FOLLOW-UP SURVEY OF NUTRITIONAL STATUS IN CHILDREN 6-29 MONTHS OF AGE, KYRGYZ REPUBLIC 2013

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LIST OF ABBREVIATIONS

AGP	1-acid glycoprotein
CDC	United States Centers for Disease Control and Prevention
CEE	Central and Eastern Europe
CIS	Commonwealth of Independent States
CRP	C - reactive protein
DHS	Demographic and Health Survey
DDPME	Department for Drugs, Procurement and Medical Equipment
Gulazyk	Local name for micronutrient powder
HAZ	Height-for-age, Z-score
Hb	Hemoglobin
Hgb	Hemoglobin
IYCF	Infant and young child feeding
IYCN	Infant and young child nutrition
KSSHP	Kyrgyz-Swiss-Swedish Health Project
LQAS	Lot Quality Assurance Sampling
MNP	Micronutrient Powder
MOH	Ministry of Health
NSC	National Statistical Committee
RBP	Retinol-binding protein
sTfR	Soluble transferrin receptor protein
UNICEF	United Nations Children's Fund
VAD	Vitamin A Deficiency
VHC	Village Health Committee
WAZ	Weight-for-age, Z-score
WHO	World Health Organization
WHZ	Weight-for-height, Z-score

INVESTIGATORS AND COLLABORATORS

This survey was administered under the Cooperative Agreement between UNICEF and the U.S. Centers for Disease Control and Prevention. Support for this survey was provided by several investigating and collaborating agencies. These include:

- UNICEF Regional Office CEE/CIS
- UNICEF Kyrgyz Republic (UNICEF Kyr)
- U.S. Centers for Disease Control and Prevention (CDC)
- Ministry of Health, Kyrgyz Republic (MoHKyr)
- National Statistics Committee, Kyrgyz Republic (NSC)

The core members of the survey team are as follows:

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- United States
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EXECUTIVE SUMMARY

This report summarizes the findings of the National Nutrition Survey conducted in the Kyrgyz Republic in July and August 2013, and presents the results for the indicators pertaining to the Gulazyk program, infant and young child nutrition, anthropometry, and biochemical markers of nutritional status. To assess changes in breastfeeding and complementary feeding practices and biochemical indicators of nutritional status following implementation of the nationwide combined Infant and Young Child Nutrition (IYCN)/micronutrient powder (MNP) program, this report also compares data from the 2009 and 2013 National Nutrition surveys. The collaborating partners for these surveys included the Ministry of Health (MOH) of the Kyrgyz Republic, the Kyrgyz Republic National Statistical Committee (NSC), United Nations Children's Fund (UNICEF)-Kyrgyzstan, Kyrgyz-Swiss-Swedish Health Project (KSSHP), and the U.S. Centers for Disease Control and Prevention (CDC).

SURVEY OBJECTIVES AND DESIGN

The major objectives of the 2013 Kyrgyz Republic National Survey of Nutritional Status in Children 6–29 months of age were to:

- Assess receipt and use of Gulazyk by children and assess trends (2011-2013)
- Assess Infant and Young Child Feeding practices
- Assess anthropometric status
- Assess the prevalence of anemia, iron deficiency anemia, iron deficiency, vitamin A deficiency in children 6–29 months of age
- Compare the 2009 and 2013 survey results to measure changes in hematologic and biochemical indicators of iron and vitamin A status after adjustment for infection/inflammation status.

Cross-sectional household surveys were conducted in 2009 and 2013. The 2013 survey was designed to collect comprehensive information on a wide range of topics related to nutritional patterns of children 6–29 months of age living in the Kyrgyz Republic (with the exception of the city of Bishkek)[1] . A pre-post survey design was used to measure changes in micronutrient status between the 2009 and 2013 National Surveys. The 2009 and 2013 surveys used similar methods for sampling and data collection. A two-stage cluster sampling design was employed using probability proportional size (PPS) methodology to select 80 clusters of primary health clinics (FAP/FGP) with 30 children aged 6–29 months in each.

Anthropometric measurements were taken and capillary blood specimens were used to measure biochemical indicators of iron status (serum ferritin and soluble transferrin receptor protein), vitamin A status (retinol-binding protein [RBP]), and inflammation status (α1-acid glycoprotein [AGP] and C-reactive protein [CRP]).

In addition to the 2009 and 2013 surveys, Lot Quality Assurance Sampling (LQAS) surveys were conducted in 2011 and 2013. These national surveys (with the exception of Bishkek city) were used to assess the implementation and acceptance of the program.

All data analyses for this report were performed by the National Statistics Center of the Kyrgyz Republic.

1 The city of Bishkek was not included because Gulazyk was not distributed there.

SUMMARY OF FINDINGS

Gulazyk MNP Program

In 2009, the Ministry of Health of the Kyrgyz Republic launched an Infant Young and Child Nutrition (IYCN) program which included promotion of home fortification of complementary foods with a micronutrient powder (MNP) containing iron (12.5 mg elemental iron), vitamin A (300 µg), and other micronutrients. Every 2 months, children aged 6 to 23 months were provided 30 sachets of MNPs to be taken on a flexible schedule.

Nearly all (95.0%) of the caretakers interviewed had received at least one package of Gulazyk. When asked how they obtain Gulazyk, 87.9% of caretakers indicated that they got the product from the local health clinic, 6.5% said a health care worker brought Gulazyk to their home, and 5.4% said they obtained Gulazyk through both clinic visits and home visits. The majority of caretakers (73.5%) reported that their child was "currently" taking Gulazyk. When asked about the schedule they use to give Gulazyk to their children, most (45.3%) caretakers indicated that they gave Gulazyk every other day. On average, caretakers reported that they gave 28.2 sachets of Gulazyk to their children in the last two months. The majority of caretakers (80.1%) indicated that they would continue to give Gulazyk when they finished their current package.

Among all children who received Gulazyk, 55.7% of children consumed at least 30 sachets of Gulazyk (one package contains 30 sachets) during the last two months. Among children who were not currently consuming, the most commonly cited reason for not consuming Gulazyk was the child does not like the food when Gulazyk is added (49.9%).

The majority of caretakers (56.4%) indicated that they noticed changes in the color of food to which Gulazyk was added. Among those who noticed a change in color, 67.0% responded that the change in color was not a concern for them or their child. Additionally, 57.7% of caretakers reported that they noticed changes in the taste of food when Gulazyk was added. Among those who noticed a change in taste, 60.1% responded that the change in taste was not a concern for them or their child. When asked about the portion of food into which Gulazyk was mixed that the child consumes, 66.4% said their child consumed the entire portion and 33.6% said their child consumed less than a full portion.

When caretakers were asked if they noticed any positive changes in their children after they started taking Gulazyk, 42.7% had observed positive changes. Among these, 42.6% indicated increased appetite, 33.6% reported that their child overall seems better/healthier, 29.9% of caretakers indicated that the energy level increased, 16.1% indicated more curiosity/intelligence, 10.4% reported that their child gets sick less often, and 9.0% indicated better growth.

Sixty percent of all caretakers reported receiving the Gulazyk brochure. Only 43.0% of respondents had a radio at home; of those 45.6% indicated that they had heard about Gulazyk on the radio. Nearly all caretakers (99.2%) reported having a television; of those 68.8% of respondents indicated that they had heard about Gulazyk on television.

Between 2011 and 2013, clinic records (Green Journal) indicated that the percentage of children

who had ever received Gulazyk changed very little in 2011, 2012 and 2013 (93.2%, 90.8% and 92.1%). However, between 2011 and 2013, those who had received Gulazyk within 3 months of the interview decreased significantly from 84.9% to 76.1%. According to caretaker report, the percentage of children who had ever received Gulazyk MNP was about 95% in all three years (95.3%, 95.9% and 95.0%, respectively). The percentage children who were currently receiving Gulazyk decreased was 79.4%, 69.7% and 73.5%, respectively. The percentage of caretakers who reported that their child[2] would continue in the program declined (89.1%, 84.6% and 81.0%, respectively).

Infant and Young Child Nutrition (IYCN): Knowledge, Attitudes, and Practices

For the first 6 months of age WHO recommends exclusive breastfeeding; at six months of age WHO recommends introduction of solid, semi-solid and soft foods to supplement the breastfed child's diet (WHO, 2001). Appropriate infant and young child feeding (IYCF) practices include altering the frequency, variety, and amount of foods as a child gets older, while continuing breastfeeding until 2 years of age. Among children 6.0 to 23.9 months of age, 99.5% were reported to have ever been breastfed and 40.2% were reported to have been exclusively breastfed for the first six months after childbirth. At 1 year of age, 80.1% were reported to be breastfeeding and at 2 years of age, 26.2% were reported to be breastfeeding. The proportion of infants 6.0–8.9 months of age who were reported to have received appropriate solid, semi-solid or soft foods was 90.9%. The proportion of children 6.0–23.9 months who received a diet with the minimum recommended diversity (4 or more food groups) was 86.8% and the proportion who received a diet with at least the minimum recommended meal frequency was 74.7%.

Among caretakers, 75.6% considered breastfeeding very important for the baby's health and nutrition. Nearly all caretakers (99.6%) reported that babies should be breastfed and 99.7% reported that there were advantages to breastfeeding. Among those who felt a baby should be breastfeed, the mean length of time reported that a baby should breastfeed was 23.9 months.

Anthropometry

A total of 2162 children aged 6.0-29.9 months had weight and age data to calculate length-for-age (stunting), weight-for-length (wasting), and weight-for-age (underweight) z-scores. The 2013 survey found that 11.7% of the children 6.0–29.9 months of age had growth stunting, 2.0% had wasting, 4.8% were underweight, and 3.2% of children were overweight. The prevalence of stunting increased across age through 23.9 months of age, was similar among rural and urban children (11.3 versus 12.6%), and was slightly higher among boys compared to girls (13.1% versus 10.3%).

Biochemical Indicators

A total of 2156 children had hemoglobin, serum ferritin, and soluble transferrin receptor (sTfR) measurements and 2148 children had retinol binding protein (RBP) measurements. Among all children 6.0–29.9 months of age, 34.2% had iron deficiency as measured by ferritin and 39.3% had iron deficiency as measured by sTfR. After adjustment for altitude, the prevalence of anemia among all children was 32.7%. The prevalence of iron deficiency anemia as measured by ferritin was 18.8% and as measured by sTfR was 21.5%.

When the prevalence of anemia among all children was stratified by age, gender, and place of residence, the prevalence of anemia was higher in children 6 to 23 months (35.8% to 35.0%) compared to children 24.0–29.9 months (24.5%). The prevalence of anemia was 34.5% in males compared to 30.7% in females and was similar in rural and urban areas.

A total of 2148 children had RBP measurements. The prevalence of vitamin A deficiency (VAD) was 15.6%. Among children 6.0 -11.9, 12.0-17.9, 18.0-23.9, and 24.0-29.9 months, the prevalence of VAD was

2 Among children who were not aging out of the program prior to running out of sachets.

16.0%, 13.7%, 16.1%, and 16.7%, respectively. The prevalence of deficiency was 17.0% among males and 14.1% among females, and was 16.0% in urban and 14.7% in rural areas.

Comparison of Nutritional Status of Children 6–29 months between the 2009 and 2013 National Surveys

Among children 6 to 29 months (not living in Bishkek), the prevalence of anemia showed a non-significant decline of 6.0 percentage points [PP], from 38.7% at baseline in 2009 to 32.7% at follow-up ($p=0.116$). The prevalence of iron deficiency (as measured by serum ferritin) decreased by 16.4 PP (50.6% vs 34.2%, $p<0.001$); iron deficiency (as measured by sTfR) prevalence decreased by 9.6 PP (48.9% vs 39.3%, $p= 0.007$); and iron deficiency anemia prevalence decreased by 8.3% PP (from 31.9% vs 23.6%, $p=0.014$). Among all children, the prevalence of vitamin A deficiency increased by 9.4 PP (6.2% vs 15.6%, $p<0.001$). Between the two surveys, the prevalence of wasting among children 6-29 months remained stable (≤2%), while the prevalence of stunting decreased by 7.9 PP from 19.6% to 11.7%, $p<0.001$). IYCN indicators showed either no change or showed improvement.

CHAPTER 1
INTRODUCTION

BACKGROUND

Anemia is a public health problem in the Kyrgyz Republic. In a 2009 national baseline survey of nutritional status of children 6–59 months of age and their mothers, the prevalence of anemia was 26.0% in children and 23.0% in their mothers (CDC/UNICEF/MOH, 2012). Based on the prevalence in children, anemia constitutes a public health problem of moderate significance according to the World Health Organization (WHO) classification (WHO 2001). To address micronutrient deficiency, in May 2008, the Ministry of Health of Kyrgyzstan (MOH) — in close collaboration with the United Nations Children's Fund (UNICEF)-Kyrgyzstan and Kyrgyz-Swiss-Swedish Health Project (KSSHP)—developed a nationwide Infant and Young Child Nutrition (IYCN) program, which included a nutrition education program to encourage breastfeeding and appropriate complementary feeding. The program is community-based and relies on active involvement of medical specialists from primary health care level facilities and village health committees (VHCs). The educational campaign uses the infrastructure of the VHC for the dissemination of educational messages to mothers living in rural areas. The VHCs consist of volunteers (mainly women) who learn about specific public health issues and ways to address the issues. The VHCs then share their knowledge with women through peer-to-peer interactions.

In addition to the nationwide IYCN program, in June 2009, the MOH began a pilot program in Talas Oblast, to distribute micronutrient powders (MNP), known locally as Gulazyk, through government primary health care centers, at no cost, to all children 6–23 months of age. The MNP contains iron (12.5 mg elemental iron), vitamin A (300 µg), and other micronutrients. Every 2 months, children aged 6 to 23 months were provided 30 sachets of MNPs to be taken on a flexible schedule. Primary health care providers distributed MNP, instructed caretakers on proper use, and distributed informational materials. A pre-post survey design was used in Talas Oblast to measure change in nutritional status of children before and after implementation of the IYCN/MNP program. A baseline survey was conducted in rural Talas Oblast in June 2008 and a follow-up survey was conducted in July and August 2010. Declines were observed in the prevalence of: anemia, 50.6% versus 43.8% ($p= 0.05$); total iron deficiency (either low ferritin or high sTfR), 77.3% versus 63.7% ($p<0.01$); and iron deficiency anemia, 45.5% versus 33.4% ($p < 0.01$). In addition, the 2010 survey found, 66.4% of children were reported to currently consume the MNP.

