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Evaluation of the PL 480 Title II Program

USAID/HAITI
Development Assistance Program

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Evaluation of the PL 480 Title II Program

USAID/Haiti Development Assistance Program

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Table of Contents

Acknowledgements	vi
Acronyms and Abbreviations.....	vii
Executive Summary	viii
Chapter 1: Introduction	1
A. BACKGROUND.....	1
B. TITLE II PROGRAMS	2
C. THE TITLE II PROGRAM IN HAITI.....	3
D. CS PROGRAM DESCRIPTIONS.....	8
E. CONCEPTUAL FRAMEWORKS: MALNUTRITION AND FOOD SECURITY	9
F. ORGANIZATION OF REPORT	12
Chapter 2: Methodology	13
A. QUESTIONNAIRE DEVELOPMENT	13
B. SAMPLING	14
C. FIELD OPERATIONS.....	15
D. DATA ANALYSIS	16
Chapter 3: Community Characteristics	17
A. BASIC CHARACTERISTICS OF THE COMMUNITIES	17
B. ACCESS TO COMMERCIAL SERVICES AND SCHOOLS.....	18
C. ACCESS TO HEALTH SERVICES	19
Chapter 4: Household Characteristics	23
A. HOUSEHOLD MEMBERS	23
B. HOUSING AND SANITATION.....	24
C. HOME CHARACTERISTICS.....	27
D. FOOD SECURITY	29
E. CONCLUSION	31
Chapter 5: Title II Program Participation.....	32
A. HEALTH/NUTRITION AND SUPPLEMENTARY FEEDING PROGRAMS	32
B. OTHER PROGRAMS.....	33
C. CONCLUSION	34
Chapter 6: Neonatal and Maternal Health	35
A. PRENATAL CARE.....	35
B. HEALTH CARE RECEIVED AT DELIVERY.....	38
C. POSTNATAL CARE	39
D. BIRTH SPACING	41
E. CONCLUSION	42
Chapter 7: Infant and Young Child Feeding and Child Care Practices	43
A. BREASTFEEDING PRACTICES.....	43
B. FEEDING OF YOUNG CHILDREN	46
C. DIETARY DIVERSITY	48
D. PATTERNS OF CAREGIVING	50
E. CONCLUSION	52
Chapter 8: Child Health.....	53
A. IMMUNIZATION	53
B. VITAMIN A SUPPLEMENTATION	55
C. CARE SEEKING FOR CHILDHOOD ILLNESS	58
D. TREATMENT PRACTICES FOR CHILDHOOD ILLNESS.....	59
E. PREDICTORS OF DIARRHEAL DISEASE.....	63
F. CONCLUSION	65

Chapter 9: Child Growth Indicators	67
A. STUNTING.....	69
B. WASTING	72
C. UNDERWEIGHT	75
D. TITLE II PROGRAM PARTICIPATION AND CHILD GROWTH.....	78
E. OTHER FACTORS ASSOCIATED WITH CHILD GROWTH.....	79
F. CORRELATION AND REGRESSION RESULTS RELATED TO STUNTING.....	81
Chapter 10: Analyses by CS.....	86
A. HOUSEHOLD CHARACTERISTICS AND PROGRAM PARTICIPATION BY CS	86
B. HEALTH AND NUTRITION SERVICES AND OUTCOMES	95
Chapter 11: Summary, Conclusions, and Recommendations	109
A. SUMMARY AND CONCLUSIONS	109
B. RECOMMENDATIONS	112
Appendix A: References.....	115
Appendix B: Baseline and Final Evaluation Questionnaire Variables	118

Table of Figures

Figure 1-1: Areas of Interventions for CSs in Haiti.....	4
Figure 1-2: Conceptual Framework for Understanding Malnutrition	10
Figure 1-3: Food Security Conceptual Framework	11
Figure 6-1: Tetanus Toxoid Given During Pregnancy of Reference Child	37
Figure 6-2: Time of First Prenatal Visit.....	38
Figure 7-1: Positive Newborn Feeding Practices among Children	44
Figure 7-2: Liquids Given to the Child on Day of Birth 2006.....	45
Figure 8-1: Percentage of Caregivers Seeking Advice When Child is Ill	58
Figure 9-1: Mean HAZ Scores by Age.....	71
Figure 9-2: Mean WHZ Scores by Age	74
Figure 9-3: Mean WAZ Scores by Age	78

Table of Tables

Table 1-1: Annual Funding Levels	5
Table 1-2: CS Title II Support.....	5
Table 1-3: Title II Programs in Haiti: Beneficiary Levels and Resources Streams (2002).....	5
Table 1-4: Title II Programs in Haiti: Beneficiary Levels and Resources Streams (2006).....	6
Table 1-5: Summary Features of the Title II Programs in Haiti as of 2006	7

Table 1-6: CS Food Assistance Protocols for Pregnant/Lactating Women and Children	9
Table 2-1: Sample Localities, Interviews, and Households by Survey	15
Table 3-1: Locality Zone Ecology, 2006.....	17
Table 3-2: Nearest Services, 2006.....	18
Table 3-3: Access to Health Providers, 2006	19
Table 3-4: Percentage of Health Care Providers Offering Essential Health Services, 2006.....	20
Table 3-5: Health Providers Able to Offer Key Supplies, 2006	21
Table 3-6: Average Distance to Nearest Providers of Health Services and Supplies, 2006.....	22
Table 4-1: Household Characteristics by Type of Household, 2006.....	23
Table 4-2: Principal Occupations of Individuals, 2006	24
Table 4-3: Highest Level of Education by Gender, 2006	24
Table 4-4: Sources of Drinking Water.....	25
Table 4-5: Time Spent Getting Water, 2006	26
Table 4-6: Disposal of Human Excreta.....	26
Table 4-7: Home Sanitation	27
Table 4-8: Home Characteristics.....	28
Table 4-9: Principal Home Construction Material	29
Table 4-10: Months in the Past Year with Reported Food Shortage, 2006	30
Table 4-11: Households Owning Domestic Assets.....	31
Table 5-1: Participation in Health and Nutrition Programs, 2006.....	32
Table 5-2: Participation in Any Food Programs	33
Table 6-1: Prenatal Health Care	36
Table 6-2: Number of Prenatal Visits	37
Table 6-3: Location of Delivery	39
Table 6-4: Health Workers Involved in Prenatal, Childbirth, and Postpartum Care, 2006	39
Table 6-5: Timing of First Postnatal Visit.....	40
Table 6-6: Birth Spacing Patterns.....	42
Table 7-1: Reported Number of Months of Breastfeeding	45
Table 7-2: Continued Breastfeeding	46
Table 7-3: Percentage of Children Receiving a Bottle One Day Prior to Interview.....	47
Table 7-4: Percentage of Children Meeting or Exceeding Age-Appropriate IYCF Indicator Standards for Number of Feedings.....	48
Table 7-5: Percentage of Children Receiving Minimum Standard for Feeding Frequency by Age and Breastfeeding Status	48
Table 7-6: Dietary Diversity: Food Groups Consumed at Least Once in Past 24 Hours	49
Table 7-7: Percentage of Children Receiving Minimum Food Group Diversity by Age.....	49
Table 7-8: Percentage of Children Meeting or Exceeding Feeding Standards	50
Table 7-9: Percentage of Primary Caregiver for Children at Home.....	51
Table 7-10: Reasons for Receiving Food from a Program, 2006.....	52
Table 8-1: Percentage of Children 12-60 Months Fully Immunized	54
Table 8-2: Percentage of Immunization Coverage of Children 12-60 Months by Vaccination in CS areas and Haiti as whole	54
Table 8-3: Percentage of Immunization Coverage of Children 12-60 months by Vaccination.....	55
Table 8-4: Percentage of Children Ages 12-60 Months Receiving Vitamin A Supplementation	56

Table 8-5: Percentage of Children Ages 12-60 Months Receiving Vitamin A Supplementation.....	56
Table 8-6: Percentage of Children Ages 12-60 Months Receiving Vitamin A Supplementation.....	56
Table 8-7: Prevalence of Illness in Last Two Weeks for Children 6-60 Months.....	58
Table 8-8: Type of Health Services Where People Sought Advice/Treatment for Cough/Fever and Diarrhea, 2006.....	59
Table 8-9: Family Members Deciding to Seek Care for Seriously Ill Child, 2006	59
Table 8-10: Quantity of Liquid Given to Children with Diarrhea.....	60
Table 8-11: Quantity of Food Given to Children Ages 6-60 Months with Diarrhea	60
Table 8-12: Quantity of Food Given to Children Ages 6-60 after Diarrhea.....	61
Table 8-13: Treatment that Children Ages 6-60 Received for Diarrhea	62
Table 8-14: Medicine Children Ages 6-60 Received For Treating Cough, 2006.....	62
Table 8-15: Medicine Children Ages 6-60 Months Received for Treating Fever, 2006	63
Table 8-16: Prevalence of Diarrhea by Approaches Used for Prevention, Final Evaluation.....	64
Table 8-17: Prevalence of Diarrhea by Knowledge of Washing Hands, Final Evaluation	64
Table 9-1: Percentage of Stunted Children by Age and Gender.....	70
Table 9-2: Percentage of Severely Stunted Children by Age Range and Gender	72
Table 9-3: Percentage of Wasted Children by Age Range and Gender	73
Table 9-4: Percentage of Severely Wasted Children by Age Range and Gender	75
Table 9-5: Underweight Children by Age Range and Gender	76
Table 9-6: Severely Underweight Children by Age Range and Gender	77
Table 9-7: Malnutrition by Time Spent on Agricultural Activities, 2006.....	78
Table 9-8: Malnutrition by Time Spent in Health Programs, 2006	79
Table 9-9: Malnutrition by Reported Food Security, 2006.....	79
Table 9-10: Malnutrition by Reported Food Shortage, 2006	80
Table 9-11: Percentage of Children Stunted and Underweight by Birth Interval	80
Table 9-12: Percentage of Stunted and Underweight Children by Feeding Practice, 2006	81
Table 9-13: Correlations of Mean 2006 Height to Age z-Scores with Variables at the Household (Child) Level, 2006	82
Table 9-14: Regression on 2006 Mean Height to Age z-Scores with Variables at the Household (Child) Level, 2006	83
Table 9-15: Correlations of Mean 2006 Height to Age z-Scores with Variables at the Community Level, 2006	84
Table 9-16: Regression on Mean 2006 Height to Age z-Scores with Variables at the Community Level	85
Table 10-1: Principal Home Construction Material by CS	88
Table 10-2: Sources of Drinking Water by CS.....	89
Table 10-3: Adult Latrine Types by CS	90
Table 10-4: Household Asset by CS	91
Table 10-5: Food Shortages by CS, 2006.....	92
Table 10-6: Participation in Health Programs by CS, 2006	92
Table 10-7: Participation in Agricultural Programs by CS, 2006.....	93
Table 10-8: Participation in Food Distribution Programs by CS.....	94
Table 10-9: Receipt of Pre-Natal and Post-Natal Care by CS.....	97
Table 10-10: Number of Pre-natal Visits by CS	98
Table 10-11: Birth Spacing by CS.....	99

Table 10-12: Months of Breastfeeding of Children (aged 24-60 months) by CS	100
Table 10-13: Children (aged 6-24 months) Meeting Minimum Frequency of Feeding of Solid/Semi-Solid Foods by CS.....	101
Table 10-14: Percentages of Children (aged 6-24 months) Meeting Minimum Food Group Diversity by CS	102
Table 10-15: Percentages of Children (aged 6-24 months) Meeting Minimum IYCF Standards by CS ...	103
Table 10-16: Children (Aged 12-60 months) Receiving Full Vaccination and Vitamin A Supplementation by CS.....	104
Table 10-17: Children with Illnesses during the Past 2 Weeks by CS.....	105
Table 10-18: Food Given to Children during Diarrhea by CS.....	106
Table 10-19: Food Given to Children after Diarrhea by CS.....	107
Table 10-20: Rates of Stunting, Wasting, and Underweight by CS.....	108
Table 10-21: Mean z-Scores of Stunting, Wasting, and Underweight by CS.....	108

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ACRONYMS AND ABBREVIATIONS

BCC	Behavior Change Communication
BCG	Bacillus Calmette-Guerin (vaccination against tuberculosis)
CA	Cooperative Agreement
CARE	Cooperative for Aid and Relief Everywhere
CFW	Cash for Work
CHW	Community Health Worker
CRS	Catholic Relief Services
CS	Cooperating Sponsor
CTC	Community-based Therapeutic Care
DA	Development Associates
DAP	Development Assistance Program
DHS	Demographic and Health Survey
DPT	Diphtheria, Pertussis, and Tetanus
EPI	Expanded Program on Immunization
FANTA	Food and Nutrition Technical Assistance project
FAO	Food and Agriculture Organization
FFP	Food for Peace (FFW is Food for Work; CFW is Cash for Work)
FY	Fiscal Year
GMP	Growth Monitoring and Promotion
HAZ	Height-for-age z-score
IMCI	Integrated Management of Child Illnesses
IYCF	Infant and Young Children Feeding
KAP	Knowledge, Attitudes, Practices
LOA	Life of Agreement
M&E	Monitoring and Evaluation
MCHN	Maternal and Child Health and Nutrition
MOH	Ministry of Health
NCHS	National Center for Health Statistics
NGO	Non-governmental Organization
NRM	Natural Resources Management
ORS	Oral Rehydration Salts
PAHO	Pan American Health Organization
PL 480	Public Law 480
PLWHA	Person living with HIV/AIDS
PTA	Parent Teacher Associations
SC/US	Save the Children/United States
SES	Socio-Economic Status
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USC	Unité Communale de Sante (Administrative Health Unit)
USG	United States Government
VAD	Vitamin A Deficiency
WAZ	Weight-for-age z-score
WFP	World Food Program
WHZ	Weight-for-height z-score
WHO	World Health Organization
WSB	Wheat Soy Blend
WVI	World Vision International

EXECUTIVE SUMMARY

Background: Since 1958, the US government has provided PL 480 Title II resources to support food security and related development assistance in Haiti. Since 1996, this assistance has been provided within the framework of a Development Assistance Program (DAP) in collaboration with US-based non-governmental organization partners. USAID/Haiti's Title II programs are multi-sectoral—including health, nutrition, agriculture, natural resources management, micro-credit, education, and civil society components—all have the aim of improving food security. The second five-year cycle, 2002-2007, is being implemented through four Cooperating Sponsors (CSs): CARE, Catholic Relief Services, Save the Children/US, and World Vision International.

Approach: Food for Peace Development Assistance Programs are required to have a baseline survey at or near the start of the interventions, and a final evaluation in the penultimate year of the implementation period. The purpose of the 2006 evaluation is to assess the impact of the assistance provided and to examine factors that likely are promoting or impeding progress, especially those that are amenable to practical program interventions.

The Haiti DAP 2002 baseline and 2006 final evaluation surveys collected maternal and child health program component data using mostly identical questionnaires at the same time of the year. Both surveys were conducted during the end of the annual dry, food-lean season, May through July. In 2006, a total of 3,233 households with a child between the ages of 6-60 months were interviewed in 105 localities across the four CS geographic areas—the same localities sampled in 2002 with 2,922 households.

The 2002 survey sampling baseline was designed to yield robust statistical inference about anthropometric indicators at the aggregate, USAID Title II-wide level but only suggestive findings at the regional CS program area level.

Summary of Findings:

Household Reported Food Insecurity

Over 80 percent of households in DAP program areas reported not having enough to eat five or more months of the year; in three of the four CS service areas this was 90 percent or more. Overall, over half (51.5 percent) of respondents reported they did not have enough food 9-12 months of the year, with an overall mean shortage during 7.8 of the last 12 months. Only five percent of households reported no shortage at any time during the year. Households that reported taking part in a supplementary food program reported levels of food insecurity similar to those reporting that they did not participate in a supplementary food program.

Neonatal and Maternal Health

At the aggregate level, the evaluation found positive improvements in maternal health care to women in the DAP service area. There were notably higher percentages of mothers in 2006 reporting having obtained a complement of key services including prenatal examination, iron supplementation, tetanus vaccination, and food compared to percentages in 2002.

- Prenatal care - There were significant increases in the percentages of women receiving pre-natal care (95 percent in 2006 versus 86 percent in 2002); these increases were in the SC/US and World Vision areas.

- Postnatal care - There were significant increases in the percentages of women receiving post-natal care (51 percent in 2006 versus 17 percent in 2002). Though not yet statistically detectable in this four-year interval, increased postnatal care should lead to improved child health outcomes over time if services are continued.
- Birth Spacing - A significant increase was found in the average interval between the birth of the reference child and the birth of the just-prior sibling. There was a statistically significant increase between 2002 and 2006 in the birth interval for all four CSs, ranging from an average increase of 9.1 months in the area served by CARE to 11.3 in World Vision's service area. Thirty-seven percent of children in 2006 met the international standard for optimal health of mothers and children of between three and five years of spacing, whereas in 2002 only 25 percent achieved this standard. This converges with findings from the community level that family planning services were more accessible in 2006 than in 2002 and, from the household respondents, that almost one-third of women now are using some method of family planning.

Infant and Young Child Feeding and Child Care Practices

Results regarding the current status of infant and young child feeding (ICYF) and of positive changes over the 4-year program period were more mixed. There was a major improvement in the percent of mothers who gave colostrum to their baby (from 65 to 83 percent), and the majority of women reported giving only breast milk on the day their baby was born. In addition, almost all women who reported initiating breastfeeding did so within eight hours of delivery, with 43 percent doing so within one hour of birth, as compared to 24 percent of women in the baseline. Also, the findings in terms of dietary diversity were much more favorable, with 90 percent of children meeting the minimum food group diversity in 2006 as opposed to 78 percent in 2002. There was a small improvement in children 6-24 months of age who received the minimum number of semi solid/solid feedings on the day prior to the interview since the baseline survey, indicating the success of various CS interventions aimed at improving this practice.

- Feeding Standards - The percentage of children ages 6-24 months who were meeting all three standards for adequate feeding (receiving breast milk or milk products, frequency of feeding, and food group diversity) increased in DAP program areas of CARE, CRS, and SAVE, and decreased for World Vision. The decrease for World Vision was largely based on a lower number of reported feedings of semi-solid and solid foods in 2006.
- Dietary Diversity - The number of children receiving minimum food group diversity increased from 2002 to 2006; and there was also an increase in the mean number of dietary categories received by children in the four CS areas. There were no statistically significant changes between 2002 and 2006 in the number of dietary categories received by children for any of the CSs, but the increase represents an important trend.

Child Health

The evaluation found no statistically significant improvements in rates of reported child illness or in child growth indicators. Diarrhea reportedly increased slightly from 29.6% at baseline to 31.3% at final. Cough, fever, 'any illness' and multiple sicknesses also increased slightly from 2002 to 2006. Close to 80 percent of children 6-60 months in the CS service areas experienced an illness during the two weeks preceding the survey, more than half suffered from more than

one illness during that period, and there was not a statistically significant change between 2002 and 2006 in this regard. Health seeking behavior improved considerably, with 70.0 percent of caregivers seeking advice when a child is ill in 2006 compared to 49.0 percent in 2002. Nearly 46 percent of caregivers reported seeking advice when their child was ill compared to 34.0 in 2002.

- Immunization - The percentage of children who were fully vaccinated (63 percent in 2006 versus 39 percent in 2002). The percentage of children who received vitamin A supplementation (75 percent versus 44 percent).
- Supplementation - There were statistically significant increases between 2002 and 2006 for Vitamin A supplementation.
- Care Seeking for Child Illnesses - Eighty-five percent of respondents reported that when their children are seriously ill, fathers are key in decision-making about seeking medical treatment, with a role seemingly greater than for mothers or other caretakers.
- Child Illness - The evaluation did not find any statistically significant changes between 2002 and 2006 in rates of childhood illness (cough, fever, and diarrhea), overall or for any of the CSs. Nearly 80 percent of children 6-60 months of age were reported to have had an illness during the two weeks prior to interview. The evaluation did not identify any variables at the child/household level other than age of the child that were strongly correlated with childhood diarrhea, but did find a number of variables at the community level that were correlated including mean birth interval between children, percentage of households with an improved latrine, percentage of households with a protected water source and mean level of domestic assets. Of these correlates, the evaluation did not find any significant changes between 2002 and 2006 with the exception of the significant increase in birth interval.

Child Growth Indicators

There were also no significant differences between 2002 and 2006 in rates of stunting or severe stunting of children between 6-60 months of age. Height for age is a long-term, chronic symptom of malnutrition and improvement in rates of stunting depend on multiple basic and underlying causes of malnutrition. There were also no significant differences in stunting rates by gender within any of the four CS service areas. Overall, the 2002 survey found 26 percent of children between 6-60 months were stunted, with 9 percent severely stunted; and four years later the rates were essentially the same, 25 percent, and 8 percent respectively. While a slight decrease in stunting occurred between baseline and final evaluation, the change did not differ when using statistical tests. The same was true with respect to wasting. In 2002 the overall rates were 3 percent wasted and 0.2 severely wasted, while in 2006 the rates were 4 and 0.1 percent, respectively. High rates of diarrhea and other childhood illnesses and continuing household food insecurity likely are contribute to the absence of change in rates of malnutrition.

Analyses by CS

Analysis by CS - Though there were significant differences in the intervention approaches used by the CSs and in the populations being served, there were few differences in the outcomes that they achieved. All of the CSs showed increases in the receipt of pre-natal and post-natal

services, in birth spacing of children, in full immunization of children, and in Vitamin A supplementation. However, none showed statistically significant changes in numbers of complementary feedings; dietary diversity; rates of diarrhea, cough, and fever; rates of stunting, wasting, and underweight; or z-scores related to malnutrition. Thus the analyses by CS do not provide evidence that any approach being applied by a CS is any more effective than another.

Further Analyses

The evaluation did find a number of variables at the community level that were correlated with diarrhea and child stunting. Correlations of prevalence of diarrhea at the community level showed moderate relationships with the mean birth interval with previous child (-.285), the percentage of households with an improved latrine (-.240), the mean of a composite of domestic assets (-.220), the percentage of households with a protected water source (-.211), and the mean number of solid/semi-solid feedings given children in the previous 24 hours (.207). Variables showing relatively high correlations to mean height-to-age z-scores in 2006 included the mean composite of domestic assets (.534), the percentage of households in the community with an improved latrine (.439), the mean on a measure of dietary diversity (.382), the percentage of children with diarrhea in the past two weeks (-.294), the mean birth interval of children (.270), and the percentage of households with a protected water source (.261).

The findings also show that of the variables that are correlated with diarrhea or stunting, there has been a positive change over the 4-year period with respect to birth spacing among mothers of children 6-60 months, and food group diversity, and frequency of solid/semi-solid feeding among children 6-24 months. There has been no significant change with respect to increased domestic assets, households with improved latrines, households with access to protected water, or the rate of diarrhea. These findings suggest that community interventions to improve the economic circumstances of families, and provide protected water sources and improved latrines are likely to be effective in reducing diarrheal disease and child stunting.

Recommendations:

According to the UNICEF conceptual framework of malnutrition, the two immediate causes of malnutrition in children under 5 are inadequate diet—which includes quality and quantity of food—and disease. While most households reported not having enough food most of the time, the questions related to food security were self-reported. Since markets in many of the CS interventions areas are functioning, the results of this evaluation suggest that nuanced approaches toward improving food security in Haiti are needed.

Household Food Insecurity

Cash for Work interventions focusing on potable water supply and sanitation is recommended as one way to increase household income and thereby access to food. In addition to generating cash, these activities will increase access to protected water sources and improved latrines and thereby decreasing diarrhea rates among young children, which in turn leads to improvements in growth indicators.

Neonatal and Maternal Health

- Continue pre-natal and post-natal care programs to ensure that all pregnant and lactating women have access to health care. While there were increases in all four CS program areas in post-natal care, pre-natal care must still be increased.

- Continue birth-spacing and other family planning programs as these had positive outcomes.

Infant and Young Child Feeding and Child Care Practices

- Commit to ensuring that the three IYCF standards are met, which include providing breast milk or milk products, providing minimum feeding frequency of semi-solid/solid foods, and providing minimum food group diversity. Special attention should be paid to frequency of feeding, because evaluation results show a particularly poor level of achievement on this indicator. None of the CS program areas showed statistically significant changes in frequency of feeding semi-solid/solid foods or food group diversity. The IYCF standards for supplementary feedings are: (a) for breastfed children ages 6-8 months, two feedings of solid or semi-solid food; (b) for breastfed children ages 9-24 months, three feedings; and (c) for non-breastfed children ages 6-24 months, four feedings.
- Fortify local grains with micronutrients which will improve diet quality. There were no statistically significant changes between 2002 and 2006 in the number of dietary categories received by children for any of the CSs, but the potential to improve rates of stunting by impacting diet quality is possible through flour fortification. This recommendation was made in the 2001 Evaluation Report and the potential impact of and need for fortification remains. By fortifying with B vitamins, iron, folate, and vitamin A, prevention against micronutrient malnutrition can be achieved on a national level.

Child Health

- Continue behavior change communication (BCC) and other education programs, such as Ti Foyer and the positive deviance approach, to further improve hygiene practices and health seeking behavior of beneficiary communities. Increased BCC on nutrition, health, hygiene, family planning as behavior change impact is known to take longer; while there have been increases since 2002 in health seeking behaviors and birth spacing, these efforts should be continued. Also, explore nuanced BCC approaches. For example, Ti Foyer sessions can incorporate more on diarrheal management education and be scaled up to include fathers and other family members. Diarrhea, fever, and cough incidence all increased from 2002 to 2006, indicating that while more people are accessing health services, there is still a need to decrease morbidity levels of children under five.
- Continue rally posts and other health outreach activities to achieve even better rates of immunization and supplementation coverage, given the evidence that they have positively influenced immunization levels and supplementation levels.
- Include fathers in targeting of PHC outreach activities aimed at informing the value of early treatment (and prevention) of serious child illness and malnutrition, as evidence from the evaluation shows that fathers significantly contribute to decision-making regarding when to access health care.

Child Growth Indicators

- Continue supplementary feeding for vulnerable groups including: children under five who are moderately malnourished after nutritional screening; pregnant and lactating

mothers, with emphasis on the post-natal supplement; vulnerable groups such as persons living with HIV/AIDS (PLWHAs), TB patients, the elderly, etc. as needs indicate in each program area.

- Adopt community-based therapeutic care (CTC) in the existing health structure to more holistically identify and treat moderate acute and severe acute malnutrition, linking this process to rally posts and ensuring that both inadequate diet and disease are treated as immediate causes of malnutrition. Mothers' clubs can be included in CTC by volunteering to work at out-patient sites and to manufacture plumpynut or another appropriate ready-to-use-therapeutic-food (RUTF), thereby having the additional benefit of increasing household income.

Regression analysis showed that protected water source, correct hand-washing behavior, participation in food distribution program, birth interval, improved latrine, and composite scores of domestic assets were all significant predictors of stunting. Improving the number of available protected water sources and latrines was mentioned in the food security recommendations and hand-washing behavior was addressed in the BCC recommendation. Birth spacing has improved and will continue to if programs are maintained for neonatal and maternal care. Also, domestic assets can be further diversified through FFW, CFW and other income generation. Even when each of these indicators is improved, stunting will only begin to decrease when diarrheal incidence is decreased and appropriate PHC is available. While there was no study of caloric intake done, it is likely that supplementary feeding should be continued with different targeting.

Chapter 1: INTRODUCTION

This report presents the findings and recommendations from an external evaluation of USAID/Haiti's Development Assistance Program (DAP), which is composed of the combined PL 480 Title II programs for four Cooperating Sponsors (CSs): CARE, Catholic Relief Services, Save the Children/US, and World Vision International. The evaluation is based on analysis comparing the results of a baseline survey conducted in 2002 with those of a 2006 follow-up household survey in the same locales, using the same methodologies. The evaluation's focus is on the effectiveness of maternal and child health (MCH) and nutrition components of the CSs' programs, and its purposes are to update the baseline data, ascertain if expected changes occurred, and make recommendations that might be used in planning proposals for the next program period. While the scope of the evaluation did not include the agricultural component of the DAP or supplementary food distribution, these are components of the CS programs and therefore, have interwoven impact on food security, health and nutrition. However, since actual agriculture production (crop yield, post harvest losses and crop sales value) were not included in the questionnaire, the authors cannot make specific suggestions about the types of agriculture activities to implement.

A. Background

Haiti is among the poorest countries in the Western Hemisphere: its per capita income of less than \$500 per year. Its population, currently approximately 8.5 million, is growing at an estimated rate of 2.3 percent as of 2004 (US Bureau of the Census, 2005). Sixty-five percent of the population lives in poverty. Two-thirds of Haitians depend on the agriculture sector, which consists mainly of small-scale subsistence farming.

Haiti's life expectancy (53 years) is the lowest in the hemisphere. The under-5 mortality rate in 2002, 111 deaths per 1,000, was estimated to be the highest; with 28 percent of children under-5 considered underweight, child malnutrition, is second only to Guatemala. Rates of access to potable water and general infrastructure are also the lowest in the Americas. About 75 percent of the rural population falls below the poverty line.

The country suffers from rampant inflation, a lack of investment, and a severe trade deficit. Following legislative elections in May 2000, which were fraught with irregularities, international donors – including the United States and European Union – suspended almost all aid to Haiti. The economy shrank an estimated 1.2 percent in 2001 and 0.9 percent in 2002. Suspended aid and loan disbursements totaled more than \$500 million at the start of 2003.

Extensive civil strife in 2004, marked by the flight of President Jean Bertrand Aristide, further undermined the country's already fraying social and economic fabric. Donors and investors evacuated in the face of increasing security risks.

Haiti's social and economic volatility was further tested when Hurricane Jeanne affected the northwest, also in 2004. Years of uncontrolled deforestation left many people especially vulnerable: the storm left thousands dead and many more thousands homeless.

Haiti's prospects began to improve in early 2006, as newly elected leadership replaced the interim government and the donor community renewed its commitment to the country. Nevertheless, economic and political fragility continue.

In light of Haiti's longstanding struggle to meet the food and other welfare needs of its population, the US government has been using PL 480 Title II resources to support food security and other development assistance endeavors in collaboration with international non-governmental organization (NGO) partners since 1996. The current five-year cycle (2002-2007) is being implemented through four NGOs: CARE, CRS, Save the Children/US (SC/US), and World Vision International.¹ All of the currently funded programs are multi-sectoral, comprising health, nutrition, agriculture, natural resources management, micro-credit, education, and civil society development. Together, the four CSs provide services to a large proportion of the Haitian population living in the Northwest, Central Plateau, and Southern Peninsula regions, and the island of La Gonave.

B. Title II Programs

All NGOs that receive Title II support conduct a baseline survey to assess the conditions prevailing in their target areas before or near the start of interventions. Ideally, the findings of the baseline survey are used to adjust the program's implementation design to the reality on the ground. The Title II agreements also stipulate that there be an external evaluation to update baseline data in the penultimate year of the program (i.e., 2006) to ascertain if the expected changes in effect and impact indicators occurred during the period of activity and whether the project warrants continuation.²

The baseline survey of the 2002-2007 cycle was conducted between May and July 2002. Households were interviewed across the four CS catchment areas on issues ranging from the nutrition of children to agricultural production. Survey findings, produced jointly by the four CSs, were released in October 2003. This database provides a good framework and basis for the required final evaluation survey.

The timing of the baseline survey corresponded with the end of the annual dry season, before crops were harvested and thus when households' reserves were at their lowest. That year in Haiti was particularly hard on agricultural production; droughts affected large portions of the Northwest and the Plateau Central, while torrential rains caused widespread landslides and floods in the Southern Peninsula.

