get better services at a private clinic, but that the private providers' prices are prohibitively expensive.

Teachers, monks, and VHSG members consistently reported good or excellent service from the health center. This is likely attributable to staff giving them free and/or priority treatment.

When FGD participants were asked "Do you get the information you like? Tell me more about that," they generally reported that they want better understanding of and more information about health and immunization. There were isolated reports that people did not feel as if the information they received from the health center was correct.

Hepatitis B birth dose

For infants exposed by the mother at birth, monovalent HepB vaccine is 90 percent effective in preventing transmission if the first dose is administered within 24 hours and the series is completed at the recommended intervals.³⁹ Key informants were asked about the challenges and difficulties with giving the Hepatitis B birth dose.

Health center staff report that provision of Hepatitis B birth dose is a challenge because people give birth in the village assisted by the traditional birth attendant, and Hepatitis B is only available from the health center, which is too far away for them to travel. This is compounded by the common practice "*ang-pluhgn*" or អាំង ភ្លើង whereas post-partum women and their babies stay in the house for seven days (see below).

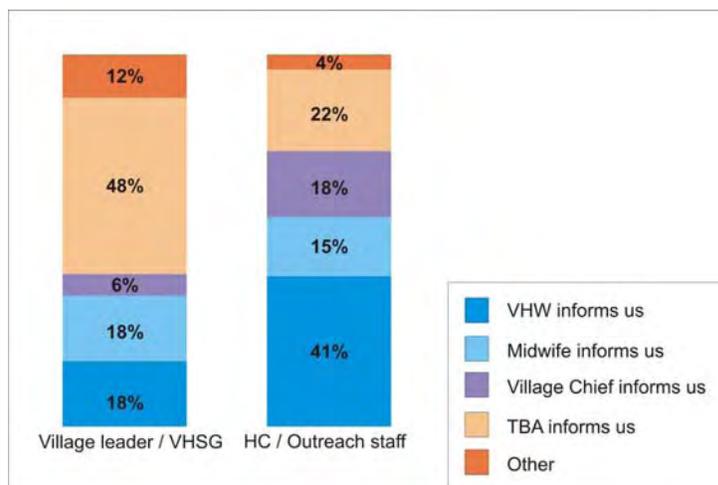
Also mentioned as an issue is that village leaders and VHSG do not immediately report new births to health center staff, who report that mothers are not clear on the usefulness of the HepB. Supply chain issues with delays in restocking were also noted.

Outreach teams reiterated the challenges identified by health center staff, emphasizing the challenge caused by the practice of "*ang-pluhgn*" or អាំង ភ្លើង. They also mentioned that mothers do not bring newborn children to outreach for fear of the child becoming sick from vaccines. Village leaders and VHSGs identified lack of transportation and the long distance to health center as barriers for post-partum women to get to the health center.

Some village leaders recognized the urgency of reporting new births immediately to the health center so as not to delay outreach staff deployment. One village leader commented, "When women deliver in my village, I report that to the health center on time because I am afraid to delay to receive the injection". Another village leader stated, "I know my community is very poor and cannot get to the health center and, if this information is reported to the health center, I believe and trust that they can come and provide the best intervention by providing the injection at the house." Also of interest was the suggestion from village leaders that people in the village should assist with transporting post-partum women to the health center.

³⁹ USAID, Immunization Essentials, A Practical Field Guide, October 2003

Graphic 5. Who informs whom about newborn children?



Graphic 5 illustrates the information flow relating to newborns. Village leaders and VHSG members are informed by TBAs, midwives, and VHSGs. Health center and outreach staff report being informed by village chiefs and VHSGs about new births.

When asked their opinion about midwives or traditional birth attendants providing the Hepatitis B birth dose to women who give

birth in the village, there strong opposition from health center staff and outreach teams. They stated that the vaccine cannot be provided to the traditional birth attendant as they have no experience or technical information on vaccine management. Additionally, storage in the village was identified as a concern. "If we take it [Hepatitis B vaccine] out [of the health center], it will spoil."

By contrast, village leaders stated that, based on their experience, they trust midwives because they "have never seen them make a problem for child birth," suggesting that if midwives, in particular, are trustworthy to deliver a child, they are trustworthy enough to provide a vaccine.

VHSG corroborated that midwives provide better services than traditional birth attendants. Midwives have higher knowledge and appropriate supplies (e.g. medicine).

Interpersonal Communication

Twelve outreach teams (one per health center) were observed providing vaccination services in the village. Although all observations (see table 6) are important, some desired behaviors and messages are more pragmatic in nature, and therefore may be considered higher priority. For example, actively looking for unvaccinated children is probably more likely to result in improving vaccination rates than thanking caregivers for coming for vaccination.