After the Talas pilot program showed positive results, the IYCN/MNP program was gradually scaled up and had become nationwide (with the exception of the city of Bishkek) by June 2011. In 2011 and 2012, surveys using Lot Quality Assurance Sampling (LQAS) were conducted to assess implementation and acceptance of the nationwide program. LQAS survey results showed nationwide MNP coverage (defined as the caretaker report of consumption of MNP by the child at the time of the survey) to be 76.0% in 2011 and 66.8% in 2012.

A national baseline survey of nutritional status of children 6–59 months of age in the Kyrgyz Republic, and their mothers, was conducted in June and July 2009. In order to measure change in micronutrient status and IYCN practices, a follow-up national survey was conducted in July and August 2013 of children 6–29 months of age.

SURVEY OBJECTIVES

The major objectives of the 2013 Kyrgyz Republic National Survey of Nutritional Status in Children 6–29 months of age were to:

- Assess receipt and use of Gulazyk by children and assess trends (2011-2013)
- Assess Infant and Young Child Feeding practices
- Assess anthropometric status
- Assess the prevalence of anemia, iron deficiency anemia, iron deficiency, vitamin A deficiency in children 6–29 months of age
- Compare the 2009 and 2013 survey results to measure changes in hematologic and biochemical indicators of iron and vitamin A status after adjustment for infection/inflammation status.

CHAPTER 2
METHODS

SURVEY POPULATION

The target demographic for this survey was children 6–29 months of age living in the Kyrgyz Republic (with the exception of the city of Bishkek). Although Gulazyk was only distributed to children 6–23 months of age, we anticipated some micronutrient effects for an additional 6 months (Ip 2009). Children outside of the age range and children whose families moved outside of the designated localities were excluded. In addition, the metropolitan area of Bishkek was excluded from sampling and analysis since the Gulazyk program is not active in the area.

Sample Size Determination

The objective of the 2013 National Nutrition Survey was to describe the nutritional status of the target population of the MNP program based on a number of indicators including anemia, iron deficiency, iron deficiency anemia, and vitamin A deficiency in children 6-29 months of age. We calculated the necessary sample size in order to be able to detect statistically significant differences from results of the 2009 National Nutrition Survey. We took into account the effects detected in serum biomarkers of iron deficiency and anemia in the pilot study of Gulazyk in Talas in 2010. We calculated the sample sizes for this follow-up study using the following equation:

$$\text{Power} = \Phi\left[\frac{|p_2 - p_1|}{\sqrt{p_1 q_1/en_1 + p_2 q_2/en_2}} - t_{1-\frac{\alpha}{2}, m_1+m_2-1}\ \frac{\sqrt{\bar{p}\ \bar{q}\ (1/en_1 + 1/en_2)}}{\sqrt{p_1 q_1/en_1 + p_2 q_2/en_2}}\right]$$

Where:

p1= prevalence/coverage in the baseline survey

q1= 1-p1

n1= sample size in baseline survey

DEFF1= design effect in baseline survey

en1= equivalent sample size in baseline survey calculated as n1/DEFF1

p2= estimated prevalence/coverage in follow-up survey

q2= 1-p2

n2= sample size in follow-up survey

DEFF2= the design effect in the follow-up survey; this is estimated from the baseline survey by:

a) calculating the average number of observations per cluster in the baseline survey (k1) as n1/m1, where m1= number of clusters in baseline survey;

b) calculating ICC1 for the baseline survey as (DEFF1-1)/(k1-1);

c) calculating average number of observations in the follow up survey as k2=n2/m2;

d) finally, calculating the DEFF2 as 1+(k2-1)xICC1

en2= equivalent sample size in follow-up survey calculated as n2/DEFF2

p= a weighted average of the two prevalence/coverage values calculated as (p1*en1+p2*en2) / (en1+en2)

q= 1-p

Based on previous survey data from Talas, the sample was designed to detect a 7.7 percentage point change in ferritin deficiency from the baseline of 52% with a power of 80% and a two-sided alpha of 0.05. This also allowed for the detection of a change in elevated sTfR of 9.1 percentage points or more, and a change in the prevalence of iron deficiency anemia (where iron deficiency is defined as low ferritin and/or high sTfR) of 8.1 percentage points. All of these detectable changes were smaller than those detected in the 2008-2010 Talas pilot study (CDC/UNICEF/MOH, 2011).

The sample was nationally representative, consisting of 80 clusters of 30 children each (one cluster had 22 children instead of 30). An anticipated response rate of 85% (based on previous studies) was factored into the sample size calculation.

SAMPLING PROCEDURES

The Republican Health Information Center provided a list of health clinics (known in Kyrgyzstan as FAPs or FGPs) with the number of children assigned to each FAP/FGP. FAP/FGPs were the Primary Sampling Units (PSUs) in this study. (There were 1,599 clinics (FAP and FGP's) in 2013.) The first stage sampling of 80 PSUs was performed using probability proportional to size (PPS). In this case the probability of PSU selection depended on the number of children aged 6-29 months assigned to the PSU. The methodology (MI/CDC, 2007) followed the steps outlined below:

1. At the first step, we made a list with three columns. The first column had the name of sample unit (FAPs/FGPs), listed in geographical order. The second column had the population size. The third column had the cumulative population calculated by summing the population of each sampling unit to the sampling units preceding it on the list. The last cell of the third column was equal to the total size of population.
2. PSUs were selected by calculating a sampling interval (k) which equaled the total population size divided by the number of PSUs being surveyed (in this case 80). A random number between 1 and k was chosen as the starting point. K was added cumulatively until the number of clusters desired (in this case 80) was chosen.
3. The first PSU was selected as the PSU which contained the cumulative value (column 3) equal to the random starting point. We then chose the second chosen PSU as that with the cumulative value (column 3) equal to the random starting point + the interval (k). The third PSU contained the cumulative value (column 3) equal to the random starting number + 2k. This selection process was repeated until we had 80 PSUs.

Before the beginning of the second stage of sampling, we gathered a list from every selected FAP/FGP of all children born during the period from February 1, 2011 through January 31, 2013. We randomly selected 30 children (one cluster had 22 and another cluster had 29 children instead of 30 children) from the lists from every selected FAP/FGP. Before fieldwork in each PSU, the health care staff members at each FAP/FGP informed all selected children of the day and time they should visit the FAP/FGP for participation in the study. Participation was staggered to prevent a situation where too many children were at the clinic at the same time.

Survey team personnel visited the home of any child on the list that did not arrive at the health clinic as scheduled. All efforts were made to measure all of the participants on the list. No substitutions were made for any reason.

ON-SITE TRAINING AND SURVEY IMPLEMENTATION

Survey Teams

Four field teams collected data for the follow-up survey. Each team consisted of one field supervisor, two anthropometrists/interviewers, one phlebotomist, and one driver. The survey coordinator was responsible for overseeing the implementation of the survey (including ensuring that the timeline was followed) and directly coordinating and overseeing the work of the three major study coordinators (fieldwork coordinator, laboratory coordinator and data management coordinator).

Training

All survey team members received one day of instructions regarding the overall survey objectives and procedures. At the close of training all team members participated in a one-day pilot test (10–20 children per survey team) of all survey procedures including blood collection, centrifugation, and storage. The training included presentations and practical demonstrations on the following topics:

All survey team members

- The consent process and confidentiality issues
- Survey objectives
- An overview of interview techniques

The phlebotomist and supervisors

- Procedures for collecting blood samples
- Handling and shipping of biochemical specimens
- Labeling of biological specimens
- Filling in values on questionnaires
- Universal precautions for handling biological specimen
- Protocol for action in case of exposure to biological specimen

The anthropometrists/interviewers and supervisors

- Reliability and validity issues in collecting information using a questionnaire
- The rationale for each question of the survey
- Anthropometry (measuring height and weight of children)

Immediately after the training sessions, the questionnaire was pilot tested in FGPs not selected for the survey (FGPs# 2–5 in the Ak-Ordo and Archa-Beshik areas). The pilot included 59 children. The interviewers conducted the questionnaire and took anthropometric measurements of the children. The phlebotomists obtained blood samples and the laboratory technicians processed the blood samples. The pilot clarified questions regarding the questionnaire as well as other complex logistical issues that arose in the field.

Preparation for Field Survey

The Ethics Committee under the Department of Drug Provision and Medical Equipment approved the survey protocol, biochemical testing procedures, and transportation itinerary to maintain the cold chain for specimen transport. After approval of the research protocol by the Ethics Committee, an order of the Ministry of Health of Kyrgyz Republic, #425, dated July 23, 2013, outlined the respon-

sibilities and obligations of health care facilities in the survey.

Before beginning any fieldwork, the Survey Coordinator in conjunction with the Laboratory Coordinator obtained a letter signed and containing the seal of the MOH providing an introduction to the survey with background, justification and explanation of methodology. The letter contained the contact information for the Survey Coordinator in case there were any questions. Each supervisor also had a copy of the letter. Before the survey began, field supervisors visited the local health organizations in each cluster included in the survey to explain the purpose of the survey. They answered any pending questions, received permission to conduct the survey, and obtained the list of eligible children in each cluster. In each cluster, the clinic heads were provided a schedule of the survey in advance.

Before the survey began, the Fieldwork Coordinator prepared a list of children selected for inclusion to the survey. The list of participants was given to the survey team supervisor and the health worker at the clinic. The health care workers were asked to invite those children and their mothers to the health clinic on the pre-determined day. Survey respondents were notified two to three days in advance about the date and time of their FAP visit for the questionnaire interview, anthropometrical measurements, and blood sampling collection before the arrival of the survey team. The supervisor of each team received a route schedule, cluster numbers and addresses, and location of survey administration.

Survey Implementation

Data collection started on July 31, 2013 and was completed on August 26, 2013. Each team surveyed one health clinic (PSU) each day. The survey team arrived at the clinic approximately 30-60 minutes before the arrival of the first child in order to set up the equipment, prepare questionnaires, and introduce themselves to the medical personnel at the clinic. Upon the arrival of the mother or caretaker at the medical clinic, the team supervisor or another team member explained the purpose of the survey and the methods and procedures, and asked the caregiver for consent for the child.

All children from the predetermined participant list were included in the survey if consent was received. No substitutions from the original randomly selected participant list of children were made. If the selected child did not arrive, the medical worker and a member of the survey team visited the home and invited the child to the health clinic. Transportation to the clinic for these participants was provided if necessary. In the case of refusal, the reason was noted on the household questionnaire.

DATA COLLECTION

Survey Instrument

Once consent was given, one of the interviewers administered the questionnaire. The questionnaire contained modules on: receipt and use of Gulazyk; socio-demographic information;breastfeeding and infant feeding patterns; knowledge, attitude and behaviors regarding breastfeeding and infant feeding; dietary advice; vitamin/supplement use; anthropometric measurements; and blood specimen collection. The questionnaire was written in English and then translated into Kyrgyz and Russian languages (Appendix I).

Anthropometry

Length/height and weight measurements were taken for all children 6–29 months of age included in the survey. The age of the child was calculated based on the difference between the child's birth date and the date of the measurement. For children less than 24 months of age, supine length (lying down) was measured to the nearest 0.1 cm. For children 24–29 months of age, height (standing up) was measured to the nearest 0.1 cm using the same height board. All subjects were measured without shoes or hair accessories because they add artificial height.Except for the first day of measurement when Seca boards were used, all measurement were conducted using a height board manufactured by Shorr

Productions (Olney, Maryland, USA).

UNICEF Seca Uniscales were used to measure the body weight of the children. The weight of the children was measured by taring the scale after the mother's weight was recorded, then handing the child to the mother.The child's weight was taken with minimal clothing and without a diaper. The results were recorded on the data collection form.

Hemoglobin Measurement

Hemoglobin (Hgb) was assessed in the clinic using the HemoCue™ 301 photometer. The HemoCue™ 301 instrument has an internal quality control (self-test) and does not have a separate control cuvette or need liquid controls. Laboratory personnel collected capillary blood samples through a finger stick using a retractable lancet. In both the 2009 and 2013 surveys, after the first and second drop, the finger was then wiped clean and the third drop was drawn into a HemoCue cuvette.

All mothers participating in the survey were told the Hgb concentration of their child. The results of the Hgb concentration were also given to the mother in written form. Anyone with an Hgb concentration less than 7.0 g/dL received a referral to return to the medical clinic to see the health care worker. The team supervisor recorded hemoglobin results for all children in each cluster on the "List of Child Hemoglobin Results: For Village Medical Attendant" (Appendix II). The team supervisor gave this form to the medical attendant at the end of each day.

Blood Collection, Processing and Storage

For each participant, capillary blood was collected from a fingerstick, using a lancet, into a Microtainer™ containing the anticoagulent EDTA. To avoid hemolysis of specimens, precautions were taken, such as not milking the finger, not scraping the finger with the Microtainer™ and not allowing specimens to touch the frozen gel packs in the cool box. The phlebotomist used a lancet to prick the ring finger and wiped the first two drops of blood away with an alcohol pad, then collected approximately 250-500 µL of blood directly into a Microtainer™ containing EDTA. The blood was mixed well by gently inverting the Microtainer™ about 10 times. The blood in the Microtainer™ was used to assess Hgb, ferritin, soluble transferrin receptor protein (sTfR), C-reactive protein (CRP), α1-acid glycoprotein (AGP), and retinol-binding protein (RBP).

During all data collection and before leaving the clinic at the end of the day, the survey team ensured that all waste had been put in bio-hazard bags and that lancets were disposed of in the sharps collector.

The capillary blood collected into the Microtainer® containing EDTA was immediately placed by the phlebotomists into a cold box containing frozen gel packs placed at the bottom and were maintained at a temperature between 4-10 °C. Blood samples were transported from the field to the mobile laboratory for processing. At the mobile laboratory, the blood was centrifuged the same day that it was received, and plasma was transferred into labeled 0.2mL PCR tubes and cryovials. After centrifugation and preparation, cryovials were stored in a -20°C freezer at the mobile laboratory until transported to Bishkek. Samples were packed in frozen gel packs and transported to Bishkek in the freezer unit of a refrigerator truck. The temperature within the storage unit declined to -20°C within 3-4 hours of driving. In Bishkek, samples were stored at a temperature of -20°C. Finally, the cryovial boxes containing the 0.2mL PCR tubes were shipped on dry ice to VitA-Iron Tech in Willstaett, Germany for analysis of biochemical indicators.