Field work for the final evaluation survey, the focus of this report, was conducted from June through July 2006 to parallel as closely as possible the climatological and agricultural conditions of the baseline survey. A total of 3,233 households were interviewed in 105 localities across the

¹ The current DAP goes from USG Fiscal Year 2002 through FY 2006 with allowance for a one-year extension (i.e., FY 2002 – 2007).

² USAID Contract No. 521-M-00-06-00012-00 for the Evaluation of the PL 480 Program. Statement of Work, Section A.2. I, May 2006.

four CS zones. At the time of the baseline, there had been concern that the especially poor weather conditions of 2002 would have to be taken into account when making comparisons with the final evaluation data. Although the weather in the interim period was not as harsh, the aforementioned economic and political disruptions may have resulted in ongoing, perhaps equally adverse, conditions affecting food security.

C. The Title II Program in Haiti

The PL 480 Title II Program in Haiti aims to reduce food insecurity and mitigate the effects of frequent disasters in Haiti. As earlier noted, the four current DAPs run from 2002 to 2007, and are implemented through four CSs (CARE, CRS, SC/US, and World Vision), each operating in a separate geographic area. (See map in *Figure 1-1*.) These partners provide food security assistance through a significant number of health centers/dispensaries, rally posts, mobile clinics, schools, and farms. The principal intervention sectors vary somewhat from one CS to another, but all are involved in maternal and child health, nutrition, agriculture, natural resources management, and disaster early warning. Some also have programs in primary education, assistance to vulnerable children, water supply and sanitation, HIV/AIDS, and the social safety net.

While the CSs in Haiti have collaborated to a very high degree on their DAPs, ultimately, they work in distinct areas of the country. CARE works mostly in the Northwest, covering communes in the NordOuest and Artibonite Departements. CRS focuses its activities in Departement de Sud and parts of Grande Anse. Save the Children is active in the Central Plateau area (Departements Artibonite and Centre); and World Vision provides services to the island of La Gonave as well as some communes in the Departement de Centre.

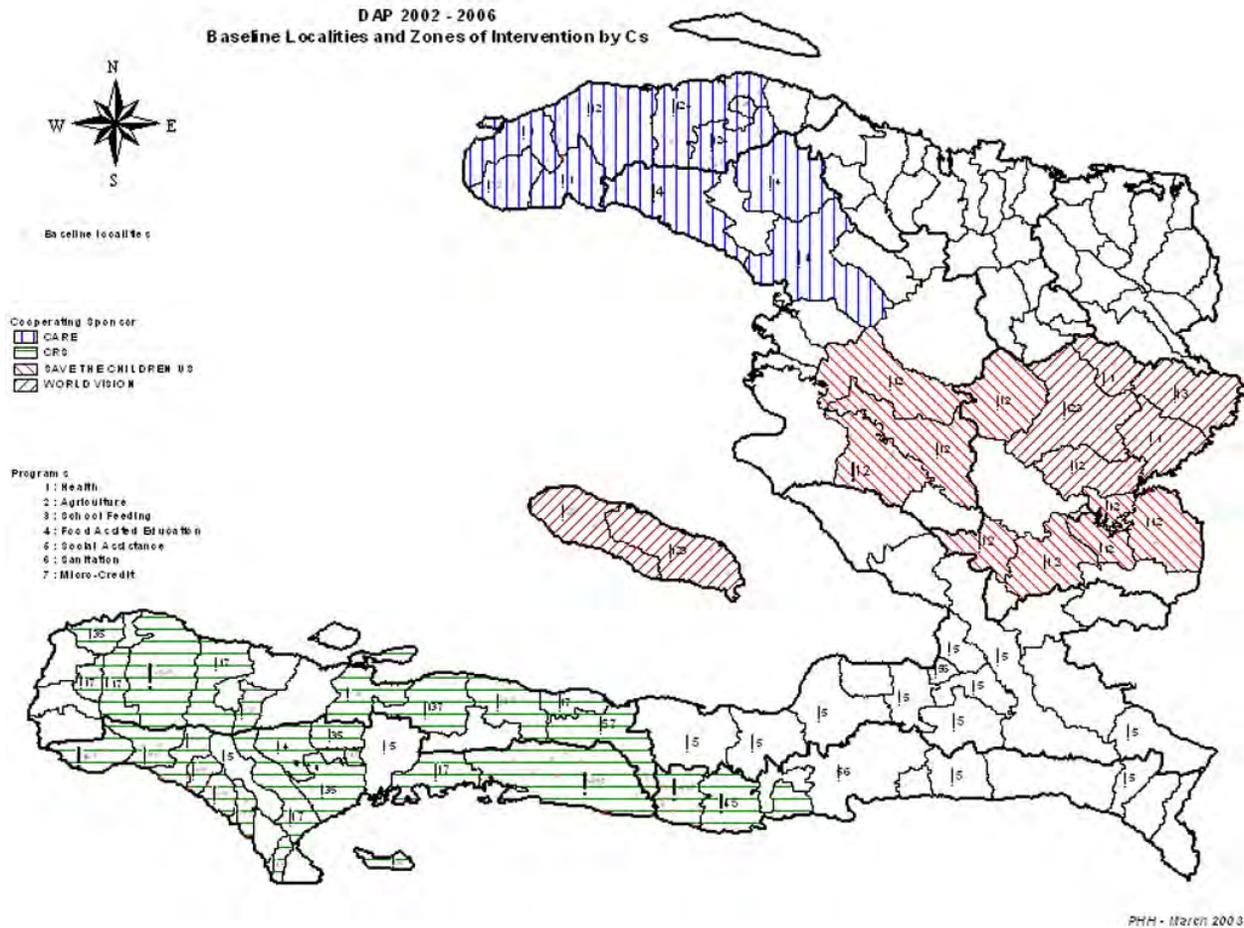


Figure I-1: Areas of Interventions for CSs in Haiti

The CSs also manage their programs in accordance with their own philosophies, capabilities, and personnel. For example, there are differing categories of beneficiaries: Maternal and Child Health and Nutrition (MCHN) distribution requires planning and strengths different from what is needed for Food for Work distribution. Moreover, the MCHN feeding programs have mechanisms that remove beneficiaries from the registers after a specified period, and a constant inflow of new beneficiaries who must be taught procedures often complicates distribution.

Table I-1 shows the annual funding levels for the current DAP (2002-2007):

Table I-1: Annual Funding Levels³

FY	Amount (US\$)
FY 02	19,262,900
FY 03	33,118,400
FY 04	30,554,000
FY 05	30,888,300
FY 06	34,221,400
FY 07	30,913,100
TOTAL	178,958,100

Table I-2 shows the breakdown of Title II funding by CS over the course of the DAP.

Table I-2: CS Title II Support⁴

CS	LOA (\$)	FY 05	FY 06	FY 07
CARE	35,651,000	6,108,200	5,758,600	5,133,300
CRS	37,425,000	11,102,200	12,789,800	12,285,400
SC/US	18,241,000	4,625,600	5,621,600	5,101,100
WVI	53,384,700	8,802,200	9,051,200	8,400,700
TOTAL	144,701,700	30,638,200	33,221,200	30,920,500

Table I-3 and Table I-4 illustrate the changes in CS beneficiary population coverage and resource allocation between 2002 and 2006.

Table I-3: Title II Programs in Haiti: Beneficiary Levels and Resources Streams (2002)

	CARE	CRS	SC/US	WVI	Total
Beneficiaries (FY2002)	56,247 ⁵	43,700	66,841 ⁶	65,000	275,488
Amount of food (LOA)	16,570 MT	42,597	8,258 MT	20,004 MT	87,429 MT
Cash resources (LOA)	\$27,818,797	\$18,799,946	\$10,125,225	\$36,116,659	\$92,860,627

³ USAID Contract No. 521-M-00-06-00012-00 for the Evaluation of the PL 480 Program. Statement of Work, Section A.2.I I. May 2006.

⁴ USAID Contract No. 521-M-00-06-00012-00 for the Evaluation of the PL 480 Program. Statement of Work, Section A.2. I. May 2006. The totals provided by USAID in this table do not match the related totals in the previous table, because program value during current and outlying years changes as commodity values fluctuate.

⁵ This number includes both direct and indirect beneficiaries.

⁶ This is an overestimate. SC/US targets both pregnant women and lactating mothers. Each of those is counted as individual beneficiaries but may in fact correspond to the same person receiving benefits at two different points in time.

Table I-4: Title II Programs in Haiti: Beneficiary Levels and Resources Streams (2006)

	CARE	CRS	SC/US	WVI	Total
Beneficiaries (FY2002)	46,165 ⁷	240,223	66,841	70,000	377,064
Amount of food (LOA)	13,990 MT	40,737 MT	21,610 MT	21,202 MT	97,539 MT
Cash resources (LOA)⁸	\$27,734,926	\$30,675,952	\$15,002,747	\$23,786,034	\$69,464,733.00

USAID/Haiti's previous Title II cycle (1996-2001) emphasized school feeding. MCHN, some micro-credit, and Food for Work activities were secondary. The second cycle saw a major transition in design and content in response to the findings of the first cycle's final evaluation: MCHN activities assumed prominence, followed by agricultural programming. School feeding activities were gradually scaled down over the project period, and the remaining school activities were organized around the principles of Food for Education. A second important change was in the lineup of NGOs operating the program: ADRA, CARE, and CRS were the original CSs; CARE, CRS, SC/US, and World Vision International were selected for the second cycle.

For the second cycle, the CSs shared largely similar strategic objectives, namely to:

- Improve agricultural productivity through better agricultural and natural resource management practices.
- Increase household revenue through increased productivity coupled with market linkages and credit for income generation.
- Improve nutritional status through maternal and child health interventions and nutrition assistance through the social safety net to people affected with HIV, TB, and other vulnerable groups
- Improve productive and market infrastructure to actualize #1-3.

Program interventions under the maternal and child health sector generally target vulnerable groups (mostly lactating and/or pregnant women, children under five and other vulnerable groups including PLWHAs and/or TB patients) for direct distribution of supplementary food, behavior change communication activities and improved outreach, and improved access to health services.

Table 1-5 summarizes the main features of each program. All CSs maintain activities in the key areas of health and nutrition, and agricultural production and natural resource management. Three of the four (all except SC/US) also have designed Food for Education interventions.

⁷ This number includes both direct and indirect beneficiaries and comes from the FY 06 Annual Estimation Requirements for the DAP Program.

⁸ The difference between the initial budget and this updated one because of budget revisions due to program cuts.

Table I-5: Summary Features of the Title II Programs in Haiti as of 2006⁹

	CARE	CRS	SC/US	WVI
Health and Nutrition				
Institutional capacity building	✓	✓	✓	✓
Child nutrition	✓	✓	✓	✓
Maternal health and nutrition	✓	✓	✓	✓
IMCI (Integrated Mgt of Childhood Illnesses)	✓	✓	✓	✓
Reproductive health	✓		✓	✓
TB/HIV-AIDS	✓	✓		✓
Water and sanitation		✓		
Micro-credit		✓		
Agriculture and Natural Resources Management				
Agricultural extension in production techniques	✓	✓	✓	✓
Natural resource management and improved agricultural practices	✓	✓	✓	✓
Market development	✓	✓	✓	✓
Income-generation activities	✓	✓	✓	✓
Local emergency response capacity	✓	✓	✓	✓
Animal husbandry	N/A	✓	✓	
Food for Education				
Capacity building-school administration	✓	✓		✓
Teacher training	✓	✓		
Educational performance	✓	✓		✓
PTA and community involvement	✓	✓		
Other Activities				
Social safety net	N/A	✓		
Children shelters	N/A	✓		

⁹ This table is taken directly from the Baseline Report and was re-confirmed by the CSs in June 2006.

D. CS Program Descriptions

Statistical comparisons of the CSs are included in Chapter 10 of this report. This section explains some of the differences in programming and targeting. According to their 2005 activity reports, the four CSs have two common objectives using varying implementation mechanisms for the 2002 – 2007 DAP period:

- Improved health and nutrition status among women and children in the target areas
- Increased sustainable rural agricultural output in the target areas

This evaluation is concerned exclusively with the former objective and only comments on the latter objectives where impact may overlap. All four CSs work in different geographical areas of Haiti and therefore prioritize different interventions as deemed appropriate to the needs of specific beneficiary communities. While implementation techniques differ, the overall goal of improving food security remains the same for all CSs in the context of measurable indicators.

Emphasis was given by all CSs on increasing access to health services through partnerships with local clinics, training of community health workers, and increasing the number of mobile rally posts providing growth monitoring, immunization, deworming, nutrition education and family planning services to children and pregnant and lactating women in remote areas. Three health sector activities feature across the CSs: rally posts, where health staff identify beneficiaries, provide health education and growth monitoring, and furnish other preventive health care; mothers' clubs, where participants gather for facilitated peer-group discussions of health and nutrition topics; and distribution points where beneficiaries receive monthly food rations be it for preventive or recuperative purposes.

The approach taken by SC/US in the MCHN area is based on the follow-up of all mothers and children living in the area of intervention with preventive and recuperative activities to reduce malnutrition and general health problems among target groups. This contrasts with the approach used by CARE and CRS, who use a more conventional Growth Monitoring and Promotion approach.

All CSs provided some form of training for health workers and/or mothers and community based health and nutrition education. Quality of training of community health workers was not measured in this evaluation and therefore, only the number of people trained in relation to improvement in nutritional status can be commented on. Additionally, care practices were not directly observed. CARE worked more directly with USCs to improve their functioning.

Supplementary food was provided to three groups of people: children under 5 years old, pregnant and lactating women and vulnerable groups, particularly PLWHAs and people with TB. All three groups were targeted in various ways, depending on the implementing CS. The general cohort of children targeted for supplementary feeding were those between 12-23 months of age, as this is the recommended time of complementary food introduction and therefore, when most children are susceptible to malnutrition due to exposure to new foods and potential lack of proper complementary feeding techniques. World Vision and SC/US provided supplementary food for all children between 6-23 months; CRS, CARE, and SC/US provided supplementary food for children between 6-59 months who were classified as malnourished and World Vision provided supplementary food for children between 24-59 months who were malnourished. Pregnant and lactating women were also eligible for

supplementary feeding depending on criteria designed by the implementing CS. For example, World Vision and CRS provided supplementary food to all pregnant and lactating women from the fourth month of pregnancy through delivery; CARE provided supplementary food for pregnant mothers with MUAC < 226mm and SC/US provided supplementary food to pregnant and lactating women from the seventh month of pregnancy through delivery. CARE and CRS provided supplementary food to PLWHAs. Caloric intake was not measured but the amount of food distributed as well as the number of people who accessed programs as a result of the supplementary food incentive can be used to discuss impact of the DAP activities in this funding cycle.

CRS includes a micro-finance component, SC/US includes encouraging home gardens as a source of food and income and World Vision and CRS both address water and sanitation, the former through home water purification and the latter through infrastructure improvements (e.g., latrines and cisterns).

Table 1-6: CS Food Assistance Protocols for Pregnant/Lactating Women and Children

	Prenatal	Postnatal	Child feeding target group	Criteria for recuperative program
World Vision	4 th month thru delivery	First 6 months	ALL 6-23 months 24-59 malnourished	WAZ = <-2 SD
CARE	Selection MUAC <226 mm 2nd month thru delivery	First 6 months	6-59 months malnourished HIV/AIDS orphans	WAZ = <-2 SD
CRS	4 th month thru delivery	First 12 months	6-59 months malnourished	WAZ = <-2 SD Loss of 2 kgs in preceding month
SC/US	7 th month thru delivery	First 12 months	ALL 12-23 months 6-59 months malnourished	WAZ = <-2 SD

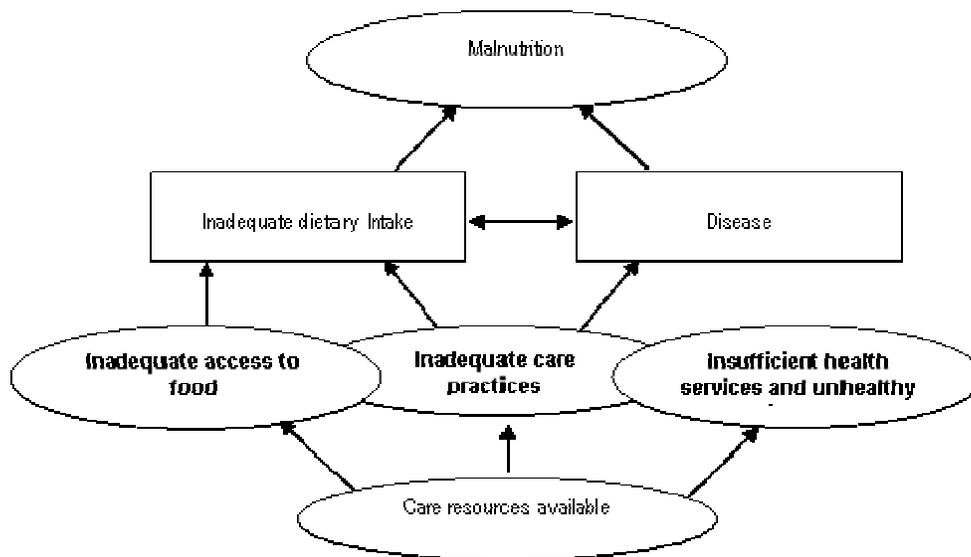
Note: SD = standard deviation, MUAC = mid-upper arm circumference, WAZ = weight-for-age Z-score,

E. Conceptual Frameworks: Malnutrition and Food Security

Malnutrition

The hypotheses to explain children’s nutritional status in Haiti are informed by a conceptual framework for understanding malnutrition (see *Figure 1-2*). The applied model is based on the UNICEF conceptual framework of the causes of child malnutrition (UNICEF 1990). The framework identifies three underlying causes of malnutrition: (a) inadequate access to food, (b) inadequate environment, including poor water and sanitation and insufficient health services, and (c) inadequate care. The presence of any of these conditions is associated with inadequate dietary intake and/or increased vulnerability to infection and disease, the immediate causes of malnutrition.

As the framework suggests, there is an interactive relationship between inadequate dietary intake and the presence of infection and disease. The presence of disease leads to poor nutrient utilization, which eventually causes nutrient deficiency or depletion. Similarly, inadequate dietary intake does not provide sufficient nutrients for protection from disease. The interaction occurs such that insufficient dietary intake, poor nutrient utilization, and/or frequent episodes of infection and disease are direct causes of serious malnutrition.



**Figure I-2: Conceptual Framework for Understanding Malnutrition
 (UNICEF 1990)**

Food Security

USAID, in administering the Title II program, defines food security as “when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life” (Bergeron and Deitchler 2003, 1). NGOs that use Title II resources articulate their interventions in ways that enhance the food security of their beneficiaries.¹⁰ The general concept of food security is divided into three distinct dimensions: food availability, food access, and food utilization (see *Figure I-3*):¹¹

¹⁰ PL 480 Title II states: Pursuant to Title II of Public Law 480, A.I.D. may transfer agricultural commodities to address famine or other urgent or extraordinary relief requirements; combat malnutrition, especially in children and mothers; carry out activities that attempt to alleviate the causes of hunger, mortality and morbidity; promote economic and community development; promote sound environmental practices; and carry out feeding programs. FFP conceptualizes [program interventions] under the rubric of food security.

¹¹ This conceptual framework is adapted directly from the “Report on the 2002 Joint Baseline Survey in the Targeted Areas of the PL 480, Title II Programs in Haiti” (Bergeron and Deitchler, 2003).

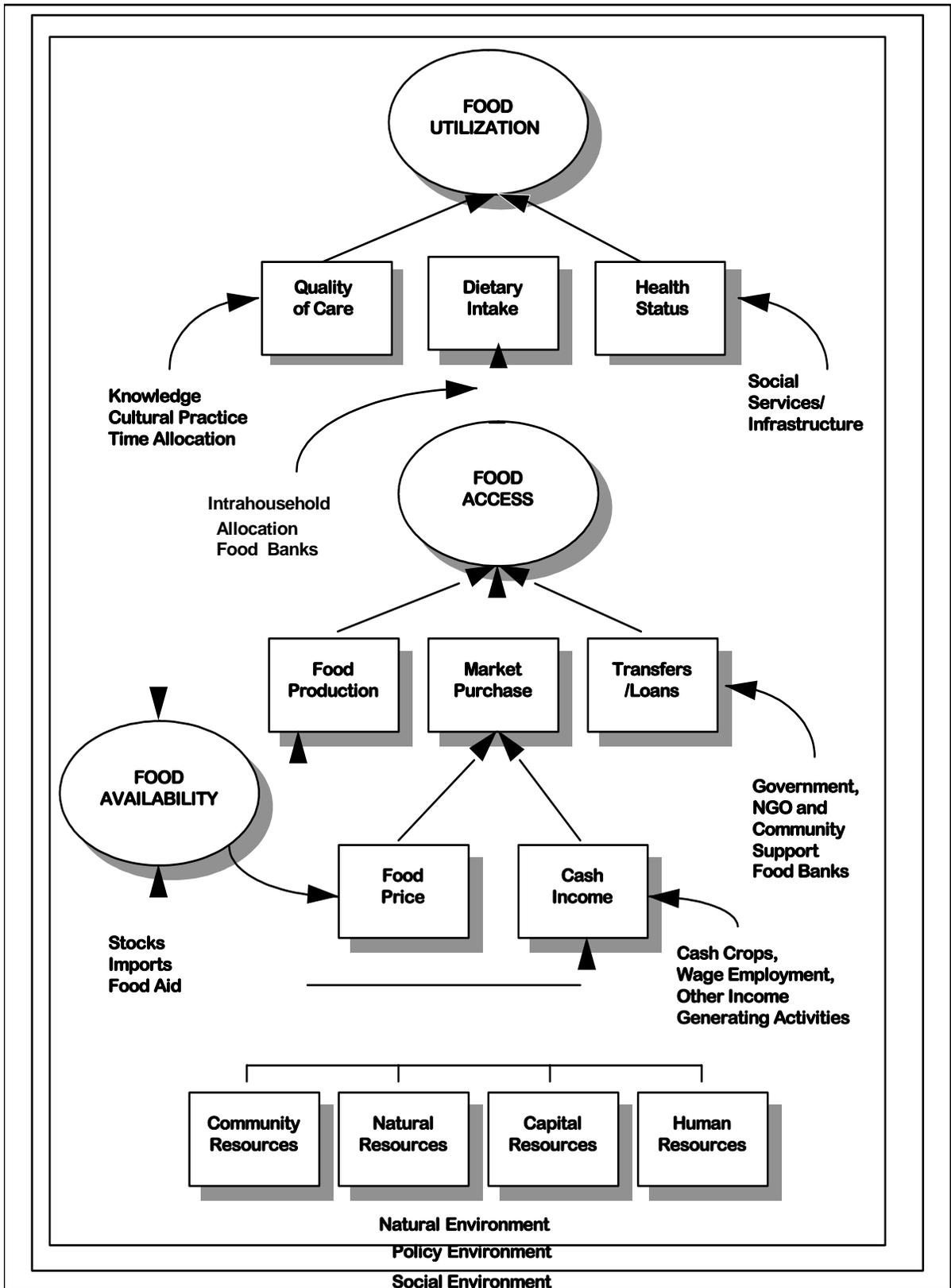


Figure I-3: Food Security Conceptual Framework

Food availability is achieved when sufficient quantities of food are consistently available to all individuals within a country. Such food can be supplied through domestic output, commercial imports, existing stocks, or food assistance.

Food access is ensured when households and all individuals within them have adequate resources to obtain appropriate foods for a nutritious diet. Access depends on the income (in cash or in-kind) available to the household.

Food utilization is the proper biological use of food, requiring a diet providing sufficient energy and essential nutrients, potable water, and adequate sanitation. Effective food utilization depends in large measure on knowledge within the household of food storage and processing techniques, and on basic principles of nutrition, child care, and management of illness.

In short, a wide array of development interventions can affect and effect food security. When food availability is adequate, increasing agricultural productivity, raising household incomes, and improving household nutrition, especially for children and mothers, will have the most immediate impact on food security. However, the physical and socio-economic context in which food security interventions are undertaken often predetermine their long-term impact and durability. Thus, other interventions that affect those predetermining conditions may be considered to influence food security as well. *Table 1-2* provides examples of the main factors related to food security, and the types of interventions that may be undertaken to affect those dimensions, either at the immediate (proximal) or underlying (distal) level.¹²

F. Organization of Report

Chapter 2 describes the methodology used, including questionnaire development, sampling, field operations, and data analysis. This is followed by chapters describing the characteristics of the communities from which data were collected, characteristics of the households of the survey respondents, and the extent of participation in Title II program activities (Chapters 3, 4, and 5). These are followed by chapters providing results in the areas of neonatal and maternal health (Chapter 6), infant and child feeding and child care practices (Chapter 7), child health (Chapter 8), and child growth (Chapter 9).

Consideration was given to the pros and cons of presenting data primarily for the Title II program overall, or by each CS. The CS programs differ in design and it would be reasonable to expect that there would be differences in outcomes. However, evaluation data analyses showed that despite the differences in program design and the characteristics of the areas in which the programs worked, there were few differences among CSs in terms of the key DAP outcomes. Consequently, findings are presented in terms of the program overall, and then descriptive and impact data are broken down by each CS in tables (Chapter 10). This is followed by a chapter providing the evaluators' conclusions and recommendations (Chapter 11).

¹² Note that interventions may simultaneously affect more than one dimension: for instance, interventions that improve agricultural productivity affect both households' access to food, and the aggregate availability of food. Likewise, family planning, which results in fewer mouths to feed, affects both food utilization at the individual level, and food availability at the aggregate demand level. Hence the dimensions of availability, access, and utilization are not mutually exclusive; the subdivisions are mainly useful for organizational purposes and should not be construed too rigidly.

Chapter 2: METHODOLOGY

The evaluation is based on a survey of data collected in 105 communities in Haiti during the months of June and July 2006, and comparisons of those survey results to data collected in the same communities, using a similar survey instrument and data collection design during the same months in 2002. The data for the 2002 baseline survey were collected by the Cooperating Sponsors (CSs) in their areas of intervention and analyzed and reported by FANTA. The data for the final evaluation were collected under the supervision of Development Associates through a subcontract with Intell Consult, a Haitian research organization that also participated in updating the survey questionnaire and was responsible for processing the data. Data analyses and reporting were done by Development Associates. FANTA provided advice to Development Associates and Intell Consult throughout the data collection and analysis process.

A. Questionnaire Development

The final evaluation survey used the baseline first-stage cluster samples and survey questionnaire as the starting point. Questionnaire modules on agricultural and natural resources and infant feeding from the 2002 questionnaire, and most of the questions related to education were eliminated as those sectors were not part of the final scope of this evaluation exercise, which was limited to the maternal and child health sector. Collection of household information was divided into two modules: Family Composition (including education) and Domestic Inventory. A new module 3 was created consisting of questions on food security and CS program participation that were not part of the baseline. Questions on HIV/AIDS and birth spacing were added to the module on maternal health, and additional questions to discern attitudes and practices of common health messages were added to relevant sections. The Community Questionnaire from 2002 was largely retained, with some modifications and additions to reflect the final evaluation's reduction in scope. In lieu of the baseline's procedure for recording home visits on the Household Register, a new Household Follow-Up Form (Suivi) was created to make it easier for interviewers to keep track of the houses visited and to reduce the number of survey forms that needed to be filled out. All together, the full questionnaire for the final evaluation survey comprised the following modules:

- Community Questionnaire (one per community)

- Household Register

 - Module 1 – Family Composition

 - Module 2 – Domestic Inventory

 - Module 3 – Food Security and Participation in DAP Activities

 - Module 4 – Anthropometry

 - Module 5 – Maternal Health (Pregnancy, Prenatal Care, Childbirth, Post-partum Care)

 - Module 6 – Child Feeding

 - Module 7 – Vaccination and Child Health

Community information was collected using a focus group methodology. Interviewers were deployed to the field with a calendar of salient events in the past five years and age conversion charts to facilitate pinpointing children's ages. Questionnaires were filled out only for those households that met the criteria of having a child between 6 and 60 months and a mother or caretaker available either at the time of the initial visit, or within the period that the team was

in that community. The caregiver or biological mothers of reference children (children 6-60 months) were identified and asked questions about their child's health, as well as various issues surrounding the neonatal/postnatal conditions of the birth and subsequent care and feeding of that child. Anthropometric data were also collected from the reference children.

A pre-test of all the survey instruments was carried out on 14 June 2006 in four different areas in and around Petionville and Fermathe, with the feedback from interviewers, supervisors, Intell Consult, Food and Nutrition Technical Assistance Project (FANTA), and Development Associates (DA) staff reflected in the final versions of the instruments, ancillary instruments, and manuals. These have been included in contract reports to USAID.

B. Sampling

The sampling for the 2002 baseline study used a two-stage cluster sampling approach with probability proportional to size sampling at the first stage. A total of 108 communities (27 from each cooperating sponsor) were selected at the first stage of sampling. At the second stage, the objective in each community was to collect data in 37 randomly selected households with at least one child in the target age range (6-60 months). This sample size was selected based on power analyses designed to find statistically significant differences ($\alpha = .05$, power = .80) between baseline and final evaluation rates of stunting, assuming a decrease of 8 percentage points in stunting between baseline and final evaluation. Thus, any mention of a lack of statistical difference must be taken with this power in mind; differences were achieved that did not meet this test.

Data collection in the baseline study included 5,273 households, 3,017 of which had children in the target age range. The number of households per community with children in the target age range ranged from nine to 45. Although the baseline sample was originally designed to be unit-weighted (i.e., each household having the same probability of selection from within the service area of each CS), the probabilities of selection varied by a factor of up to 5:1. Thus, in this final evaluation report, baseline data on childhood nutrition and health were reanalyzed using analytic weights proportional to probability of selection (see Section D on data analysis below).

For the final evaluation in 2006, the evaluation team and CSs decided to collect data from the same communities as in the baseline, but from a new random sample of households within those communities. Using the same communities eliminated the possibility that characteristics of the communities selected would generate differences between the baseline and final results. On the other hand, this approach raised the possibility that the results from communities studied might differ from results from other communities if, for example, the CSs devoted more attention to communities in the baseline study than to other communities.¹³

While the baseline study collected data in 108 communities, the final evaluation collected data in only 105 communities. This was because three of the communities in the baseline study ended up not being served by Save the Children. Thus, in order to compare results from the baseline and final studies, the results from those three communities were eliminated from the analyses of the baseline datasets (see Section D).

¹³ This issue was reviewed in joint and separate meetings with the CSs and USAID. The CS Monitoring and Evaluation Officers stated that they were not aware that the final evaluation might re-visit the same communities that were in the baseline study.

Also, based on results from the baseline study, the power analyses were adjusted using improved estimates of the design effect of clustering. These analyses indicated that only 3,240 households with children in the target age range were needed in order to find statistically significant differences (alpha = .05, power = .80) between baseline and final evaluation measures of rates of stunting. Thus in the final evaluation, a target of 30 households per community with children in the target age range was selected, except for Save the Children communities in which the target was 34 households. In addition, a decision was made not to collect data from households that did not have children in the target age range (6-60 months).

C. Field Operations

Both the baseline and final evaluation surveys were conducted during the weeks near the end of Haiti’s annual dry season, when households’ reserves typically are at their lowest and crops sown earlier are not yet providing new food and commodities.

Table 2-1: Sample Localities, Interviews, and Households by Survey

	Number of localities	First interview	Last interview	Total number of households with children 06-60 months
2002 Baseline	105*	May 8	July 9	2,922*
2006 Evaluation	105	June 19	July 28	3,233

Number included in the final evaluation data analyses.