To account for this difference, desired behaviors of a more practical nature were grouped separately (Group A) than desired behaviors of a more educational or encouraging in nature (Group B). To reduce bias, this reorganization of observations was done during the data analysis in order to avoid any obvious grouping to the study observers. Observations classified into Group A were weighted by a factor of two in attempting to compensate for their relative higher importance when calculating a composite score for all observations.

Clearly, the goal is universal achievement of all desired behaviors and messages to provide high-quality service that is expected to result in improved demand.

Overall, Group A observations had a higher unweighted score (70 percent) when compared to Group B (53 percent). All outreach staff were observed writing the date of the vaccine on the yellow card. However, in the case of immunization series, only 31 percent of observations explained that additional vaccines were necessary to protect the child from disease. Sixty-two percent mentioned possible side effects and how to handle them.

In relation to Group B, 85 percent of observations explained in simple language the vaccine-preventable diseases. Only 46 percent used the yellow card as an instructional guide. However, 92 percent provided information regarding vitamin A.

During the expanded outreach session, outreach staff provided vitamin A capsules. The study teams observed outreach staff administering vitamin A directly into the mouths of all children. However, mebendazole was distributed by placing the tablet into the child's or mother's hand. The study teams observed three scenarios: (1) at least half of these people walked away from the outreach site without consuming the tablet, (2) approximately one-quarter of the children would taste the tablet and spit it out before consuming it in its entirety, and (3) approximately one-quarter of the children consumed the tablet.

Table 6. Observation checklist results

Group A					
Number	Description	Yes	No	NA	% of achievement
1	writes the date of the current vaccination being given on yellow	13	0	0	100
2	writes date of next vaccination and tells caretaker	10	2	1	83
3	associates next vaccination date with a holiday or seasonal event	6	7	0	46
4	actively looking for unvaccinated infants	12	1	0	92
5	mentions possible side effects and explains how to handle them	8	5	0	62
6	if vaccine is one in a series, explains the need for the child to complete the series to be fully protected against the disease	4	9	0	31
7	explains to come to health center for next vaccination if child misses next vaccination date	9	3	0	69
8	reminds caretaker to bring yellow card every time child is brought for vaccinations	10	3	0	77
	Unweighted Average				70
Group B					
9	thanks caregiver in a friendly manner for coming for vaccination	4	9	0	31
10	explains in simple language the diseases against which the vaccination protects	11	2	0	85
11	used yellow card as an instructional guide	6	7	0	46
12	if vaccination series completed, congratulates caretaker	3	8	1	25
13	congratulates caretaker if fully vaccinated	6	7	0	46
14	asks caretaker if she has any questions and politely answers all questions	6	7	0	46
15	provides information regarding vitamin A	12	1	0	92
	Unweighted Average				53
	Combined Average (weighted)				64

Yellow cards distributed by the ministry of health are designed to record immunization and growth-monitoring history. However, it was observed that growth-monitoring is not conducted during outreach and the growth-monitoring chart on the back of the yellow card is not used.

Finally, it was also observed that although the yellow card is printed on card-stock material, it is susceptible to water damage, especially during rainy season.

VIII. Key Findings and Recommendations

Key Finding 1

Interpersonal communication with each mother through home visits is a critical factor to motivate them to seek vaccination services. However, village leaders and VHSGs often do not have time to visit each house. Furthermore, caregivers, particularly caregivers of children "not on schedule", want to be reminded in their home about health center outreach one day before the session.

Recommendation 1

Volunteer and communication networks should be mobilized in the community to disseminate the outreach schedule as well as encourage caregivers to seek vaccination services for their children. Volunteers, including Red Cross volunteers, should be

Several village leaders and VHSG members recommended setting up small committees or village-based teams to help them get the word out and disseminate health information throughout the village. "A village committee could help us with identification and mobilization of families with children needing vaccinations," one village leader explained.

responsible to their communities for completing a manageable number of home visits to remind families to attend outreach one day prior to the outreach visit. It is important to motivate volunteers to develop a personal relationship with each household with whom they work. This will permit them to better understand barriers and resistances, personalize messaging, and negotiate more effectively to improve attendance for health center services.

Key Finding 2

Caregivers report that they often share information about health center outreach sessions with their family and neighbors. However, they do not report receiving information from these same people.

Recommendation 2

A "neighbor-to-neighbor" campaign should be developed to encourage and formalize the practice of sharing information related to outreach scheduling.

One "not-on-schedule" father recommended that mothers with fully vaccinated children should teach and motivate their neighbors to come for immunization services.

Key Finding 3

Advance notification of the outreach schedule to the village varies and is often not adequate to permit proper dissemination of information throughout the village by VHSGs and village leaders.

Recommendation 3

Health centers should standardize the practice of informing village leaders and VHSGs at least two days before outreach. Village leaders recommended that information is provided both by letter and verbally at least two to four days before the activity.