Analyses of biochemical indicators of iron status (ferritin and sTfR), vitamin A status (retinol binding protein [RBP]) and markers of acute inflammation (CRP and AGP) in blood plasma were conducted by the VitA-Iron Tech research laboratory (Erhardt, 2004). The Department of Drug Provision and Medical Equipment under the Ministry of Health of Kyrgyz Republic granted permission to transport specimens to Germany. For an in-depth discussion of the selection of these indicators and the anticipated effects of inflammation on serum values, please see Chapter 7: Biochemical indicators for micronutrient deficiency and the use of micronutrient supplements.

Quality Control and Assurance

External Quality Assurance

The VitMin Laboratory (Willstaett, Germany) has participated in CDC's external quality assurance program, VITAL-EQA (The Vitamin A Laboratory-External Quality Assurance), since 2006 (Haynes, 2008) The laboratory measures ferritin, sTfR, CRP, and RBP concentrations in plasma using an enzyme-linked immunosorbent assay (ELISA) technique (Erhardt, 2004). The precision and bias were Optimal or Desirable for ferritin, sTfR, and CRP (>90% precision of the VITAL-EQA results, with <0.5% bias). However, the precision and bias shifted 15-20% for RBP (>80-85% precision of the VITAL-EQA results, with 18.3% bias) due to a change in pools used by the VITAL-EQA program. This quality assurance analysis is based on exercises immediately preceding and during the survey (Rounds 20-21).

Internal Quality Control

The VitMin Lab analyzed the survey samples for ferritin, sTfR, CRP, RBP, and AGP using an ELISA technique. The lab routinely tested a single QC pool in 10 different wells randomly distributed in each 384-well plate. The inter-assay coefficients variation (CV) for these analytes were 3.8% for RBP, 3.2% for ferritin, 5.1% for AGP, 3.0% for TfR, and 5.2% for CRP. A CV of about 10% provides acceptable precision using an ELISA technique (Erhardt, 2004; Haynes, 2008). These data indicate that the lab's performance exceeded the acceptable performance expectations while analyzing the survey samples.

DATA MANAGEMENT AND STATISTICAL ANALYSIS

The data were entered into computers using CSPro software. Data entry was in duplicate to ensure quality and consistency of data, and any inconsistencies found between the two entries were investigated and resolved. Data analysis was conducted using SPSS (versions 17 and 19). To calculate the age of each child the child's date of birth was subtracted from the interview date and then divided by 30.40. For both survey years, children younger than 6.0 months of age or older than 29.9 months of age at the time of the interview were excluded.

Confidence intervals and design effects (DEFF) for key variables were calculated based on sampling methods. Probability proportionate to size (PPS) sampling was used, so the data were self-weighted. However, it was necessary to weight the data to account for non-response. The 95% confidence intervals were adjusted to account for the cluster survey design. Bivariate tests of statistical significance were conducted using tests (primarily the Pearson chi-square test), which accounted for the cluster survey design. Design effects, and intra-class correlation coefficients for major indicators can be found in Appendix III.

CHAPTER 3
RESPONSE RATES AND CHARACTERISTICS OF RESPONDENTS

RESPONSE RATES

Figure 3-1 and Table 3-1 show participation in this survey. A total of 2391children were invited to participate (30 children from each of the 78 clusters, one cluster only had 22 children and one had 29 children) (Figure 3-1). As instructions were to interview all children born between February 1, 2011 and January 31, 2013, 41 children were ineligible for analysis because they were younger than 6.0 months of age or older than 29.9 months of age at the time of the interview and 49 children had moved away from the area permanently; this leaves a total of 2301 children that were eligible to participate. Of these, interviews were not obtained for 138 of the children. Interviews were completed for the remaining 2163 children. Of the children from whom interviews were completed, a blood sample that was sufficient for biochemical analysis was obtained from 2156 (7 children had an insufficient blood sample); of these, a blood sample that was sufficient for analysis of hemoglobin was obtained from 2153 children (3 children had insufficient samples for hemoglobin).

Figure 3-1: Flow chart of participation in survey – Kyrgyzstan, 2013

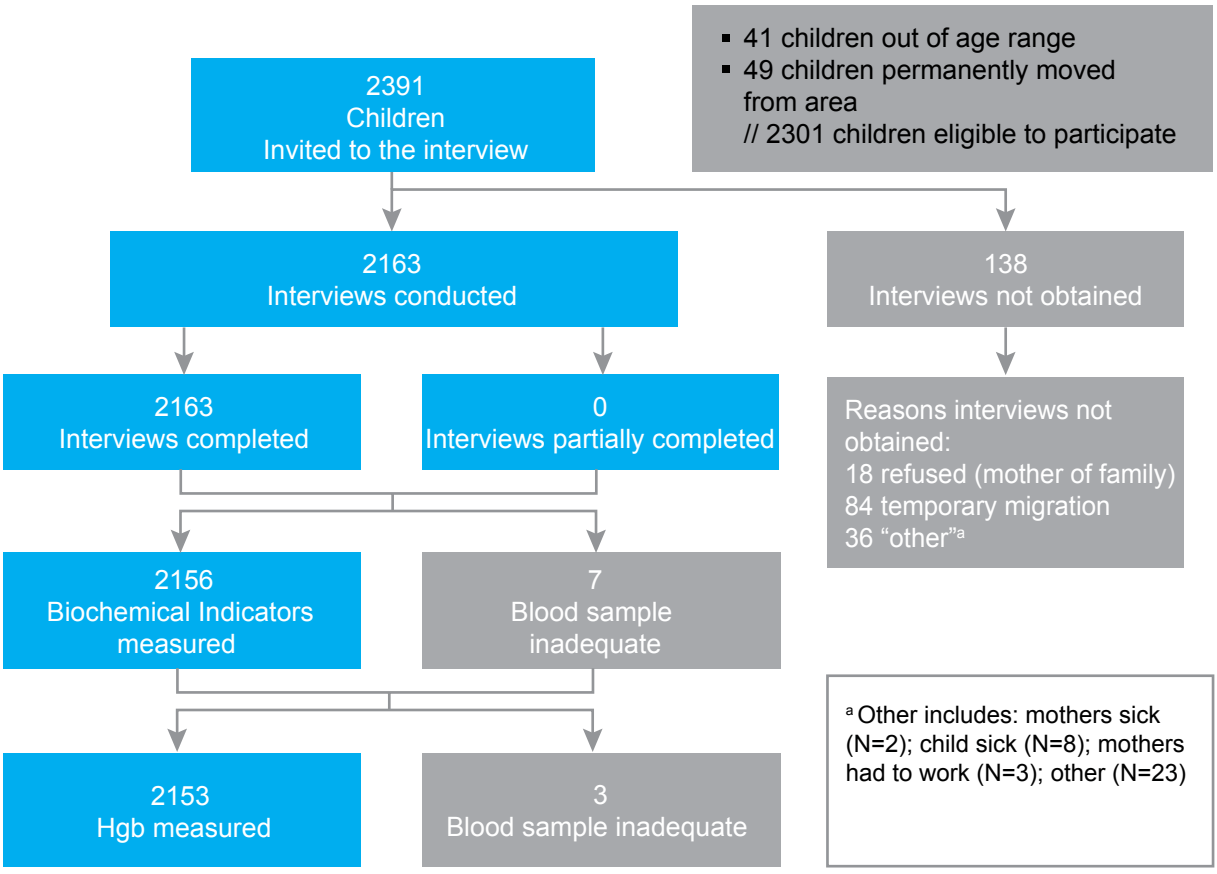

Table 3-1 shows characteristics of the respondents for interviews that were obtained. Of interviews that were obtained, the majority of respondents were mothers (84.3%), with some grandmothers (8.4%) and aunts (3.6%) participating. The majority (74.5%) of the caretakers interviewed lived in rural areas, while 25.5% of respondents lived in urban areas.

Table 3-1: Results of interviews and characteristics of respondents (unweighted) — Kyrgyzstan, 2013

Indicator	N	%
Result of interview[a]	2301	
Interview obtained		94.0
Interview not obtained		6.0
Reasons interview not obtained		
Refused		0.8
Mother sick		0.1
Child sick		0.3
Mother had to work		0.1
Temporary migration		3.7
Other		1.0
Person interviewed (in relation to child)	2163	
Mother		84.3
Grandmother		8.4
Aunt		3.6
Other		3.7
Place of Residence	2163	
Urban		25.5
Rural		74.5

[a] 41 children not included in analysis due to age out of range; 49 children not included due to having moved permanently.

DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS

Demographic and socioeconomic characteristics of surveyed children and their mothers are shown in Tables 3-2 and 3-3. The majority (83.3%) of mothers were under 35 years old. All children were between the ages of 6.0 and 29.9 months, and there was fairly equal participation across the age categories for children. The majority (81.1%) of interviews were conducted in the Kyrgyz language.

The majority (56.3%) of the mothers of surveyed children had completed secondary school, with some going on to technical (11.9%) or higher (21.3%) education (Table 3-4). Most of the mothers were not employed (95.7%). Respondents were asked if there family received universal monthly benefits as a proxy for economic status, with 70.2% reporting that they did.

Table 3-2 Demographic characteristics of children and their mothers (unweighted) — Kyrgyzstan, 2013

Characteristic	N	%
Age of mothers	2163	
17-24 years		28.3
25-35 years		55.0
35+ years		16.7
Age of children[a]	2163	
6.0-11.9 months		24.0
12.0-17.9 months		26.3
18.0-23.9 months		24.9
24.0-29.9 months		24.7
Gender of children	2163	
Male		51.0
Female		49.0
Place of Residence	2163	
Urban		25.5
Rural		74.5
Language of interview	2163	
Russian		18.5
Kyrgyz		81.1
Uzbek		0.3

[a] *Child's age (in months) was truncated to the integer (representing whole months completed)*

Table 3-3 Socioeconomic characteristics of respondents (unweighted) — Kyrgyzstan, 2013

Characteristic	N	%
Mother's education (highest level completed)[a]	1823	
Less than secondary		10.5
Secondary		56.3
Technical		11.9
Higher		21.3
Mother's employment status[1]	1823	
Not employed		95.7
Employed / student:		4.3
Family receives universal monthly benefits	2163	
Yes		70.2
No		29.4
Don't know		0.4

[a] *Education and employment status were asked only o mothers who were interviewed (n=1823)*

CHAPTER 4
GULAZYK MICRONUTRIENT POWDER (MNP) PROGRAM AND TRENDS IN GULAZYK USE FROM 2011–2013

BACKGROUND

Through the governmental primary health care (PHC) system in Kyrgyzstan, caretakers of children 6.0-23.9 months old are given, free of charge, one package of 30 Gulazyk sachets every two months. The recommended dosing regimen is to use 30 sachets every two months. Therefore, a child should consume a total of 270 sachets within an 18-month period (starting at 6 months of age when the child begins consuming weaning foods and ending at 24 months). Using a "flexible administration" approach, caretakers are instructed that they can give the Gulazyk according to any schedule they wish, as long as they use all

30 sachets in two months and they do not give more than one sachet per day. Gulazyk was distributed to all areas of the country except for the capital city of Bishkek where children were considered to be at lower risk of micronutrient malnutrition.

Communications and Social Mobilization

There are three main communication channels for the Gulazyk program: primary health care providers, village health committee volunteers, and mass media (CDC 2011).

Primary Health Care Providers

Primary health care providers (doctors, nurses, and feldshers [nurse practitioners]) are the main conduit through which mothers receive information and counseling on the use of Gulazyk. As the sole distributors of Gulazyk and a trusted source of reliable health information at the community-level, primary health care workers serve as a valuable channel through which Gulazyk use can be promoted in both rural and urban settings. Primary health care providers have been extensively trained on the distribution procedures for Gulazyk and appropriate counseling for caretakers on the use of this product. At the clinic, caretakers receive a Gulazyk flier with usage instructions, as well as a reminder card, which states the date on which they should return for their next package of Gulazyk. Furthermore, a record book is kept at each FAP/FGP to record Gulazyk distribution.

Village Health Committees

Village Health Committees (VHCs) play an integral role in the interpersonal communication to promote the use of Gulazyk among rural populations. Village Health Committees (which work in nearly 1,500 villages throughout the country) make home visits to families with children 6.0-23.9 months of age in the village to inform and educate mothers about Gulazyk, and encourage them to visit their local health clinic to receive Gulazyk for their children. Members of the Gulazyk Action Group within each Village Health Committee are trained to identify families with children in the target age range, discuss Gulazyk with caretakers, counsel caretakers on its use, and monitor adherence to the intervention. Throughout the program, VHC members refer families to the local health clinic for Gulazyk when a child in the family turns six months of age. In this way, VHCs are a critical channel through which to inform families of the availability of Gulazyk in their village, and encourage them to obtain Gulazyk at the local health clinic. VHC volunteers use illustrated flipcharts and brochures to aid them in discussing key messages with caretakers. Additionally, they provide caretakers with a Gula-

zyk-branded children's book, which they can read to their children. VHC volunteers recruit engaged and enthusiastic mothers within the village to serve as "Mother Activists" who help promote and monitor the use of Gulazyk.

Mass Media

Mass media is an important communications conduit for the Gulazyk program in both rural and urban areas. In urban areas (where VHC's are not operating), radio broadcasts are the primary mechanism to encourage caretakers to visit the clinic to receive Gulazyk. Print and radio personnel were invited to attend program advocacy meetings, as well as the campaign kick-off event, and journalists were provided with press kits containing information on the program. During and after the scale-up, radio and television broadcasts were aired nationally 3 to 4 times each year. Local (provincial level) radio broadcasts were aired 1 to 2 times each year.

Monitoring Gulazyk use

Records are kept at each health center (referred to in this report as FAP [Feldsher Obstetrics (Accoucher) Points] and FGP [Family Group Practitioners)] in a book known as the Green Journal. In the Green Journal, local staff record which children receive disbursements of Gulazyk, as well as the quantity and date of receipt and whether caretakers permanently refuse future Gulazyk disbursements.

Using data from the Green Journal, the MOH has conducted an ongoing internal monitoring system. Clinic personnel abstract information from each journal regarding the percentage of children who have ever received Gulazyk and the percentage of children whose caretaker permanently refused to give Gulazyk. This information is collected at the health clinic level and sent to the oblast and national level where it is compiled on a quarterly basis.

In addition to internal monitoring, external monitoring has been conducted through three national surveys in 2011, 2012 and 2013. The 2011 and 2102 surveys were based on Lot Quality Assurance Sampling (LQAS) methods and the 2013 survey was based on population proportional sampling (PPS) methods (see Chapter 2).