Intell Consult, a local survey research firm in Haiti, managed the overall implementation of the final evaluation survey, including hiring, training, and supervising the field supervisors and interviewers. The four CSs provided logistical support, including vehicle and drivers, and facilitated entry and accommodations in the communities surveyed. FANTA provided ongoing technical assistance and oversight throughout the training process and accompanied the Intell Consult supervision team to the field. Data collection was carried out by eight teams, each comprising a supervisor and four enumerators. Two teams were deployed to each of the CS areas.

The training for the field staff went smoothly thanks to Intell Consult and DA’s logistic staging, high caliber technical input from FANTA, support from World Vision for use of their conference room, CRS for helping to arrange the venue for the anthropometry standardization, Save the Children for lending one of their staff who had played a leading role in the baseline survey to serve as an anthropometry standardization reference, and two orphanages, Maison L’Espoir and Maison Haitienne de Mon Freres, who kindly allowed interviewers to practice anthropometry on their wards. Intell Consult initially recruited a surplus of interviewer candidates to participate in the training, thereby providing an opportunity to compare the candidate’s practical skills against their CV. Only those candidates who proved competent by the end of two weeks of training in both interviewing and anthropometric skills were ultimately deployed to the field. To ensure a uniformly qualified cadre of staff, selected interviewers also participated in a supplementary practice session on anthropometry.

On the day of arrival in the locality, the team supervisor randomly selected a series of departure points from which each sub-team would proceed. Households within a cluster were

chosen following the random walk methodology, done by randomly choosing a direction from the assigned starting point; conducting an interview in the nearest household meeting the interview criteria; then continuing by choosing the next nearest household in that direction and interviewing every household until the desired number of household interviews were completed. While the enumerators were doing the household interviews, the supervisor met with community leaders or other key informants to complete the Community Questionnaire. At the end of the day, the supervisor reviewed all the questionnaires completed during that day by members of his/her team. Once every few days, on a schedule planned in advance, the set of completed surveys were sent to headquarters for data entry. Intell Consult, together with FANTA, undertook field visits to all of the CS areas at several points during the data collection phase to provide supervision, oversight, and quality control. One of the DA team members accompanied the pretest and joined the first field visit.

D. Data Analysis

This report presents analyses of the data from the 2002 baseline study and 2006 final evaluation. The report primarily presents univariate and bivariate analyses, though two multivariate analyses are presented in Chapter 9. Results from the baseline study and final evaluation often are presented side-by-side to facilitate comparisons.

The point estimates (proportions and means) presented in Chapters 4-10 are based on weighted analyses. The populations of interest are households with at least one child 6-60 months that live in areas served by one of the four CSs, and children within the target age range within those households. The weights used were an inverse function of the probability of selection, such that households with lower probabilities of selection had proportionally higher weights.

Estimates from the baseline study presented in this report differ from those in the baseline report because: (a) the results in this report exclude the three communities not served by Save the Children that were included in the baseline report; (b) in this report data on household characteristics (Chapter 4) are based on households with children in the target age range, not all households (as in the baseline); and (c) the weighting approach used for this report differs from that used for the baseline report. In the baseline report, analyses of household characteristics were based on unweighted data, while data on nutrition and health used weighted data. In this report, all analyses at the household level are based on weighted data, including the baseline data, which was reprocessed so it would be comparable to the final evaluation data. Also, in the baseline report, the sum of the weights for each of the four CSs were equal (i.e., the CSs contributed equally to the overall estimates), while in this report the sum of the weights for the CSs are proportional to the sizes of the populations in their service areas.

Statistical comparisons of data from the baseline and final evaluation are presented at a number of points throughout this report. The calculation of standard errors for cluster samples is complex and the values calculated by most statistical packages underestimate the true error term for such comparisons (since they assume simple random samples). To compute standard errors, a simplified variance estimator was used (Sarndal 1992, 423). Statistical comparisons were made based on unweighted proportions and means, which were similar (but not identical) to the weighted estimates.

CHAPTER 3: COMMUNITY CHARACTERISTICS

This chapter provides a description of the salient characteristics of the 105 communities included in the survey at the time data were collected in the summer of 2006. The data were obtained through interviews with community leaders. Community characteristics data will be used in analyses of program impacts in later chapters of this report.

A. Basic Characteristics of the Communities

The final evaluation revisited 105 Localities.¹⁴ The 2006 Community Questionnaire included most of the same questions as in the 2002 questionnaire: general dispersion of households, ecologic zone type, predominant economic activities, distances to nearest towns and means of transport, and access to health services.¹⁵

Nearly all of the DAP sample Localities (98) were considered rural. Seventy-two (72) were described as having a “dispersed” settlement pattern, the rest as “densely populated.”

Table 3-1: Locality Zone Ecology, 2006

Type	Number	Percentage (n=105)
Humid mountain	28	26
Dry mountain	38	36
Dry plain	19	18
Humid plain	8	8
Irrigated plain	8	8
Coastal region	4	4
Total	105	100%
Notes: On this variable, 10 communities were not coded.		

More than half (66) were recorded as located in “mountain” terrain; 35 as located on “plains”; and the remaining four were recorded as coastal. In terms of agricultural zone type, informants most often characterized their Localities as “dry mountain” (36 percent), with distributions by other agro-ecologic zones as shown in *Table 3-1*.

All but eight Localities in 2006 reported that their main activity is agriculture (all but one reported this in 2002). Commerce was reported as a major activity in 54 Localities in 2006 (27 did so in 2002). Artisan handicraft was reported as a major activity by three Localities in both 2002 and 2006. Likewise, in both years fishing was identified as a major activity in three Localities and unspecified other major activities were indicated in 21 Localities.

¹⁴ The 2002 survey included 27 Localities in each of the four CS areas (108 total). Three of those Localities did not receive DAP services, so in 2006, data were collected in only 105 Localities.

¹⁵ See Appendix B, “Baseline and Final Evaluation Questionnaire Variables.”

B. Access to Commercial Services and Schools

In order to characterize the context of economic production and consumption, the interviewer team supervisor recorded the reported distance and means of access to the closest daily and weekly markets, to the closest general store, to the nearest point where transportation is available, and to the school. Access to health services was also surveyed in detail to determine how CSs interventions performed in improving access and awareness to primary health care. Baseline analysts hypothesized that “*proximity to markets invites producers to interact with market operators in a more consistent manner...that the closer the distance to market outlets, the higher the number of market exchanges taking place...that shorter distances to markets increase producers’ access to market information, improving their relative position...[that]...proximity of commercial services offers producers a means of acquiring key agricultural production inputs such as fertilizer, seeds, and others...[and that] availability of roads and the use of public transport enable producers to bring their commodities to markets, and to bring back necessary production supplies*” (p. 17). These various relations were examined in some detail in a section of the baseline report on agriculture but are not dealt with in the 2006 study. Here, we describe what community informants reported as their access to basic commercial services, assuming the Locality center as the point of origin.

The average distance from the center of these Localities to the nearest town or city was estimated to be about 13 kilometers in 2006, usually over poor dirt roads; only 11 percent of Localities had a paved road. The principal means of transportation varied: 55 percent of informants reported that people in their Locality went to town on foot only; animals (mostly horses) were mainly used by 23 percent; and buses, trucks, and/or taxis were the principal means of transport by the remaining 22 percent of informants.

Weekly markets were reported to be on average 6.8 kilometers from the center of the Localities; stores selling groceries were at a mean distance of 11.4 km, daily markets were at a mean distance of 15.3 km, and the point at which people could get public transport was on average 8.0 km away. In most Localities, primary schools were from 0.5 to 6.8 kms from the Locality center, with an average of 3.7 kms.

Table 3-2: Nearest Services, 2006

Type of service	Mean distance (kilometers)
Daily market (n=85)	15.3
Weekly market (n=81)	6.8
Store (n=88)	11.4
Transportation service (n=88)	8.0
Primary school (n=48)	3.7

C. Access to Health Services

Table 3-3: Access to Health Providers, 2006

Type of Service	Baseline Mean distance (kilometers) (n= 92-102)	Final Mean distance (kilometers) (n= 92-102)
Private doctor	26.3	25.1
Hospital	21.4	18.1
Pharmacy	14.2	11.8
Health center	10.8	9.1
Dispensary	7.6	6.0
Mobile clinic	2.6	3.3
Health agent	1.6	2.2
Rally post	1.2	1.1
Trained birth attendant	0.1	0.4
Other	NA	2.5

Table 3-3 displays distances that were reported from the geographical center of the community to various health-related services in 2006. The rally posts,¹⁶ a key feature of some CS interventions, appear to be relatively close to the sample communities—1.1 kms away on average—and physicians and/or hospitals were about 20 kms or more away. Almost all distances were reported to have decreased with the exception of health agents and TBAs, implying the success of CS interventions at increasing access to primary health care.

Table 3-4 cross-tabulates key community informants' reports of the types of primary health care services offered by accessible health care providers. Hospitals and health centers, for example, generally provide a full range of essential services, from prenatal and childbirth care to family planning and HIV testing. Most private physicians and dispensaries also offer a full range of services (though only about one-third offers HIV testing). The rest of the providers are more specialized in expected ways. This cross-tabulation was compared with a similar one in the baseline report, revealing no notable differences in percentages with the exception of increased family planning services in the mobile clinics and rally posts in 2006.¹⁷

¹⁶ Rally posts provide growth monitoring and promotion; screening of eligibility for food assistance; distribution of vitamin A capsules, oral rehydration salts (ORS), and deworming medication; and group education sessions.

¹⁷ Detailed quantitative comparisons of the 2002 and 2006 Locality/Community Questionnaires are of very limited analytical value since these responses were coded from focus groups not randomly selected in either year. Consideration was given to not including the Community Questionnaire in the 2006 survey, but it was decided jointly by DA and the CSs to include it primarily in order to replicate as closely as possible of the 2002 process by which the study was introduced to—and sanctioned by—people in the communities.

Table 3-4: Percentage of Health Care Providers Offering Essential Health Services, 2006

(baseline comparison in parentheses)

Health provider	Prenatal care*	Childbirth*	Pediatric services*	Vaccination*	Care for sick*	Birth spacing*	HIV test*
Hospital (n=95)	100% (98.8)	100% (98.8)	100% (94.2)	100% (98.8)	99% (98.8)	99% (96.5)	99% NA
Health center (n=86)	92 (97.3)	84 (68.0)	72 (69.3)	93 (94.7)	94 (84.0)	94 (95.9)	61 NA
Private doctor (n=81)	89 (86.0)	61 (73.7)	85 (82.5)	63 (64.9)	81 (78.9)	73 (70.2)	34 NA
Dispensary (n=93)	80 (94.6)	59 (37.6)	36 (36.6)	84 (93.5)	70 (78.5)	87 (87.1)	27 NA
Mobile clinic (n=68)	54 (60.5)	2 (4.7)	32 (58.1)	49 (81.4)	68 (65.1)	46 (38.1)	10 NA
Health agent (n=82)	26 (26.0)	10 (7.8)	22 (21.1)	89 (96.2)	6 (13.9)	44 (43.0)	6 NA
Rally post (n=99)	25 (28.8)	4 (0.0)	6 (5.0)	90 (96.3)	10 (6.3)	47 (32.5)	6 NA
Trained birth attendant (n=99)	29 (33.0)	100 (97.9)	2 (3.2)	1 (4.3)	0 (3.2)	2 (2.1)	0 NA
Other (n=16)	38 NA	13 NA	44 NA	27 NA	88 NA	25 NA	20 NA

* Percentages do not add to 100 percent because multiple responses are possible.

Access to supplies and commodities by type of provider, shown in

Table 3-5 and 3-6, likewise very closely paralleled the percentages reported in 2002, with the exception of greater accessibility of condoms, which may be a reflection of the HIV prevention and family planning outreach in the DAP program areas during the period from 2002 to 2006.

Table 3-5: Health Providers Able to Offer Key Supplies, 2006

(baseline comparison in parentheses)

Health provider	ORS*	Condoms*	Antibiotics*	Chloroquine*
Private doctor (n=77)	88% (82.5)	87% (75.4)	85% (84.2)	85% (85.7)
Hospital (n=95)	100 (97.7)	98 (97.7)	100 (96.5)	100 (96.4)
Health center (n=85)	100 (94.7)	94 (88.0)	100 (90.7)	100 (89.3)
Dispensary (n=92)	96 (93.5)	89 (86.0)	96 (92.5)	96 (92.5)
Mobile clinic (n=68)	85 (83.3)	71 (47.6)	72 (66.7)	75 (69.0)
Health agent (n=82)	74 (65.8)	72 (55.7)	26 (31.6)	21 (24.4)
Rally post (n=99)	73 (66.3)	60 (36.3)	18 (15.0)	15 (11.3)
Pharmacy** (n=103)	98	98	98	98
Trained birth attendant (n=100)	5 (6.4)	3 (6.4)	1 (1.1)	1 (1.1)
Other** (n=16)	19	19	31	31

* Percentages do not add to 100 percent because multiple responses are possible.

** No baseline available.

Table 3-6: Average Distance to Nearest Providers of Health Services and Supplies, 2006

Type of service/supply	Distance (in kilometers) (n=98-102)
Service	
Prenatal care	5.8
Childbirth	6.3
Pediatric services	3.2
Vaccination	4.2
Care for sick persons	5.6
Family planning	4.8
HIV test	12.7
Supply	
ORS	4.0
Condoms	4.7
Other family planning methods	5.6
Antibiotics	4.6
Chloroquine	4.6

CHAPTER 4: HOUSEHOLD CHARACTERISTICS

This chapter provides a description of the households included in the 2006 final evaluation survey and of the similar set of households included in the baseline report. Data on changes in household characteristics, including housing and sanitation and food insecurity, are important in their own right and also will be related to data on program participation and program outcomes in later chapters of this report.

A. Household Members¹⁸

The 2006 survey began by collecting the same household composition enumeration as did in the 2002 survey. The head of household was recorded and all members of the household were listed with their relationship to head of household, their gender, age, occupation, marital status, present residence, and highest level of education attained. The 2006 survey collected this information on 3,233 households with one or more children ages 6-60 months.¹⁹

Table 4-1 shows the marital status and age of heads of households, and the number of household members. Seventy-eight percent of households were headed by males and 22 percent by females. Thirty-one percent of household heads reported being married; 56 percent reported living with a “placée” (i.e., in co-habitation with a partner). Male heads of household were much more likely to be married or in co-habitation (98 percent) than were females (52 percent). Female heads of household on average were only slightly older than male heads (43 years old versus 41 years), and the average number of their household members was only slightly smaller (5.9 versus 6.3).

Table 4-1: Household Characteristics by Type of Household, 2006

Civil/marital status of head of household	Male head of household (n=2524-2527)	Female head of household (n=705)	Total (n=3233)
Married	36.2%	14.4%	31.3%
Placée (co-habitation)	61.5	37.8	56.2
Single	0.2	3.0	0.8
Divorced/separated	0.9	22.3	5.7
Widower/widow	1.1	22.4	5.9
Total	100.0%	100.0%	100.0%
Mean age of household head	40.9	42.7	41.3
Mean number of household members	6.3	5.9	6.2

¹⁸ The 2002 survey collected household characteristic data in all households sampled, irrespective of whether there was a child 6-60 months living in the household or not; the 2006 survey collected household characteristic data only in households with a child 6-60 months. To compare results, the data presented in this report for 2002 include only those households with children 6-60 months.

¹⁹ More than 99 percent of household members listed were recorded as presently living within the home. Only 183 of the total 22,878 enumerated were recorded as “living elsewhere.”

Table 4-2 shows that in 2006, for households headed by a male, cultivation was the principal occupation of the head of household (82 percent), followed by “other paid work” (14 percent); the total percentage of all other occupations was negligible. Female heads of household, too, most often were cultivators (44 percent) but trade was a close second (33 percent).

Table 4-2: Principal Occupations of Individuals, 2006

Occupation	All persons > 6 years (excl. students) (n=9071)	Male heads of household (n=2525)	Female heads of household (n=702)
Cultivator	49%	82.0%	44.1%
Female domestic work (own home)	8.4	0.1	9.2
Other paid work	8.3	14.4	5.0
Other non-paid work	1.1	0.8	0.6
Trade	16.3	1.4	32.7
No occupation	16.6	1.1	8.1
Other	0.3	0.3	0.4
Total	100.0%	100.0%	100.0%

Males (Table 4-3) appear less likely than females to be reported as having “no education” and slightly more were likely to have some secondary education, but these gender differences are small.

Table 4-3: Highest Level of Education by Gender, 2006

Level of education	Male (n=7040)	Female (n=7723)
No education	23.9%	30.1%
Some primary education	64.8	60.7
Some secondary education	11.3	9.2
Total	100.0%	100.0%

B. Housing and Sanitation

Physical aspects of habitations in the DAP sample—their water sources and means of transport, latrines, home tenure, size of housing and construction materials, cooking fuels used, and sanitation—reveal the very rustic circumstances in which most people in the DAP household samples live. The typical circumstances in which people live did not differ much over the four-year interval.

Table 4-4: Sources of Drinking Water

Source of water	Baseline study (n=2921)	Final evaluation (n=3228)
Protected source		
Tap in home/yard	2.3%	2.6%
Tap in public	21.9	26.0
Covered well in home/yard	0.8	0.3
Covered well in public	5.0	4.7
Protected surface water	13.3	8.2
Water from salesman	0.2	0.1
Filtered/treated water	0.1	0.6
Subtotal	43.6%	42.5%
Unprotected source		
Open well in home/yard	2.5%	1.7%
Open well in public	2.9	4.1
Unprotected surface (e.g., river, lake, pond)	49.5	48.9
Rain water	1.3	2.5
Subtotal	56.2%	57.2%
Total	100%	100%

Epidemiological studies world-wide show that *household water sources* figure prominently in explaining incidence and prevalence of intestinal parasites, dysentery, and diarrhea. For that reason, characterizing typical water sources was included in the household questionnaire. *Table 4-4* shows that in the Haiti 2006 DAP sample, only about 43 percent of all households obtained water from a “protected” source: 3 percent from a tap in their home or yard; 26 percent from a public tap; and 14 percent from other protected sources (e.g., covered wells and protected surface water). The remaining 57 percent relied on unprotected sources for their daily water source, mostly from surface sources. Most households in the DAP populations, therefore, are at high risk of intestinal problems, especially children who are beginning to be introduced to complementary foods. The increased use in public taps could indicate an improvement in access to a safe water source and the impact of CS programs. The decrease in use of protected surface water could be a result of more people accessing public taps.

The 2002 study revealed virtually the same distribution of household water sources as shown here. It also showed that principal water source type varied significantly by geographic zone. For example, unprotected sources were reported in 54 percent of households in the CARE zone; 43 percent in the CRS zone; and in 60 and 64 percent of households, respectively, in the SC/US and World Vision zones.

Table 4-5: Time Spent Getting Water, 2006

Time	Percentage (n=3218)
Less than 5 minutes	14.5%
5-15 minutes	24.7
15-30 minutes	19.1
30-60 minutes	21.0
More than 1 hour	20.8
Total	100.0%

As shown in *Table 4-5* about 15 percent of households obtained water from a source that was less than five minutes away. Over 40 percent spent more than 30 minutes getting their water (going and returning) on a daily basis; 20 percent required more than one hour per day.

Interviewers asked questions about and then briefly inspected the home and grounds to confirm the method used in each household for disposal of human feces. *Table 4-6* shows that “no toilet” for adult use was confirmed in 56 percent of households. Latrines or water closets (WCs) were noted in only 16 percent of the homes.

Reported means of disposing of children’s waste (*Table 4-6*) presented the same picture: poor sanitation.

Table 4-6: Disposal of Human Excreta

Type of latrine	Baseline (n=2920)	Final (n=3233)	Type of latrine	Final* (n=2190)
a. By adults			b. Used by children 2-3 years	
No toilet	56.1%	55.9%	No toilet	27.8%
Pit in the open air	26.0	23.7	Pit in the open air	7.7
“Improved” latrine	17.5	16.0	“Improved” Latrine	4.5
Water closet	0.1	0.2	Pot or diaper to latrine	14.7
Neighbor’s toilet & other	0.4	4.3	Pot or diaper thrown out	10.1
Total	100.0%	100.0%	Nothing (clean from floor)	48.3
			Other	0.8

* Percentages do not add to 100 percent because multiple responses are possible.

Prevailing patterns of garbage disposal (*Table 4-7*) suggest that sanitation is poor for the large majority of households: waste is simply dispersed in the outdoors by 83 percent of families. It usually is burned by about 16 percent. Very few (1 percent) bury or otherwise dispose of their garbage.

Table 4-7: Home Sanitation

Description	Baseline study (n=2907-2912)	Final evaluation (n=3227-3231)
Trash disposal		
Burn	13.8%	15.6%
Throw outside	83.6	83.4
Bury	0.7	0.5
Other	1.9	0.5
Total	100.0%	100.0%
Sanitation		
Presence of animal in home	32.2%	21.6%
Presence of feces	2.0	2.3
Presence of flies	20.4	22.7
Presence of garbage	9.2	14.0
Presence of bad smells	5.1	9.1

As *Table 4-7* also shows, while outdoor waste disposal methods are very rustic, hygiene inside the homes appears better. Other than water from unprotected sources, the most important source of contamination (e.g., parasites) inside the homes likely would be the presence of animals. Twenty-two percent of homes keep animals inside. Flies contaminate food. They were noted as a nuisance in 23 percent of homes. Few of the households visited had garbage, foul smell, or feces noticeable inside the home, however, suggesting knowledge and practice of basic hygiene principles at the household level.

C. Home Characteristics

More than 80 percent of DAP-zone households report that they own the property on which they live—a sizable proportion of the population with settled rural land tenure (*Table 4-8*). Though “free” housing has various interpretations, this usually means these householders are vulnerable to displacement on fairly short notice. Overall, the high ownership findings suggest a comparatively stable land tenure pattern in which most people have long-term stakes in their communities.

Homes were quite modest in scale and typically fairly crowded: 70 percent consist of only one or two rooms (and the average number of persons per house was 6.2).

Informally, the evaluation team learned that fuels for cooking and (in the mountains) for heating consume a significant portion of disposable household income. The questionnaire obtained information only concerning what type of fuel was normally used for cooking in the home. The most common form was firewood (83 percent) followed by charcoal (17 percent). Cleaner

burning, less environmentally damaging fuels are extremely rare. These are almost precisely the same estimates obtained in 2002.

Table 4-8: Home Characteristics

Description	Baseline study (n=2918-2922)	Final evaluation (n=3219-3232)
Tenure of home		
Owner	84.8%	81.0%
Tenant/Leasing	5.6	7.6
Work housing	0.1	0.1
Free (“gratuit”)	9.6	11.3
Total	100.0%	100.0%
# of rooms in home		
One or two	72.1%	69.3%
Three or more	27.9	30.7
Total	100.0%	100.0%
Cooking fuel		
Kerosene	0.5%	0.0%
Charcoal	16.1	16.7
Firewood, straw	83.4	83.3
Total	100.0%	100.0%

As shown in *Table 4-9*, floors in most households are made of packed earth, sand, or stone (73 percent). The remainder is made of cement or other consolidated materials.

Walls are also usually built from earth or mud (“glissade”), sometimes mixed with concrete (44 percent). The second most frequent building material for walls is stone (35 percent), followed by cinder blocks (13 percent). Palm wood is sometimes used (7 percent). Roofs most frequently use zinc (66 percent), although thatch or straw is also frequent (38 percent).

Table 4-9: Principal Home Construction Material

Principal material	Baseline study (n=2919)	Final evaluation (n=3229-3233)
Floor		
Earth/sand/stones	77.1%	73.0%
Mosaic/ceramic	0.8	0.7
Concrete/masonry	22.0	26.2
Total	100.0%	100.0%
Walls		
Glissade/earth	45.7%	43.9%
Wood	2.9	6.9
Cinder block	8.2	13.1
Stone	35.4	34.7
Other	7.8	1.3
Total	100.0%	100.0%
Roof		
Patch/straw	39.5%	32.2%
Sheet metal	58.8	66.3
Cement/concrete	1.7	1.4
Total	100.0%	100.0%

D. Food Security

Interviewers questioned respondents about each household's experience of food shortage over the past year. They asked whether, over the past 12 months, there had been times when there was not enough food to meet the needs of the family. *Table 4-10* reveals how extensive and prolonged food shortages are for people in the DAP sample. Fully one-half of the households reported insufficient food nine to 12 months of the past year, and another 38 percent sometimes reported shortages for roughly half of the year. Only 5 percent reported adequate food throughout the past year. On average, the households reported 7.8 months of food inadequacy. The relationship between reported food inadequacy and anthropometric indicators in 2006 is described in Chapter 6.

Table 4-10: Months in the Past Year with Reported Food Shortage, 2006

Number of months	Percentage of households with food shortage (n=3233)
0 months	4.5%
1-4 months	6.2
5-8 months	37.7
9-12 months	51.5
Total	100.0%
Mean	7.8

This specific variable was not measured in 2002, so comparisons with 2006 findings are not possible. However, there was a related item in 2002 that asked farmers, “How many months of food reserve did you have from last harvest.” As indicated in the baseline report, 97 percent of farmers said that they did not produce enough food during the main season for their family to last twelve months, and more than half said their reserves did not last three months.

The socio-economic status of households was extensively described in the baseline report, based mainly on an index that was calculated including agriculture variables that were not included in the 2006 survey. One component of the main index consisted of the information shown in *Table 4-11*, which is a simple depiction of the “domestic assets” of each household. Findings from the 2002 and 2006 surveys on this listing were very similar.

Many households were found to possess a table (92 percent) and chairs (91 percent), which is notable, since use of a table when eating meals (rather than sitting on the floor or ground) would reduce risk of contamination and diarrhea and determine whether children have intestinal parasites²⁰ Radios were possessed by only 43 percent of the households which suggests that it is not easy to reach the majority of households with mass media for health information and promotion.

²⁰ Rathavuth Hong, James E Banta, and Jose A Betancourt: “Relationship between household wealth inequality and chronic childhood under-nutrition in Bangladesh”, November 2005, <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1702347>, accessed December 26, 2006

Table 4-1 I: Households Owning Domestic Assets

Description	Baseline* (n=2922)	Final* (n= 3233)
Cooking pot	98.9%	99.5%
Bed	93.4	97.0
Table	88.9	91.5
Dresser	25.2	33.6
Chairs (one or more)	87.3	91.4
Radio	31.2	42.5
Poultry	67.1	70.1
Mule/horse/ass	32.7	35.9
Ox	27.5	28.3
Bicycle/small boat	11.3	12.6
Motorcycle/sail boat	1.3	3.2
Telephone	0.3	6.7
Television	0.7	1.4
Refrigerator	0.3	0.4
Car/truck	0.5	0.5
Mean number of assets	5.7	6.1

* Percentages do not add to 100 percent because multiple responses are possible.

E. Conclusion

As shown above, most households on the CS service areas are lacking in access to pure water and in sanitary facilities for disposing of human excreta, and this situation has not changed substantially over the four year program period. Both the baseline and final surveys showed over half the households (56 percent and 57 percent) obtain their water from unprotected sources, and over half (56 percent for both surveys) of adults no toilet by which they dispose of human waste and less than 20 percent (17.6 and 16.2 percent respectively) have an” improved” latrine or water closet.

As also was shown, most households in the CS service areas are suffering from food insecurity. On average, households reported they suffered food shortage 7.8 months during the past year, and over 50 percent (51.5 percent) indicated they suffered shortage of food nine to twelve months of the year.

CHAPTER 5: TITLE II PROGRAM PARTICIPATION

DAP final evaluation respondents were asked about their household participation in different CS activities during the 12 months preceding the survey. Responses reflect recall of the period from June/July 2005-June/July 2006. Most questions of this nature were not included in the baseline. In this chapter the focus is on the DAP program overall. In Chapter 10 more detail is provided by CS.

A. Health/Nutrition and Supplementary Feeding Programs

The final evaluation found that 74.1 percent of households interviewed reported participating in some sort of health activity over the course of the preceding 12 months. Seventy percent of all respondents reported attending a rally post, and 27 percent reported receiving a supplementary feeding ration for children.

Table 5-1: Participation in Health and Nutrition Programs, 2006

Program	Percentage* (n=3206-3225)
Private clinic for pregnant women	26.1%
Program for women on delivery and nursing	25.9
Rally post	70.3
Mobile clinic	15.7
Program giving food to children	26.7
Mother's club	24.2
Ti Foyer nutrition program	3.1
Home garden program	2.2
Other activities supported by CS	2.9

* Percentages do not add to 100 percent because multiple responses are possible.

All of the CSs feature mobile prenatal clinics as part of their mother and child health repertoire. Twenty-six percent of respondents reported attending a pre-natal clinic in the previous 12 months, and the same percentage reported participating in a program for pregnant or lactating mothers.²¹ Twenty-four (24 percent) percent of caretakers reported attending mothers' club meetings in the last 12 months.

Ti Foyer sessions were attended by eight percent of the respondents in the Save the Children served area. Ti Foyer is a flagship nutritional demonstration program of SC/US that consists of a regular meeting of 5-6 parents of malnourished children in a group member's home for a 2-week period. Participants discuss and learn about positive infant feeding and health practices from women in the community who have well-nourished children.

²¹ Because the respondents were mothers with at least one child 6-60 months old but who may have been pregnant with or had other children, it is not clear what percentages of respondents were eligible for these two programs in the 12 months preceding data collection.

All of the CSs provide rations to children identified as malnourished, while some of the CSs have a policy to provide supplementary food to all children between 6 and 24 months, either in all its service area (SC/US) or in selected areas (WVI). Moreover, supplementary food distribution points are used as a means of encouraging people to capitalize on available maternal and child health services. Food rations may be distributed otherwise, in addition to specific distribution posts, such that respondents may not always identify it as a separate activity.

In 2006, five questions were asked of respondents regarding present or past participation in food distribution. Two of these asked about food for the mothers (also asked in 2002) and three were about the reference child (of which one was asked in 2002). *Table 5.2* shows the percentage of those who reported participation by question and year (rows 1 through 5), and the percent of respondents who reported any participation. Participation of mothers during pregnancy and during lactation show large increases over the four years: from 21 and 17 percent to 49 and 49 percent, respectively. Overall, there was very little increase over the period in the percent of children reported to be participating in food distribution, from 11 to 14 percent. (See Chapter 10 for detail on differences by CS.)

Table 5-2: Participation in Any Food Programs

Food program	Baseline study* (n=2472-2869)	Final evaluation* (n= 2641-3229)
Received food from a program for pregnant women	20.8%	48.8%
Received food from a program for lactating women	16.6	49.3
Any family members took part in a program distributing food to children in the past 12 months	N/A	26.7
Currently participated in a program distributing food to children	11.1	13.7
Previously participated in a program distributing food to children	N/A	23.2
Participation in any of these food programs	28.5%	63.4%

* Percentages do not add to 100 percent because multiple responses are possible.

Taking the five questions together, in 2006, 63 percent reported *any* participation in food distribution, i.e., roughly two-thirds of the DAP population. “Any” participation varied widely by CS (see Chapter 10).

B. Other Programs

Although the evaluation was primarily concerned with the health and nutrition component of the DAP, very limited questions were asked about participation in CS sponsored agriculture, micro-enterprise, and education activities. Key findings in these program areas are:

- **Agricultural Programs:** DAP agricultural activities were targeted at a relatively narrow segment of the population, so it is not surprising that only 13 percent of those interviewed reported participating in a CS agricultural activity, and that participation rates in specific activities fell below 10 percent. Consistent with the differences in the planned scope of their activities, the percentage of participants varied markedly by CS, with CARE and WVI having the largest participation (see Chapter 10).