Key Finding 4

Buddhist monks and nuns, as well as schoolteachers, are highly respected community members; however, their participation in promoting immunization services is presently limited.

Recommendation 4

Pagodas should be engaged to play pre-recorded immunization radio spots one day prior to scheduled outreach sessions using the pagoda loudspeaker system. The radio spots should be the same so that people always associate it with immunizations. Bullhorns should also be used to promote outreach sessions.

When asked for suggestions on how to improve communication about health center outreach, all caregivers suggested use of a bullhorn or loudspeaker to broadcast this information.

Teachers should also be engaged to educate school children about immunization and vitamin A. Teachers can also disseminate information about scheduled outreach sessions to students in order to pass this information along to their parents and neighbors.

Key Finding 5

Health center staff members consider their primary achievement to be the completion of "full coverage." By contrast, village leaders and VHSGs had difficulty identifying their achievements. Furthermore, immunization record keeping in the village is a critical factor as this information permits both village leaders and VHSG to go directly to those households needing follow up.

Recommendation 5

The common goal of "full coverage" should be discussed, defined, and understood among all key immunization stakeholders, especially village leaders and VHSGs. This discussion should serve as a basis for the development of a common plan to achieve "full coverage" to be monitored through the village record keeping system. Additionally, a village recognition system such as health certification or raising a flag to identify that the village has achieved its full coverage target should be developed.

Key Finding 6.1

Good planning and cooperation, as well the development of a positive relationship with villagers, village-level volunteers, and village leaders, as identified by health center staff, is critical to ensure high immunization coverage.

Key Finding 6.2

Roles and responsibilities of immunization stakeholders are not clear or well-understood, thus limiting their potential in promoting immunization services.

Recommendation 6

Relationships among key immunization stakeholders should be strengthened. This may be achieved through reactivating full participation of stakeholders in monthly health center coordination (VHSG) meetings. In addition to VHSG members, village leaders and volunteer leaders, should be encouraged to attend.

When possible, key immunization stakeholders (including health center and outreach staff, village leaders, VHSGs, volunteer leaders) should be brought together to strengthen relationships and coordination.

Roles and responsibilities among village level stakeholders including health center and outreach staff, VHSGs, village leaders, volunteer leaders and volunteers, as well as caregivers should be clarified. This should be achieved through a participatory discussion to ensure stakeholder understanding and buy-in. Health center staff should publicly recognize the role of village leaders as advocates and capitalize on their strong belief related to the effectiveness of vaccines. Village leaders should be empowered to maximize their influence in getting caregivers to seek health center services.

Additionally, the results of this study should be disseminated among stakeholders at all levels including district, health center, and village as part of a process to build on lessons learned and strengthen relationships. Finally, the findings should also be shared at the national level.

Key Finding 7

As most births occur in the village, the administration of the HepB birth dose is challenging. Furthermore, the traditional practices of "ang-pluhgn" or អាំង ភ្លើង and "chrab chewan" or ច្រាប ជាន់ deter post-partum women from going to the health center or outreach services for seven days following childbirth. A few village leaders report newborn tracking as an achievement. Health center and outreach staff are willing and interested in completing home visits immediately following birth. However, there is no uniform system for tracking and reporting newborns to the health center.

Health center staff most commonly cited the need to educate TBAs on the importance of the HepB birth dose. All health center staff identified the need to be informed immediately following childbirth. "Please report [new births] to us immediately,... it is easy for us to manage the staff to come to the village and inject the birth dose," explained one health center director.

Key immunization stakeholders agree that the HepB birth dose should be administered by health center outreach staff (midwives).

Recommendation 7

A localized birth notification plan should be developed among key immunization stakeholders. Successful approaches noted by a few village leaders should be shared among all stakeholders. The plan should detail the reporting process for new births to the health center within 12 hours of delivery as well as the protocol for a health center staff visit within the 12 hours following notification. The plan should be linked to the national birth registration system.

Key Finding 8

The benefits of tetanus toxoid (TT) are not well understood among caregivers; TT coverage rates among pregnant women are low.

Recommendation 8

A communication campaign focusing on the benefits of tetanus toxoid should be developed. Appropriate incentives, such as long-lasting mosquito nets, should be distributed through health centers to motivate pregnant women following the completion of at least two tetanus toxoid shots.

Key Finding 9

Caregivers had difficulty recalling any vitamin A messages on their own or expressing how they would convince their neighbor to bring their children for vitamin A capsules. However, when key vitamin A messages were read out loud, most caregivers were able to identify them, suggesting that people have not yet internalized messaging related to vitamin A, as they have with immunizations.

Recommendation 9

Focusing on interpersonal communication, health stakeholders should promote vitamin A key messages throughout the year. They should emphasize the benefits of consuming vitamin A rich foods that are accessible and available to caregivers in the village.