This Chapter is divided into two parts: Gulazyk use in 2013 and Trends in Gulazyk use 2011, 2012 and 2013.

GULAZYK USE IN 2013

Methods

Data were collected by abstracting information from the Green Journal at the FAP/FGP and by interviewing caretakers. Teams reviewed the Green Journal at each FAP/FGP and recorded if the child had ever been given Gulazyk, the last date that it had been received, and whether the child had received Gulazyk at any point in the previous 3 months (See 2013 Questionnaire, Appendix I). Teams also interviewed caretakers about receipt of Gulazyk, current use, any side effects, where the Gulazyk was obtained, perceived changes in color/taste of food after adding Gulazyk, and plans for future use. Analyses for the 2013 survey are restricted to children 6 to 23 months of age, the age at which children are eligible for the Gulazyk program.

Caregiver Report of Receipt and Use of Gulazyk

Table 4-1 presents Gulazyk program monitoring indicators related to receipt and use of Gulazyk according to the caregiver report.. Nearly all (95.0%) of the caretakers interviewed had received at least one package of Gulazyk. When asked how they obtain Gulazyk, 87.9% of caretakers indicated that they get the product from the local health clinic, 6.5% said a health care worker brings Gulazyk to their home, and 5.4% said they obtain Gulazyk through both clinic visits and home visits.

Among those who had ever received Gulazyk, the majority of caretakers (73.5%) reported that their child is "currently" taking Gulazyk[3]. It should be noted that the recall period for currently consuming Gulazyk was not defined in the question. Because Gulayzk was given on a flexible schedule it is possible that some children who were adherent (i.e. consumed Gulazyk every day in the previous month, but not currently consuming) may have been reported as not "currently" consuming. When asked about the schedule they use to give Gulazyk to their children, most (45.3%) caretakers indicated that they give Gulazyk every other day. Approximately 37% of the caretakers said they give Gulazyk every day for one month. Very few caretakers reported using another schedule, such as one sachet per day for fifteen days and then taking a break for fifteen days. On average, caretakers reported that they gave 28.2 sachets of Gulazyk to their children in the last two months. The majority of caretakers (80.1%) indicated that they will continue to give Gulazyk when they use up their current package. Among those whose child stopped consuming Gulazyk, caretakers were asked the age when the child stopped consuming Gulazyk; 49.6%, 31.6% and 18.8% reported stopping at 6-11, 12-17 and 18 -23 months of age, respectively.

Table 4-1: Receipt and use of Gulazyk among children 6.0–23.9 months according to the caretaker report— Kyrgyzstan, 2013

Item	N	%, mean	(95% CI)
Ever received a package of Gulazyk, %	1628		
Yes		95.0	(92.9 - 96.5)
No		4.9	(3.4 - 6.9)
Among those who have ever received a package of Gulazyk:	1537		
How Gulazyk is obtained, %			
From the health clinic		87.9	(83.9 - 91.1)
Medical worker brings it to home		6.5	(4.2 - 9.9)
Both		5.4	(3.5 - 8.1)
Child is currently consuming Gulazyka ,%	1537		
Yes		73.5	(66.8 - 79.3)

3 The question asked was: "Is this child currently taking Gulazyk?" The time frame was not defined.

No		26.3	(20.6 - 32.9)
Among children not currently consuming Gulazyk:			
Age when child stopped consuming Gulazyk, %	290		
6.0-11.9 months		49.6	(40.3 – 59.0)
12.0-17.9 months		31.6	(23.7 - 40.7)
18.0-23.9 months		18.8	(12.7 - 27)
Frequency of Gulazyk consumption, % (based on the time when child was taking Gulazyk)	1537		
Every day for one month		37.2	(31.3 - 43.4)
Every other day		45.3	(37.3 - 53.6)
1 sachet/day for 15 days, break for 15 days		11.9	(6.8 - 20)
Other		3.5	(2.1 - 5.8)
Number of sachets consumed during the last two months, mean	1507	28.2	(25.3 - 31.1)
Will continue giving Gulazyk when current supply runs out, %[a]	1537		
Yes		80.1	(74.2 – 85.0)
No		12.6	(8.5 - 18.3)
Don't know		6.2	(4.1 - 9.3)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.
[a] The question asked was " When you run out of Gulazyk, do you plan to continue?

Table 4-2 shows the use of Gulazyk in the last two months by age, place of residence, and method by which Gulazyk was obtained. We excluded from our calculations children 6-7.9 months of age as they would not have had an opportunity to consume Gulazyk over the previous 2 months. Among all children who received Gulazyk, 56.0% of children consumed at least 30 sachets of Gulazyk (one package) during the last two months. Among children 8.0–11.9 months of age, 60.2% consumed 30 or more sachets (a full package) in the last two months, 28.2% consumed less than 30 sachets, and 11.7% consumed zero sachets. Among children 12.0-17.9 months of age, 59.1% consumed 30 or more sachets in the last two months, 24.8% consumed less than 30 sachets, and 16.2% consumed zero sachets. Among children 18.0-23.9 months of age, 50.1% consumed 30 or more sachets in the last two months, 26.2% consumed less than 30 sachets, and 23.7% consumed zero sachets.

Among urban children, 56.3% consumed ≥ 30 sachets compared to 55.3% of rural children. When consumption was stratified by how Gulazyk was obtained, the percentage consuming ≥ 30 sachets was 55.2% for those who received Gulazyk at the health clinic, 56% for those who received Gulazyk through a medical worker home visit and 68.8% for those who received from both sources.

Table 4-2: Among those who had ever received Gulazyk, amount of Gulazyk consumed within a two month period by various characteristics — Kyrgyzstan, 2013

	0 Sachets			< 30 Sachets			≥30 Sachets		
Characteristic	**N**	**%**	**(95% CI)**	**N**	**%**	**(95% CI)**	**N**	**%**	**(95% CI)**
Age of childrena	206			403			761		
8.0-11.9 monthsb	28	11.7	(7.2 - 18.4)	123	28.2	(21.4 - 36.1)	187	60.2	(50.5 - 69.1)
12.0-17.9 months	79	16.2	(10.6 - 23.9)	142	24.8	(18.7 - 32.0)	316	59.1	(50.7 - 66.9)
18.0-23.9 months	99	23.7	(16.2 - 33.4)	138	26.2	(20.0 - 33.5)	258	50.1	(42.2 - 57.9)
Place of Residencea	206			403			761		
Urban	71	19.9	(12.8 – 29.6)	84	23.8	(17.5 – 31.5)	199	56.3	(47.0 - 65.2)
Rural	135	13.1	(10.1 – 16.8)	319	31.5	(25.8 – 37.9)	562	55.3	(48.6 - 61.9)
How Gulazyk is obtaineda	206			403			761		
From the health clinic	186	19.0	(13.4 - 26.2)	316	25.8	(20.4 - 32.1)	614	55.2	(48.0 - 62.2)
Medical worker brings to home	14	13.5	(6.8 - 25.1)	65	30.5	(18.2 - 46.4)	80	56.0	(38.4 - 72.3)
Both	6	5.7	(1.7 - 17.8)	22	25.4	(14.5 - 40.6)	67	68.8	(51.0 - 82.4)
Total	206	17.9	(12.6 - 24.6)	403	26.1	(21.2 - 31.7)	761	56.0	(49.2 - 62.6)

: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.

[a] Frequencies add to 100% across rows (horizontally)

[b] Restricted to children 8.0-11.9 months because children < 8.0 months would not have had the opportunity to consume all 30 sachets within the previous two months.

Table 4-3 shows the reasons why caretakers choose not to give Gulazyk to children and the reasons why caretakers will not continue to give Gulazyk when their current package of 30 sachets runs out. Among those not currently consuming Gulazyk, the most commonly cited reasons for not consuming were: the child does not like the food when Gulazyk is added (49.9%), the caretaker perceived that the child experienced side effects/diarrhea (13.7%),the caretaker ran out of Gulazyk (13.7%), Gulazyk makes the food taste bad (8.3%), and the mother/caretaker doesn't like Gulazyk (7.5%). Some caretakers reported they would not give Gulazyk in the future once their current supply runs out, the most commonly cited reasons caretakers gave for not continuing to give Gulazyk were: child does not like the food when Gulazyk is added (72.8%), child experienced side effects (28.4%), children should receive natural vitamins from food (9.5%), and family member doesn't want to use (7.5%).

Table 4-3: Reasons why caretakers choose not to give Gulazyk to children and why caretakers will not continue to give Gulazyk — Kyrgyzstan, 2013

Item	%	(95% CI)
Reasons why children are not currently consuming Gulazyk (of those who are not currently consuming Gulazyk) (N=346)[a]		
Too difficult to remember to give Gulazyk	3.6	(1.6 - 7.6)
Child experienced side effects/diarrhea	13.7	(9.2 - 19.8)
Child experienced side effects/skin/allergy	3.7	(1.4 - 9.5)
Child experienced side effects/other	0.4	(0.1 - 1.1)
Child does not like food when Gulazyk is added	49.9	(41.7 - 58.2)
Gulazyk makes the food taste bad	8.3	(5.2 - 12.9)
Gulazyk changes the color of the food	2.4	(1.0 - 5.7)
Mother/caretaker doesn't like Gulazyk	7.5	(3.2 - 16.3)
Ran out of Gulazyk	13.7	(8.5 - 21.4)
Children should receive natural vitamins from food	3.8	(1.6 - 8.7)
We have been away from home	5.0	(2.1 - 11.3)
Child has been sick	4.6	(2.0 - 10.5)
Belief that Gulazyk is harmful to the child	0.9	(0.2 - 4.6)
Heard on the TV or radio that Gulazyk is harmful	0.1	(0.0 - 0.7)
Don't know	2.9	(1.5 - 5.6)
Reasons why caretakers will not continue to give Gulazyk when their current package runs out (of caretakers who indicated they will not continue to give Gulazyk when their current package is used up) (N=166)[a]		
Too difficult to remember to give Gulazyk	0.6	(0.2 - 2)
Child experienced side effects	28.4	(17.2 - 43.1)
Child does not like food when Gulazyk is added	72.8	(64.4 - 79.8)
Family member doesn't want to use	7.5	(3.6 - 15.2)
Children should receive natural vitamins from food	9.5	(4.4 - 19.5)
Belief that Gulazyk is harmful to the children	0.5	(0.1 - 1.9)
Heard on the TV or radio that Gulazyk is harmful	1.9	(0.4 - 9.6)
When I run out of Gulazyk my child will be >24 months	2.9	(1.0 - 8.2)
Don't know	3.6	(1.3 - 9.7)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.
[a] Does not add up to 100% because respondents were allowed to provide more than one answer to the question; predefined response options were not read aloud, but rather respondents' individual answers were recorded and categorized.

Experiences Giving Gulazyk

Table 4-4 reports caretakers' experiences with giving Gulazyk. The majority of caretakers (56.4%) indicated that they notice changes in the color of food to which Gulazyk is added. Among those who noticed a change in color, 67.0% responded that the change in color was not a concern for them or their child. Additionally, 57.7% of caretakers reported that they notice changes in the taste of food when Gulazyk is added. Among those who noticed a change in taste, 60.1% responded that the change in taste was not a concern for them or their child. When asked about the portion of food into which Gulazyk is mixed that the child consumes, 66.4% said their child consumed the entire portion and 33.6% said their child consumed less than a full portion.

Table 4-4: Experiences consuming Gulazyk among those currently consuming Gulazyk— Kyrgyzstan, 2013

Item	%	(95% CI)
Have you noticed any changes in the color of the food to which Gulazyk is added? (N=1190)		
Yes	56.4	(48.4 - 64.1)
No	43.6	(35.9 - 51.6)
Among those who noticed a change in color:		
Is this change in color a concern for you or your child?(N=652)		
Yes	33.0	(28.5 - 37.8)
No	67.0	(62.2 - 71.5)
Have you noticed any changes in the taste of the food to which Gulazyk is added? (N=1190)		
Yes	57.7	(50.8 - 64.3)
No	42.3	(35.7 - 49.2)
Among those who noticed a change in taste:		
Is this change in taste a concern for you or your child?(N=662)		
Yes	39.9	(33.7 - 46.4)
No	60.1	(53.6 - 66.3)
Does the child usually consume the entire portion of food into which Gulazyk is mixed, or does he/she consume less than the entire portion? (N=1190)		
Consumes entire portion	66.4	(61.5 - 70.9)
Consumers less than full portion	33.6	(29.0 - 38.4)
Don't know	0.1	(0.0 - 0.4)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.

Caretaker's Perceived Effects of Gulazyk

Table 4-5 presents caretakers' reports of positive changes that were experienced by the child after he/she started taking Gulazyk. When caretakers were asked if they noticed any positive changes in their children after they started taking Gulazyk, 42.7% said they had noticed positive changes. Among those who had noticed positive changes, 42.6% indicated increased appetite, 33.6% reported that their child overall seems better/healthier, 29.9% of caretakers indicated that the energy level increased, 16.1% indicated more curiosity/intelligence, 10.4% reported that their child gets sick less often, and 9.0% indicated better growth.[4]

4 When interpreting results about reported positive changes in characteristics of the child after he/she started taking Gulazyk, it should be noted that, anecdotally, some respondents observed that they had noticed differences, but they reported that these differences might also be attributed to the older age of the child (rather than the Gulazyk).

Table 4-5: Effects of Gulazyk, as reported by respondents who have ever given Gulazyk to their child of 6.0–23.9 months (based on the time when child was taking Gulazyk) —Kyrgyzstan, 2013

Item	%	(95% CI)
Have you noticed any positive changes in your child since he/she started taking Gulazyk that you believe are due to Gulazyk? (N=1537)		
Yes	42.7	(38.4 - 47.1)
No	57.3	(52.9 - 61.6)
Among those who noticed positive changes:		
What are the positive changes that you noticed in your child? (N=702)[a]		
More energy	29.9	(23.4 - 37.4)
Better growth	9.0	(5.8 - 13.6)
More curiosity/intelligence	16.1	(11.6 - 21.9)
Improved eyesight	0.8	(0.4 - 1.6)
Gets sick less often	10.4	(6.9 - 15.6)
Increased appetite	42.6	(34.8 - 50.9)
Overall seems better/healthier	33.6	(25.8 - 42.4)
Other	5.1	(3.2 - 7.9)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.
[a] Does not add up to 100% because respondents were allowed to provide more than one answer to the question; predefined response options were not read aloud, but rather respondents' individual answers were recorded and categorized.