- **Micro-Credit Programs:** Only one of the CSs (CRS) had a micro-credit program that was implemented in tandem with the health program, so it is not surprising that only 4 percent of households reported participating in this type of activity. Those who participated in the micro-credit program attended an average of about six micro-credit meetings over the course of the preceding 12 months. More than half of those who participated in the micro-credit program (59 percent) reported having a loan in hand at the time of the interview.
- **Educational Programs:** With the gradual phasing out of school feeding programs, the final evaluation focused only on household participation in school Parent Teacher Committees. In the face of constrained resources, parental involvement in school activities may have implications for the health and well being of children in their school environment. Only 16 percent of households interviewed reported participating in their children's school Parent Teacher Association (PTA), with 87 percent of that number engaged as a simple member and 13 percent taking an active role in PTA decision making.

C. Conclusion

Most noteworthy is the finding that almost two-thirds (63.4 percent) of the households reported having participated in a supplementary food program, and that this is a sizeable increase from the percentage so reporting in 2002. It is also of note, however, that as was shown in Chapter 4, over 50 percent of respondents indicated they suffered shortages of food nine to twelve months of the year.

CHAPTER 6: NEONATAL AND MATERNAL HEALTH

During pregnancy, the health of a developing fetus is directly linked to the health and nutrition status of the mother. Women's dietary intake influences the availability of certain nutrients to the developing fetus as well as to the newborn. Micronutrient-deficient mothers are not able to pass on sufficient nutrients to their infant, either in the womb or postpartum. Maternal morbidity also places the health of the unborn at risk, and can compromise the health of newly born and infant children as well. Maternal death during pregnancy or in childbirth often means death for the infant also.

Several practices can contribute to reducing maternal, perinatal, and neonatal deaths, and poor pregnancy outcomes. Improved access and use of pre- and postnatal care, improvement of women's nutritional status, and promotion of optimal child spacing are all recognized as important to protecting maternal and infant health and nutrition. All of the Title II CSs place emphasis on increasing access to maternal health services. Pregnant and lactating women availing of these services are eligible for supplemental food rations (with criteria varying by CS). The extent to which access to and use of these services in Haiti may have changed over the course of the 2002-2006 Title II DAP cycle are discussed below. The findings represent households for which the mother of the reference child was the survey respondent. The data refer to practices reported during the pre- and postnatal period for the reference child.

A. Prenatal Care

Prenatal care offers important preventive health benefits to the mother and her infant. Essential components of quality prenatal care include fetal monitoring, screening for potential pregnancy complications, protection against iron deficiency anemia and neonatal tetanus, and health education.

Table 6-1 shows notably higher percentages of mothers in 2006 reporting having obtained a complement of key services including prenatal examination, iron supplementation, tetanus vaccination, and food compared to percentages in 2002. Ninety-five percent had received some prenatal care for the reference child, an increase of almost 9 percentage points since 2002. The proportion of those attending prenatal services during their first trimester was negligible in 2002, and remains so in 2006. However, in the aggregate, more women are seeking services sooner, in their second trimester rather than third, in 2006 than in 2002. The CSs, working through local partners, generally encourage pregnant women to volunteer for HIV testing and counseling where Voluntary Counseling and Testing facilities are available. More than half of the women interviewed report contact with HIV/AIDS information and HIV testing in 2006, a notable success of CS outreach and BCC education.

Table 6-1: Prenatal Health Care

Health practice	Baseline study* (n=2385-2473)	Final evaluation* (n=1667-2923)
Received prenatal care	86.3%	95.1%
Received iron supplementation during pregnancy	73.3	88.7
Received full tetanus immunization during pregnancy	62.7	68.1
Received food from a program during pregnancy	20.8	48.8
Someone talking about AIDS during prenatal visits (% of all women)	N/A	56.6
Someone giving out a HIV test during pregnancy	N/A	64.4

* Percentages do not add to 100 percent because multiple responses are possible.

During pregnancy, women’s iron requirements not only increase, but the associated negative outcomes of iron deficiency are particularly severe. Iron deficiency during pregnancy is associated with increased maternal and perinatal mortality, premature delivery, and postpartum hemorrhaging. In addition, iron deficiency during pregnancy is associated with negative developmental outcomes for the infant, including low birth weight and potential long-term cognitive impairments (Viteri 1998). In order to provide some protection against iron deficiency during pregnancy, supplementation with iron folate tablets is recommended.

Data from the final evaluation show that the percentage of women who received iron tablets during the reference pregnancy increased 16 percentage points from 2002 to 2006. Guidelines usually recommend daily²² iron supplementation to women throughout pregnancy. However, the data do not provide a full understanding of the extent to which the full recommended iron supplementation regime was actually provided by a health worker or adhered to by pregnant women.

Table 6-2 suggests that mothers are availing of these services more frequently during their pregnancies—a 17 percentage point rise for those reporting three or more visits. Not only do multiple prenatal visits allow for better monitoring of the mother’s health, but they also are likely to result in better preventive health practices during pregnancy.

²² Among some populations in developing countries, weekly iron supplementation may be an option, if a high compliance rate is expected (Beaton 1999).

Table 6-2: Number of Prenatal Visits

Number of visits	Baseline study (n=2447)	Final evaluation (n=2920)
No visit	13.9%	4.9%
Less than 3	17.8	10.0
3 or more	68.3	85.2
Total	100.0%	100.0%

Compliance with the recommended dose schedule for full protection against tetanus toxoid (two or more vaccinations) during pregnancy increased from 63 to 68 percent between 2002 and 2006 (Figure 6-1). This contrasts sharply with the national tetanus toxoid coverage rates of 19 percent and testifies to the success of the CSs in raising awareness and increasing access to prenatal care. Twenty-one percent of the reference births were partially protected (one tetanus toxoid vaccination), and the proportion of women giving birth with no tetanus protection dropped from 17 percent in 2002 to 11 percent in 2006. This number may, in fact, be smaller than indicated, due to a proportion of women who may have already been immunized during an earlier pregnancy.

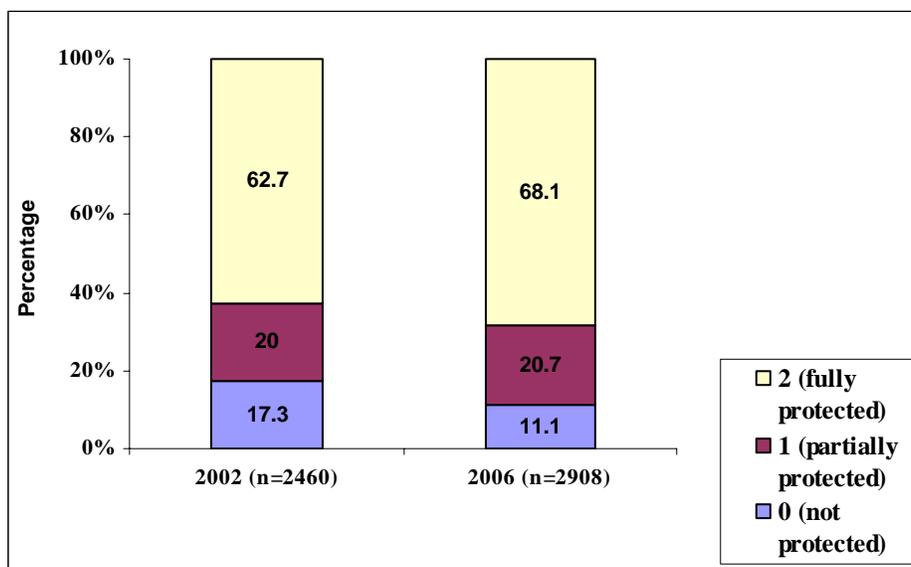


Figure 6-1: Tetanus Toxoid Given During Pregnancy of Reference Child

Prenatal care received late in the third trimester, especially during the last month, can facilitate a safe delivery by identifying potential delivery complications, such as infection, hypertension, and mal-presentation, and taking into account the likely location and surrounding circumstances of the delivery. Close to 57 percent of the mothers interviewed for the final evaluation received prenatal care at some time in the ninth month of pregnancy (an increase from 52 percent in 2002).

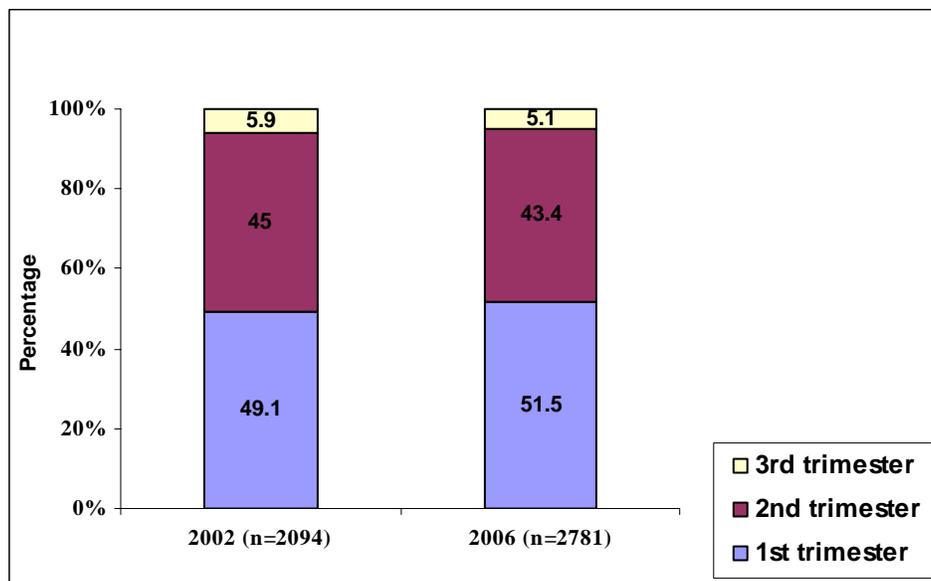


Figure 6-2: Time of First Prenatal Visit

Because of the increased energy needs that pregnancy generates, all the CSs provide food assistance to pregnant women at varying points of gestation as a conditional transfer for participating in their prenatal programs. This could be a factor underlying the increase in use of prenatal clinic services. Forty-nine (48.8) percent of women reported receiving supplemental food while they were pregnant with the reference child (almost twice the proportion reported in 2002), with 5.42 months of gestation the mean point at which they first received food, and 3.62 as the mean number of times they received food during the pregnancy in 2006. That the proportion of women who reported receiving food supplementation during their pregnancy is almost double those in a prenatal clinic in the last 12 months could be explained by differences in the reference period and denominators related to the specific survey questions.

In spite of CS efforts to supplement prenatal food consumption, only 38 percent of women reported eating more during their pregnancy; 45 percent said they ate less than usual while they were pregnant, and 17 percent did not change their eating patterns while pregnant.

B. Health Care Received at Delivery

The location where women give birth has not changed significantly between 2002 and 2006. Most women are still delivering their babies at their own home or an alternative home setting (see *Table 6-3*). What has changed since 2002, however, is the proportion of those births that are now attended by a trained health worker.²³ Forty-five percent of women in 2002 reported having a trained health worker in attendance at the time of delivery. In 2006, this proportion had risen to close to 60 percent (*Table 6-4*). The presence of a trained health worker during childbirth facilitates referral in the case of an emergency and greatly reduces the risk of neonatal and postpartum infection. Moreover, a good relationship between the health worker

²³ “Trained health worker” defined here as a health professional, formally trained midwife, or health agent.

and mother helps important messages concerning infant feeding and care practices get across in a timely manner.

Table 6-3: Location of Delivery

Location	Baseline study (n=2466)	Final evaluation (n=2909)
Own home	83.4%	83.6%
Another house	7.8	4.6
Health institution	8.0	11.0
Other	0.8	0.8
Total	100.0%	100.0%

Table 6-4: Health Workers Involved in Prenatal, Childbirth, and Postpartum Care, 2006

	Prenatal	Childbirth	Postpartum
Health worker	Percentage* (n=2923)	Percentage* (n=3233)	Percentage (n=2887)
Health professional	93.4%	12.2%	38.0%
Health agent	2.5	0.6	2.2
Formally trained midwife	0.2	47.2	8.0
Traditional healer	0.2	0.7	0
Traditional midwife	0.1	24.0	2.4
Parents/friends	0	15.3	0.3
Other people	0.1	0.1	0
No assistance received	4.9	2.4	49.1
Total	--	--	100.0%

* Percentages do not add to 100 percent because multiple responses are possible.

C. Postnatal Care

During the postpartum period, women should receive a postpartum exam, vitamin A supplementation, and be encouraged to practice exclusive breastfeeding. A postnatal visit by a health worker is critical to the health of the mother and her newborn. It provides an opportunity to monitor the health of the mother and her infant, as well as to give additional guidance to the mother on proper feeding and care of the child. The timing of the postnatal visit is important for ensuring optimal protection of the health of the mother and her infant. Ideally, a postnatal visit with a trained health worker should take place within the first days following delivery, when the health of the mother and child are most vulnerable. Postpartum infection and hemorrhaging are most likely to occur at this time, and the first few days of life for an infant are critical. Both the baseline and final evaluations collected data on the timing and

location of the postnatal visit if one took place, and if micronutrient supplementation was received.

CS efforts to raise awareness and increase availability of postnatal care evidently have been remarkably successful: in 2002, only about 17 percent of women interviewed reported receiving postnatal care; in 2006, 51 percent of women interviewed reported receiving postpartum care. Among those women, over half received their postpartum consult within the first two days of delivery. The percentage of those seen within the first two days of childbirth decreased slightly between 2002 and 2006. Nevertheless, more than half received a post-natal visit within 2 days of delivery; more than two thirds had received a postnatal follow-up visit within the first week of delivery, and the proportion of those postponing postnatal care six weeks or more after delivery dropped to almost zero. About a quarter of those women who received a postnatal visit did so at home, with the rest seeking services at private and public sector health facilities.

Table 6-5: Timing of First Postnatal Visit

	Baseline study (n=358)	Final evaluation (n=1424)
Within first 2 days after delivery	63.4%	53.7%
3 to 6 days after delivery	13.5	13.5
7 to 27 days after delivery	17.3	28.6
28 to 41 days after delivery	2.7	3.8
42 days or more after delivery	3.1	0.4
Total	100.0%	100.0%

Vitamin A deficiency can create problems for pregnant women as well as their children. Like children, they are subject to night blindness if vitamin A deficient. Also, infants younger than 6 months receive vitamin A through breast milk. International guidelines recommend that in countries with vitamin A deficiency, all mothers should receive a dose of vitamin A (200,000 IU) within 6-8 weeks of giving birth to ensure that the vitamin A content of their breast milk is adequate. Vitamin A has potential teratogenic effects and should only be provided during the natural period of infertility that follows pregnancy. For breastfeeding mothers, this period of natural infertility extends through the first eight weeks following delivery. For mothers not breastfeeding, the “safe infertile period” is only through the first six weeks following delivery.

Asking respondents whether they experienced night blindness during pregnancy is a means of estimating the prevalence of vitamin A deficiency. Despite a significant increase from 27 percent to 48 percent of postpartum vitamin A supplementation between 2002 and 2006, the rate of night blindness among pregnant women did not change over this period. Prevalence of maternal night blindness was 14 percent in 2002 and 15 percent in 2006.²⁴

²⁴ Self-reports of “night blindness” is generally regarded as a weak indicator that does not always correspond well with direct vision testing or biological assays though findings of large differences within a large sample may be taken to be indicative. Also, there were a number of issues raised with the Creole terms used for night blindness in the baseline study. These issues suggest that the Night blindness-Vitamin A findings be regarded with caution.

Women who are breastfeeding need to increase their kilocalorie intake to cover the energy cost of lactation.²⁵ To this end, all of the Title II CSs provide a supplementary food ration for the first six to 12 months after delivery to all lactating women in their target areas who avail themselves of postpartum services. The average lapsed time at which women report receiving their first post-partum food ration is 0.69 months (2-3 weeks). Opinions differed within the evaluation team as to whether this average lag time in receiving supplementary food should be cause for concern and it was not evident how the reasons for varying intervals could best be explored within this data set.

D. Birth Spacing

Extensive research shows that children born three or more years after a previous birth are healthier at birth and are at reduced risk of mortality throughout infancy and childhood. Setty-Venugopal (2002) demonstrated that children born three to five years after the previous child are about 2.5 times more likely to survive to age five than children born less than two years after the previous child. The baseline study suggested that *“increased spacing between births in Haiti may have the potential for enhancing the health of newborns and [improving]...child survival...increased spacing between births might help...relieve time and resource constraints related to caregiver capacity to provide adequate care to multiple children.”*

Sizable improvements in child spacing evidently have occurred during the four-year period in the DAP program areas. This is a finding that parallels preliminary findings of the 2005/6 Haiti National Demographic and Health Survey (DHS) that show significant, continuing decline in Haiti's Total Fertility Rate over recent years.

Both the 2002 and 2006 surveys recorded birth intervals in months between the reference child and the child born just prior (if any); the 2006 survey also recorded the intervals between the reference child and the child born next (if any). In 2002, with respect to 'prior child,' 22 percent of women practiced the recommended birth spacing interval of between three and five years; in 2006, that percentage was 30 (Table 6-6). More importantly, the proportion of women reporting close birth intervals (two years or less) declined by 20 percentage points from 2002 to 2006, and those meeting the international guidelines for safe birth intervals, between three to five years or more between children had increased from 32 percent to 50 percent since 2002.²⁶

25 Kilocalorie: the energy required to raise the temperature of a liter of water one degree centigrade at sea level. In nutrition, "calorie" commonly refers to a unit of food energy and represents 1000 true calories of energy.

26 Setty-Venugopal, 2002

Table 6-6: Birth Spacing Patterns

(Time interval between prior sibling and reference child)

Birth interval	Baseline study (n=1791)	Final evaluation (n=2162)
Less than 2 years	37.8%	17.8%
2-3 years	30.3	32.6
3-5 years	21.7	30.3
More than 5 years	10.2	19.3
Total	100.0%	100.0%

These findings suggest that DAP program messages may be reaching people in the DAP areas and access to services may be improving. Mothers of the referenced children were asked whether they were presently using any method of family planning and had ever used any method in the past. Forty-four percent of mothers reported having ever used a method of family planning; 32 percent of those who were not pregnant at the time of the interview reported they were using some method at present to prevent pregnancy.

E. Conclusion

Data presented in this chapter lead to the conclusion that there have been significant improvements in the neonatal and maternal health care of women in the DAP service area. There have been notably higher percentages of mothers in 2006 reporting having obtained a complement of key services including prenatal examination, iron supplementation, tetanus vaccination, and food compared to percentages in 2002. There has been a 17 percentage point rise in the numbers reporting three or more pre-natal visits. The proportion of women who were attended at the time of child birth by a trained health worker rose from 45 percent in 2002 to 60 percent in 2006. Even more dramatic was the increase in postnatal care, which rose from 17 percent of women interviewed in 2002 to 51 percent in 2006, and 48 percent reporting in 2006 that they received postpartum vitamin A supplementation as compared to 27 percent in 2002. Consistent with the increase in care, there were sizeable improvements in child spacing over the four year period, with the proportion of women reporting close birth intervals (two years or less) having declined by 20 percentage points from 2002 to 2006, and those meeting the international guidelines for safe birth intervals (three years to five years between children) having increased from 32 percent to 50 percent since 2002.²⁷

²⁷ Setty-Venugopal, 2002

CHAPTER 7: INFANT AND YOUNG CHILD FEEDING AND CHILD CARE PRACTICES

Appropriate infant and young child feeding practices (IYCF) are essential components of the child nutrition framework presented in Chapter 1. The Title II program, through the four CSs, delivers a mix of preventive and curative services including focused nutrition education and counseling services to mothers and pregnant and breastfeeding women in conjunction with growth monitoring and promotion activities. Nutrition education provided at rally posts and mothers' clubs promotes optimal feeding and care of children younger than 5 years of age, with special emphasis on children age 6-24 months, the period of maximal impact on child growth and future development. These activities are expected to contribute to improved nutrition status.

Nutrition education activities of the Title II program were designed to promote optimal feeding practices: exclusive breastfeeding during the first six months of life; hygienic introduction of complementary foods as of 6 months with continued breastfeeding up to 24 months of age and dietary diversity to optimize availability of nutrients.

This chapter describes the feeding practices of children 6-24 months of age in the Haiti Title II program. It reviews the current infant and child feeding and care practices at the time of the final survey in relation to WHO's guiding principles for the breastfed and nonbreastfed child (WHO 2003, WHO 2005). Several IYCF indicators, using WHO's guiding principles as the scientific rationale, have been developed and are currently being used by DHS (ORC Macro 2006). These indicators are also used here to report the results from the final evaluation survey. Comparisons to data from the baseline are provided as appropriate and feasible. Although the final questionnaire was designed to replicate the Maternal and Child Health component baseline questionnaire as closely as possible, a few items relating to dietary diversity indicators for children were modified in 2006 to reflect improved measurement guidance from FANTA.

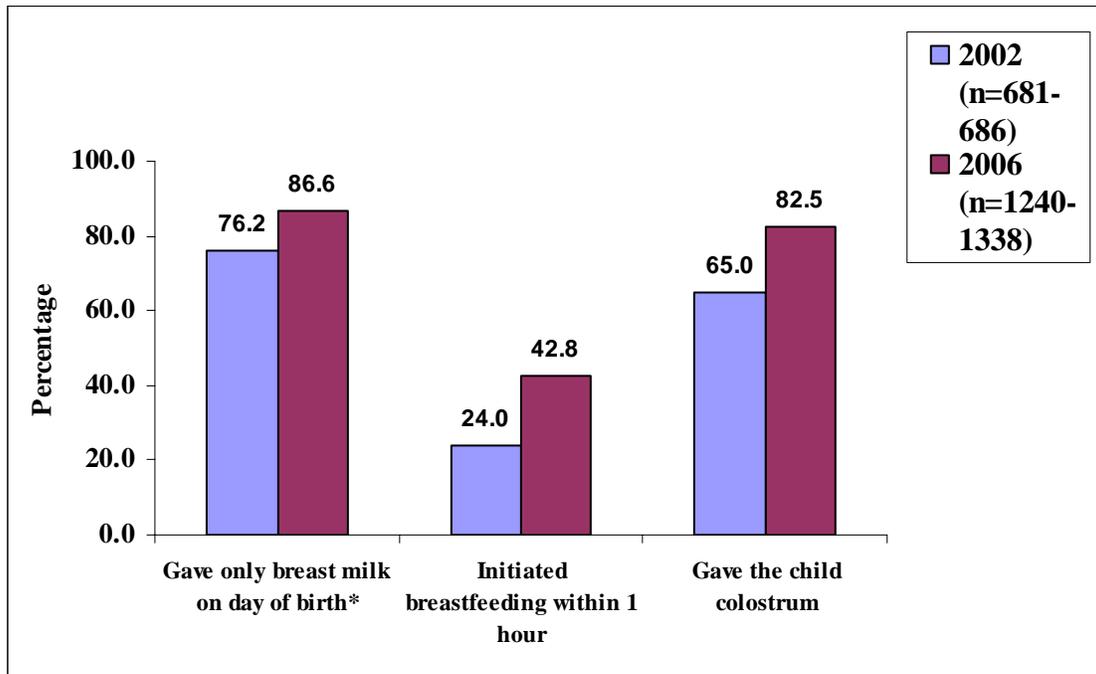
A. Breastfeeding Practices

Breastfeeding Initiation and Positive Newborn Feeding Practices: *Figure 7-1* presents data on breastfeeding of newborn children. It should be noted that children of this age group were not included in the survey, so findings on this period are based on retrospective data, obtained through interviewee recall. Note the data are particularly prone to recall bias as mothers were asked to recall when various foods and liquids were introduced to the reference child, who in some cases may be as old as 59 months.

As *Figure 7-1* shows, most mothers reported initiating breastfeeding appropriately, feeding colostrum or breast milk on the day their child was born. Most mothers gave colostrum to the baby (83 percent), while 17 only percent discarded this vital fluid that provides nutrients, immunity, and other health promoting substances. This is a major improvement in practice from the baseline, when 35 percent reported throwing their colostrum away.

The majority of women also reported giving only breast milk on the day their baby was born; 87 percent of those who breastfed their child said they did not feed anything other than breast

milk to their newborn. This compares favorably to the baseline, when 76 percent of those who breastfed their child reported feeding only breast milk the day their baby was born. Almost all women who reported initiating breastfeeding did so within eight hours of delivery, with 43 percent doing so optimally—within one hour of birth. This was an increase from the 24 percent of women who reported doing so in the baseline.



* Of those mothers who breastfed.

Figure 7-1: Positive Newborn Feeding Practices among Children

Some women continue to report giving Lok (11 percent), a purgative that is thought to cleanse the baby of meconium, and very few said they offered other liquids such as tea (1 percent), sugar water (2 percent), or boiled water (3 percent) to children on the day they were born. However, babies do not need and should not receive anything other than breast milk from birth to six months.

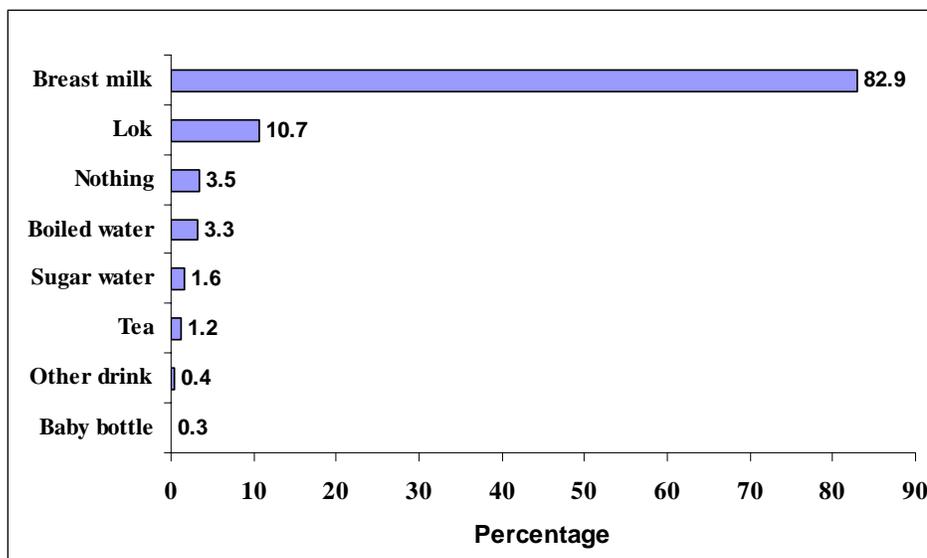


Figure 7-2: Liquids Given to the Child on Day of Birth 2006

(n=3233) *

Percentages do not add to 100 percent because multiple responses are possible.

Breastfeeding Duration: In order to examine the trends in duration of breastfeeding, the evaluation looked at the data in two ways. We first looked at breastfeeding duration among children age 24-60 months, based on mothers' reports of how long they breastfed their babies. *Table 7-1* shows no apparent change in duration for this age group; the median duration of breastfeeding was 18 months at both times, and the age-group trends are virtually identical.

Table 7-1: Reported Number of Months of Breastfeeding

(Based on recall for children age 24-60 months)

Number of months	Baseline study (n=1491)	Final evaluation (n=1536)
1-6 months	1.5%	1.4%
7-9 months	2.1	1.8
10-12 months	7.5	7.1
13-15 months	8.4	7.5
16-18 months	37.3	37.2
19-21 months	12.4	11.4
22-24 months	24.0	27.5
25 months or more	6.9	6.1
Total	100.0%	100.0%
Median	18	18

The evaluation also looked at children 6-24 months to see if they were still being breastfed. *Table 7-2* shows that continued breastfeeding followed similar trends in the baseline and final samples. Continued breastfeeding was nearly universally reported from 6-15 months in both baseline and final surveys. Three-quarters of the baseline sample and almost 80 percent of final sample still reported breastfeeding from 15-18 months. Thereafter, rates dropped off as children neared 24 months. The rates appear to be somewhat higher in the final sample in the 18-21 month age group (46 percent in the final sample vs. 33 percent in the baseline), indicating that more women are currently approaching the optimal two-year mark for continued breastfeeding than during the baseline.

Table 7-2: Continued Breastfeeding

(Based on current feeding reported for children age 6-24 months)

Age range of child	Still Breastfeeding	
	Baseline study (n=852)	Final evaluation (n=1333)
6-9 months	98.1%	98.9%
9-12 months	99.1	97.7
12-15 months	93.6	91.4
15-18 months	75.1	77.9
18-21 months	33.2	45.7
21-24 months	22.9	25.0
6-24 months	69.7	76.1

Breastfeeding Frequency: The median number of times breastfed babies received the breast during the day was six, and four during the night, in both baseline and final samples, for a median of about 10 breastfeeding episodes per day. These figures are for children 6 months and older, who are still being breastfed.

B. Feeding of Young Children

To gain a better understanding of the feeding practices and adequacy of the diets of the children, we examined the feeding patterns of young children. The information on feeding was obtained in the 24-hour recall on children 6 months and older.

Use of Bottles: *Table 7-3* shows similar trends, with a slight decrease in the percentage children receiving bottles in 2006 than in 2002. Given that the use of bottles was already fairly uncommon in 2002, it is more difficult to achieve a substantial reduction in the negative practice.

Table 7-3: Percentage of Children Receiving a Bottle One Day Prior to Interview

(Age 6-36 months, 24-hour recall)

Age range	Baseline study (n=1443)	Final evaluation (n=2161)
6-12 months	14.5%	12.2%
12-24 months	7.9	5.9
24-36 months	3.0	1.6

Timing of Introduction of Complementary Foods: Most women knew when it was time to introduce complementary foods: 82 percent answered correctly that it should begin at 6 months, while 7 percent and 11 percent thought it should be earlier or later. In the 2006 sample, when asked to report on the time they introduced complementary foods, the median response was 6 months for starting liquids (e.g., tea, sugar water, etc.), cow’s milk or other dairy products, semi-solids (e.g., porridge or soups) and foods made with oil and other fats. Solids such as white rice and other cereals were reportedly introduced at 7 months. Fruit and vegetables as well as eggs and meats (e.g., chicken, port, beef, or fish) were introduced at 8 months. It should be noted, however, that these data are particularly prone to recall bias as the data were obtained by asking mothers to recall when various foods and liquids were introduced to the reference child, who in some cases, may be as old as 59 months.

Frequency of Feeding: In addition to continued breastfeeding and appropriate complementary foods from 6-24 months of age,²⁸ children also need to be fed solid, semi-solid, or soft foods with the minimum age-appropriate frequency, to match their nutritional needs and gastro-intestinal development. The current cut-offs DHS uses are based on the WHO Guiding Principles for the breastfed and non-breastfed child and are as follows: Breastfed children 6-9 months should receive solid, semi-solid or soft foods a minimum of 2 times per day and breastfed children 9-24 months a minimum of 3 times per day. Non breastfed children 6-24 months should receive solid, semi-solid, or soft foods a minimum of four times per day (ORC Macro 2006).

Table 7.4 presents the percentage of children who met the minimum standard on feeding frequency according to age and breastfeeding status, based on the number of feedings of semi-solid, solid, or soft foods reported in the 24-hour recall section of the questionnaire. Overall, infant and young child feeding practices in the Haiti Title II program are not meeting minimum standards of feeding frequency. Two-thirds of children 6-24 months of age did not receive the minimum number of semi solid/solid feedings on the day prior to the interview. The percentages do seem to have improved somewhat overall and within age groupings. The percentage of children receiving minimum feeding frequency rose somewhat from 34 percent in 2002 to 37 percent in 2006.²⁹

²⁸ WHO guidance makes exceptions for HIV positive mothers.

²⁹ The situation concerning complementary feeding might not be as negative as these data suggest. The questionnaire included an item asking about the number of “snacks such as bananas, mangos, avocados, biscuits, sauces, and pies in addition to the food quoted above” received by the child in the previous 24 hours. Respondents reported an average of two such snacks per day.