Key Finding 10

Some health centers offer priority and/or free services to VHSGs and village leaders as an incentive for collaboration. This is a highly valued and appreciated benefit.

Recommendation 10

The practice of free health services for all VHSGs, village leaders, and community volunteers who collaborate with the health center should be standardized, institutionalized, and expanded.

Key Finding 11

Outreach sessions are almost exclusively focused on immunization services. During expanded outreach, vitamin A and mebendazole are also included. The growth-monitoring chart on the back of the yellow card immunization record is not used.

Recommendation 11

Outreach sessions should be viewed as a platform upon which other services can be offered such as promotion of the Community-Integrated Management of Childhood Illnesses key family practices as well as monthly growth-monitoring. Additional services are likely to increase community awareness of and action for improved health.

Key Finding 12

Outreach staff report they do not have enough time to provide health education during outreach sessions.

Several health center and outreach staff recommended that the designation of one person to explain vaccinations during outreach sessions to improve demand for vaccination services.

Recommendation 12

Health education should be coordinated with outreach staff and provided by community stakeholders including village leaders, VHSG, nuns, volunteer leaders and volunteers.

Key Finding 13

Health center outreach staff did not directly observe oral ingestion of mebendazole distributed during expanded outreach. This task was not assigned to village leaders, VHSG member, or village-based volunteers. It is not clear how many children provided with mebendazole consumed the medication.

Recommendation 13

Protocols for mebendazole distribution should be applied; this should include the provision of clean drinking water to ensure that the tablets are swallowed. The responsibility of providing water and observing oral ingestion should be clearly assigned.

Key Finding 14

Caregivers perceive the yellow immunization card to be an important document. However, it is susceptible to water damage, especially during rainy season.

Recommendation 14

Plastic covers should be provided to reinforce the concept that the yellow card is an important document and should be protected. Plastic covers will reduce the risk of water damage.

Key Finding 15

Outreach staff interpersonal communication and focus messages during service delivery could be improved. Specifically, there is a need to reinforce communication related to completing vaccines given as part of a series as well as associating vaccination dates with other days of significance such as holidays.

Recommendation 15

Practical training should be provided to health center staff to refresh interpersonal communication skills using adult-learning methodologies.

Finding 16

The primary barrier for villagers to go to the health center for services is distance and related travel costs. The national level fixed-site strategy pilot has demonstrated favorable results.

Recommendation 16

Fixed-site vaccination services should be scaled up over time to all villages near health centers. Communities should have maximum feasible participation to ensure vaccination service seeking at the health center. Scale-up should be closely monitored in order to detect and resolve any challenges to service delivery through the fixed-sites.

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X. Research Team

Primary Investigator

Mr. Robert Kolesar, MPH, American Red Cross, ICH Project Director

Research Coordinator and Field Supervisor

Mr. Chhun Sona, American Red Cross, ICH Monitoring and Evaluation Officer*

Field Observer

Mr. Sor Sara, American Red Cross ICH Project Coordinator

Interviewers and Recorders

Mr. Rath Chum, Administrative District, Deputy District Governor
Mr. Rath Rumnea, Cambodian Red Cross, Operation Manager
Mr. Phoung Sam On, Cambodian Red Cross, Operation Manager
Dr. Ouk Vichit, National Immunization Center, Immunization Officer
Dr. Chheng Morn, National Immunization Center, Immunization Officer
Mr. Khan Sakhorn, Operational Health District, AIDS officer*
Mr. Kroch Samoeun, Operational Health District, Malaria Officer*
Mr. Y Im, Angkor Chum Health Center, Pharmacy Officer
Mr. Nup Vanny, Angkor Chum Health Center, Officer**

Drivers

Mr. Hel Kimman, American Red Cross, Driver
Mr. Pon Navuth, American Red Cross, Driver

Planning and Logistics

Dr. Mak Sam Oeun, Operational Health District Director
Mr. Chhum Sophal, American Red Cross Administrative Manager

Data Entry

Mr. Kheng Bunny, American Red Cross, Data Entry Clerk

Data Analysis

Mr. Robert Kolesar, American Red Cross, ICH Project Director
Mr. Chhun Sona, American Red Cross, Monitoring and Evaluation Officer

Report Writer

Mr. Robert Kolesar, American Red Cross, ICH Project Director

Editors

Mr. Svay Sarath, National Immunization Program, Deputy Director
Mr. John Grundy, PATH/Cambodia, Immunization Technical Officer
Mrs. Sujata Ram, MPH, Maternal and Child Health Technical Officer
Ms. Minal Amin, MPH, American Red Cross, Southeast Asia Program Officer
Ms. Patricia Weeks, American Red Cross, Writer/Editor

* March 6 and 16 observation team member

** March 6 and 16 observation team member only