Coverage of Gulazyk Communications Materials and Activities

Caretakers were asked about their receipt of the Gulazyk communications materials (Table 4-6). Sixty percent of all caretakers reported receiving the Gulazyk brochure. Of those who received the brochure, 58.1% read it. Only 43.0% of respondents had a radio at home. Of those who had a radio, 45.6% indicated that they have heard about Gulazyk on the radio. Nearly all caretakers (99.2%) reported having a television. Among those with a television, 68.8% of respondents indicated that they have heard about Gulazyk on television.

Table 4-6: Communications coverage as reported by caretakers of children 6.0–23.9 months, —Kyrgyzstan, 2013

Item	N	%	(95% CI)
Received the Gulazyk brochure	1537		
Yes		60.4	(53.7 - 66.7)
No		38.4	(32.1 – 45.0)
Read the brochure	1537		
Yes		58.1	(51.3 - 64.6)
No		40.6	(33.9 - 47.7)
Has a radio at home	1628		
Yes		43.0	(37.7 - 48.4)
No		57.0	(51.6 - 62.3)
Heard about Gulazyk on the radio (among those who have a radio)	682		
Yes		45.6	(39.7 - 51.7)

No		54.3	(48.2 - 60.3)
Has a television	1628		
Yes		99.2	(98.4 - 99.6)
No		0.8	(0.4 - 1.6)
Heard about Gulazyk on television (among those who have a television)	1611		
Yes		68.8	(62.7 - 74.3)
No		30.8	(25.4 - 36.9)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.

TRENDS IN GULAZYK USE FROM 2011–2013

Background

This section compares results of the 2011–2012 Lot Quality Assurance Sampling (LQAS) surveys and the 2013 National survey in regards to Gulazyk receipt and use in the population of children aged 6.0–23.9 months of age living in the Kyrgyz Republic (with the exception of the city of Bishkek).

Methods

In 2011 and 2012, surveys which used Lot Quality Assurance Sampling (LQAS) were conducted to assess the implementation and acceptance of the nationwide program. In 2013, the survey used population proportional sampling (PPS) (see Chapter 2). For all three surveys, the metropolitan area of Bishkek was excluded from sampling and analysis because the Gulazyk program was not implemented in Bishkek. LQAS is a sampling methodology that uses small samples from each locality to determine if key indicators of public health programs have been met. While originally designed for quality control of industrially produced goods, this method has been successfully used for monitoring and evaluation of a wide variety of public health programs around the world (Robertson 2006; Valdez 2003; Valdez 1991). At the locality level, LQAS uses cumulative binomial probabilities to determine whether a locality has or has not met a predetermined goal. However, when results are compiled on a national level and weighted for the population of each locality, a numerical national estimate of coverage (defined as the caretaker report of consumption of MNP by the child at the time of the survey) can also be calculated.

In the 2011 and 2012 surveys Lot Quality Assurance Sampling (LQAS) was used. Both surveys were stratified at the district (rayon) level. With the exception of the city of Bishkek, the survey sample was stratified by all districts, the urban territories within each province, and the City of Osh for a total of 48 strata. In each stratum, 24 children aged 6-23 months were selected using systematic sampling from clinic registries. Caretakers of selected children were interviewed in their homes. If the caretakers were not in their homes when the interviewers arrived and a contact phone number was available, the interviewers attempted to conduct the interview by phone. In the 2011 survey, data were collected during July and August, and in the 2012 survey data were collected during September.

In 2013, a survey was conducted to assess MNP use and the micronutrient status of the population. A two-stage cluster PPS sampling design (with no stratification) was used (see Chapter 2). In the 2013 survey, data were collected July and August. The 2013 survey interviews were conducted at the health clinic.

The 2011, 2012, and 2013 questionnaires contained modules on MNP use as recorded in the health clinic (Green Journal) and MNP use as reported by the caretaker (see 2013 questionnaire in Appendix I and 2011 and 2012 questionnaires in Appendix IV). Teams reviewed the clinic registry at each FAP/FGP and recorded Gulazyk had ever been distributed to the child, the last date that it had been received, and whether the child had received Gulazyk at any point in the previous 3 months. In all three surveys, questionnaires were written in English and then translated into the Kyrgyz and Russian languages. Teams also interviewed caretakers about receipt of Gulazyk, current use, any side effects, where the Gulazyk was obtained, perceived changes in color/taste of food after adding Gulazyk, and plans for future use. During the 2013 interviews were conducted at the FAP/FGP; the 2011 and 2012 LQAS interviews were conducted in the home of the child.

Although the survey sampling methods were different, the three survey questionnaires (2011 LQAS, 2012 LQAS, and 2013 national survey) were identical in regard to the questions asked concerning Gulazyk use with two exceptions. The first exception concerned the Russian and Kyrgyz translations of question GU2, where caregivers were asked if the child was currently taking Gulazyk. For the 2013 survey, the translations were changed from "taking" to "consumed" due to confusion on behalf of the caregivers on the difference between taking, as in receiving, and consuming. The second exception concerned the format of the questions on change in color or taste and, among those who had noticed a change, whether the change was of concern. In 2013, separate questions were asked about

change in color and/or taste and concerns about color and/or taste (see Appendix I: GU8, GU8a, GU9 and GU9a) whereas in the 2011 and 2012 surveys, the question on change in color or taste were combined into one questions (see Appendix IV: GU9 and GU9a).

Data analysis was conducted using SPSS (versions 17 and 19). For the 2011 and 2012 surveys only interviews conducted in the home were included in the analysis. Bivariate statistical testing was used to determine the significance of differences between the 2011, 2012 and 2013 surveys. The 2011 and 2012 surveys were weighted to account for stratification (district) and non-response. The 2013 survey was weighted for non-response only (the sample was not stratified). To compare the Kyrgyzstan 2011, 2012, and 2013 assessments, approximate p-values were calculated for an overall chi-square and test-for-trend. A spreadsheet was developed where the prevalence and confidence limits from each of the three assessments were entered. For each assessment, the effective sample size was calculated based on the point estimate and confidence limits (Kish, 1965). Based on the effective sample size, an overall chi-square and test-for-trend p-values were calculated. (Rosner, 2010). P-values for the Pearson chi-square test are presented to indicate whether there are statistically significant differences in these indicators among the 2011, 2012 and 2013 surveys. The Pearson chi-square tests were run using methods that account for the design of the surveys (standard errors were adjusted for the cluster survey design). The overall chi-square can be interpreted as to whether or not there was a statistically significant association in the estimates across the three years. The test-for-trend can be interpreted as whether or not there was a statistically significant linear increase or decrease in estimates across the three years.

Trends in Gulazyk use

Table 4-7 compares trends in national key indicator results among children 6.0–23.9 months of age from 2011–2013. Between 2011 and 2013, Green Journal records indicated that the percentage of children who had ever received Gulazyk was slightly over 90% in all survey years and remained stable (p=0.252). The percentage children who had received Gulazyk within 3 months of the interview declined by 8.8% (p <0.001). According to caretaker report, the percentage of children who had ever received Gulazyk was about 95% during all three survey years. Among children who had ever received Gulazyk, the percentage children who were currently receiving Gulazyk decreased 5.9% (79.4% versus 73.5%, p<0.001). Caretakers reporting a perceived change in the color or taste of food increased 20.2% (46.4% versus 66.6%, p <0.001)[5]. Among those who had noticed a change in the taste or color, there was little change in the percentage who were concerned (31.6% versus 31.9%, p=0.421) about the change in color or taste. Among children who had ever received Gulazyk and who were not going to age out of the program prior to their next scheduled receipt of the product, care takers reported an 8.1% decrease (89.1% versus 81.0%, p=0.003) in their plans to continue use of Gulazyk in the future.

5 It should be noted that questions on change in color and/or taste were not asked in the same way across all survey years. The changes in questionnaire format may account for some of the differences in response.

Table 4-7: National Key Indicator Results— among children 6.0–23.9 months of age, Kyrgyzstan, 2011–2013

	2011[a]			2012[a]			2013[b]			Overall p-value[c]	Test-for-trend p-value
	N	%	95% CI	N	%	95% CI	N	%	95% CI		
Green Journal Indicators											
Ever received Gulazyk	1023	93.2	(90.9-94.9)	995	90.8	(88.4-92.6)	1628	92.1	(88.7 - 95.5)	0.252	0.304
Received Gulazyk within 3 months of interview	1023	84.9	(81.9-87.6)	995	72.8	(69.1-76.3)	1628	76.1	(68.9 - 82.1)	0.000	0.000
Questionnaire Indicators (per caretaker report)											
Ever received Gulazyk	1023	95.3	(93.3-96.7)	995	95.9	(94.3-97.1)	1628	95.0	(92.9 - 96.5)	0.707	0.818
Currently consuming Gulazyk[d]	974	79.4	(76.1-82.4)	949	69.7	(65.9-73.2)	1537	73.5	(66.8 - 79.3)	0.000	0.004
Noticed a change in taste or color of foodd,[e]	972	46.4	(42.5-50.3)	936	57.9	(54.3-61.5)	1535	66.6	(60.3 - 72.3)	0.000	0.000
Concerned about change in taste or color d,[e]	515	31.6	(26.5-37.2)	471	27.8	(23.3-32.8)	1535	31.9	(27.6 - 36.7)	0.421	0.834
Plan to continue to give Gulazyk[f]	974	89.1	(86.6-91.2)	949	84.6	(81.6-87.3)	1270	80.1	(74.2 - 85.0)	0.003	0.001

NOTE: CI=confidence interval

[a] *Results aggregated across all localities, using population to weight results from each locality within national total (excluding Bishkek city).*

[b] *95% confidence intervals adjusted for cluster survey design*

[c] *Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.*

[d] *Among children who ever received Gulazyk..*

[e] *Separate questions on color and taste were asked in 2013 whereas they were combined into one question in 2011 and 2012.*

[f] *Out of those children currently consuming Gulazyk and who were not aging out of the program prior to running out of sachets*

Table 4-8: Other Indicators Related to Gulazyk Receipt and Use — among children 6.0–23.9 months of age who had ever received Gulazyk, Kyrgyzstan, 2011–2013

	2011[a,b]			2012			2013			Overall p-value	Test-for-trend p-value
	N	%, Mean	95% CI	N	%, Mean	95% CI	N	%, Mean	95% CI		
Where Gulazyk obtained by family, %	974			949			1537				
Health clinic		53.9	(49.9-57.8)		43.8	(39.9-47.7)		87.9	(84.4 – 90.8)	0.000	0.000
Home health worker		37.4	(33.6-41.3)		34.7	(30.9-38.6)		6.5	(4.2 – 10.0)	0.000	0.000
Both of above		8.5	(6.8-10.6)		20.8	(17.8-24.1)		5.4	(3.6 – 7.9)	0.000	0.918
Other		0.2	(0.0-1.2)		0.8	(0.2-2.3)		0.2	(0.0 - 1.1)	0.107	0.996
Schedule of consumption, %	974			949			1537				
Every day for one month		27.2	(23.6-31.0)		24.7	(21.4-28.2)		37.2	(31.3 - 43.4)	0.001	0.029
Every day for 15 days, Alternating		14.5	(12.0-17.5)		6.6	(4.8-9.1)		11.9	(6.8 – 20.0)	0.000	0.003
Every other day		49.9	(45.9-53.9)		55.8	(51.8-59.8)		45.3	(37.3 - 53.6)	0.031	0.766
Other schedule		7.7	(5.7-10.4)		10.1	(8.1-12.5)		3.5	(2.1 - 5.8)	0.000	0.035
Never consumed		0.1	(0.0-0.3)		1.0	(0.5-2.0)		1.6	(0.9 - 2.7)	0.000	0.000
Don't know		0.6	(0.2-1.7)		1.8	(0.9-3.5)		0.7	(0.2 - 2.1)	0.063	0.717
Number of sachets of Gulazyk consumed by child in last 2 months (mean #)	972	23.9	(22.3-25.5)	936	33.7	(31.4-36.1)	1507	28.2	(25.3 - 31.1)	**0.000**	**0.000**

NOTE: CI=confidence interval

[a] Results aggregated across all localities, using population to weight results from each locality within national total (excluding Bishkek city).

[b] 95% confidence intervals adjusted for cluster survey design

[c] Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.

Table 4-9: Reasons given for not using Gulazyk, among children 6.0–23.9 months of age not currently consuming Gulazyk, Kyrgyzstan, 2011–2013

	2011[a]			2012[a]			2013[b]			Overall p-value[d]	Test-for-trend p-value
	N	%	95% CI	N	%	95% CI	N	%	95% CI		
	203			302			346				
Too difficult to remember to give Gulazyk		1.0	(0.4-2.8)		3.5	(1.6-7.6)		3.6	(1.7 - 7.1)	0.018	0.008
Child experienced side effects (total)		20.6	(15.5-26.9)		29.3	(23.3-36.2)		17.6	(11.3 - 26.4)	0.036	0.931
Diarrhea		20.6	(15.5-26.9)		26.0	(20.2-32.8)		13.7	(9.3 - 19.7)	0.013	0.110
Skin/allergy		0.0	N/A		1.1	(0.4-3.5)		3.7	(1.4 - 9.5)		
Other side effect(s)		0.0	N/A		4.0	(2.2-7.2)		0.4	(0.1 - 1.2)		
Perceived change in food due to Gulazyk (total)		10.4	(6.4-16.4)		17.4	(12.4-23.8)		52.9	(45.0 - 60.7)	0.000	0.000
Child does not like food when Gulazyk added		9.7	(5.8-15.6)		14.1	(9.6-20.2)		49.9	(41.8 - 58.0)	0.000	0.000
Gulazyk makes food taste bad		0.3	(0.0-2.0)		3.0	(1.3-7.0)		8.3	(5.2 - 12.9)	0.000	0.000
Gulazyk changes the color of the food		1.3	(0.4-4.3)		2.9	(1.2-6.9)		2.4	(1.0 - 5.7)	0.397	0.323
Mother/caretaker doesn't like Gulazyk		3.2	(1.5-6.8)		7.2	(4.3-11.9)		7.5	(3.3 - 16.0)	0.105	0.054
Health care worker told family to stop using Gulazyk		0.1	(0.0-1.0)		0.2	(0.0-1.4)		0.0	N/A		
Ran out of Gulazyk		45.9	(38.0-54.0)		32.8	(26.5-39.9)		13.7	(8.6 - 21.2)	0.000	0.000
Believe children should get natural vitamins from food		2.2	(0.8-5.6)		0.7	(0.2-2.4)		3.8	(1.6 - 8.7)	0.012	0.357
Family has been away from home		2.0	(0.9-4.6)		1.0	(0.3-2.8)		5.0	(2.1 - 11.2)	0.014	0.185
Child has been sick		11.5	(7.3-17.5)		4.4	(2.4-8.0)		4.6	(2.0 - 10.5)	0.008	0.011
Don't know		1.5	(0.4-4.9)		1.9	(0.7-5.2)		2.9	(1.5 - 5.4)	0.463	0.227
Other		0.0	N/A		25.3	(20.3-31.0)		10.3	(6.0 - 17.0)		

NOTE: CI=confidence interval

[a] Results aggregated across all localities, using population to weight results from each locality within national total (excluding Bishkek city).