Table 7-4: Percentage of Children Meeting or Exceeding Age-Appropriate IYCF Indicator Standards for Number of Feedings

(Children age 6-24 months)

Age range	Baseline study (n=972)	Final evaluation (n=1417)
6-9 months	24.8%	28.3%
9-12 months	28.3	34.2
12-24 months	37.2	40.4
6-24 months	33.9	37.1

Table 7-5 presents the frequency of feeding data by age and breastfeeding status.

Table 7-5: Percentage of Children Receiving Minimum Standard for Feeding Frequency by Age and Breastfeeding Status

(Children age 6-24 months)

Age range	Baseline study		Final evaluation	
	Still Breastfed (n=591)	Not Breastfed (n=258)	Still Breastfed (n=1003)	Not Breastfed (n=315)
6-9 months	23.4%	*	26.8%	*
9-12 months	29.8	*	33.0	*
12-24 months	33.8	46.6%	39.5	37.6%
6-24 months	30.3	47.5	34.9	38.3

*Insufficient data (fewer than 10 cases).

C. Dietary Diversity

The overall quality of the diet is assessed by dietary diversity, i.e., the variety of different foods or food groups consumed. The evaluation studied dietary diversity by examining the number of different food groups reported to have been included in the child's diet during the previous day. Seven food groups were examined and are presented in Table 7.6: (a) dairy foods; (b) cereals; (c) vitamin A rich fruits and vegetables; (d) other fruits and vegetables; (e) meat, fish, and eggs; (f) legumes; and (g) fats. In other studies, eight groups are used, with eggs being examined as a separate group, but the baseline survey had grouped meat and eggs together, so eggs could not be examined as a separate category (ORC Macro 2006). Virtually all the children consumed cereals and fats at least once in the 24 hours prior to the interview. Legume consumption seems to have increased from 58 percent in 2002 to almost 80 percent in 2006. It is noteworthy that only a quarter of the children got any servings of dairy products on that day.

However, these snacks were not counted in the number of complementary feedings as presented in this report. Current instructions for the KPC Module 2 suggest that a feeding represents an event when "the child ate enough to be full," and that "very small snacks" should not be counted in the number of feedings.

The evaluation statistically compared the number of food groups included in children’s diets in 2002 and 2006. Though there was an increase (from 4.37 to 4.52), the difference was not statistically significant. Dietary diversity is dependent on access, education and cultural norms and therefore, a significant improvement in the number of food groups consumed by children will require nutrition education, paired with access and availability of multiple appropriate complementary foods.

Table 7-6: Dietary Diversity: Food Groups Consumed at Least Once in Past 24 Hours

(Children 6-60 months)

Food category	Baseline study* (n=2816-2903)	Final evaluation* (n=3230-3233)
Dairy	26.8%	23.6%
Cereal	92.9	97.6
Vitamin A rich food	77.1	81.5
Other fruits and vegetables	47.3	26.2
Egg and meat	41.7	49.6
Legume	57.6	78.3
Fats	93.7	95.5

* Percentages do not add to 100 percent because multiple responses are possible.

Overall, the findings in terms of dietary diversity was much more favorable for children in the Haiti Title II Program, with 90 percent meeting the standard of dietary diversity in 2006 and 78 percent meeting it in 2002. *Table 7-7* shows these combined results for the children age 6-24 months. The largest improvement appears to be in the 6-9 month age group where those meeting the diversity standard went from 64 percent to 79 percent.

Table 7-7: Percentage of Children Receiving Minimum Food Group Diversity by Age

(Children age 6-24 months)

Age range	Baseline study (n=810)	Final evaluation (n=1326)
6-9 months	63.7%	78.6%
9-12 months	77.4	86.6
12-24 months	82.9	93.7
6-24 months	78.5	89.6

In order to assess whether or not the children were being adequately fed from age 6 to 24 months in the Haiti Title II Program, we constructed an IYCF practices indicator. It was constructed to be as parallel as possible to the IYCF indicator based on infant feeding data from the DHS (ORC Macro 2006). This IYCF indicator is constructed of the following three components for specific age groups:

- Continued breastfeeding or feeding of milk or milk products
- Feeding solid/semi-solid food the minimum number of times per day according to age and breastfeeding status
- Feeding the minimum number of food groups per day according to breastfeeding status

Table 7-8 shows the percentage of children meeting this overall standard. Approximately one-quarter of children are meeting this standard, and there has been only a small increase from 2002 to 2006.

Table 7-8: Percentage of Children Meeting or Exceeding Feeding Standards

Age range	Baseline study (n=806)	Final evaluation (n=1315)
6-9 months	19.8%	26.6%
9-12 months	26.6	31.9
12-24 months	26.2	28.2
6-24 months	25.0%	28.7%

D. Patterns of Caregiving

In 2006, child care giving followed the traditional Haitian pattern, relying heavily on mothers as caregivers, and there was no change from 2002. Table 7-9 shows that mothers were the primary caregivers for 80 percent of the reference children in both surveys, caring for their children at least six days a week. Grandmothers were the children’s caregivers second most often, for about 10 percent of the children. Less than 2 percent of children were cared for by their aunts, sisters, fathers, or others caregivers including sisters, brothers, mothers-in-law, fathers-in-law, and grandfathers.

Table 7-9: Percentage of Primary Caregiver for Children at Home

(Children ages 6-60 months)

Caregiver (relation to the child)	Baseline study (n=2922)	Final evaluation (n=3231)
Mother	78.3%	82.6%
Grandmother	13.9	9.5
Father	1.6	2.0
Sister	1.7	1.9
Aunt	1.9	1.7
Grandfather	0.3	0.7
Brother	0.5	0.5
Mother-in-law	0.8	0.4
Other	1.0	0.4
Guardian	0.1	0.2
Father-in-law	0.0	0.1
Total	100.0%	100.0%

Haiti is a country where food is shared widely within families and with relatives, friends, and neighbors. More than 90 percent of those informants who took part in a program providing food for a child reported sharing the food aid ration among the whole family and just 2 percent said that they gave the ration only to the target child.

When asked about why they received food aid currently (from Title II or any other program), their responses fell into preventive and recuperative categories. The most cited reasons were “to preserve health” (40 percent), “the child had lost weight” (29 percent), “to help the child grow well” (28 percent), “because the mother attended a prenatal clinic” (23 percent) or “was still nursing” (14.8 percent).

Table 7-10 provides a complete list of reported reasons for receiving food aid rations.

Table 7-10: Reasons for Receiving Food from a Program, 2006

Reason	Percentage* (n=419)
Recuperation	
The children are sick.	7.9%
The children are skinny.	10.0
The children have malnutrition.	5.7
The children have lost weight.	29.0
The children are not healthy.	8.2
The children are swollen.	0.5
Prevention	
To preserve health	40.4
To help children to grow well	27.5
To avoid malnutrition	8.0
They are in a health program "ti fwaye"	0.3
The mother participates in a mother's club	4.6
The mother goes to prenatal clinic	22.9
The mother is nursing	14.8
The child's parents died of AIDS	0.0

* Percentages do not add to 100 percent because multiple responses are possible.

E. Conclusion

Results regarding the current status of infant and young child feeding and of positive changes over the four year program period are mixed. Most mothers gave colostrum to the baby (83 percent), which is a major improvement in practice from the baseline, when 35 percent reported throwing their colostrum away. The majority of women also reported giving only breast milk on the day their baby was born; and 87 percent of those who breastfed their child said they did not feed anything other than breast milk to their newborn as compared with 76 percent in the baseline study. In addition, almost all women who reported initiating breastfeeding did so within eight hours of delivery, with 43 percent doing so within one hour of birth, as compared to 24 percent of women in the baseline.

On the other hand, infant and young child feeding practices in the DAP program area are not meeting minimum standards of feeding frequency. Two-thirds of children 6-24 months of age did not receive the minimum number of semi solid/solid feedings on the day prior to the interview. However, the findings in terms of dietary diversity were much more favorable, with 90 percent of children meeting the standard of dietary diversity in 2006 as opposed to 78 percent in 2002.

CHAPTER 8: CHILD HEALTH

As noted in the conceptual framework outlined earlier, children's health and nutritional status are inextricably linked. When children are infected or diseased, their appetite as well as their capacity to absorb and utilize nutrients may diminish. Similarly children who are malnourished are more susceptible to illness. Children's health status is therefore both an underlying causal factor and a related outcome of malnutrition. Information on the status of children's health and practices related to child health is thus key, not only for the protection and promotion of child health in general, but also to gain an understanding of the specific conditions that cause and sustain child malnutrition in Haiti. Prenatal and postpartum maternal health (discussed previously in Chapter 6) also features importantly in the constellation of factors influencing child health and development.

Accordingly, CS efforts to enhance food security in Haiti place a high premium on health promotion and disease prevention activities to uphold children's nutritional status. Rally posts provide growth monitoring and promotion, screening of eligibility for food assistance, distribution of vitamin A capsules, ORS, and deworming medication, and group education sessions. Mothers clubs target pregnant and lactating mothers, and depending on the CS, serve all mothers of children 6-24 months or mothers of malnourished children. In some cases, members of mothers clubs are eligible for micro-credit assistance (on the premise that increased revenue is critical to household food security and child health). Other activities include mobile clinics and support for home gardens. The frequency and duration of targeted activities vary by CS. For those CSs engaging in preventive feeding programs, food assistance is conditional on participation in a CS health activity. The key interventions/messages conveyed across CS programs to improve child survival include promotion of exclusive breastfeeding, appropriate complementary feeding, increased micro-nutrient consumption, prevention, and treatment of preventable childhood diseases including diarrheal disease, and improvements in prenatal and postpartum care.

The Title II Haiti baseline and final evaluation surveys collected data on a range of health-related factors to examine their impact on children's health and nutrition status. These included caretaker knowledge, attitudes and practices (KAP), child immunization status, and prevalence of sickness/disease (fever, cough, and diarrhea) among children. The final evaluation also collected data on participation in CS activities to examine program participation relative to child health and nutrition indicators.

A. Immunization

All of the CSs assist with the logistics and promotion of immunization, including encouragement given to parents to have their children immunized. They are not, however, responsible for all aspects of the process, and it has been reported that vaccine has frequently been unavailable in many CS centers. Nevertheless, close to 85 percent of those interviewed for the final evaluation were in possession of a health card recording information on immunization and vitamin A capsule supplementation for their child. This represents an increase of more than 18 percentage points since 2002. In 8 percent of the households, a health card was reported in existence but not seen, and in 8 percent of cases, no card existed.



Photo by Nina Louise Frankel

Data collected in 2002 by health card documentation and caregiver recall indicated that less than 30 percent children 12-24 months in Haiti had achieved full immunization (Table 8-1). As would be expected, this proportion increased for older age groups.³⁰ Across all age groups there is a marked increase in 2006 of almost 25 percentage points in the proportion of children fully immunized, with the largest gain achieved among children 12-24 months. This difference in full immunization rates was statistically significant ($p < .05$). CS efforts to marshal greater attendance at rally posts (where children can be

vaccinated) may be a contributing factor to the overall improvement in immunization coverage across age.

Table 8-1: Percentage of Children 12-60 Months Fully Immunized

(as documented on health card or by caregiver recall)

Age range	Baseline study (n=2380)	Final evaluation (n=2596)
12-24 months	29.9%	58.5%
24-36 months	38.6	65.7
36-60 months	45.0	66.0
12-60 months	39.2	63.4

Table 8-2: Percentage of Immunization Coverage of Children 12-60 Months by Vaccination in CS areas and Haiti as whole

(as reported on health card)

Vaccination	Baseline study (n=1719)	Final evaluation (n=2225)	Haiti -2005 ³¹
BCG	72.9%	87.8%	62%
Polio	61.6	82.4	68
DPT	61.2	78.9	62
Measles	73.5	81.3	65

³⁰ It should be noted, however, that recall data is usually less reliable than observational data documented on a health card.

³¹ PAHO immunization coverage figures.

**Table 8-3: Percentage of Immunization Coverage of Children
12-60 months by Vaccination**

(as reported by caregiver recall)

Vaccination	Baseline study (n=764-877)	Final evaluation (n=402-441)
BCG	75.1%	84.5%
Polio	19.8	42.6
DPT	21.7	42.2
Measles	63.7	64.7

The average age by which caretakers believed a child should be immunized is 22.5 months (which corresponds to the coverage trends observed), suggesting that caretakers are still not entirely clear on the recommended vaccination schedule for children.

As *Table 8-2* shows, specific immunization coverage rates in the CS areas compare very favorably with coverage rates for Haiti as a whole, which speaks well for the impact that the CSs are having in their targeted areas.

B. Vitamin A Supplementation

Vitamin A deficiency (VAD), widespread in young children in many developing countries, substantially increases a young child's risk of death. Evidence indicates that routine vitamin A supplements given between 6 and 72 months of age can be expected to reduce mortality by about 23 percent wherever VAD exists (UNICEF 1998). The use of periodic large dose vitamin A supplements has been globally accepted as a highly cost-effective approach to preventing and treating VAD in young children, and is believed to have an impact on reducing young child mortality as great as, or greater than, that of any single Expanded Program on Immunization (EPI) antigen³². The current recommended practice to protect the greatest number of children as cost-effectively as possible is to administer very high doses of vitamin A (200 000 IU) for children age 12 months and over once every four to six months, in areas where VAD exists.³³ All four of the Title II CSs working in Haiti have incorporated vitamin A distribution into regular rally post activities.

Data on vitamin A supplementation was collected both by health card and by caretaker recall in 2002 and 2006.

Table 8-4 illustrates supplementation at some point in the past as recorded on card and children who, according to caregiver recall, received vitamin A within the six months prior to being interviewed. *Table 8-5* shows the data collected by card and *Table 8-6* shows the data based on recall.

³² USAID, Immunization Essentials, 2003, http://pdf.dec.org/pdf_docs/PNACU960.pdf, accessed December 26, 2006.

³³ Smaller dose vitamin A capsules are now available for children aged 6-12 months but are not yet widely in use.

Table 8-4: Percentage of Children Ages 12-60 Months Receiving Vitamin A Supplementation

(Card or Recall)

Age range	Baseline study (n=2543)	Final evaluation (n=2649)
12-24 months	39.5%	73.5%
24-36 months	46.7	76.3
36-60 months	44.8	74.4
12-60 months	44.0	74.7

Table 8-5: Percentage of Children Ages 12-60 Months Receiving Vitamin A Supplementation

(Reported by health card)

Age range	Baseline study (n=1719)	Final evaluation (n=2225)
12-24 months	39.9%	77.5%
24-36 months	49.0	83.3
36-60 months	46.3	82.6
12-60 months	45.4%	81.0%

Table 8-6: Percentage of Children Ages 12-60 Months Receiving Vitamin A Supplementation

(Recalled by those without health cards)

Age range	Baseline study (n=824)	Final evaluation (n=424)
12-24 months	38.5%	42.0%
24-36 months	42.0	38.8
36-60 months	41.7	41.4
12-60 months	41.0%	40.8%

As Table 8-4 illustrates, the percentage of children receiving vitamin A supplementation is more than 30 percentage points higher across age groups in 2006 than it was in 2002. This change was statistically significant ($p < .05$). Given that Haiti suffers periodically from vitamin A stockouts, this increase is all the more remarkable.

Clinical vitamin A deficiency often manifests itself through defects in ocular tissue, causing negative changes in vision (e.g., night blindness) and potential corneal disease (e.g. corneal xerosis, ulceration, or keratomalacia) (WHO, 1996). Various indicators can be used to estimate

the prevalence of vitamin A deficiency. The WHO identifies night blindness as an appropriate indicator for a population level estimation of vitamin A deficiency and has established a prevalence of 1.0 percent (among children 24-71 months) as population-level criteria to indicate vitamin A deficiency as a public health problem (UNICEF 1998). For the Haiti baseline and final evaluation surveys, the prevalence of vitamin A deficiency among children was estimated by caregiver report, using the local term for night blindness.

The 2002 baseline found a prevalence of night blindness of around 4 to 5 percent for children over 24 months in Haiti³⁴ – high by international standards. In 2006, the status of night blindness remains essentially the same.³⁵

Data on childhood illness for both the baseline and final evaluations were collected during the wet season, when episodes of malaria and diarrhea are more frequent. Thus, disease prevalence indicated here may be higher than during other times of the year.

Close to 80 percent of children age 6-60 months in the CS service areas experienced an illness during the two weeks preceding the survey, and more than half suffered from more than one illness during that period (see *Table 8-7*). The burden of disease is distributed fairly evenly across age groups. Cough is the most frequent illness reported, suggesting high prevalence of respiratory infections. Fever is commonly associated with malaria. Across the board, morbidity rates among young children are slightly higher, albeit not significant statistically, in 2006 than in 2002.

Worth noting also is that only 20 percent of children age 6-60 months received de-worming medication in the last six months. Children living in substandard living conditions and exposed to precarious water sources are highly susceptible to debilitating parasitic infections.

Disease and parasites hinder the capacity of children to utilize their food effectively while inadequate dietary intake exacerbates vulnerability to disease. Unchecked, the cycle spirals downward. The continuing high prevalence of child illness and susceptibility to parasites may explain to some degree why DAP assistance, in spite of increased vaccination coverage, vitamin A supplementation, and food assistance, among other interventions, has had only a minimal effect on child growth indicators over the last four years.

³⁴ Data on night blindness were collected for children 0-60 months, however, only children 24-60 months are included in the tabulations shown here. Children 0-24 months were excluded from the analysis in an effort to follow, as best as possible, the WHO recommendation that the night blindness indicator be reported for children 24-71 months (WHO 1996).

³⁵ As reported in the Baseline Report, the reliability for the data on night blindness is questionable. The local term used to inquire about the presence of night blindness is not universally recognized in Haiti as having that meaning, and consequently the data could be either an over- or under-estimate of the real situation. However, it is reasonable to assume that the same misunderstanding, if any, occurred in both surveys and that the finding of no difference is likely to be the case.

Table 8-7: Prevalence of Illness in Last Two Weeks for Children 6-60 Months

Illness	Baseline study (n=2901-2919)	Final evaluation (n=3189-3222)
Diarrhea	29.6%	31.1%
Cough	68.2	69.7
Fever	45.1	52.0
Any sickness	77.0	79.5
Multiple sickness (2 sicknesses or more)	50.4%	55.1%

C. Care Seeking for Childhood Illness

The proportion of caretakers seeking advice or treatment for ill children has increased markedly since 2002 (*Figure 8-1*). The trends are roughly the same across age groups. Health centers are the most common venue for seeking treatment. More than 10 percent turn to traditional healers (*Table 8-8*).

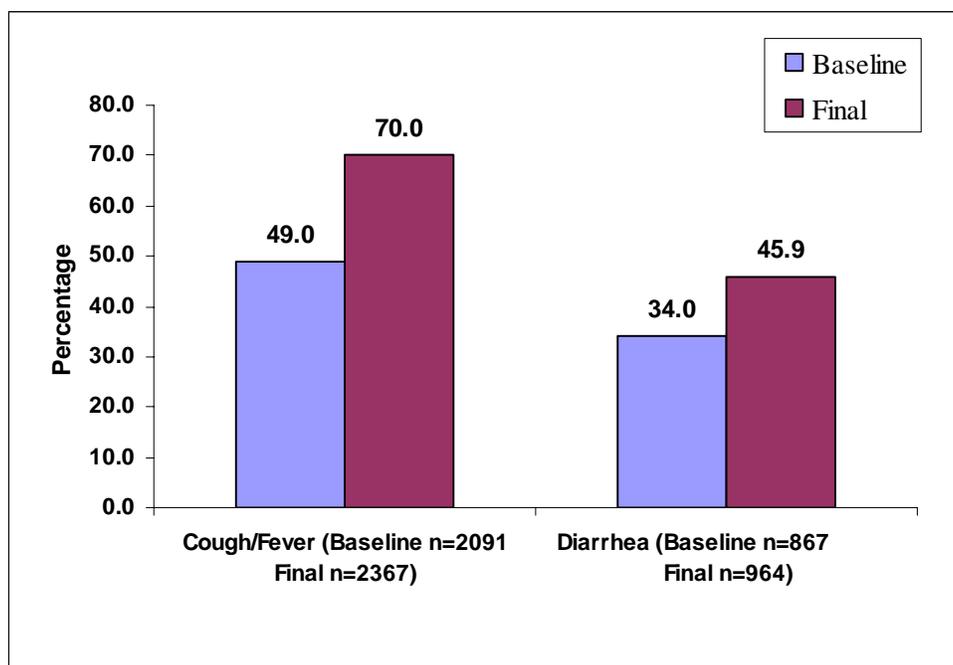


Figure 8-1: Percentage of Caregivers Seeking Advice When Child is Ill

Table 8-8: Type of Health Services Where People Sought Advice/Treatment for Cough/Fever and Diarrhea, 2006

Service	Cough/Fever Percentage* (n=1625)	Diarrhea Percentage* (n=439)
Hospital	14.0%	16.6%
Health center	45.2	44.7
Private medical practice	1.5	1.2
Nurse/Midwife	2.9	3.6
Pharmacy	0.7	0.4
Community health services	4.8	9.5
Traditional sector	14.4	13.1

* Percentages do not add to 100 percent because multiple responses are possible.

Fathers play a more prominent role than one might expect in making decisions about seeking help for seriously ill children. If they are indeed as involved in decisions regarding their child's health as *Table 8.9* suggests, then CSs should continue to ensure that men are targeted in health education outreach activities.

Table 8-9: Family Members Deciding to Seek Care for Seriously Ill Child, 2006

Person (related to the child)	Percentage* (n=3233)
Mother	50.6%
Father	85.2
Grandmother	10.6
Other	2.9

* Percentages do not add to 100 percent because multiple responses are possible.

D. Treatment Practices for Childhood Illness

Appropriate treatment of diarrheal disease depends, in part, on the type of diarrhea present. There are three main types of diarrheal disease that affect children in developing countries: acute watery diarrhea, dysentery, and persistent diarrhea. A child affected with any of these types of diarrhea should receive oral rehydration salts for the prevention and treatment of dehydration. It is important also that continued feeding and increased fluid intake³⁶ are provided during an episode of any type of diarrhea. In addition, treatment by antibiotic may be required

³⁶ "Increased fluid intake" has been defined here as giving the child more liquid during the diarrhea episode; "Continued feeding" has been defined here as giving the child about the same quantity or more to eat during the diarrhea episode.

for dysentery, and dietary adjustments, such as reduced lactose intake, may be helpful in the case of persistent diarrhea (USAID 2000).

DAP health programs offer preventive and curative health activities to meet the needs of the most vulnerable groups. Included among them is training on management of diarrheal disease, through mothers' clubs, home visits, and rally posts. Participants (who may include family members other than mothers) are made aware of the importance of keeping children with diarrhea well hydrated and fed both during and after a diarrheal disease episode. Some of these messages seem to be effective insofar as the proportion of caretakers providing more liquid to children with diarrhea has increased from 40 percent in 2002 to 57 percent in 2006 (*Table 8-10*).

Table 8-10: Quantity of Liquid Given to Children with Diarrhea

(Ages 6-60 Months)

Quantity	Baseline study (n=859)	Final evaluation (n=974)
Much less than normal	5.1%	3.3%
A little less than normal	23.6	19.8
About the same amount as normal	29.8	18.2
More than normal	40.1	57.4
Nothing to drink	1.4	1.3
Total	100.0%	100.0%

Table 8-11: Quantity of Food Given to Children Ages 6-60 Months with Diarrhea

Quantity	Baseline study (n=865)	Final evaluation (n=971)
Much less than normal	9.8%	12.5%
A little less than normal	45.8	43.6
Same and/or more than normal	39.1	40.6
Stop food	4.6	1.8
Child not given solid food	0.7	1.5
Total	100.0%	100.0%

A heartening change in behavior has occurred between 2002 and 2006, in that previously only 9 percent of caretakers were feeding a child with diarrhea the same or more food and that proportion has now risen to almost 24 percent (*Table 8-11*). Moreover, as seen in *Table 8-12*, noticeably more caretakers in 2006 than in 2002 are feeding their children more food than normal after a diarrheal disease episode to help him/her catch up.

**Table 8-12: Quantity of Food Given to Children
Ages 6-60 after Diarrhea**

Quantity	Baseline study (n=809)	Final evaluation (n=862)
Much less than normal	3.0%	2.0%
A little less than normal	16.8	10.6
About the same amount as normal	47.7	32.1
More than normal	31.2	53.9
Stop food	1.0	0.1
Child not given solid food	0.3	1.3
Total	100.0%	100.0%

Even if mothers do not believe in withholding fluids or foods during diarrhea, the amounts ingested during diarrhea episodes are usually reduced due to diminished appetite or vomiting. Still, caretaker knowledge has yet to translate fully into practice inasmuch as less than half reported that they gave their child with diarrhea the same amount or more food, and more than half of reported either withholding or reducing food during their child's last diarrheal disease episode.

Data on the type of diarrhea experienced are not available. The treatment data are therefore for non-specific cases of diarrhea. With respect to that in 2006, less than half of the children with a recent case of diarrhea received oral rehydration salts (ORS) for diarrhea (*Table 8-13*). (Of those, 91 percent used a commercial sachet of ORS as opposed to a home prepared serum.) More than 50 percent of caretakers reported increasing fluids provided when their child last had diarrhea, and about 41 percent continued feeding. Even so, only 14 percent of children 6-60 months received all three elements of appropriate treatment.³⁷ This represents an increase from 2002, but is still indicative that recommended management and treatment practices for diarrheal disease are still far from a universal concept. It also indicates that most caregivers are now practicing one or more component of appropriate feeding/treatment during diarrhea.

Although caregiver knowledge for treatment of diarrhea was not assessed in this evaluation, the summary of findings indicate that CSs may need to reinforce the appropriate feeding practices for diarrheal disease management, competing household demands, food scarcity, and the

³⁷ The definition for having applied recommended treatment for diarrhea involves three components for treating diarrhea, 1) Providing ORS to the child during diarrhea, 2) Providing increased fluids to the child during diarrhea, and 3) Providing continued feeding to the child during diarrhea. All three of these behaviors must have been practiced for the treatment applied during the diarrhea episode to be considered as "recommended." As an aside, USAID also supports zinc supplementation to decrease the duration and severity of diarrheal disease in children under age 5. Studies have demonstrated that an inexpensive 7- to 10-day course of 20-mg zinc supplements can reduce diarrhea severity by 40 percent and its duration by 20 percent. It can also reduce the likelihood of future occurrences of diarrheal disease. However, this recommendation has yet to be integrated into practice in Haiti.

difficulty of feeding a sick child may also be contributing to the continuing gap between diarrheal disease management and treatment knowledge and practice.

Table 8-13: Treatment that Children Ages 6-60 Received for Diarrhea

Treatment	Baseline study* (n=535-865)	Final evaluation* (n=971-978)
Received ORS	44.1%	41.6%
Received pill/syrup	19.7	17.0
Received herbal remedy	29.2	15.2
Increased fluids provided	40.1	57.4
Continued feeding provided	39.2	40.6
Recommended treatment	4.6%	13.6%

* Percentages do not add to 100 percent because multiple responses are possible.

The appropriate treatment protocol for a cough is dependent on the nature of the cough. In cases of common colds, until recently, the appropriate treatment for an associated cough can include cough syrup, a treatment often provided to children in Haiti (*Table 8-14*). Treatment with tea or the traditional herbal therapy might also be appropriate. If, on the other hand, the cough is associated with pneumonia, the appropriate treatment protocol would be more specific, and would include treatment with oral antibiotics³⁸ (USAID 2000). In such cases, the possibility of a simultaneous infection with malaria should be considered, and treated accordingly (USAID 2000). Similar patterns were observed across age groups.

Table 8-14: Medicine Children Ages 6-60 Received For Treating Cough, 2006

Medicine	Percentage (n=1999)
Pill or syrup	64.8%
Injection	0.2
Herbal remedy	38.6
Other	1.1

* Percentages do not add to 100 percent because multiple responses are possible.

When a child presents with a fever in a malaria endemic area, screening for both malaria and pneumonia is recommended. Appropriate malaria treatment recommends that a full course of anti-malarials be given, along with continued feeding and increased fluids during illness and continued fluids and feeding immediately after illness. Should malaria be diagnosed, the appropriate treatment protocol would ask that management of pneumonia also be considered if the child has a cough or difficulty breathing, and fast breathing or chest in-drawing. Treating only malaria may result in death from pneumonia (USAID 2000).

³⁸ Data on the use of antibiotics for the treatment of cough were not collected in the Title II Baseline Survey.

The Haiti baseline data indicate that aspirin is used most frequently as a remedy for fever, whereas chloroquine or acetaminophen (Tylenol, Paracetamol, or Analgin) is provided to children with fever in about one in five cases (*Table 8-15*). These data more or less parallel the findings from the baseline and suggest that appropriate treatment for childhood fever is rarely provided. In fact, provision of aspirin to children under 19 years is never recommended, due to the risk of acquiring Reye’s syndrome.

These data should, however, be interpreted with caution. Despite aspirin having been indicated as the most common practice for treatment of childhood fever, this may, in fact, not be the case. Local Title II Cooperating Sponsor staff report that ‘aspirin’ is a term used broadly in Haiti, and may refer to any type of pain reliever, or medication tablet, such as acetaminophen or ibuprofen. Moreover, the CSs in Haiti report that aspirin is not commonly available in local communities. As a result, the percent of caregivers reporting giving aspirin for treatment of childhood fever may reflect a gross overestimate. In contrast to aspirin, acetaminophen (i.e., products like Tylenol, Paracetamol, or Analgin) and ibuprofen can be appropriate treatments for cases of fever not caused by malaria. However, due to a lack of data on the specific circumstances of the child presenting with fever, few conclusions can be drawn on the extent of appropriate treatment practices for fever in Haiti.

Table 8-15: Medicine Children Ages 6-60 Months Received for Treating Fever, 2006

Medicine	Percentage (n=1616)
Chloroquine	19.4%
Aspirin	27.7
Acetaminophen	20.1
Ibuprofen	2.3
Other	23.6

* Percentages do not add to 100 percent because multiple responses are possible.

E. Predictors of Diarrheal Disease

Table 8-16 and *Table 8-17* suggest that knowing how to prevent diarrhea and current methods used to prevent it do not seem to be effective. *Table 8-16* shows that mothers of children with and without diarrhea reported using similar methods for prevention of diarrhea. *Table 8-17* shows that mothers of children with and without diarrhea indicated similar levels of knowledge of when hands should be washed. Even if caretakers understand the fecal-oral route of transmission of diarrhea, the absence of a safe water supply may be undermining whatever practical measures they are taking to reduce risk of diarrheal disease.

Table 8-16: Prevalence of Diarrhea by Approaches Used for Prevention, Final Evaluation

Having diarrhea in the last 2 weeks		
Prevention approach	Yes* (n=978)	No* (n=2229)
Purify drinking water	67.7%	65.0%
Keep the house clean	10.3	12.4
Wash mother's hands	11.8	10.4
Wash child's hands	18.1	22.8
Wash the utensils	17.0	20.5
Wash fruits and vegetables	3.3	4.8
Pay attention to foods consumed	45.7	50.6

Percentages do not add to 100 percent because multiple responses are possible.

Table 8-17: Prevalence of Diarrhea by Knowledge of Washing Hands, Final Evaluation

Having diarrhea in the last 2 weeks		
Knowledge	Yes* (n=978)	No* (n=2229)
Wash hands before giving food to the child/before eating	52.0%	53.4%
Wash hands before preparing the food	27.0	29.8
Wash hands after going to the bathroom	82.2	83.1
Wash hands before nursing	6.7	5.1
Wash hands after changing the diapers	3.5	3.2
After touching something dirty	63.1	62.9

* Percentages do not add to 100 percent because multiple responses are possible.