[b] Percentages do not add to 100% because respondent could choose more than one option.

[c] 95% confidence intervals adjusted for cluster survey design

[d] Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.

Table 4-8 compares trends in other indicators related to Gulazyk receipt and use results among children 6.0–23.9 months of age from 2011–2013. Between 2011 and 2013, the majority of respondents obtained Gulazyk from a health clinic, with a 34.0% increase (53.9 versus 87.9%, $p<0.001$) in respondents obtaining Gulazyk from a health clinic. Across the three years, a schedule of every other day was the most frequently followed regimen, followed by every day for one month and every day for 15 days, alternating. Between 2011 and 2013, the percentage of respondents reporting a schedule of every other day consumption decreased 4.6% (49.9% versus 45.3%, $p=0.031$) while the percentage giving Gulazyk every day for one month increased 10.0% (27.2% versus 37.2%, $p=0.001$). Finally, the mean number of sachets consumed in the previous 2 months increased from 23.9 in 2011 to 28.2 in 2013 ($p<0.001$).

Table 4-9 presents trends in reasons for not using Gulazyk, among children not currently consuming Gulazyk according to caretakers from 2011–2013. In 2011, the most frequently cited reason for not currently using Gulazyk was "Ran out of Gulazyk" (45.9%) whereas in 2013 the most frequently cited reason (49.9%) was "child does not like food when Gulazyk added". There was a 3% decrease (20.6% versus 17.6%, $p=0.036$) from 2011 to 2013 in caretakers citing that the child experiencing side effects as the reason for not using Gulazyk.

DISCUSSION

Overall, program monitoring indicators collected during all three surveys showed positive results. Almost all caretakers had heard of Gulazyk and had received at least one package of 30 sachets of Gulazyk. These results show success in the initial outreach efforts within communities to raise awareness of the availability of MNP and draw caretakers to local health clinics where they can obtain Gulayzk. Additionally, a majority of caretakers reported that their children were currently taking Gulazyk at the 2011, 2012 and 2013. However, the prevalence of reported current use decreased by 5.9% from 2011 to 2013. This slight decrease in current use could reflect the fact that as programs move into the maintenance phase, it can be more difficult to sustain long-term interest and motivation among caretakers.

In the 2013 survey two thirds of caretakers reported a change in the taste or color of food compared with about half of caretakers in 2011. Among caretakers who discontinued use of Gulazyk, the percentage reporting that their child did not like the taste of food when Gulazyk was added increased from 10% in 2011 to 50% in 2013. The reasons for these increases are unclear. A possible reason for the change in taste or color is inappropriate preparation and serving time; however, we did not collect information on preparation and could not address whether preparation methods changed over the time period. There was no change to the formulation (ferrous fumarate was coated during all years), manufacturing technology or packaging over the survey time periods (personal communication, Pritesh Shetty, Piramal) Furthermore, Piramal, the distributor, tested samples from the Gulazyk batches supplied to UNICEF in 2010 and 2012[6] and neither showed any abnormal enhanced metallic taste (personal communication, Pritesh Shetty [Piramal], 2014). Persons from the MOH noticed that some children refused to consume Gulazyk during the training; they also noticed an increase in complaints about taste of Gulazyk in 2013, but attributed this to negative press publicity resulting from parliamentary debate concerning future funding of the Gulazyk program. It should be noted that in 2013, all caretakers of children who were currently consuming Gulazyk were asked separate questions about change in color and change in taste when Gulazk was added to the food while in 2011 and 2012, caretakers were asked one combined question about change in color and/or taste (see Appendix I and Appendix IV). Change in question format may have led to an apparent increase in the percentage of all caretakers who noted a change in color or taste (Serdula 1992, Serdula, 1995). However, change in format would not account for the increase seen in the percentage of caretakers who said they stopped Gulazyk because the "child does not like food when Gulazyk added" because identical questions were asked about reasons for discontinuation in all survey years.

A limitation of these surveys is that some information on Gulazyk use were self-reported by caretakers; however, for several questions, information on Gulazyk use was also abstracted from the clinic registry (green journal). The figures for ever receiving Gulazyk and current use obtained through clinic registry were consistently similar to those found through the interviews with caretakers, which can be interpreted as a positive sign that self-reporting was accurate.

During all survey years, caretaker satisfaction and acceptance of Gulazyk was high. However, there was a slight decline in the proportion of caretakers who said they would continue to give Gulazyk from 9 in 10 caretakers in 2011 to 8 in 10 in 2013. Outreach through three complementary communications channels – health care professionals, VHC volunteers, and mass media – may have been an important factor in ensuring satisfactory knowledge, attitudes and practices among caretakers. Coverage of communications materials and activities is an area of program performance that may require programmatic adjustments. When caretakers who had ever received MNP were asked whether they received the MNP communications materials in 2013, it was found that only 60% received the instructional brochure. In regard to mass media outreach, slightly over two thirds of the population had heard about Gulazyk through television. Program administrators will need to make programmatic adjustments to improve the coverage of community outreach activities and distribution of MNP communications materials.

6 The 2012 shipment was distributed in both 2012 and 2013.

CHAPTER 5
INFANT AND YOUND CHILD NUTRITION (IYCN): KNOWLEDGE, ATTITUDES, AND PRACTICES

BACKGROUND

WHO recommends exclusive breastfeeding for the first six months and then at six months introduction of solid, semi-solid and soft foods is recommended to supplement the child's diet (WHO, 2001). Appropriate infant and young child feeding (IYCF) practices include altering the frequency, variety, and amount of foods as a child gets older, while continuing breastfeeding until 2 years of age.

INFANT AND YOUNG CHILD FEEDING PRACTICES

The *WHO Indicators for Assessing Infant and Young Child* Feeding Practices (2008) were used to measure infant and young child feeding practices (Table 5-1). Because children under 6 months of age were not included in the survey, we could not use the standard WHO indicators for exclusive breastfeeding and age-appropriate breastfeeding. Instead we used maternal recall to estimate these indicators (Table 5-2). The algorithm for calculating indicators of feeding practices is found in Appendix V. In the 2009 baseline survey only mothers answered the IYCN indicator questions, whereas in 2013, all caretakers answered these questions. For consistency, the 2013 IYCN analysis of indicators was restricted to only those interviews where the mother was the respondent, with the exception of dietary and breastfeeding advice received which reflects that of all caretakers.

Table 5-1: Definitions of the WHO indicators for infant and young child feeding practices (WHO, 2008)

Early initiation of breastfeeding*: **Proportion of children born in the last 23.9 months who were put to the breast within one hour of birth** **Children born in the last 23.9 months who were put to the breast within one hour of birth** **Children born in the last 23.9 months** * included only children 6-23.9 months
Ever breastfed*: **Proportion of children born in the last 23.9 months who were ever breastfed** **Children born in the last 23.9 months who were ever breastfed** **Children born in the last 23.9 months** * included only children 6-23.9 months
Continued breastfeeding at 1 year: **Proportion of children 12-15.9 months of age who are fed breast milk** **Children 12-15.9 months of age who received breastmilk during the previous day** **Children 12-15.9 months of age**
Continued breastfeeding at 2 years: **Proportion of children 20-23.9 months of age who are fed breast milk** **Children 20-23.9 months of age who received breastmilk during the previous day** **Children 20-23.9 months of age**

Введение твердой, полутвердой или мягкой пищи: **Соотношение детей в возрасте 6-8.9 месяцев, получающих твердую, полутвердую или мягкую пищу** **Дети в возрасте 6-8.9 мес., получивших накануне твердую, полутвердую или мягкую пищу** **Дети в возрасте 6-8.9 месяцев**
Introduction of solid, semi-solid or soft foods: **Proportion of infants 6-8.9 months of age who receive solid, semi-solid or soft foods** **Infants 6-8.9 mo of age who received solid, semi-solid or soft foods during the previous day** **Infants 6-8.9 months of age**
Minimum dietary diversity: **Proportion of children 6-23.9 months of age who receive foods from ≥ 4 food groups** **Children 6-23.9 mo of age who received foods from ≥ 4 food groups during the previous day** **Children 6-23.9 months of age**
Minimum meal frequency: **Proportion of breastfed and non-breastfed children 6-23.9 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more** **Breastfed children 6-23.9 mo of age who received solid, semi-solid or soft foods the minimum number of times or more during the previous day** **Breastfed children 6-23.9 months of age** **and** **Non-breastfed children 6-23.9 mo of age who received solid, semi-solid or soft foods or milk feeds the minimum number of times or more during the previous day** **Non-breastfed children 6-23.9 months of age**
Minimum acceptable diet: **Proportion of children 6-23.9 months of age who receive a minimum acceptable diet (apart from breast milk)** **Breastfed children 6-23.9 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day** **Breastfed children 6-23.9 months of age** **and** **Non-breastfed children 6-23.9 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity and the minimum meal frequency during the previous day** **Non-breastfed children 6-23.9 months of age**
Milk feeding frequency for non-breastfed children: **Proportion of non-breastfed children 6-23.9 months of age who receive at least 2 milk feedings** **Non-breastfed children 6-23.9 months of age who received at least 2 milk feedings during the previous day** **Non-breastfed children 6-23.9 months of age**

Table 5-2: Definitions of other infant and young child feeding indicators used

Exclusive breastfeeding under 6 months: **Proportion of children 6-23.9 months of age whose mothers reported that they were exclusively breastfed (no other liquids, milks, or other foods) until 6 months of age** **Children who were exclusively breastfed until 6 months of age** **Children 6-23.9 months of age**
Age appropriate breastfeeding (children 6-23.9 months): **Proportion of children 6-23.9 months of age who are appropriately breastfed** **Children 6-23.9 months of age who received breast milk, as well as solid, semi-solid or soft foods, during the previous day** **Children 6-23.9 months of age**

The estimates of indicators for infant and young child feeding practices are summarized in Table 5-3. Among children, 85.1% were reported to have been breastfed within the first hour after birth (early initiation of breastfeeding). Among children, 99.5% were reported to have ever been breastfed and 40.2% had been exclusively breastfed during the first 6 months of life. A total of 80.1% of children continued breastfeeding at 1 year and 26.2% continued breastfeeding at 2 years.

Appropriate introduction of solid, semi-solid or soft foods was reported in 90.9% of all children. The criteria for minimum dietary diversity (four or more food groups) was met by 86.8% of children and the criteria for minimum meal frequency (three or more times a day) was met by 74.7% of children. Combining the indicators of minimum dietary diversity and minimum meal frequency resulted in 67.2% of children reaching the criteria for minimum acceptable diet. Age appropriate breastfeeding (proportion of children 6 to 23.9 months of age who were appropriately breastfed) was reported for 62.8% of children. Adequate milk feeding frequency (at least 2 milk feedings a day) was reported for 65.4% of non-breastfed children.

Table 5 3: Prevalence of infants achieving each Infant Young Child Nutrition (IYCN) indicator for appropriate feeding practices among children aged 6–23.9 months as reported by mothers — Kyrgyzstan, 2013

IYCN Indicator	N	%	(95% CI)
Early initiation of breastfeeding	1416	85.1	(82.1 - 88.1)
Exclusive breastfeeding under 6 months	1410	40.2	(34.9 – 45.6)
Ever breastfed	1416	99.5	(98.9 - 100.1)
Continued breastfeeding at 1 year	348	80.1	(72.7 - 87.5)
Continued breastfeeding at 2 years	295	26.2	(20.8 - 31.5)
Appropriate introduction of solid, semi-solid or soft foods	212	90.9	(86.2 - 95.7)
Consuming minimum dietary diversity	1416	86.8	(84.1 – 89.6)
Consuming minimum meal frequency	1416	74.7	(70.9 - 78.5)
Consuming minimum acceptable diet	1416	67.2	(63.1 – 71.3)
Age-appropriate breastfeeding	1416	62.8	(59.3 - 66.3)
Adequate milk feeding frequency for non-breastfed children	637	65.4	(56.4 - 74.4)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.

KNOWLEDGE AND ATTITUDES REGARDING INFANT AND YOUNG CHILD FEEDING

Table 5-4 presents knowledge and attitudes of mothers regarding breastfeeding and feeding of their babies. Among caretakers, 75.6% considered breastfeeding very important for a baby's health and nutrition. Almost all (99.6%) of the mothers felt a baby should be breastfed and 97.7% felt there were advantages to breastfeeding. When asked how long a baby should be breastfed, on average mothers reported that children ideally should be breastfed for the first 23.9 months. Caretakers reported children should be given other liquids (tea, water, animal milk, etc.) at the age (mean)of 5.2 months and children should start eating other foods at the age (mean) of 7.4 months.

Table 5 4: Knowledge and attitudes regarding infant and young child feeding as reported by all caretakers — Kyrgyzstan, 2013

Пункт	N	%, средний	(95% ДИ)
Importance of breastfeeding, %	2163		
Very important		75.6	(68.8 – 81.3)
Important		24.2	(18.6 - 31.0)
Somewhat important		0.1	(0.0 - 0.4)
Not important		0.02	(0.0 - 0.2)
Baby should be breastfed, %	2163		
Yes		99.6	(99.0 – 99.8)
No		0.1	(0.0 - 0.2)
Among those who felt a baby should be breastfed:			
Length of time a baby should be breastfed (in months), mean	2154	23.9	(22.9 – 24.8)
Age at which a baby should start drinking other liquids like tea, water, milk, etc. (in months), mean	2163	5.2	(4.7 - 5.6)
Age at which a baby should start eating foods like porridge, cereal, bulymak, etc. (in months), mean	2163	7.4	(6.9 - 7.8)
Advantages to breastfeeding, %	2163		
Yes		97.7	(96.1 - 98.6)
No		2.3	(1.4 – 3.9)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.

DIETARY AND BREASTFEEDING ADVICE

Caretakers were asked about the advice they received from medical professionals regarding breastfeeding and feeding their baby which is summarized in Table 5-5. Overall, 87.8% of caretakers reported receiving advice on breastfeeding from a doctor, nurse, midwife, or feldsher. Among those who had received advice, on average, caretakers reported that medical professionals recommended breastfeeding for 23.3 months and to exclusively breastfeed for approximately 7.2 months.

Table 5-5: Dietary and breastfeeding advice received by all caretakers — Kyrgyzstan, 2013

Item	N	%, mean	(95% CI)
Doctor, nurse, midwife, or feldsher gave advice on breastfeeding, %	2163		
Yes		87.8	(84.8 - 90.3)
No		6.5	(4.8 - 8.6)
Don't know		5.7	(4.0-8.0)
Among those who received advice on breastfeeding from a doctor, nurse, midwife, or feldsher:			
Length of time advised to breastfeed without giving other liquids or solids (in months), mean	1698	7.2	(6.7 – 7.7)
Age at which advised to stop breastfeeding (in months), mean	1223	23.3	(22.5 – 24.2)

NOTE: CI=confidence interval; 95% confidence intervals adjusted for cluster survey design.

CHAPTER 6
ANTHROPOMETRY

BACKGROUND

This chapter documents the anthropometric measurements of children in Kyrgyzstan and compares them to international standards for growth.

METHODS

Anthropometric indicators of length/height-for-age, weight-for-age, and weight-forlength/ height were determined for all children 6 to 29.9 months (Table 6-1). Shorr boards were used to measure height/length and UNICEF Seca Uniscales were used to measure weight. For children ≥24 months standing height was measured. For children <24 months supine length, rather than height, was measured[7]. The age of the child was calculated based on the difference between the child's birth date and the date of the measurement divided by 30.4.

Table 6-1: Interpretation of anthropometric indicators for children

Reference: The WHO growth curves for nutritional status will be used to interpret the anthropometric data of the children (WHO, 2006). This system is based on parameters of height for children from six different countries, where children receive proper nutrition and health care in a hygienic environment. The present system is appropriate to use for all population groups. Healthy and well-nourished children from most countries have growth patterns similar to the parameters of this system.
Z-scores: The anthropometric indices used for evaluating the nutritional status of children include height-for-age, weight-for-age, and weight-for-height. These indices are interpreted using classifications based on Z-scores (standard deviation units from the reference median). The WHO recommends that a Z-score cut-off point of <-2 be used to classify low height-for-age (stunting), low weight-for-age (underweight), and low weight-for-height (wasting) for estimating the prevalence of malnutrition (WHO, 1995). A Z-score cut off of <-3 indicates severe wasting, stunting or underweight. The reference Z-score distribution for each index has a mean of 0.0 and a standard deviation of 1.0. A Z-score cut-off of +2 should be used to classify high weight-for-height for estimating the prevalence of overweight (also a form of malnutrition). A Z-score of -2 corresponds to the 2.3rd percentile of the reference distribution, while a Z-score of 2 corresponds to the 97.7th percentile on the reference distribution. Thus, with any of the indicators, a prevalence less than or equal to 2.3% is regarded as the surveyed population being free from malnutrition based on that indicator.
Height-for-age: A low height-for-age indicates growth stunting, which reflects a long term deficit of nutritional status and/or a history of illness and disease such as diarrhea and acute respiratory infection. On a population level, a high prevalence of stunting is usually associated with poor socioeconomic conditions and a greater risk for frequent and/or early exposure to adverse environmental conditions such as illness and inadequate nutrition. A decrease in the prevalence of stunting usually parallels improvements in economic conditions (WHO, 1995).

7 For the purpose of this report, the term height will be used to indicate either length or height.

Weight-for-age: This index is a composite of height-for-age and weight-for-height. On a cross-sectional basis, weight-for-age is less useful than height-for-age or weight-for-height in defining nutritional status. In most populations where there are few children with low weight-for-height, the weight-for-age status provides essentially the same information as height-for-age.

Weight-for-height: Low weight-for-height, or wasting, is an indicator of acute under-nutrition and is often the result of severe food shortages and/or prolonged illness.

Data Quality:

Data Cleaning: The records with potentially erroneous data were excluded from analysis based on the following standard Z-score cutoffs (WHO, 1995):
Height-for-age, Z-score (HAZ) <-6.0 or >6.0
Weight-for-age, Z-score (WAZ) <-6.0 or >5.0
Weight-for-height, Z-score (WHZ) <-5.0 or >5.0

Data quality: The Standard Deviation (SD) of the Z-score (unweighted) provides information on the spread of the distribution and the quality of the anthropometric measurements done for a survey. In the reference population, the standard deviation (S.D.) of the Z-score distribution for height-for-age and weight-for-height is 1.0. A Z-score S.D. that is lower than 0.9 indicates that the distribution is more homogeneous or one with less variation compared to the reference distribution. A Z-score S.D. >1.0 and <1.2 indicates that the distribution has a wider spread than the reference. A Z-score S.D. <0.80 or >1.3 is suggestive of inaccurate anthropometric measurements and/or inaccurate age information (WHO, 1995).

NOTE: Supine length, rather than height, is measured for children under 24 months of age.

The prevalence of anthropometric indicators was interpreted using the WHO classification presented in Table 6-2. Anthropometric results for the WHO global data base on child growth and malnutrition can be found in Appendix VI.

Table 6 2: WHO classification for low anthropometric values according to public health significance for children < 5 years of age (WHO, 1995)

Anthropometric Index	Low	Medium	High	Very High
Wasting (WHZ < -2)	<5.0%	5.0-9.9%	10.0-14.9%	≥15.0%
Stunting (HAZ < -2)	<20.0%	20.0-29.9%	30.0-39.9%	≥40.0%
Underweight (WAZ < -2)	<10.0%	10.0-19.9%	20.0-29.9%	≥30.0%

RESULTS

A total of 2162 children aged 6.0-29.9 months had height/length, weight, and age data to calculate height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight) z-scores. Participants were excluded from analysis after applying the standard z-score cutoffs (WHO, 1995): height-for-age (7 children), weight-for-height (2 children), and weight for age (0 children). After excluding the observations with invalid z-scores, the standard deviations for all anthropometry indicators suggest that measurements were accurately taken because they fall within the acceptable range (Mei 2007, WHO 1995;Table 6-3).

Table 6-3: Distribution of anthropometry measurements among children aged 6.0-29.9 months — Kyrgyzstan, 2013

Anthropometric Indicator	N	Mean	SD
Height -for-age	2155	-0.59	1.27
Weight-for-height	2160	0.17	1.04
Weight-for-age	2162	-0.17	1.06

Note: SD=standard deviation; SD's are unweighted. Mean estimates are weighted for non-response. Anthropometric values based on WHO growth reference curves (WHO, 2006).

The prevalence of wasting was 2.0% and the prevalence of underweight was 4.8% among children. Overweight children comprised 3.2% of the population (Table 6-4).

Table 6-4: Prevalence of wasting, underweight, and overweight for children 6.0-29.9 months of age — Kyrgyzstan, 2013

Anthropometric Indicator	N	%	(95% CI)
Wasting (weight-for-height Z < -2)	2160	2.0	(1.1 - 2.8)
Underweight (weight-for-age Z < -2)	2162	4.8	(3.7 - 5.9)
Overweight (weight-for-height Z > +2)	2160	3.2	(1.8 - 4.5)

NOTE: CI=confidence interval; percent estimates weighted for non-response and 95% CI's adjusted for survey design. Anthropometric values based on WHO growth reference curves (WHO, 2006).

Stunting was identified in 11.7% of the children aged 6-29.9 months (Table 6-5). When stratified by gender, 10.3% of girls were stunted, while 13.1% of boys were stunted. The prevalence of stunting increased across age categories through 23.9 months of age, and was similar among rural children and urban children.

Table 6-5: Stunting (height -for-age Z<-2) by age, gender, and place of residence for children 6.0-29.9 months of age — Kyrgyzstan, 2013

Characteristic of Child	N	% Stunted	(95% CI)
Age Group (months)			
6.0-11.9 months	515	5.0	(2.3 - 7.6)
12.0-17.9 months	568	8.6	(5.5 - 11.6)
18.0-23.9 months	539	17.1	(12.5 - 21.7)
24.0-29.9 months	533	15.5	(10.9 - 20.1)
Gender			
Male	1099	13.1	(9.8 - 16.4)
Female	1056	10.3	(7.4 - 13.1)
Place of Residence			
Urban	549	11.3	(8 - 14.6)
Rural	1606	12.6	(10.5 - 14.7)
Total	2155	11.7	(9.3 - 14.1)

NOTE: CI=confidence interval; percent estimates weighted for non-response and 95% CI's adjusted for survey design. Anthropometric values based on WHO growth reference curves (WHO, 2006).

Wasting was identified in 2.0% of the children aged 6-29.9 months (Table 6-6). When stratified by gender, 1.0% of girls were found to have wasting, while 3.0% of boys had wasting. The prevalence of wasting decreased across age categories, and was similar among urban and rural children.

Table 6-6: Wasting (weight-for-height Z<-2) by age, gender, and place of residence for children 6.0-29.9 months of age — Kyrgyzstan, 2013

Characteristic of Child	N	% with Wasting	(95% CI)
Age Group (months)			
6.0-11.9 months	520	2.7	(0.8 - 4.5)
12.0-17.9 months	568	2.5	(0.8 - 4.2)
18.0-23.9 months	539	2.3	(0.5 - 4.2)
24.0-29.9 months	533	0.5	(0.1 - 0.8)
Gender			
Male	1101	3.0	(1.4 - 4.5)
Female	1059	1.0	(0.3 - 1.7)
Place of Residence			
Urban	552	2.0	(0.8 - 3.2)
Rural	1608	2.0	(1.3 - 2.7)
Total	2160	2.0	(1.1 - 2.8)

NOTE: CI=confidence interval; percent estimates weighted for non-response and 95% CI's adjusted for survey design. Anthropometric values based on WHO growth reference curves (WHO, 2006).

Underweight was identified in 4.8% of the children aged 6-29.9 months (Table 6-7). When stratified by gender, 4.3% of girls were underweight, while 5.3% of boys were underweight. The prevalence of underweight increased slightly across age categories through 23.9 months of age, and was similar among urban and rural children.

Table 6-7: Underweight (weight-for-age Z<-2) by age, gender, and place of residence for children 6.0-29.9 months of age — Kyrgyzstan, 2013

Characteristic of Child	N	% Underweight	(95% CI)
Age Group (months)			
6.0-11.9 months	520	3.4	(0.9 - 6)
12.0-17.9 months	569	3.7	(1.9 - 5.6)
18.0-23.9 months	539	6.3	(3.4 - 9.3)
24.0-29.9 months	534	5.6	(3.1 - 8.1)
Gender			
Male	1102	5.3	(3.3 - 7.3)
Female	1060	4.3	(2.8 - 5.8)
Place of Residence			
Urban	552	5.0	(3.5 - 6.5)
Rural	1610	4.3	(3.2 - 5.4)
Total	2162	4.8	(3.7 - 5.9)

NOTE: CI=confidence interval; percent estimates weighted for non-response and 95% CI's adjusted for survey design. Anthropometric values based on WHO growth reference curves (WHO, 2006).

DISCUSSION

The prevalence of stunting (11.7%), wasting (2.0%), and underweight (4.8%) among children are all classified as low according to the WHO criteria for public health significance (Table 6-2) (WHO, 1995). Although the WHO criteria apply to population estimates for children less than 59 months, this national nutrition survey included only children 6-29.9 months of age. In general, the prevalence of stunting increases with age, which agrees with other studies (Rah, 2009; UN, 2003]. Because the prevalence of stunting has been shown to be higher in children 24-59 compared to younger children in Kyrgyzstan (CDC/UNICEF/MOH, 2012), it is likely that the prevalence of stunting in all preschool children would be higher than that measured in children 6-29 months (CDC, 2012).

CHAPTER 7
BIOCHEMICAL INDICATORS FOR MICRONUTRIENT DEFICIENCY AND THE USE OF MICRONUTRIENT SUPPLEMENTS

BACKGROUND

This chapter highlights 1) the results from biochemical tests to estimate the extent of iron and vitamin A deficiencies and 2) the use of micronutrient supplements.

METHODS

In order to account for the effect of inflammation on ferritin and RBP levels, the acute phase indicators CRP and AGP were measured for each child. Inflammation was considered present if either indicator was elevated (CRP>5.0 mg/L or AGP > 1.0g/L). All results are presented for the total population and for the population without inflammation.

EFFECTS OF INFLAMMATION ON NUTRITIONAL BIOMARKERS

Ferritin and retinol, including its proxy, retinol binding protein (RBP), are acute-phase reactants. Whereas ferritin is elevated during infection/inflammation, retinol and RBP are depressed. Thus, if inflammation is not taken into account, iron deficiency, as measured by serum ferritin, will be underestimated and vitamin A deficiency, as measured by retinol or RBP, will be overestimated. In this survey, both C-reactive protein (CRP) and α1-glycoprotein acid (AGP) are used as markers for inflammation. CRP is an acute phase protein that is often used as a marker for acute inflammation, and AGP is used as a marker for chronic inflammation (Thurnham 2003, Thurnham 2010).

IRON DEFICIENCY, ANEMIA, AND IRON DEFICIENCY ANEMIA

Iron deficiency is the leading cause of anemia, yet not all cases of anemia are caused by iron deficiency and iron deficiency does not necessarily develop into anemia. On the population level a prevalence of iron deficiency is on average 2-5 times higher than the prevalence of iron deficiency anemia (WHO, 2001). The magnitude of iron deficiency can be assessed by several biochemical indicators, including ferritin, soluble transferrin receptor protein (sTfR), and hemoglobin.

In our survey, iron deficiency was defined as (1) decreased ferritin concentration in plasma or (2) increased sTfR levels. In children, ferritin levels in plasma below 12µg/L or sTfR levels greater than 8.3 mg/L indicate iron deficiency (WHO, 2001; Erhardt, 2004). Total iron deficiency was defined as presence of either low ferritin or high sTfR. The prevalence of anemia was determined from hemoglobin levels collected from capillary blood samples using a Hemocue® photometer (Hb 301, HemoCue AB, Angelholm, Sweden). Cut-off values for anemia depend on the age and sex of the person and the altitude where the person lives (WHO/UNU/UNICEF, 2001). Anemia in children was defined as hemoglobin < 11.0 g/dL after adjusting for altitude (see details below). Iron deficiency anemia was defined as having both: 1) a low hemoglobin value and 2) low plasma ferritin or high sTfR.