At the same time, gaps in knowledge and practice concerning safe water persist. Only two-thirds of caretakers cited purifying water as a means of preventing diarrhea. Among those, close to 80 percent are aware of bleach for this purpose, with the same proportion reporting its use. However, less than 50 percent know that boiling water can make it safe to drink, and more than a fifth believe that adding lemon to water will render it potable.

Because of the scarcity of fuel sources in Haiti, CSs have made a point of promoting bleach as a means to make water safe to drink, and some of them have cost-sharing arrangements with target communities to procure it because bleach is not always available locally. Facilitating access to bleach no doubt accounts for its wide usage, although it remains concerning that awareness of using safe water to prevent diarrheal disease is not universal.

In order to further understand factors associated with diarrheal disease, we examined correlations of the prevalence of diarrhea with other household and community factors. At the household level, the prevalence of diarrhea in the past two weeks was negatively correlated with age (-.307). Other variables had much weaker correlations, such as dietary diversity (-

.075), the child having a fever (.189), having a cough (.122), and being fully vaccinated (-.105). Variables related to sanitation had particularly weak correlations: household having an improved latrine (-.047), household having a protected water source (-.027), knowledge of correct ways of treating water (.024), and correct hand washing technique (-.036). Because the two week period is a limited time period for studying disease in an individual child, these low correlations were not completely unexpected.

We also examined correlations of prevalence of diarrhea at the community level by calculating the percentage of children in a community with diarrhea, and then correlating that measure with other variables at the community level. There were a number of variables with moderate correlations, including the percentage of children with fever (.438), the percentage of children with cough (.293), the mean birth interval with previous child (-.285), the percentage of households with an improved latrine (-.240), the mean of a composite of domestic assets (-.220), and the percentage of households with a protected water source (-.211). These findings suggest that community interventions to increase birth spacing, improve the economic circumstances of families, and provide protected water sources and improved latrines might be effective in reducing diarrheal disease.

F. Conclusion

Many positive developments in child health have occurred in the four years of DAP assistance between the baseline and final surveys. These include increased vaccination and vitamin A supplementation coverage as well as marked improvements in caretaker practice of treating sick children. Close to 85 percent of those interviewed for the final evaluation were in possession of a health card recording information on immunization and vitamin A capsule supplementation for their child. This represents an increase of more than 18 percent since 2002. There is also an increase of almost 25 percentage points from 2002 to 2006 (39 to 63 percent) in the percent of children who had achieved full immunization.

However, children in Haiti remain very vulnerable to illness. Close to 80 percent of children age 6-60 months in the CS service areas experienced an illness during the two weeks preceding the survey, and more than half suffered from more than one illness during that period. Worth noting also is that only 20 percent of children age 6-60 months received de-worming medication in the last six months. Children living in substandard living conditions and exposed to precarious water sources are highly susceptible to debilitating parasitic infections.

More positively, the proportion of caretakers seeking advice or treatment for ill children has increased markedly since 2002, and the proportion of caretakers providing the same or more liquid to children with diarrhea has increased from 70 percent in 2002 to 76 percent in 2006.

In 2006, only 14 percent of children 6-60 months with a recent case of diarrhea received all three elements of appropriate treatment. This represents an increase from 2002, but is still indicative that recommended management and treatment practices for diarrheal disease is not well followed. It is also of note that only two-thirds of caretakers cited purifying water as a means of preventing diarrhea, and less than 50 percent indicated they knew that boiling water can make it safe to drink, and more than a fifth that adding lemon to water will render it potable.

Correlations of incidence of diarrhea at the community level showed moderate relationships with: the mean birth interval with previous child (-.285), the percentage of households with an improved latrine (-.240), the mean of a composite of domestic assets (-.220), and the percentage of households with a protected water source (-.211).

CHAPTER 9: CHILD GROWTH INDICATORS

Malnutrition is implicated in or directly responsible for more than 50 percent of child mortality and around 20 percent of childhood illness and disease in developing countries (Pelletier et al., 1994). The irreversible outcomes of impaired growth and development that malnutrition may cause impose far-reaching consequences for both individuals and society at large (Brown and Pollitt, 1996). A key intended outcome of Title II programs is improved nutritional status. Using the UNICEF/FANTA conceptual framework outlined earlier, this section examines final evaluation findings on child growth indicators and factors affecting child growth and nutrition in Haiti.

Evidence on growth patterns of children throughout the world suggests that children under age 5 years are those most appropriate (of highest priority) for the study of malnutrition. Research suggests that well-nourished, healthy children throughout the world demonstrate the same weight and height growth patterns as children from industrialized countries, irrespective of race or ethnicity, until about 10 years of age. National Center for Health Statistics (NCHS)/WHO reference standards are widely accepted as the most accurate currently available for international comparisons of growth patterns. Application of NCHS/WHO reference standards allows sample-specific anthropometric data to be standardized and comparable globally (Cogill 2001).



Photo by Nina Louise Frankel

The indicators most commonly used to describe the extent and type of malnutrition in a population are: stunting (height for age), wasting (weight for height), and underweight (weight for age). Each indicator provides a different vantage on the probable timing, duration, and implications of malnutrition in a specific population.

Unusually low height-for-age (for children ≥ 2 years) or low length for age (children < 2 years)—*stunting*—indicates past growth failure as a result of sub-optimal health and/or nutritional conditions. High levels of stunting in a population are closely associated with poor socio-economic conditions and increased risk of frequent and early exposure to illness and/or inappropriate feeding practices.³⁹ Similarly, a decrease in rates of stunting usually is indicative of improvements in overall socio-economic conditions. The age of the child modifies the interpretation of the findings: for children under about 30 months, low height-for-age probably reflects a continuing process of “failing to grow” or “stunting”; for older children, it reflects a state of “having failed to grow” or “being stunted.” It is important to distinguish between the two related terms, length and stature: length refers to the measurement in recumbent position, the recommended way to measure children under 2 years of age or less than 85 cm tall; stature

³⁹ Long-term adverse effects of childhood stunting are well-documented and numerous, including even adult obesity, and greater risk of debilitating chronic disease (Sawaya et al., 1998).

refers to standing height measurement. For simplification, the term height is used to cover both measurements (FAO 1999). World-wide variation in the prevalence of low height-for-age is considerable, ranging from 5 percent to 65 percent among the less developed countries (FAO 1999). In many such settings, the prevalence (rate/100) of low height-for-age starts to rise at about age 3 months, peaks around 24-30 months, and then declines somewhat after around 36 months, after which average heights run parallel to the reference curve. Because stunting reflects sustained food insufficiency and poor diet over time, it is generally regarded as the most sensitive indicator for measuring the impact of efforts to achieve sustained improvements in child nutrition. For that reason, the Haiti DAP program uses stunting as a key indicator of changes in child nutritional status.

Low weight for height (for children ≥ 2 years) or low weight for length (children < 2 years)—*wasting*—indicates current malnutrition, often associated with acute infections and/or disease. Wasting may also be the result of a chronic unfavorable condition. Provided there is no severe food shortage, the prevalence of wasting is usually below 5 percent, even in poor countries (FAO 1999).

Low weight-for-age—*underweight*—means that a child's weight is significantly lower than expected for a child of the same age. Low weight-for-age is influenced by both the height of the child (height-for-age) and his or her weight (weight-for-height). Its composite nature makes interpretation complex. For example, weight-for-age does not distinguish between short children of adequate body weight and tall, thin children. However, in the absence of significant wasting in a community, similar information is provided by weight-for-age and height-for-age as both reflect the long-term health and nutritional experience of the individual or population. In general terms, the world-wide variations and age distribution of low weight for age are similar to those of low height-for-age. Weight for age is often used as an initial nutritional screening because it is easy to collect (Cogill 2001).

Data on height for age, weight for height, and weight for age were collected on children between the ages of 6 and 60 months in the baseline survey in 2002 and again in 2006 for the final evaluation in 2006 to assess the impact of the DAP program(s) on child nutritional status.⁴⁰ The survey sample design in 2002 was devised specifically to be able to detect an 8 percentage point change in stunting. Anthropometric data were not collected for children less than 6 months in the 2006 survey (nor in the 2002 survey) due to the greater difficulty in taking accurate measurements of young infants.

⁴⁰ For children under age 5, the Z-score classification system is used for population-wide assessments including surveys and nutrition surveillance. For consistency with clinical screening, prevalence-based data are commonly reported using cut-off values, usually at minus two and plus two z-scores from the median in the reference population. This implies that slightly more than 2 percent of the reference population will be classified as "malnourished" even if they are truly "healthy" individuals with no growth impairment.

Prevalence of underweight children is the percentage of children with a weight for age Z score that is less than -2 SD below the median weight-for-age.

Prevalence of stunted children is the percentage of children with a height for age Z score that is less than -2 SD below the median height-for-age.

Prevalence of wasted children is the percentage of children with a weight for height Z score that is less than -2 SSD below the median weight-for-height.

The mean age of children in the 2006 study population was 28.35 months, slightly younger than the mean age in the 2002 baseline sample. The proportion of boys and girls in the 2006 sample was roughly equal (49.6 and 50.4 percent respectively).

A. Stunting

While stunting decreased slightly from 25.8 percent in 2002 to 25.2 percent in 2006, this difference was not statistically significant. Within 2002, 8.7 percent of children under five in DAP program areas were severely stunted, and 7.5 percent were severely stunted in 2006.

Little difference in stunting was found between boys and girls: 26 percent of boys and 25 percent of girls in 2002 versus 27 percent of boys and 24 percent of girls in 2006. The same was true for those found to be severely stunted: 8 percent of boys and 9 percent of girls in 2002 versus 8 and 7 percent, respectively.

Although the 2006 sample of children is slightly younger than the 2002 cohort, the age-specific stunting rates are remarkably similar. As *Tables 9.1* and *9.2* and *Figure 9.1* show, prevalence of stunting rises markedly with increasing age of the child, from 11 percent among children 6-9 months, rising to 20.6 for children 9-12 months, and peaking at 35 percent among children 21-24 months. Beyond 24 months, the rate of stunting shows a slight decrease, with children age 24-60 months showing a relatively constant level (ranging from 24 to 31 percent by these three-month-age-groupings).

Because low height-for-age is the result of chronic under-nutrition, its cumulative increase from 6-24 months is not surprising. The extent of the increase (by 24 percent), however, is disturbing, as well as the spike in *severe stunting* at 18-21 months (6 percent) and 21-24 months (14 percent). Children who lag behind during their first two years are hard pressed to catch up. By 36-60 months, the negative cognitive and developmental consequences associated with malnutrition have likely already been imposed, and are, by this time, often irreversible.

Table 9-1: Percentage of Stunted Children by Age and Gender

Age range/gender	Baseline study (n=2922)	Final evaluation (n= 3230)
6-9 months	10.5%	10.8%
9-12 months	10.2	20.6
12-15 months	19.5	18.2
15-18 months	17.3	19.8
18-21 months	28.3	27.7
21-24 months	36.1	34.8
24-27 months	27.8	26.8
27-30 months	28.4	27.2
30-33 months	26.5	30.6
33-36 months	24.0	26.8
36-60 months	28.9	28.6
6-60 months	25.8%	25.2%
Boys (6-24 months)	20.6	24.2
Boys (24-60 months)	29.3	29.6
Boys (6-60 months)	26.4%	27.2%
Girls (6-24 months)	21.7	18.6
Girls (24-60 months)	26.9	27.0
Girls (6-60 months)	25.2%	23.4%

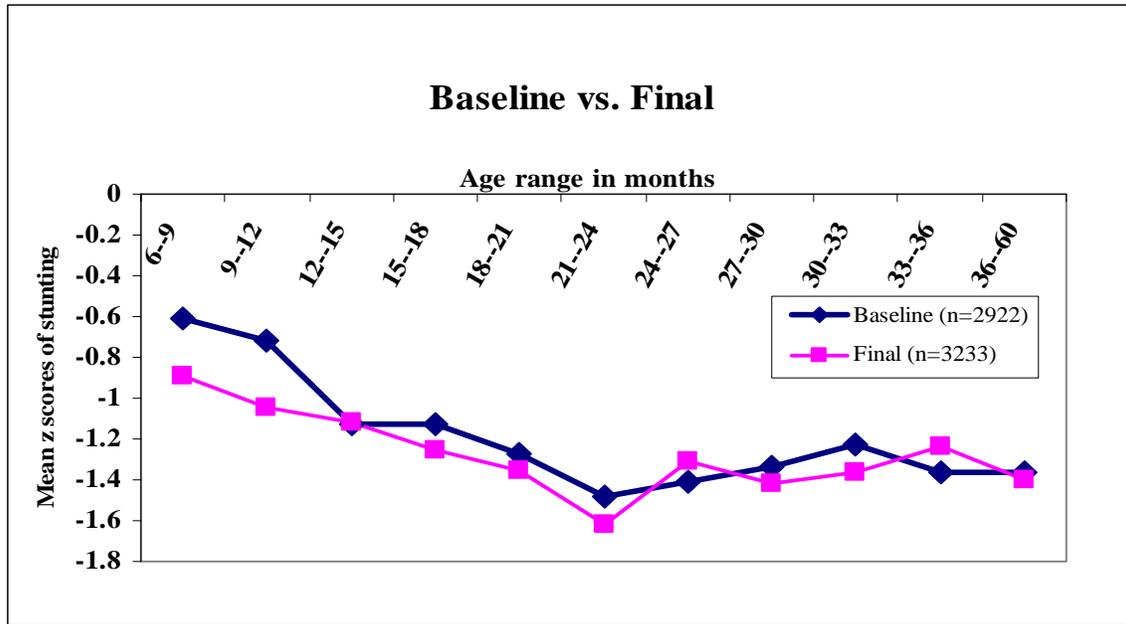


Figure 9-1: Mean HAZ Scores by Age

Table 9-2: Percentage of Severely Stunted Children by Age Range and Gender

Age range/gender	Baseline study (n=2922)	Final evaluation (n= 3230)
6-9 months	2.5%	2.5%
9-12 months	0.8	5.7
12-15 months	4.2	5.8
15-18 months	4.5	5.0
18-21 months	4.3	5.6
21-24 months	9.0	13.9
24-27 months	10.5	5.9
27-30 months	9.6	9.2
30-33 months	7.4	9.1
33-36 months	8.8	8.2
36-60 months	11.9	8.9
6-60 months	8.7%	7.5%

Boys (6-24 months)	4.5	6.9
Boys (24-60 months)	10.3	8.5
Boys (6-60 months)	8.4%	7.8%

Girls (6-24 months)	4.5	5.6
Girls (24-60 months)	11.3	8.7
Girls (6-60 months)	9.1%	7.4%

B. Wasting

No significant differences were found in the prevalence of wasting or severe wasting among children between 6-60 months in 2002 and 2006 (*Tables 9-3 and 9-4*). In 2002, the overall rates were 3 percent wasted and 0.2 percent severely wasted; in 2006 these rates were 4 and 0.1 percent, respectively. Boys and girls did not differ much in either survey: 3 percent of boys and 3 percent of girls in 2002 showed low weight-for-age; in 2006, the rates were 4 and 3 percent, respectively. The overall rates of wasting in 2002 and 2006 were statistically compared, and there was no difference. Even so, these rates are well below UNICEF's national estimate of prevalence of 5 percent wasting and 1 percent severely wasted.

In the baseline, the prevalence of wasting followed an age-specific pattern similar to that of stunting: a rise in prevalence with increasing age of children, up to about 18 months when it reaches a plateau. Beyond 24 months, the rate of wasting decreased. Wasting rates were higher in the youngest 6-9 month age group (*Figure 9-2*).

The higher wasting rate among children 6-9 months in the DAP areas (3 percent in 2002 and 2 percent in 2006), if a true reflection of population-wide prevalence, might be explained by the rapidity with which weight-for-height reacts to infections and/or dietary deficiencies, in contrast to the longer period of time required for adverse changes in height-for-age. These rates of wasting among the 6-9 month age group may be due the transition in feeding that occurs at this time that may result in inadequate breastfeeding or poor complementary feeding practices. Increased incidence of diarrheal disease and parasites during the transition from exclusive breastfeeding to complementary feeding can produce or further aggravate wasting.

In 2006, wasting among the youngest two age groups (6-9 months and 9-12 months) declined, but it increased more among children in the next two age groups (12-15 months and 15-18 months) than in 2002.

Table 9-3: Percentage of Wasted Children by Age Range and Gender

Age range/gender	Baseline study (n=2922)	Final evaluation (n= 3231)
6-9 months	3.4%	1.8%
9-12 months	5.1	2.9
12-15 months	3.2	6.6
15-18 months	5.2	7.3
18-21 months	6.0	6.1
21-24 months	5.6	6.1
24-27 months	1.9	5.0
27-30 months	3.6	2.5
30-33 months	0.7	1.9
33-36 months	0.6	2.1
36-60 months	2.3	2.0
6-60 months	2.9%	3.6%
Boys (6-24 months)	6.2	5.8
Boys (24-60 months)	1.9	2.4
Boys (6-60 months)	3.3%	3.9%
Girls (6-24 months)	3.3	4.1
Girls (24-60 months)	2.2	2.5
Girls (6-60 months)	2.6%	3.2%

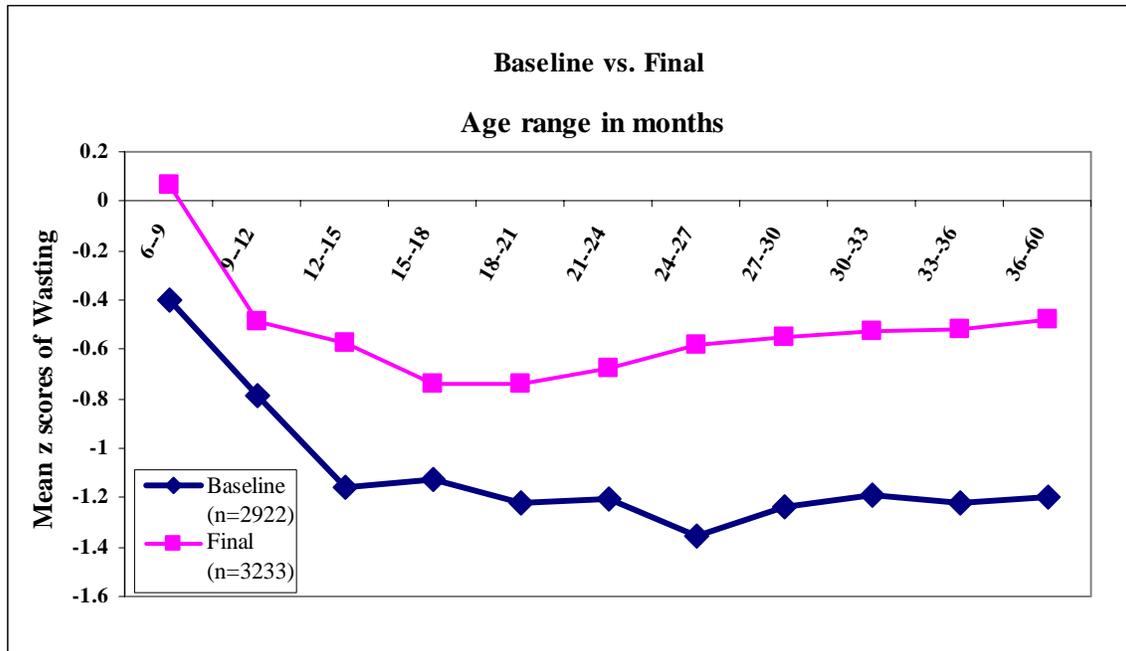


Figure 9-2: Mean WHZ Scores by Age

Table 9-4: Percentage of Severely Wasted Children by Age Range and Gender

Age range/gender	Baseline study (n= 2922)	Final evaluation (n= 3231)
6-9 months	0.0%	0.4%
9-12 months	0.0	0.0
12-15 months	0.3	0.0
15-18 months	0.9	0.3
18-21 months	0.0	0.4
21-24 months	0.6	0.4
24-27 months	0.0	0.0
27-30 months	0.5	0.0
30-33 months	0.0	0.0
33-36 months	0.0	0.0
36-60 months	0.1	0.0
6-60 months	0.2%	0.1%

Boys (6-24 months)	0.6	0.5
Boys (24-60 months)	0.3	0.0
Boys (6-60 months)	0.4%	0.2%

Girls (6-24 months)	0.0	0.1
Girls (24-60 months)	0.0	0.0
Girls (6-60 months)	0.0%	0.1%

C. Underweight

According to UNICEF (2006), 7 percent of children in Latin America and 27 percent of children worldwide are underweight. Prevalence of underweight children in the CS service areas remained relatively stable between 2002 and 2006, at 21 percent and 23 percent respectively (Table 9-5). The overall rates of underweight in 2002 and 2006 were statistically compared, and there was no difference. Slightly more boys were underweight in 2006 than girls (23 percent vs. 22 percent respectively), similar to the 2002 gender prevalence (21 percent for boys, 20 percent for girls.)

Low weight-for-age (underweight) among children 6-9 months is fairly uncommon, but the prevalence of underweight increases rapidly for the two successive age groups. In 2006, 10 percent of children 6-9 months in the CS service areas were underweight, with that rate increasing by 10 percentage points for children 9-12 months, and 4 percentage points for

children in the 12-15 month range. Prevalence of underweight peaked at 32 percent for children 24-27 months, as compared to the high point of 26 percent at 21-24 months in 2002.

Table 9-5: Underweight Children by Age Range and Gender

Age range/gender	Baseline study (n= 2922)	Final evaluation (n= 3230)
6-9 months	8.3%	10.0%
9-12 months	13.5	20.4
12-15 months	22.1	24.6
15-18 months	20.0	23.8
18-21 months	24.0	25.9
21-24 months	25.7	24.5
24-27 months	25.1	31.8
27-30 months	24.8	28.2
30-33 months	22.2	20.6
33-36 months	20.4	19.1
36-60 months	20.0	22.4
6-60 months	20.6%	22.6%
Boys (6-24 months)	21.9	23.3
Boys (24-60 months)	20.7	23.1
Boys (6-60 months)	21.1%	23.2%
Girls (6-24 months)	16.6	19.9
Girls (24-60 months)	21.8	24.2
Girls (6-60 months)	20.1%	22.4%

Severe underweight in the study population (*Table 9-6*) increased slightly from 3.8 percent in 2002 to 4.3 percent in 2006. This is roughly on par with the national average of four percent prevalence of severely underweight children under five (UNICEF 2006). The low rates of severe underweight in the 18-21 month group both at the baseline and final evaluation are based on small numbers of cases, and thus should not be over-interpreted.

Table 9-6: Severely Underweight Children by Age Range and Gender

Age range/gender	Baseline study (n= 2922)	Final evaluation (n= 3230)
6-9 months	3.4%	1.1%
9-12 months	3.4	6.7
12-15 months	4.9	6.2
15-18 months	4.5	5.3
18-21 months	1.4	2.6
21-24 months	3.7	6.1
24-27 months	5.5	5.4
27-30 months	7.5	3.4
30-33 months	2.9	5.3
33-36 months	2.7	5.2
36-60 months	3.4	3.2
6-60 months	3.8%	4.3%
Boys (6-24 months)	4.4	5.3
Boys (24-60 months)	3.6	3.1
Boys (6-60 months)	3.8%	4.1%
Girls (6-24 months)	2.5	4.0
Girls (24-60 months)	4.2	4.7
Girls (6-60 months)	3.7%	4.4%

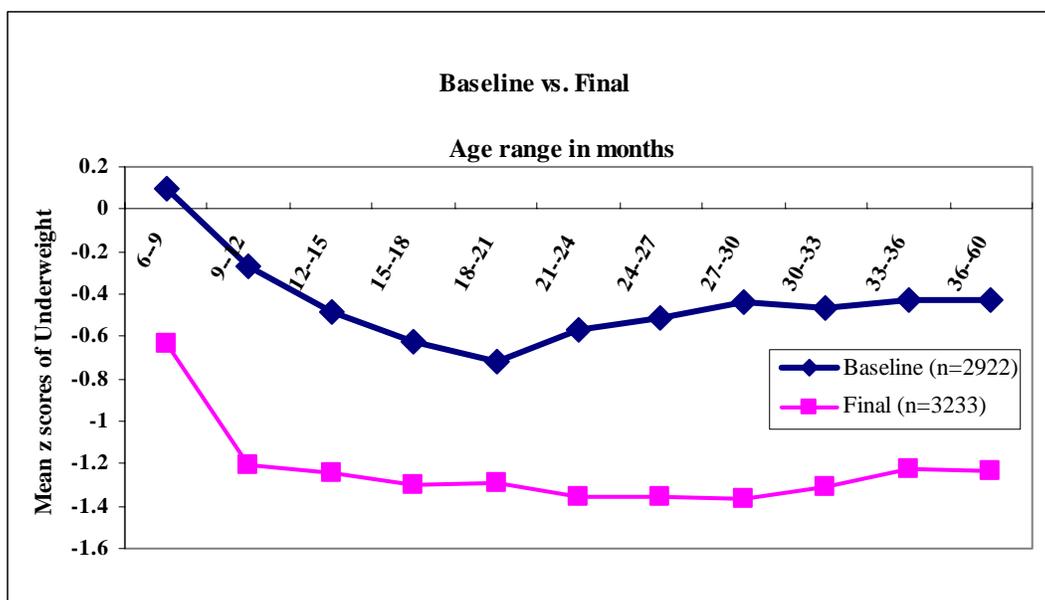


Figure 9-3: Mean WAZ Scores by Age

D. Title II Program Participation and Child Growth

Approximately one in nine households interviewed in 2006 reported that they participated in an agricultural activity organized by the CS in their community in the previous 12 months. Among these households, stunting appears to be inversely correlated with the extent of their engagement in those agricultural activities (Table 9-7). Stunting rates are lower in households in which a family member has participated in at least 18 sessions of agricultural activities, as compared to those who participated in eight sessions or fewer. Participation in agricultural activities at least nine times over the preceding 12 months was associated with a lower rate of underweight.

Table 9-7: Malnutrition by Time Spent on Agricultural Activities, 2006

Time range	Malnutrition		
	Stunting (n=3211)	Wasting (n=3212)	Underweight (n=3211)
Do not participate	25.2%	3.7%	23.0
1-8 times	29.7	2.5	23.9
9-17 times	25.3	2.4	18.7
18 times or more	21.9	2.7	19.9

Table 9.8 shows that increased frequency of attendance at health sessions in the previous 12 months was not related to rates of stunting, wasting, or underweight. This finding is not surprising in that two hypotheses about this relationship would predict results in opposite directions. If health activities are being targeted to those most in need, those attending health

sessions would be expected to have higher rates of stunting, wasting, or underweight. On the other hand, if health sessions are effectively addressing issues related to malnutrition, those attending would be expected to have lower rates of malnutrition.

Table 9-8: Malnutrition by Time Spent in Health Programs, 2006

Malnutrition			
Time range	Stunting (n=3221)	Wasting (n=3222)	Underweight (n=3221)
Do not participate	24.3%	3.8%	20.4%
1—8 times	25.2	2.8	25.1
9—17 times	26.5	4.1	23.6
18 times or more	24.8	3.6	21.3

E. Other Factors Associated with Child Growth

Table 9-9 and Table 9-10 indicate that rates of stunting are associated with household food insecurity. Stunting is more prevalent among households reporting scarcity of food in the last 12 months than in those where food security is not deemed to be an issue. Another interesting finding is that households who reported having enough food still had a stunting rate of 15.3%, suggesting that underlying and basic causes of malnutrition, such as sanitation and hygiene and primary health care, must be addressed to sufficiently improve the nutritional status of children under five. Even with adequate food quantity, chronic malnutrition is still high in these communities, indicating that programs aimed at improving food availability and access alone will not improve chronic undernutrition.

Table 9-9: Malnutrition by Reported Food Security, 2006

Malnutrition			
Food security (last 12 months)	Stunting (n=3221)	Wasting (n=3222)	Underweight (n=3221)
Not enough food in some months	25.7%	3.7%	23.2%
Enough food	15.3	0.7	9.3

Table 9-10: Malnutrition by Reported Food Shortage, 2006

Malnutrition			
Months of food shortage	Stunting (n=3230)	Wasting (n=3231)	Underweight (n=3230)
0 months	16.4%	1.2%	9.1%
1-3 months	27.1	3.5	24.5
4-8 months	26.5	3.4	23.9
9-12 months	24.8	4.0	22.6

Table 9-11 shows the relationship between birth interval from a previous child and rates of stunting and underweight. Children without an older sibling had the lowest rates of stunting and underweight. For children with an older sibling, the larger the birth interval was between children, the lower were the rates of stunting and underweight.

Table 9-11: Percentage of Children Stunted and Underweight by Birth Interval

(prior sibling to reference child), 2006

Birth interval	Stunting (n=2877)	Underweight (n=2877)
No prior sibling	21.8%	19.8%
Less than 2 years	30.8	27.9
2-3 years	27.1	26.0
3-5 years	24.3	21.6
More than 5 years	22.0	17.4

We examined infant and young child feeding practices in relation to child growth, and the patterns appear to be similar in 2002 and 2006. Results of the final evaluation are presented in Table 9-12 for stunting and for underweight. Continuing to breastfeed until 24 months and complementary feeding with the correct frequency appear to be protective of child growth. Lower percentages of children were stunted or underweight than children who had been weaned or never breastfed or not been given enough complementary feedings on the day prior to the interview. Fewer children who received a bottle on that day were stunted or underweight than those who did not, a finding that is hard to interpret and probably is confounded by SES.

Table 9-12: Percentage of Stunted and Underweight Children by Feeding Practice, 2006
(Age 6-24 months)

Feeding practice	Stunted (n=1328-1416)	Underweight (n=1328-1416)
Continued breastfeeding		
Currently breastfed	18.6%	20.6%
Not currently breastfed	30.4	24.4
Complementary feeding		
Minimum feeding frequency met	19.5%	18.9%
Minimum feeding frequency not met	22.5	22.9
Bottle use		
Bottle use	17.7%	17.7%
No bottle use	21.7	21.8

F. Correlation and Regression Results Related to Stunting

In order to further understand the causes of stunting, the evaluation examined the bivariate correlations of height-to-age z-scores in 2006 with a range of other measures. This was done in two ways. The first used the household (child) as the unit of analysis. Interpreting the results from such analyses is somewhat complex because the nature of the cluster sample may introduce correlation among cases which may not be present in a purely random sample of the same population. The second approach used the community as the unit of analysis (i.e., the number of cases was 105). This approach required the calculation of averages at the community level. The advantage of this approach is that the cases are a random sample and are independent, but the obvious disadvantage is that the number of cases limits the power of analyses and the ability to perform detailed multivariate analysis.

Table 9-13 shows the bivariate correlations of a range of variables with height-to-age z-scores at the household (child) level. With the exception of a composite measure of household assets ($r = .230$), the correlations were quite modest. Among the other variables, the largest correlations were with whether or not the household had an improved latrine (.137), the birth interval between the target child and the previous child (.130), the age of the child (-.100), the number of children under five years of age in the household (-.098), the number of prenatal visits by the child's mother (.094), use of correct hand washing techniques by the mothers (.082), whether the household had access to a protected water source (.080), household participation in any food distribution program (-.075), and dietary diversity of the food given to the child in the previous day (.074).

A special note should be made concerning the small negative correlation (-.075) between height-to-age z-score and household participation in any food program. There are two likely causes for a correlation between these two variables, and these causes would influence the correlation in opposite directions. To the extent that CSs are targeting food distribution to mothers and children most in need, one would expect a negative correlation between the

variables. To the extent that past food programs positively affected child nutritional status, one would expect a positive correlation. The small negative correlation that resulted suggests that CS targeting of those most in need was effective, but that the food distribution program was insufficient to fully meet the food needs of those served. This interpretation is supported by the data on household food insecurity presented in Chapter 4.

Table 9-13: Correlations of Mean 2006 Height to Age z-Scores with Variables at the Household (Child) Level, 2006

Child variable	Correlation coefficient (n=2074-3233)	Mother/Household variable	Correlation coefficient (n=2074-3233)
Age in months	-0.100	Mean composite score of domestic assets	0.230
Dietary diversity scale	0.074	Improved latrine	0.137
Child fully vaccinated	-0.059	Birth interval in months with previous child	0.130
Gender	0.053	Number of children under 5 in the household	-0.098
Number of solid or semi-solid feedings in past 24 hours	0.049	Number of pre-natal care visits	0.094
Diarrhea in the past two weeks	-0.047	Use of correct hand washing techniques	0.082
Fever in the past two weeks	-0.034	Protected source of drinking water	0.080
Cough in the past two weeks	0.013	Participation in food distribution program	-0.075
		Female head of household	0.061
		Use of correct water treatment methods	-0.038
		Received post-natal care	-0.033
		Number of months of food shortage	-0.023
		Amount of involvement in agricultural activities	0.011
		Amount of involvement in health activities	0.003

The factors with the largest bivariate correlations plus the square of the age and gender of the child (which were used in the baseline study) were entered into a multiple regression to further examine the relationship among predictors of height-to-age z-scores. The evaluation team believes that caution should be applied to interpreting these findings because: (a) regression results with a clustered sample may not reflect the results for a random sample; (b) correlation and regression values can be strongly influenced by the precision of measurement for particular variables; (c) correlation and regression assume linear relationships among variables, which may not exist; and (d) regression coefficients are strongly influenced by the particular variables included in the analyses.

The results of this regression are shown in *Table 9-14*. All of the factors entered with the exceptions of dietary diversity, number of children under age 5, and number of pre-natal visits were shown to be statistically significant independent predictors of 2006 mean height-to-age z-scores.

Table 9-14: Regression on 2006 Mean Height to Age z-Scores with Variables at the Household (Child) Level, 2006

Variable	Standardized coefficient (n=1967)	T value (n=1967)
Age of the child	-0.313	-3.212*
Age squared	0.208	2.137*
Gender of the child	0.048	2.243*
Length of birth interval in months with previous child	0.074	3.254*
Dietary diversity scale	0.005	0.215
Protected source of drinking water	0.058	2.670*
Improved latrine	0.055	2.472*
Number of children under 5 in the household	-0.037	-1.651
Composite scores of domestic assets	0.210	9.071*
Number of pre-natal visits	0.040	1.860
Use of correct hand washing techniques	0.072	3.245*
Participation in any food distribution programs	-0.112	-5.070*

* p < 0.05

Adjusted R square = 0.115, F=21.076, p<0.05

A second set of analyses examined factors associated with mean height-to-age z-scores at the community level. *Table 9-15* shows the bivariate correlations for a range of variables with mean

height-to-age z-score in 2006. It should be noted that the largest correlation was with mean height-to-age z-score in 2002 ($r = .692$). Such a pre-post comparison could be made at the community level because the same communities were included in 2002 and 2006, but could not be made at the household level because different households (and children) were included in the two data collections. The implication of this finding is that almost half of the variation in mean height-to-age z-scores in 2006 can be explained by those same mean scores in 2002.

Table 9-15: Correlations of Mean 2006 Height to Age z-Scores with Variables at the Community Level, 2006

Child variable	Correlation coefficient (n=105)	Mother/Household variable	Correlation coefficient (n=105)
Mean height to age z score (baseline)	0.692	Mean composite score of domestic assets (final)	0.534
Mean height to age z score (final minus baseline)	0.445	Percentage of households with improved latrine (final)	0.439
Mean level of dietary diversity (final)	0.382	Distance from household to the nearest town (final)	-0.335
Percentage of children with diarrhea (final)	-0.294	Percentage of households with protected source of drinking water (final)	0.261
Mean birth interval in months with previous child (final)	0.270	Percentage of women receiving pre-natal care (final)	-0.148
Mean number of solid or semi-solid feedings in past 24 hours (final)	0.207	Mean months of food shortage (final)	0.070
Percentage of children with cough (final)	0.110	Percentage of households participating in food distribution program (final)	-0.070
Percentage of children fully vaccinated (final)	-0.106	Percentage of women receiving post-natal care (final)	-0.055
Percentage of children with fever (final)	0.017	Mean involvement in agricultural activities (final)	0.021
		Mean involvement in health activities (final)	0.003

The other variables showing relatively high correlations with mean height-to-age z-scores in 2006 were the mean of a composite measure of domestic assets (.534), the percentage of households in the community with an improved latrine (.439), the mean on the measure of dietary diversity of foods being given to children (.382), the distance of the community to the nearest town (-.335), the percentage of children with diarrhea in the past two weeks (-.294), the mean birth interval between children (.270), the percentage of households with a protected water source (.261), and the mean number of solid/semi-solid feedings given to children in the previous 24 hours (.207).

These variables were entered into a multiple regression to examine the relationship among predictors of mean height-to-age z-scores. The results are shown in *Table 9-16*. Only the 2002 mean height-to-age z-scores and the distance to the nearest town were shown to be statistically significant independent predictors of 2006 mean height-to-age z-scores, though the measures of mean household assets and percentage of children with diarrhea approached statistical significance as predictors.

Table 9-16: Regression on Mean 2006 Height to Age z-Scores with Variables at the Community Level

Variable	Standardized coefficient (n=105)	T value (n=105)
Mean height for age z score (final)	0.510	6.328*
Percentage of children with diarrhea (final)	-0.118	-1.665
Mean birth interval in months with previous child (final)	0.010	0.133
Mean number of solid or semi-solid feedings in past 24 hours (final)	0.101	1.461
Mean level of dietary diversity (final)	0.058	0.676
Percentage of household with protected source of drinking water (final)	0.024	0.327
Percentage of households with improved latrine (final)	0.023	0.274
Mean distance from household to the nearest town (final)	-0.154	-2.258*
Mean composite scores of domestic assets (final)	0.188	1.892

* p < 0.05; Adjusted R square = 0.563, F= 15.916, p<0.05

CHAPTER 10: ANALYSES BY CS

This chapter presents a breakdown of the results of the baseline and final evaluation studies by each of the four Cooperating Sponsors (CSs). All of the descriptions and analyses by CS are presented together in this chapter to provide a coherent picture of whether and how differences in programming approaches were related to program outcomes.

All the CSs are concerned with children less than 5 years of age and pregnant and lactating mothers. All provide immunizations for children and all distribute food rations, although eligibility criteria vary. All also provide training to community health workers and community based health and nutrition education, though again the details of their approaches differ. One includes a micro-finance component (CRS), one includes encouraging home gardens as a source of food and income (SAVE), and two explicitly address water and sanitation, but one (CRS) through infrastructure improvements (e.g., latrines and cisterns) and the other through home water purification (World Vision). However, the implementation of activities is handled differently by the various CSs. CARE, CRS, and World Vision are directly operational (although CRS works through CARITAS for its agricultural component, and World Vision partners with CIAT in agricultural demonstration plots), while Save the Children implements its health and agricultural activities through national partners (MARCH, Hospital Albert Schweitzer, and Hospital Claire Heureuse). A brief description of the health and nutrition activities of each CS was presented in Chapter I.

A. Household Characteristics and Program Participation by CS

This section describes differences among the CSs in terms of household characteristics and participation in programs sponsored by the CSs. Data are presented from both the baseline study (if available) and the final evaluation by CS. Statistical comparisons between baseline and final evaluation results are made for each CS on key outcome variables, but statistical comparisons are not made comparing results across CSs. Because of the large number of statistical comparisons being made (one for each CS and one overall for each variable), in this chapter differences between baseline and final results are only highlighted if they reach a statistical probability level of $p < .01$ ⁴¹.

⁴¹ The statistical significance level ($p < .05$) generally used in this report represents the likelihood that a tested difference is due to chance. Thus, a statistically significant finding at the $p < .05$ level means that there is no greater than one in twenty chance that the observed difference is due to chance. However, when more than one comparison is being made, the probability that at least one such result is due to chance is much higher. For example if 20 such comparisons are being made, the odds are that there will be at least one 'statistically significant' but chance result.

In order to deal with this issue, statisticians often apply a Bonferroni correction, which takes the overall significance level, divides it by the number of comparisons being made, and applies that new significance level to all of the comparisons. In this chapter, we have taken the number of comparisons being made on a single outcome variable (five comparisons, one for each of the four CSs and one overall) and applied the Bonferroni correction. Thus, we do not report a statistically significant result unless the probability level for that result is less than $p < .01$. We believe that this is a reasonable compromise. A more liberal approach would be not to apply the correction, and to accept that one in twenty 'statistically significant' findings was due to chance. A more conservative approach would be to apply the Bonferroni correction so that all comparisons on a particular table (one table includes 25 comparisons) were made using a single adjusted significance level (e.g., divide .05 by 25 and only report results with a statistical significance level of $p < .002$).

Table 10-1 shows the home construction materials of houses in the areas served by the CSs. Houses in the CRS area were more likely in both 2002 and 2006 to have concrete or masonry floors, while houses in the CARE area were more likely to have thatch roofs. Metal roofs were more common in 2006 than 2002, primarily because of a difference in the CARE area.

Table 10-2 shows the sources of drinking water and *Table 10-3* shows the latrine types of houses by CS. There were no statistically significant changes over time for any of the CSs in the percentages of homes with protected water sources or homes with improved latrines. CRS is the only CS that explicitly has increased access to potable water and sanitation facilities as an intermediate result, which may explain why homes in the CRS area were most likely in both 2002 and 2006 to have improved latrines.

Table 10-4 shows the assets of households in the four areas. Again, there were no statistically significant changes between 2002 and 2006 for any of the CSs in the mean number of household assets.

Table 10-5 shows the levels of reported food shortages in 2006 for the CSs. There were very comparable levels of shortages in the four areas. The average number of months of food shortage ranged from 7.5 months over the past year for households in the CARE and World Vision service areas, to 8.1 months in the areas served by SAVE and CRS.

Tables 10-6 and 10-7 show the levels of reported participation by CS in health and agriculture programs in the 12 previous months. Households in the CARE area were least likely to report participation in health activities, while those in the World Vision and CARE areas were most likely to report participation in agricultural activities.

Table 10-8 shows levels of participation in food distribution programs. The data clearly show a substantial increase in the percent of households participating in a food distribution program from 2002 to 2006, and that those in the World Vision and CRS areas reported the highest levels of participation in food distribution programs in 2006. However, it is important to note that the meaning of the data for 2002, and hence the changes between 2002 and 2006, is not entirely clear. The Title II DAP program in Haiti from 1996 to 2001 emphasized mainly school feeding and also included MCHN, micro-credit and Food for Work activities. During that period the program was implemented by two of the current four implementing CSs, CARE, and CRS. Assuming that the reported 2002 data are a reflection of participation under the previous program cycle, it is intriguing that, despite the transition in the design and content of the Title II programs to the current program model, which virtually eliminates school feeding and emphasizes MCHN and agricultural programming, the percentage of households participating in food distribution programs by the CSs has risen dramatically.

We would further note that a total of 525 statistical comparisons of baseline versus final results were made in this chapter. Thus, without the correction, a total of approximately 26 'statistically significant' but chance results would have been expected. Even with the correction, approximately five of the findings reported as statistically significant in this chapter are likely due to chance.

Table 10-3: Adult Latrine Types by CS

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Latrine type	(n=761)	(n=745)	(n=634)	(n=780)	(n=2920)	(n=800)	(n=808)	(n=816)	(n=809)	(n=3233)
No toilet	55.2%	39.2%	65.3%	57.7%	56.1%	47.7%	52.4%	60.6%	61.5%	55.9%
Pit in the open air	34.8	12.3	22.7	31.6	26.0	33.8	12.4	26.8	17.3	23.7
“Improved” latrine	9.7	47.6	11.8	10.4	17.5	14.0	31.8	7.5	17.4	16.0
Water closet (WC)	0.1	0.1	0.0	0.1	0.1	0.4	0.1	0.1	0.0	0.2
Neighbor’s toilet & other	0.2	0.9	0.2	0.1	0.4	4.2	3.3	5.0	3.9	4.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Improved latrine	9.7%	47.5%	11.8%	10.4%	17.5%	14.4%	31.9%	7.6%	17.4%	16.1%

Table 10-4: Household Asset by CS

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Household asset	(n=761)	(n=743)	(n=635)	(n=780)	(n=2919)	(n=800)	(n=808)	(n=816)	(n=809)	(n=3233)
Cooking pot	97.3%	98.4%	100.0%	99.4%	98.9%	99.8%	99.6%	99.2%	99.5%	99.5%
Bed	87.4	94.0	96.6	95.0	93.4	96.8	98.1	96.5	97.3	97.1
Table	78.0	90.2	94.2	92.6	88.9	89.5	92.2	91.7	93.0	91.5
Dresser	27.2	37.0	22.0	18.3	25.2	34.0	42.1	32.1	28.6	33.6
Chair(s)	78.6	94.9	91.0	85.9	87.3	90.4	96.7	89.6	90.7	91.4
Radio	31.3	30.1	33.6	28.7	31.2	41.0	43.9	42.0	44.0	42.6
Poultry	57.6	73.3	68.4	70.8	67.1	66.3	84.6	62.5	73.4	70.1
Mule/horse/ass	27.7	36.5	27.1	42.9	32.7	43.1	45.8	25.4	34.5	35.9
Ox	10.1	34.8	31.3	35.5	27.5	15.8	46.8	26.3	30.0	28.2
Bike/small boat	6.5	10.5	17.7	8.4	11.3	4.6	15.6	18.6	10.5	12.6
Motorcycle/sail boat	1.9	0.9	1.0	1.5	1.3	3.0	3.1	3.4	3.0	3.2
Telephone	0.3	0.1	0.2	0.5	0.3	6.5	7.6	7.2	5.6	6.7
Television	0.7	0.8	0.5	0.7	0.7	0.5	1.9	1.1	2.5	1.4
Refrigerator	0.2	0.7	0.4	0.1	0.3	0.1	0.7	0.5	0.2	0.4
Truck/car	0.3	0.8	0.5	0.2	0.4	0.6	1.0	0.3	0.5	0.5
Mean number of assets	5.1	6.0	5.8	5.8	5.7	5.9	6.8	6.0	6.1	6.1

* Percentages do not add to 100 percent because multiple responses are possible.

Table 10-5: Food Shortages by CS, 2006

	CARE	CRS	SC/US	WVI	Total
Number of months	(n=800)	(n=808)	(n=816)	(n=809)	(n=3233)
0 months	1.8%	5.2%	3.9%	7.8%	4.5%
1-4 months	7.2	4.0	4.4	9.5	6.2
5-8 months	57.1	32.0	33.8	26.2	37.7
9-12 months	33.9	58.8	57.8	56.5	51.5
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Mean	7.5	8.1	8.1	7.5	7.8

Table 10-6: Participation in Health Programs by CS, 2006

	CARE	CRS	SC/US	WVI	Total
Program	(n=786-806)	(n=798-806)	(n=805-813)	(n=805-807)	(n=3218-3225)
Private clinic for pregnant women	16.1%	37.2%	21.1%	35.2%	26.1%
Program for women on delivery and nursing	6.6	41.8	25.0	35.7	25.9
Rally post	40.4	85.1	72.0	89.2	70.3
Mobile clinic	3.2	3.1	13.2	42.9	15.7
Program giving food to children	6.2	20.5	32.5	45.8	26.6
Mother's club	6.8	21.4	6.9	69.9	24.2
Ti Foyer program	0.2	0.3	8.0	1.9	3.1
Home garden program	0.2	0.0	1.0	8.0	2.2
Other activities supported by CS	1.4	0.9	0.8	9.4	2.9
Any household member took part in health program	46.4%	88.0%	75.7%	91.8%	74.1%

*Percentages do not add to 100 percent because multiple responses are possible.

Table 10-7: Participation in Agricultural Programs by CS, 2006

Program	CARE (n=790-794)	CRS (n=792-802)	SC/US (n=814-815)	WVI (n=795-804)	Total (n=3191-3215)
Agricultural grouping	9.9%	1.4%	2.6%	15.0%	7.1%
Training about group organization	11.1	2.4	2.9	21.4	9.2
Training about ground conservation	8.7	1.9	3.1	18.4	7.9
Training about seedbeds or grafting	10.4	2.1	1.7	22.3	8.8
Seed distribution program	10.2	0.7	1.3	18.8	7.6
Seedling distribution program	11.4	1.2	1.8	20.6	8.6
Seedbed program	8.0	1.0	1.0	18.5	6.9
Garden vegetable program	4.2	0.4	0.5	11.4	4.0
Breeding animal health program	5.4	0.9	1.7	15.2	5.6
Marketing program	1.9	0.4	0.8	3.8	1.7
Activities of ground conservation	6.0	0.9	1.6	15.1	5.7
Other agricultural activities	1.4	0.1	0.1	4.2	1.4
Any household member took/takes part in agricultural activities	18.1%	4.6%	4.9%	26.2%	13.2%

* Percentages do not add to 100 percent because multiple responses are possible.

Table 10-8: Participation in Food Distribution Programs by CS

Program	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
	(n=668-752)	(n=595-727)	(n=631-816)	(n=543-622)	(n=2472-2869)	(n=705-799)	(n=691-808)	(n=631-816)	(n=511-806)	(n=2641-3229)
Received food from a program for pregnant women	18.8%	62.6%	0.4%	20.5%	20.8%	18.9%	74.3%	40.6%	72.7%	48.8%
Received food from a program for lactating women	15.4	32.6	0.5	28.4	16.6	17.0	66.7	44.3	77.5	49.4
Any family members took part in a program distributing food to children in the past 12 months	N/A	N/A	N/A	N/A	N/A	6.2	20.5	32.6	45.8	26.6
Currently participated in a program distributing food to children	10.6	8.7	0.6	28.1	11.1	2.5	3.4	19.3	26.7	13.8
Previously participated in a program distributing food to children	N/A	N/A	N/A	N/A	N/A	10.1	2.1	29.0	59.1	23.2
Participation in any of these food programs	27.3%	65.4%	1.8%	38.9%	28.5%	32.8%	80.6%	57.7%	90.5%	63.4%

B. Health and Nutrition Services and Outcomes

In this section, comparisons are made among CSs on key measures of health services and outcomes and on nutrition outcomes.

Table 10-9 shows the percentages of women who reported receiving pre-natal and post-natal care by CS. There were statistically significant increases in the percentages of women receiving pre-natal care in the SC/US and World Vision areas, and statistically significant increases in all four areas in the percentages of women receiving post-natal care. It was difficult for CARE and CRS to produce improvements in pre-natal care because rates were already high in 2002. *Table 10-10* shows the number of prenatal visits for women in the four areas. In 2006, more than 80 percent of women in all four areas reported three or more visits.

Table 10-11 shows the interval in months between the birth of the target child and the previous child. There was a statistically significant increase between 2002 and 2006 in the birth interval for all four CSs, ranging from an average increase of 9.1 months in the area served by CARE to 11.3 in World Vision's service area...

Table 10-12 shows the number of months that children ages 24-60 months were reported to be breastfed. The amount of time was similar among the four CSs, and it did not change appreciably from 2002 to 2006 for any CS or overall.

Table 10-13 shows the percentages of children ages 6-24 months who received the recommended minimum frequency of feeding and the mean number of such feedings by CS. There were no statistically significant changes between 2002 and 2006 in the number of such feedings for any of the CSs or overall.

Table 10-14 shows the number of children receiving minimum food group diversity and the mean number of dietary categories received by children in the four areas. There were no statistically significant changes between 2002 and 2006 in the number of dietary categories received by children for any of the CSs.

Table 10-15 shows the percentages of children ages 6-24 months meeting all three standards for adequate feeding (receiving breast milk or milk products, frequency of feeding, and food group diversity). There were statistically significant increases on this measure for CARE, CRS, and SAVE, and a decrease for World Vision. The decrease for World Vision was largely based on a lower number of reported feedings of semi-solid and solid foods in 2006.

Table 10-16 shows the percentages of children who were fully vaccinated and who received Vitamin A supplementation by CS. There were statistically significant increases between 2002 and 2006 for three of the 4 CSs on vaccination and all 4 CSs on Vitamin A supplementation. Those in the CARE area had a small increase in vaccination rates that was not statistically significant.

Table 10-17 shows the percentages of children by CS who were reported to have diarrhea, cough, and fever in the previous two weeks. There were no statistically significant changes between 2002 and 2006 for any of the CSs on these three measures

of illness, nor in a composite measure of “any illness” during the period. Children in the CARE area were more likely to have “more than one illness” in 2006 than in 2002.

Table 10-180 shows the quantity of food that mothers said that they provided to children experiencing diarrhea, and *Table 10-19* shows the quantity of food that mothers said that they provided to children after experiencing an episode of diarrhea. The number of cases for specific CSs is small, but CRS and World Vision appear to have been particularly effective in encouraging mothers to provide the same or more food during episodes of diarrhea. All of the CSs showed an increase between 2002 and 2006 in the amount of food provided after an episode of diarrhea.

Table 10-20 shows the rates of stunting, wasting, and underweight by CS, and *Table 10-21* shows the corresponding mean z scores on those variables. There were no statistically significant changes between 2002 and 2006 for any of the CSs on these six measures.

In summary, though there were significant differences in the intervention approaches used by the CSs and in the populations being served, there were few differences in the outcomes that they achieved. All of the CSs showed increases in the receipt of pre-natal and post-natal services, in birth spacing of children, in full immunization of children, and in Vitamin A supplementation. None showed statistically significant changes in frequency of feeding semi-solid/solid foods, food group diversity, rates of diarrhea, cough, and fever, rates of stunting, wasting, and underweight, or z-scores related to malnutrition. Thus the analyses by CS do not provide evidence of the superiority of any approach being applied by the CSs.

Table 10-9: Receipt of Pre-Natal and Post-Natal Care by CS

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Maternal care	(n=668)	(n=594-595)	(n=544)	(n=665-666)	(n=2471-2473)	(n=704-705)	(n=693)	(n=765-766)	(n=756-758)	(n=2923-2918)
Received pre-natal care	92.0%	91.7%	86.2%*	76.0%*	86.3%	93.9%	95.3%	94.4%*	97.3%*	95.1%
Received post-natal care	13.4*	20.7*	12.2*	25.6*	17.1*	41.5*	60.1*	49.2*	58.3*	51.4*

* Difference between the baseline and final studies is statistically significant at p<0.01 level.

Table 10-11: Birth Spacing by CS

* Difference between the baseline and final studies is statistically significant at p<0.01 level.

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Birth interval	(n=617)	(n=579)	(n=515)	(n=584)	(n=2295)	(n=692)	(n=677)	(n=760)	(n=751)	(n=2880)
No prior siblings	23.0%	20.0%	24.9%	20.9%	22.6%	24.8%	28.8%	27.0%	21.2%	25.4%
Less than 2 years	30.1	25.2	25.6	36.8	29.2	15.5	13.3	10.8	14.7	13.3
2-3 years	23.9	26.0	24.3	19.6	23.4	25.6	20.5	20.9	30.5	24.3
3-5 years	15.6	18.7	18.0	15.0	16.8	20.0	24.6	24.8	20.6	22.6
More than 5 years	7.4	10.2	7.2	7.7	7.9	14.0	12.7	16.5	12.9	14.4
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Mean number of months of birth interval	30.8*	33.4*	33.2*	29.9*	31.9	41.6*	42.3*	44.0*	41.2*	42.4

Table 10-12: Months of Breastfeeding of Children (aged 24-60 months) by CS

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Number of months	(n=398)	(n=350)	(n=355)	(n=388)	(n=1491)	(n=421)	(n=337)	(n=402)	(n=376)	(n=1536)
1-6 months	0.9	4.8	0.4	1.3	1.4	1.0	2.5	1.0	1.8	1.4
7-9 months	2.9	2.6	1.3	1.9	2.1	2.8	2.5	1.0	1.0	1.8
10-12 months	7.8	11.6	6.0	6.2	7.4	6.8	10.2	7.0	5.3	7.1
13-15 months	8.6	9.6	7.5	8.9	8.5	8.0	8.1	5.8	9.3	7.6
16-18 months	32.9	40.6	32.4	47.9	37.3	43.1	37.8	31.8	36.9	37.1
19-21 months	12.4	10.6	13.6	11.6	12.4	11.9	7.8	12.8	11.6	11.4
22-24 months	26.6	17.3	30.9	15.0	24.0	22.3	27.2	30.3	30.2	27.5
25 months or more	7.8	2.8	7.8	7.3	6.9	4.0	3.9	10.4	4.0	6.1
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Median	18.0	18.0	19.0	18.0	18.0	18.0	18.0	20.0	18.0	18.0

Table 10-13: Children (aged 6-24 months) Meeting Minimum Frequency of Feeding of Solid/Semi-Solid Foods by CS

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Number of months	(n=268)	(n=240)	(n=196)	(n=268)	(n=972)	(n=301)	(n=376)	(n=362)	(n=378)	(n=1417)
6-9 months	20.7%	30.8%	22.4%	29.5%	24.8%	23.8%	41.3%	29.9%	12.7%	28.3%
9-12 months	26.4	35.9	28.9	23.6	28.3	39.7	46.9	43.5	8.5	34.2
12-24 months	19.2	40.3	33.2	57.7	37.2	47.0	63.4	43.4	14.8	40.4
6-24 months	20.3%	38.4%	30.9%	49.0%	33.9%	41.7%	54.8%	41.5%	13.3%	37.1%
Mean number of complementary feeds	1.8	1.9	2.0	2.4	2.0	2.3	2.5	2.3	1.2	2.1

Table 10-14: Percentages of Children (aged 6-24 months) Meeting Minimum Food Group Diversity by CS

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Number of months	(n=237)	(n=181)	(n=173)	(n=219)	(n=810)	(n=281)	(n=348)	(n=342)	(n=355)	(n=1326)
6-9 months	56.2%	57.4%	70.2%	71.2%	63.7%	76.2%	78.7%	79.5%	80.0%	78.6%
9-12 months	64.7	91.9	85.0	68.2	77.4	78.6	93.7	84.2	91.0	86.6
12-24 months	70.8	85.6	88.2	87.2	82.9	90.1	95.4	93.9	95.5	93.7
6-24 months	66.6%	81.5%	84.6%	82.2%	78.5%	85.5%	90.7%	89.8%	92.3%	89.6%
Mean number of dietary types	3.4	4.1	4.6	4.3	4.1	4.2	4.5	4.4	4.7	4.4

**Table 10-15: Percentages of Children (aged 6-24 months) Meeting Minimum IYCF Standards by CS
(breastmilk or milk products provided, frequency of semi-solid/solid feedings, food group diversity)**

* Difference between the baseline and final studies is statistically significant at p<0.01 level.

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
Number of months	(n=236)	(n=180)	(n=173)	(n=217)	(n=806)	(n=276)	(n=342)	(n=342)	(n=355)	(n=1315)
6-9 months	12.4%	26.1%	20.0%	28.4%	19.8%	23.0%	37.8%	27.4%	13.0%	26.6%
9-12 months	20.4	35.3	30.0	20.5	26.6	33.9	44.4	42.0	6.4	31.9
12-24 months	13.4	29.8	24.3	39.4	26.2	28.2	47.3	32.2	11.5	28.2
6-24 months	13.9%*	29.9%*	24.5%*	35.3%*	25.0%	28.2%*	44.2%*	33.5%*	10.6%*	28.7%

Table 10-16: Children (Aged 12-60 months) Receiving Full Vaccination and Vitamin A Supplementation by CS

	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
	(n=606-657)	(n=622-653)	(n=524-560)	(n=628-673)	(n=2380-2543)	(n=670-679)	(n=611-635)	(n=658-669)	(n=657-666)	(n=2596-2649)
Full vaccination	38.8%	31.0%*	52.2%*	27.6%*	39.2%*	41.5%	58.8%*	73.1%*	78.3%*	63.4%*
Vitamin A supplementation	30.5*	50.1*	46.7*	50.3*	44.0*	59.7*	75.8*	83.4*	78.6*	74.7*

* Difference between the baseline and final studies is statistically significant at p<0.01 level

Table 10-17: Children with Illnesses during the Past 2 Weeks by CS

Illness	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
	(n=759-760)	(n=732-746)	(n=633-635)	(n=777-779)	(n=2901-2919)	(n=796-798)	(n=796-808)	(n=811-814)	(n=781-807)	(n=3189-3222)
Cough	70.9%	72.8%	66.0%	64.5%	68.2%	76.4%	65.4%	69.7%	65.6%	69.7%
Fever	45.9	42.6	47.9	42.4	45.1	61.3	39.8	54.9	47.4	52.0
Diarrhea	25.3	28.9	33.7	29.3	29.6	31.2	25.0	34.2	31.5	31.1
Any sickness	77.9	81.4	76.3	73.8	77.0	84.6	74.1	80.5	76.4	79.4
Multiple sickness	50.0*	50.5	53.3	46.7	50.4	63.7*	43.3	57.1	52.0	55.1

* Difference between the baseline and final studies is statistically significant at $p \leq 0.01$ level.

Table 10-20: Rates of Stunting, Wasting, and Underweight by CS

Indicator	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
	(n=761)	(n=746)	(n=635)	(n=780)	(n=2922)	(n=800)	(n=806-808)	(n=813-816)	(n=809)	(n=3230-3231)
Stunting	19.8%	24.6%	31.7%	25.1%	25.8%	22.8%	17.7%	30.5%	26.3%	25.2%
Wasting	2.9	2.0	3.3	3.2	2.9	3.7	3.7	3.3	3.7	3.6
Underweight	17.0	15.3	26.7	20.4	20.6	23.1	17.8	25.0	22.6	22.6

Table 10-21: Mean z-Scores of Stunting, Wasting, and Underweight by CS

Indicator	Baseline study					Final evaluation				
	CARE	CRS	SC/US	WVI	Total	CARE	CRS	SC/US	WVI	Total
	(n=761)	(n=746)	(n=635)	(n=780)	(n=2922)	(n=800)	(n=806-808)	(n=813-816)	(n=809)	(n=3230-3231)
Stunting	-1.131	-1.165	-1.456	-1.216	-1.233	-1.177	-1.060	-1.490	-1.353	-1.271
Wasting	-0.420	-0.368	-0.493	-0.465	-0.434	-0.570	-0.483	-0.497	-0.488	-0.509
Underweight	-1.065	-1.027	-1.284	-1.134	-1.121	-1.120	-1.074	-1.324	-1.236	-1.208

CHAPTER I I: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents Development Associates' summary of findings, conclusions, and recommendations for USAID's Title II program in Haiti.

A. Summary and Conclusions

Household Reported Food Insecurity

Over 80 percent of households in DAP program areas reported not having enough to eat five or more months of the year; in three of the four CS service areas this was 90 percent or more. Overall, over half (51.5 percent) of respondents reported they did not have enough food 9-12 months of the year, with an overall mean shortage during 7.8 of the last 12 months. Only five percent of households reported no shortage at any time during the year. Households that reported taking part in a supplementary food program reported levels of food insecurity similar to those reporting that they did not participate in a supplementary food program.

Neonatal and Maternal Health

At the aggregate level, the evaluation found positive improvements in maternal health care to women in the DAP service area. There were notably higher percentages of mothers in 2006 reporting having obtained a complement of key services including prenatal examination, iron supplementation, tetanus vaccination, and food compared to percentages in 2002.

- Prenatal care - There were significant increases in the percentages of women receiving pre-natal care (95 percent in 2006 versus 86 percent in 2002); these increases were in the SC/US and World Vision areas.
- Postnatal care - There were significant increases in the percentages of women receiving post-natal care (51 percent in 2006 versus 17 percent in 2002). Though not yet statistically detectable in this four-year interval, increased postnatal care should lead to improved child health outcomes over time if services are continued.
- Birth Spacing - A significant increase was found in the average interval between the birth of the reference child and the birth of the just-prior sibling. There was a statistically significant increase between 2002 and 2006 in the birth interval for all four CSs, ranging from an average increase of 9.1 months in the area served by CARE to 11.3 in World Vision's service area. Thirty-seven percent of children in 2006 met the international standard for optimal health of mothers and children of between three and five years of spacing, whereas in 2002 only 25 percent achieved this standard. This converges with findings from the community level that family planning services were more accessible in 2006 than in 2002 and, from the household respondents, that almost one-third of women now are using some method of family planning.

Infant and Young Child Feeding and Child Care Practices

Results regarding the current status of infant and young child feeding (ICYF) and of positive changes over the 4-year program period were more mixed. There was a major improvement in the percent of mothers who gave colostrum to their baby (from 65 to 83 percent), and the majority of women reported giving only breast milk on the day their baby was born. In addition,

almost all women who reported initiating breastfeeding did so within eight hours of delivery, with 43 percent doing so within one hour of birth, as compared to 24 percent of women in the baseline. Also, the findings in terms of dietary diversity were much more favorable, with 90 percent of children meeting the minimum food group diversity in 2006 as opposed to 78 percent in 2002. There was a small improvement in children 6-24 months of age who received the minimum number of semi solid/solid feedings on the day prior to the interview since the baseline survey, indicating the success of various CS interventions aimed at improving this practice.

- **Feeding Standards** - The percentage of children ages 6-24 months who were meeting all three standards for adequate feeding (receiving breast milk or milk products, frequency of feeding, and food group diversity) increased in DAP program areas of CARE, CRS, and SAVE, and decreased for World Vision. The decrease for World Vision was largely based on a lower number of reported feedings of semi-solid and solid foods in 2006.
- **Dietary Diversity** - The number of children receiving minimum food group diversity increased from 2002 to 2006; and there was also an increase in the mean number of dietary categories received by children in the four CS areas. There were no statistically significant changes between 2002 and 2006 in the number of dietary categories received by children for any of the CSs, but the increase represents an important trend.

Child Health

The evaluation found no statistically significant improvements in rates of reported child illness or in child growth indicators. Diarrhea reportedly increased slightly from 29.6% at baseline to 31.3% at final. Cough, fever, 'any illness' and multiple sicknesses also increased slightly from 2002 to 2006. Close to 80 percent of children 6-60 months in the CS service areas experienced an illness during the two weeks preceding the survey, more than half suffered from more than one illness during that period, and there was not a statistically significant change between 2002 and 2006 in this regard. Health seeking behavior improved considerably, with 70.0 percent of caregivers seeking advice when a child is ill in 2006 compared to 49.0 percent in 2002. Nearly 46 percent of caregivers reported seeking advice when their child was ill compared to 34.0 in 2002.

- **Immunization** - The percentage of children who were fully vaccinated (63 percent in 2006 versus 39 percent in 2002). The percentage of children who received vitamin A supplementation (75 percent versus 44 percent).
- **Supplementation** - There were statistically significant increases between 2002 and 2006 for Vitamin A supplementation.
- **Care Seeking for Child Illnesses** - Eighty-five percent of respondents reported that when their children are seriously ill, fathers are key in decision-making about seeking medical treatment, with a role seemingly greater than for mothers or other caretakers.
- **Child Illness** - The evaluation did not find any statistically significant changes between 2002 and 2006 in rates of childhood illness (cough, fever, and diarrhea), overall or for any of the CSs. Nearly 80 percent of children 6-60 months of age were reported to have had an illness during the two weeks prior to interview. The evaluation did not identify any variables at the child/household level other than age of the child that were strongly

correlated with childhood diarrhea, but did find a number of variables at the community level that were correlated including mean birth interval between children, percentage of households with an improved latrine, percentage of households with a protected water source and mean level of domestic assets. Of these correlates, the evaluation did not find any significant changes between 2002 and 2006 with the exception of the significant increase in birth interval.

Child Growth Indicators

There were also no significant differences between 2002 and 2006 in rates of stunting or severe stunting of children between 6-60 months of age. Height for age is a long-term, chronic symptom of malnutrition and improvement in rates of stunting depend on multiple basic and underlying causes of malnutrition. There were also no significant differences in stunting rates by gender within any of the four CS service areas. Overall, the 2002 survey found 26 percent of children between 6-60 months were stunted, with 9 percent severely stunted; and four years later the rates were essentially the same, 25 percent and 8 percent respectively. While a slight decrease in stunting occurred between baseline and final evaluation, the change did not differ when using statistical tests. The same was true with respect to wasting. In 2002 the overall rates were 3 percent wasted and 0.2 percent severely wasted, while in 2006 the rates were 4 percent and 0.1 percent, respectively. High rates of diarrhea and other childhood illnesses and continuing household food insecurity likely are contribute to the absence of change in rates of malnutrition.

Analyses by CS

Analysis by CS - Though there were significant differences in the intervention approaches used by the CSs and in the populations being served, there were few differences in the outcomes that they achieved. All of the CSs showed increases in the receipt of pre-natal and post-natal services, in birth spacing of children, in full immunization of children, and in Vitamin A supplementation. However, none showed statistically significant changes in numbers of complementary feedings; dietary diversity; rates of diarrhea, cough, and fever; rates of stunting, wasting, and underweight; or z-scores related to malnutrition. Thus the analyses by CS do not provide evidence that any approach being applied by a CSs is any more effective than another.

Further Analyses

The evaluation did find a number of variables at the community level that were correlated with diarrhea and child stunting. Correlations of prevalence of diarrhea at the community level showed moderate relationships with the mean birth interval with previous child (-.285), the percentage of households with an improved latrine (-.240), the mean of a composite of domestic assets (-.220), the percentage of households with a protected water source (-.211), and the mean number of solid/semi-solid feedings given children in the previous 24 hours (.207). Variables showing relatively high correlations to mean height-to-age z-scores in 2006 included the mean composite of domestic assets (.534), the percentage of households in the community with an improved latrine (.439), the mean on a measure of dietary diversity (.382), the percentage of children with diarrhea in the past two weeks (-.294), the mean birth interval of children (.270), and the percentage of households with a protected water source (.261).

The findings also show that of the variables that are correlated with diarrhea or stunting, there has been a positive change over the 4-year period with respect to birth spacing among mothers

of children 6-60 months, and food group diversity, and frequency of solid/semi-solid feeding among children 6-24 months. There has been no significant change with respect to increased domestic assets, households with improved latrines, households with access to protected water, or the rate of diarrhea. These findings suggest that community interventions to improve the economic circumstances of families, and provide protected water sources and improved latrines are likely to be effective in reducing diarrheal disease and child stunting.

B. Recommendations

According to the UNICEF conceptual framework of malnutrition, the two immediate causes of malnutrition in children under 5 are inadequate diet—which includes quality and quantity of food—and disease. While most households reported not having enough food most of the time, the questions related to food security were self-reported. Since markets in many of the CS interventions areas are functioning, the results of this evaluation suggest that nuanced approaches toward improving food security in Haiti are needed.

Household Food Insecurity

Cash for Work interventions focusing on potable water supply and sanitation is recommended as one way to increase household income and thereby access to food. In addition to generating cash, these activities will increase access to protected water sources and improved latrines and thereby decreasing diarrhea rates among young children, which in turn leads to improvements in growth indicators.

Neonatal and Maternal Health

- Continue pre-natal and post-natal care programs to ensure that all pregnant and lactating women have access to health care. While there were increases in all four CS program areas in post-natal care, pre-natal care must still be increased.
- Continue birth-spacing and other family planning programs as these had positive outcomes.

Infant and Young Child Feeding and Child Care Practices

- Commit to ensuring that the three IYCF standards are met, which include providing breast milk or milk products, providing minimum feeding frequency of semi-solid/solid foods, and providing minimum food group diversity. Special attention should be paid to frequency of feeding, because evaluation results show a particularly poor level of achievement on this indicator. None of the CS program areas showed statistically significant changes in frequency of feeding semi-solid/solid foods or food group diversity. The IYCF standards for supplementary feedings are: (a) for breastfed children ages 6-8 months, two feedings of solid or semi-solid food; (b) for breastfed children ages 9-24 months, three feedings; and (c) for non-breastfed children ages 6-24 months, four feedings.
- Fortify local grains with micronutrients which will improve diet quality. There were no statistically significant changes between 2002 and 2006 in the number of dietary categories received by children for any of the CSs, but the potential to improve rates of stunting by impacting diet quality is possible through flour fortification. This

recommendation was made in the 2001 Evaluation Report and the potential impact of and need for fortification remains. By fortifying with B vitamins, iron, folate and vitamin A, prevention against micronutrient malnutrition can be achieved on a national level.

Child Health

- Continue behavior change communication (BCC) and other education programs, such as Ti Foyer and the positive deviance approach, to further improve hygiene practices and health seeking behavior of beneficiary communities. Increased BCC on nutrition, health, hygiene, family planning as behavior change impact is known to take longer; while there have been increases since 2002 in health seeking behaviors and birth spacing, these efforts should be continued. Also, explore nuanced BCC approaches. For example, Ti Foyer sessions can incorporate more on diarrheal management education and be scaled up to include fathers and other family members. Diarrhea, fever, and cough incidence all increased from 2002 to 2006, indicating that while more people are accessing health services, there is still a need to decrease morbidity levels of children under five.
- Continue rally posts and other health outreach activities to achieve even better rates of immunization and supplementation coverage, given the evidence that they have positively influenced immunization levels and supplementation levels.
- Include fathers in targeting of PHC outreach activities aimed at informing the value of early treatment (and prevention) of serious child illness and malnutrition, as evidence from the evaluation shows that fathers significantly contribute to decision-making regarding when to access health care.

Child Growth Indicators

- Continue supplementary feeding for vulnerable groups including: children under five who are moderately malnourished after nutritional screening; pregnant and lactating mothers, with emphasis on the post-natal supplement; vulnerable groups such as persons living with HIV/AIDS (PLWHAs), TB patients, the elderly, etc. as needs indicate in each program area.
- Adopt community-based therapeutic care (CTC) in the existing health structure to more holistically identify and treat moderate acute and severe acute malnutrition, linking this process to rally posts and ensuring that both inadequate diet and disease are treated as immediate causes of malnutrition. Mothers' clubs can be included in CTC by volunteering to work at out-patient sites and to manufacture plumpynut or another appropriate ready-to-use-therapeutic-food (RUTF), thereby having the additional benefit of increasing household income.

Regression analysis showed that protected water source, correct hand-washing behavior, participation in food distribution program, birth interval, improved latrine and composite scores of domestic assets were all significant predictors of stunting. Improving the number of available protected water sources and latrines was mentioned in the food security recommendations and hand-washing behavior was addressed in the BCC recommendation. Birth spacing has improved and will continue to if programs are maintained for neonatal and maternal care. Also, domestic

assets can be further diversified through FFW, CFW and other income generation. Even when each of these indicators is improved, stunting will only begin to decrease when diarrheal incidence is decreased and appropriate PHC is available. While there was no study of caloric intake done, it is likely that supplementary feeding should be continued with different targeting.

APPENDIX A: REFERENCES

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APPENDIX B: BASELINE AND FINAL EVALUATION QUESTIONNAIRE VARIABLES

Variable names for the baseline study are extracted from the data files submitted. Variable names for the final evaluation are temporarily created for these tables.

Identification	
Final	Baseline
CS (name, code)	CS (name, code)
Community (name, code)	Community (name, code)
Community section (name, code)	Community section (name, code)
Locality (name, code)	Locality (name, code)
Head of the household (name, code)	Head of the household (name, code)
Number of questionnaire	Number of questionnaire
First visit (date)	First visit (date)
Second visit (date)	Second visit (date)
Codification date of visit (Day, Month, Year)	Codification date of visit (Day, Month, Year)
Who responded to the questions? (Module 1-7, number of household table)	Who responded to the questions? (Module 1-7, number of household table)
Supervisor (name, code)	Supervisor (name, code)
Control office (code)	Control office (code)
Person who entered the form (code)	Person who entered the form (code)
Surveyor conducting the interview (name, code)	
Surveyor completing the questionnaire (name, code)	

Module I Family Composition		
Final	Baseline	Description
F101	qst101	Number of lines of household table
F102	qst102	Members of family
F103	qst103	Relationship to the head of the household
F104	qst104	Sex
F105	qst105	Age
F106	qst106	Occupation
F107	qst107	Marital status
F108	qst108	Current residence
F109	qst109	Highest level of education

Module 2 Domestic Inventory		
Final	Baseline	Description
F201	qst201	Principal provider of the drinking water for the household
F202	qst202	Length of time going and taking water
F206	qst203	Place to do own needs
F208	qst205	Owner of the household or else
F209a	qst208a	Do you have a cooking pot?
F209b	qst208b	Do you have a bed?
F209c	qst208c	Do you have a table?
F209d	qst208d	Do you have a dresser?
F209e	qst208e	Do you have one or more chairs?
F209f	qst208f	Do you have a radio?
F209g	qst208g	Do you have poultry?
F209h	qst208h	Do you have mule/horse/ass?
F209i	qst208i	Do you have ox?
F209j	qst208j	Do you have a bicycle/small boat?
F209k	qst208k	Do you have a motorcycle/sail boat?
F209l	qst208l	Do you have a telephone?
F209m	qst208m	Do you have a television?
F209n	qst208n	Do you have a refrigerator?
F209o	qst208o	Do you have a car/truck?
F210	qst209	Type of fuel principally used for cooking
F211	qst210	Way of disposing trash
F212	qst212	Number of rooms household members live
F213a	qst211_1	Do you have animals in the home?
F213b	qst211_2	Do you have fecal matter in the home?
F213c	qst211_3	Do you have flies in the home?
F213d	qst211_4	Do you have garbage in the home?
F213e	qst211_5	Do you have bad smells in the home?
F214	qst212	Principal material of floor
F215	qst213	Principal material of walls
F216	qst214	Principal material of roof
F203		Which source of water do you use for domestic use?
F204		What containers do you use to go get/store water?

Module 2 Domestic Inventory		
Final	Baseline	Description
F205		The amount of water used
F207		Where do young children do their needs?
F217		Verify qst206
F218		Observation of the latrine physical state
F207		Latrine: state of cleanliness

Module 3 Participation in the Activities of DAP and Food Security		
Final	Baseline	Description
F301		In the past 12 months, have there been some months when you had enough food to cover the needs of your household?
F302		Which were the months during which you did not have enough food to meet the needs of your household?
F303a		Yesterday during the day and night, did you or another member of your household eat the following food? – grain
F303b		Yesterday during the day and night, did you or another member of your household eat the following food? – food with starch
F303c		Yesterday during the day and night, did you or another member of your household eat the following food? -- vegetables
F303d		Yesterday during the day and night, did you or another member of your household eat the following food? – fruits
F303e		Yesterday during the day and night, did you or another member of your household eat the following food? – meat
F303f		Yesterday during the day and night, did you or another member of your household eat the following food? – eggs
F303g		Yesterday during the day and night, did you or another member of your household eat the following food? – fish
F303h		Yesterday during the day and night, did you or another member of your household eat the following food? -- legumes
F301		In the past 12 months, have there been some months when you had enough food to cover the needs of your household?
F302		Which were the months during which you did not have enough food to meet the needs of your household?
F303a		Yesterday during the day and night, did you or another member of your household eat the following food? – grain
F303b		Yesterday during the day and night, did you or another member of your household eat the following food? – food with starch
F303c		Yesterday during the day and night, did you or another member of your

Module 3		
Participation in the Activities of DAP and Food Security		
Final	Baseline	Description
		household eat the following food? -- vegetables
F303d		Yesterday during the day and night, did you or another member of your household eat the following food? – fruits
F303e		Yesterday during the day and night, did you or another member of your household eat the following food? – meat
F303f		Yesterday during the day and night, did you or another member of your household eat the following food? – eggs
F303g		Yesterday during the day and night, did you or another member of your household eat the following food? – fish
F303h		Yesterday during the day and night, did you or another member of your household eat the following food? -- legumes
F303i		Yesterday during the day and night, did you or another member of your household eat the following food? – milk
F303j		Yesterday during the day and night, did you or another member of your household eat the following food? – food with grease
F303k		Yesterday during the day and night, did you or another member of your household eat the following food? – sugar
F303l		Yesterday during the day and night, did you or another member of your household eat the following food? – other food
F304		During the last 12 months, has anyone in the household taken part in agricultural activities implemented in the zone?
F305a		Is a member of the household of an agricultural grouping?
F305b		Is a member of the household in training about group organization?
F305c		Is a member of the household in training about grounds conservation?
F305d		Is a member of the household in training about seedbeds?
F305e		Is a member of the household in a seed distribution program?
F305f		Is a member of the household in a seedling distribution program?
F305g		Is a member of the household in seedbed program?
F305h		Is a member of the household in a garden vegetable program?
F305i		Is a member of the household in breeding or animal health program?
F305j		Is a member of the household in a marketing program?
F305k		Is a member of the household in the activities of ground conservation in your own garden?
F305l		Is a member of the household in activities that CS supports?
F306b1		Time spent by the first person in training about group organization
F306b2		Time spent by the second person in training about group organization
F306c1		Time spent by the first person in training about grounds conservation

Module 3		
Participation in the Activities of DAP and Food Security		
Final	Baseline	Description
F306c2		Time spent by the second person in training about grounds conservation
F306d1		Time spent by the first person in training about seedbeds
F306d2		Time spent by the second person in training about seedbeds
F306e1		Time spent by the first person in seed distribution program
F306e2		Time spent by the second person in seed distribution program
F306f1		Time spent by the first person in seedling distribution program
F306f2		Time spent by the second person in seedling distribution program
F306g1		Time spent by the first person in seedbed program
F306g2		Time spent by the second person in seedbed program
F306h1		Time spent by the first person in garden vegetable program
F306h2		Time spent by the second person in garden vegetable program
F306i1		Time spent by the first person in breeding or animal health program
F306i2		Time spent by the second person in breeding or animal health program
F306j1		Time spent by the first person in marketing program
F306j2		Time spent by the second person in marketing program
F306k1		Time spent by the first person in activities of ground conservation
F306k2		Time spent by the second person in activities of ground conservation
F306l1		Time spent by the first person in activities of agriculture that CS supports
F306l2		Time spent by the second person in activities of agriculture that CS supports
F307		Has a member of your household participate in activities of health that CS supports in the zone?
F308a		Is a member of the household in a private clinic for pregnant women?
F308b		Is a member of the household in a program for women nursing?
F308c		Is a member of the household in a station of gathering?
F308d		Is a member of the household in a mobile private clinic?
F308e		Is a member of the household in a program that gives children food?
F308f		Is a member of the household in a mother's club?
F308g		Is a member of the household in a program called "Ti-fwaye"?
F308h		Is a member of the household in a program called "jaden lakou"?
F308i		Is a member of the household in other health activities supported by CS?
F309a1		Time spent by one person in the household in a private clinic for pregnant women
F309a2		Time spent by the second person in a private clinic for pregnant women

Module 3 Participation in the Activities of DAP and Food Security		
Final	Baseline	Description
F309b1		Time spent by the first person in a program for women nursing
F309b2		Time spent by the second person in a program for women nursing
F309c1		Time spent by the first person in a station of gathering
F309c2		Time spent by the second person in a station of gathering
F309d1		Time spent by the first person in a mobile private clinic
F309d2		Time spent by the second person in a mobile private clinic
F309e1		Time spent by the first person in a program that gives children food
F309e2		Time spent by the second person in a program that gives children food
F309f1		Time spent by the first person in a mother's club
F309f2		Time spent by the second person in a mother's club
F309g1		Time spent by the first person in a program called "Ti-fwaye"
F309g2		Time spent by the second person in a program called "Ti-fwaye"

Module 4 Anthropometry		
Final	Baseline	Description
F401	qst401	Does... (child's name) have a health card?
F402	qst402	Does the mother of ... (child's name) have a health card?
F403	qst409	Number of lines of household table
F404	qst410	Name of lines of household table
F406	qst411	Age in months
F407	qst412	Date of birth
F408	qst413	Weight (kilograms)
F409	qst414	Height (centimeters)
F410	qst415	Measurement
F411	qst416	Results
F405		Sex of the child

Module 5 Pregnancy, Prenatal Care, Childbirth, Postnatal Care		
Final	Baseline	Description
F504	qst501	Were you pregnant before ... (child's name)?
F505	qst502	How many months has it between ... (child's name) and the child born

Module 5 Pregnancy, Prenatal Care, Childbirth, Postnatal Care		
Final	Baseline	Description
		before them?
F506	qst504	Were you pregnant after ... (child's name)?
F508	qst505	During the pregnancy of (child's name), did you receive antenatal care?
F509	qst506	The persons you consulted with
F510	qst507	Number of months during pregnancy when having the first prenatal consultation
F511	qst508	Number of times of consultation during pregnancy
F512	qst509	Number of months of pregnancy you passed a prenatal visit
F514	qst510	During the pregnancy, were you given or did you buy iron tablets or syrup containing iron?
F515	qst511	During the pregnancy, did you have vision problems or night blindness?
F516	qst512	During the pregnancy, did you have an injection in the arm or in the shoulder to immunize the baby to the disease of the stiff body?
F517	qst513	How many times did you receive the vaccine during the pregnancy of ... (child's name)?
F518	qst514	Who helped you during the childbirth of ... (child's name)?
F519	qst515	Where did you give birth to ... (child's name)?
F520	qst516	After the birth of (child's name), did anyone examine you?
F521	qst517	Who examined you at this time?
F522	qst518	Number of days or weeks after the childbirth you had your first examination by a health professional.
F523	qst519	Where did the first examination take place?
F524	qst520	In the first two months that followed childbirth, did you receive a dose of vitamin A?
F526	qst521	During the pregnancy, did you receive food given by a program to aid pregnant mothers?
F529	qst522	After your pregnancy, and during the nursing period of (child's name), did you receive food given to a nursing women aid program?
F501		Have you tried to use a method of planning to have children?
F502		Are you pregnant at present?
F503		Do you now follow a method of "planning" to have children as you wish?
F507		How many months after ... (child's name) was born did you become pregnant?
F513		What do you think is the minimum number of times that a pregnant women should go to have a consultation?
F525		During pregnancy, did you eat more than usually, the same or less than usual?

Module 5 Pregnancy, Prenatal Care, Childbirth, Postnatal Care		
Final	Baseline	Description
F527		How many months were you pregnant with ... (child's name) when you started to receive food from CS?
F528		How much time during this pregnancy did you receive this food?
F530		How many months after the birth of ... (child's name) did you receive the food?
F531		How many months after the birth of ... (child's name) did you receive the ration?
F532		Is there any center close to hear that has tests for AIDS?
F533		Did someone speak to you about AIDS during your prenatal visits?
F534		Did anyone offer to give you an AIDS test?

Module 6 Nourishment of the Child		
Final	Baseline	Description
F601	qst601	Who takes care of ... (child's name)?
F602	qst602	How many days of a week does this person deal with ...(child's name)?
F601	qst601	Who takes care of ... (child's name)?
F602	qst602	How many days of a week does this person deal with ...(child's name)?
F603	qst603	If this person is absent, who takes the duties?
F604	qst604	When (child's name) was born, what did you give him the first day?
F605	qst605	Did you give things other than breast milk the first day after the birth of ...(child's name)?
F606	qst606	How long after the childbirth did you put...(child's name) to suckle?
F607	qst607	How long after the childbirth did you start to breast feed...(child's name)?
F608	qst608	Have you given ...(child's name) the colostrums, or did you throw it out?
F609	qst609	Do you still nurse?
F610	qst610	For how many months you did nurse ... (child's name)?
F611	qst611	How many times did you nurse ... (child's name) the last night, between sunset and sunrise?
F612	qst612	Yesterday, how many times did you breast feed (child's name)?
F614	qst613	Did you give something to drink to ...(child's name) in a feeding bottle yesterday during the day or the night?
F615j1	qst614j1	How old was ...(child's name) in hours, when you started to give him liquids?
F615s1	qst614s1	How old was ...(child's name) in seconds, when you started to give him liquids?

Module 6		
Nourishment of the Child		
Final	Baseline	Description
F615m1	qst614m1	How old was ...(child's name) in months, when you started to give him liquids?
F615j2	qst614j2	How old was ...(child's name) in hours, when you started to give him milk and other mild products?
F615s2	qst614s2	How old was ...(child's name) in seconds, when you started to give him milk and other mild products?
F615m2	qst614m2	How old was ...(child's name) in months, when you started to give him milk and other mild products?
F615j3	qst614j3	How old was ...(child's name) in hours, when you started to give him semi-solids?
F615s3	qst614s3	How old was ...(child's name) in seconds, when you started to give him semi-solids?
F615m3	qst614m3	How old was ...(child's name) in months, when you started to give him semi-solids?
F615j4	qst614j4	How old was ...(child's name) in hours, when you started to give him solids?
F615s4	qst614s4	How old was ...(child's name) in seconds, when you started to give him solids?
F615m4	qst614m4	How old was ...(child's name) in months, when you started to give him solids?
F615j5	qst614j5	How old was ...(child's name) in hours, when you started to give him meat?
F615s5	qst614s5	How old was ...(child's name) in seconds, when you started to give him meat?
F615m5	qst614m5	How old was ...(child's name) in months, when you started to give him meat?
F615j6	qst614j6	How old was ...(child's name) in hours, when you started to give him eggs?
F615s6	qst614s6	How old was ...(child's name) in seconds, when you started to give him eggs?
F615m6	qst614m6	How old was ...(child's name) in months, when you started to give him eggs?
F615j7	qst614j7	How old was ...(child's name) in hours, when you started to give him vegetables and fruits?
F615s7	qst614s7	How old was ...(child's name) in seconds, when you started to give him vegetables and fruits?
F615m7	qst614m7	How old was ...(child's name) in months, when you started to give him vegetables and fruits?
F615j8	qst614j8	How old was ...(child's name) in hours, when you started to give him food prepared with grease/butter/oil?
F615s8	qst614s8	How old was ...(child's name) in seconds, when you started to give him

Module 6		
Nourishment of the Child		
Final	Baseline	Description
		food prepared with grease/butter/oil?
F615m8	qst614m8	How old was ... (child's name) in months, when you started to give him food prepared with grease/butter/oil?
F617a	qst615ma	Yesterday, during the morning, how many times ... (child's name) receive solid food or semi-solid food?
F617b	qst615mi	Yesterday, during noon, how many times ... (child's name) receive solid food or semi-solid food?
F617c	qst615ap	Yesterday, during the afternoon, how many times ... (child's name) receive solid food or semi-solid food?
F617d	qst615so	Yesterday, during the evening, how many times ... (child's name) receive solid food or semi-solid food?
F617e	qst615nu	Yesterday, during the night, how many times ... (child's name) receive solid food or semi-solid food?
F618a	qst616ma	Yesterday, during the morning, how many times ... (child's name) receive snacks?
F618b	qst616mi	Yesterday, during noon, how many times ... (child's name) receive snacks?
F618c	qst616ap	Yesterday, during the afternoon, how many times ... (child's name) receive snacks?
F618d	qst616so	Yesterday, during the evening, how many times ... (child's name) receive snacks?
F618e	qst616nu	Yesterday, during the night, how many times ... (child's name) receive snacks?
F619	qst617	What do you do when the meal is ready and that ... (child's name) is sleeping?
F620a - F620i	qst618_a – qst618_f	Yesterday during the night, have you given ... (child's name) the following liquids (list)?
F621j - F621z	qst619_g – qst619_	Yesterday during the night, have you given ... (child's name) the following solid food (list)?
F623	qst621	At present, do you take part in a program which gives you food for ... (child's name)?
F624		Why did ... (child's name) receive these foods?
F625		Which members of the family share the ration of food that you receive from the program?
F626		What do you think the ration does for ... (child's name)?
F627		Has ... (child's name) already participated in a program that gives nourishment?
F628		Why did ... (child's name) receive this food?
F629		The last time when ... (child's name) in food help program, how long did ... (child's name) remain?

Module 6 Nourishment of the Child		
Final	Baseline	Description
F630a		How old were they when they were in the program?
F630b		Until what age?

Module 7 Vaccination and Health of the Child		
Final	Baseline	Description
F701	qst701	Does ... (child's name) have a health card?
F702	qst702	Vaccination dates for each vaccination
F703	qst703	Has ... (child's name) received vitamin A during the past 6 months, which is not on the card?
F704	qst704	Has ... (child's name) received other vaccination that are not written on the card?
F705	qst705	Has ... (child's name) received BCG?
F706	qst706	Has ... (child's name) received the vaccination for polio?
F707	qst707	When did ... (child's name) get the first polio vaccination?
F708	qst708	How many polio vaccinations has ... (child's name) received?
F709	qst709	Has ... (child's name) received the DTPER vaccination?
F710	qst710	How many times has ... (child's name) taken the DTPER vaccine?
F711	qst711	Has ... (child's name) received an injection preventing measles?
F713	qst712	Did ... (child's name) take a vitamin A in the past 6 months?
F714	qst713	Did ... (child's name) have fever during the last two weeks?
F715	qst714	Has ... (child's name) suffered from a cough during the last 2 weeks?
F716	qst715	When ... (child's name) suffers from a cough, does he/she breath faster than normal with short and fast breaths?
F717	qst716	Verify qst713 and qst714
F718	qst717	When ... (child's name) had the fever, did you ask for advice or seek treatment for it?
F719	qst718	Where have you sought council or treatment?
F720	qst719	Verify qst715
F721	qst720	Has ... (child's name) received something to treat the cough?
F722	qst721	What did ... (child's name) receive?
F723	qst722	Verify qst714
F724	qst723	Did ... (child's name) take medication for their fever?
F725	qst724	What medicine did ... (child's name) take?

Module 7		
Vaccination and Health of the Child		
Final	Baseline	Description
F726	qst725	Has ... (child's name) had diarrhea during the past 2 weeks?
F727	qst726	Have you given anything to ... (child's name) to treat the diarrhea?
F728	qst727	What did you give?
F729	qst728	What type of oral serum did you give them?
F730	qst729	During diarrhea, did you give ... (child's name) less to drink, the same, or more than usual?
F731	qst730	During diarrhea, did you give ... (child's name) less to eat, the same, or more than usual?
F732	qst731	During diarrhea, did you give ... (child's name) less to eat, the same, or more than usual?
F733	qst732	Have you sought counsel or treatment to treat the diarrhea?
F734	qst733	Where have you sought counsel or treatment?
F735	qst734	What do you give a child when they have diarrhea?
F738	qst735	What do you do to make water good to drink?
F741	qst736	When do you think you need to wash your hands?
F742	qst737	Please show me how you wash your hands.
F743	qst738	In the past two weeks, has ... (child's name) suffered from night blindness?
F745	qst739	When your children are seriously ill, who decides to take the child to seek medical treatment?
F712		At what age do you think a child should receive all their vaccination?
F736		When a child has diarrhea, is it necessary to give them less to eat than usual, about the same amount, or more than usual?
F737		What do you do to prevent your children from having diarrhea?
F739		How many drops of chlorox do you use for each gallon of water?
F740		What do you think one needs to do to make water suitable for drinking?
F744		Has ... (child's name) received a disinfectant during the past 6 months?