For determining the prevalence of anemia in the population, adjustments for altitude were necessary to account for a reduction in oxygen saturation of blood and a subsequent increase in hemoglobin (Hb) values (WHO/UNU/UNICEF, 2001). The adjustment for altitude was done using the following formula (Sullivan, 2008):

$$\text{Hb adjustment} = -0.032 \times [\text{altitude (m)} \times 0.0032808] + 0.022 \times [(\text{altitude (m)} \times 0.0032808)^2]$$

where the Hb adjustment was the value subtracted from each individual's observed hemoglobin level and then compared to the cut-off values for sea level. If the altitude where the individual lives is

<1000 meters, adjustment of the hemoglobin level is not needed (Sullivan, 2008).

A summary of cut off levels for biochemical indicators used to estimate iron load in the blood are presented in Table 7-1.

Table 7 1: Biochemical indicators for identification of iron deficiency, anemia, and inflammation

Indicators	Children	Iron status
Plasma ferritin	<12 µg/L[a]	Iron deficiency (defined by ferritin)
sTfR	>8.3 mg/L[b]	Iron deficiency (defined by sTfR)
Hemoglobin	< 11.0 g/dL[c]	Anemia
CRP	>5 mg/L[d]	Inflammation present
AGP	>1.0 g/L[d]	Inflammation present

Note: sTfR= soluble transferrin receptor protein; CRP=C-reactive protein; AGP=α1-glycoprotein acid.
[a] WHO, 2001
[b] Erhardt, 2004
[c] After adjusting for altitude (WHO, 2001).
[d] Thurnham, 2010

Iron deficiency, anemia, and iron deficiency anemia were calculated for all participants (with and without evidence of inflammation), as well as for those participants without evidence of inflammation (i.e. after exclusion of those with high CRP and/or AGP) (Table 7-2). The prevalence of iron deficiency as measured by ferritin was 34.2% (39.7% among children without inflammation) and as measured by sTfR was 39.3% (38.9% among children without inflammation). The prevalence of total iron deficiency was 48.0% (49.8% among children without inflammation). After adjustment for altitude, the prevalence of anemia was 32.7% (29.5% among children without inflammation). The prevalence of iron deficiency anemia as measured by ferritin was 18.8% (20.4% among children without inflammation) and as measured by sTfR was 21.5% (19.8% among children without inflammation). The prevalence of total iron deficiency anemia was 23.6% (22.4% among children without inflammation).

Table 7 2: Prevalence of iron deficiency and anemia among children aged 6.0–29.9 months, stratified by presence of inflammationa —Kyrgyzstan, 2013

Iron Status of Children	n	All Participants % (95% CI)	n	Participants Without Inflammationa% (95% CI)
Iron deficiency				
Low ferritin (<12.0 µg/L)	2156	34.2 (31.3 - 37.2)	1436	39.7(36.4 - 43.1)
High sTfR (>8.3 mg/L)	2156	39.3 (35.6 - 43.1)	1436	38.9 (34.6 - 43.1)
Total iron deficiency[b]	2156	48.0 (44.7 - 51.3)	1436	49.8 (46.2 - 53.4)
Anemia (Hb< 11.0 g/dL)[c]	2153	32.7 (28.9 - 36.4)	1434	29.5 (25.8 - 33.1)
Iron deficiency anemia				
Low ferritin (<12.0 µg/L)	2153	18.8 (15.6 – 22.0)	1434	20.4 (16.6 - 24.2)
High sTfR (>8.3 mg/L)	2153	21.5 (17.9 - 25.2)	1434	19.8 (15.8 - 23.9)
Total iron deficiency anemia[d]	2153	23.6 (20.1 - 27.1)	1434	22.4 (18.7 - 26.1)

NOTE:CI=confidence interval; 95% CI's adjusted for survey design.
Abbreviations: sTfR= soluble transferrin receptor protein; Hb=hemoglobin.
[a] Inflammation not present (low C-reactive protein [CRP≤5 mg/L] and low α1-glucoprotein acid [AGP≤1.0 g/L]).
[b] Total iron deficiency defined as having either low plasma ferritin (<12.0 µg/L) or high sTfR (>8.3 mg/L).

[c] *Adjusted for altitude.*
[d] *Iron deficiency anemia defined as having a Hb level < 11.0 g/dL and low plasma ferritin (<12 µg/L) or high sTfR (>8.3 mg/L)*

The prevalence of anemia among all children and among those without evidence of inflammation is stratified by age, gender, and place of residence (Table 7-3).

The World Health Organization classifies anemia as a problem of public health significance based on prevalence estimates from hemoglobin values (WHO/UNU/UNICEF, 2001). Among all children, 32.7% of all children were anemic and 23.6% had iron deficiency anemia. The prevalence of anemia in this population is considered a moderate public health problem according to the WHO criteria (WHO/UNU/UNICEF, 2001).

Table 7 3: Prevalence of anemiaa among children aged 6.0–29.9 months, stratified by age, gender, residence, and presence of inflammation — Kyrgyzstan, 2013

Characteristics of Child	n	All Participants % with Anemia (95% CI)	n	Participants Without Inflammationb % with Anemia (95% CI)
Age of children				
6.0-11.9 months	519	35.6 (27.8 - 43.4)	354	33.6 (25.4 - 41.7)
12.0-17.9 months	567	35.8 (30.6 – 41.0)	380	33.4 (27.5 - 39.2)
18.0-23.9 months	537	35.1 (30.2 - 40.0)	353	29.2 (23.7 - 34.8)
24.0-29.9 months	530	24.5 (17.7 - 31.3)	347	21.7 (15.6 - 27.8)
Gender of children				
Male	1096	34.5 (29.2 - 39.8)	723	31.5 (26.3 - 36.7)
Female	1057	30.8 (26.3 - 35.2)	711	27.4 (23.0 - 31.8)
Place of Residence				
Urban	551	32.5 (27.3 - 37.7)	361	29.6 (24.5 - 34.7)
Rural	1602	33.0 (29.9 - 36.1)	1073	29.2 (25.7 - 32.6)
Total	2153	32.7 (28.9 - 36.4)	1434	29.5 (25.8 - 33.1)

NOTE:CI=confidence interval; 95% CI's adjusted for survey design.
[a] *Adjusted for altitude. Anemia was defined as having a hemoglobin < 11.0 g/dL.*
[b] *Inflammation not present (low C-reactive protein [CRP≤5 mg/L] and low a1-glucoprotein acid [AGP≤1.0 g/L]).*

VITAMIN A DEFICIENCY

Vitamin A is an essential nutrient required for the immune system, cell function and growth, and epithelial maintenance (WHO, 2009). Kyrgyzstan distributed vitamin A capsules to young children for several years; however the vitamin A capsule distribution program was discontinued based on the low prevalence of deficiency (4.2%) found among children 6-59 months in 2009 (CDC/UNICEF/MOH, 2012).

The most common biochemical indicator used to assess the prevalence of VAD in a population is plasma retinol. A plasma retinol concentration <0.70 µmol/L indicates mild or sub-clinical VAD (WHO, 2009). In the 2013 Kyrgyzstan Survey, retinol binding protein (RBP) was used as a proxy measure of vitamin A status. The CDC nutrition laboratory developed a correlation index comparing plasma retinol to RBP in a sample of children from Kyrgyzstan in order to validate the use of RBP as an indicator of vitamin A status. The RBP cut-off of 0.71 µmol/L provided the best sensitivity and specificity compared with plasma retinol of <0.70 µmol/L (CDC/UNICEF, 2010). Therefore, the RBP cut-off of <0.71 µmol/L was used to indicate vitamin A deficiency among children. The correlation agreed with past research, showing that RBP behaves like serum retinol and can be used as an indicator of vitamin A status (Gorstein, 2008).

Unlike ferritin, which is elevated during infection/inflammation, retinol binding protein is a negative acute phase reactant, meaning it decreases during infection/inflammation (Thurnham 2003; Thurnham 2010). To account for the presence of inflammation, the prevalence of vitamin A deficiency was calculated for all participants (with and without evidence of inflammation) as well as for those participants without evidence of inflammation (i.e. after exclusion of those with high CRP and/or AGP). Table 7-4 below shows the prevalence of vitamin A deficiency among all children and among those without evidence of inflammation, stratified by age, gender, and place of residence. Among all children (n=2148), the prevalence of VAD was 15.6% (95% CI: 13.1, 18.1). Among children without presence of inflammation (n=1436), the prevalence of VAD dropped to 7.8% (95% CI: 5.7, 9.8). The prevalence of vitamin A deficiency (VAD) was 15.6%. Among children 6.0 -11.9, 12.0-17.9, 18.0-23.9, and 24.0-29.9 months, the prevalence of VAD was 16.0%, 13.7%, 16.1%, and 16.7%, respectively. The prevalence of deficiency was 17.0% among males and 14.1% among females, and was 16.0% in urban and 14.7% in rural areas.

In interpreting the results of vitamin A deficiency it is important to recognize that compared to the VITAL-EQA program mean, the precision and bias were Minimal or Unacceptable for RBP (>80-85% precision of the VITAL-EQA results, with 18.3% bias (see Appendix VII).The RBP concentrations for the EQA samples measured by the VitMin Lab were 15 to 20% higher when compared to the target values. Thus, the actual prevalence of vitamin A deficiency could likely be higher than the prevalence in this report. Unfortunately, there is no accepted quantitative method for adjusting the values according to imprecision and bias

The WHO classifies the level of public health significance of VAD based on the prevalence of VAD among preschool-age children in a population. According to the classification, prevalence of VAD of ≥10% to <20% would be classified as a moderate public health problem (WHO, 2009). Again, it should be noted that the WHO criteria apply to population estimates for all children less than 71 months of age. Because the prevalence of VAD has been shown to decrease with increasing age in Kyrgyzstan (CDC/UNICEF/MOH, 2012), it is likely that the prevalence of VAD deficiency in all preschool children in Kyrgyzstan would be lower than that measured in children 6-29 months (CDC, 2012).

Table 7 4: Prevalence of vitamin A deficiency (VAD) among children aged 6.0–29.9 months, stratified by age, gender, residence, and presence of inflammation — Kyrgyzstan, 2013

Characteristics of Child	n	All Participants % with VAD (95% CI)	n	Participants Without Inflammationa % with VAD (95% CI)
Age of children				
6.0-11.9 months	517	16.0 (11.1 - 21.0)	354	9.5 (5.3 - 13.8)
12.0-17.9 months	568	13.7 (9.9 - 17.5)	381	4.0 (1.6 - 6.5)
18.0-23.9 months	537	16.1 (11.2 - 20.9)	354	8.2 (3.2 - 13.2)
24.0-29.9 months	526	16.7 (12.2 - 21.3)	347	9.6 (5.1 - 14.1)
Gender of children				
Male	1093	17.0 (13.1 - 20.9)	724	7.7 (4.0 - 11.4)
Female	1055	14.1 (11.1 - 17.1)	712	7.8 (5.5 - 10.1)
Place of Residence				
Urban	549	16.0 (12.4 - 19.5)	361	7.7 (4.8 - 10.6)
Rural	1599	14.7 (12.9 - 16.6)	1075	7.9 (6.3 - 9.5)
Total	2148	15.6 (13.1 - 18.1)	1436	7.8 (5.7 - 9.8)

NOTE: VAD=Vitamin A Deficiency (RBP <0.71 µmol/L); CI=confidence interval; 95% CI's adjusted for survey design.
aInflammation not present (low C-reactive protein [CRP≤5 mg/L] and low α1-glucoprotein acid [AGP≤1.0 g/L]).

USE OF MICRONUTRIENT SUPPLEMENTS

Among children surveyed whose mother was interviewed (n=1823), 34.6% (95% CI: 29.5, 40.2) had ever received an anemia diagnosis from a health care worker. Among children with a history of anemia (n=573), 62.6% (95% CI: 56.7, 68.2) were reported to have taken iron syrup or drops. Among all children, 21.7% (95% CI: 17.9. 25.9) were reported to have received iron tablets or syrup to improve anemia status.

CHAPTER 8
COMPARISON OF NUTRITIONAL STATUS OF CHILDREN 6–29 MONTHS AND INFANT YOUNG CHILD NUTRITION KNOWLEDGE, ATTITUDES, AND PRACTICES — 2009 AND 2013 NATIONAL SURVEYS

BACKGROUND

This chapter compares results of the 2009 and 2013 surveys in regard to anthropometry, hemoglobin, and other biochemical indicators in the population of children aged 6–29 months living in the Kyrgyz Republic, as well as infant and young child nutrition (IYCN) knowledge, attitudes, and practices.

METHODS

Both the 2009 and 2013 surveys used similar methodology for sample selection and measurement of anthropometry, hemoglobin, biochemical indicators, and IYCN indicators. In both the 2009 and 2013 surveys, the sample population was selected using population proportionate to size (PPS) methods, and information was collected from 66 and 80 clusters, respectively. Clusters were formed based on the catchment areas for health centers (based on geographic location of residence, all children are assigned to a primary health care center). The sampling frame for the 2009 survey was comprised of children 6–59 months and their mothers and was stratified by rural and urban residence. For each stratum, 33 clusters were selected for the survey with 30 children invited to participate in each cluster. The sampling frame for the 2013 survey consisted of children 6–29 months of age living in the Kyrgyz Republic (with the exception of the city of Bishkek). Although micronutrient powder was only distributed to children 6–24 months of age, we anticipated that the effects of the Gulazyk on iron status may have persisted 6 months of age after discontinuation (Ip 2009). To increase our sample size for the 2009 survey comparison, we included children 24 to 29 months of age. The 2013 sample was not stratified; 80 clusters of 30 children each (instead of 30 children, one cluster had 22 children and another had 29 children) were selected for the 2013 survey. Detailed methods for the 2013 survey including sample size calculations are described in Chapter 2 of this report. Detailed methods for the 2009 report have been previously published (CDC/UNICEF/MOH, 2012).

For the 2009 and 2013 surveys, data were collected during June and July, and July-September, respectively. Caretakers of selected children were invited to come to their primary heath care center on a predetermined day. If children did come, survey personnel visited the home. In the 2009 survey, blood was collected from both mothers and children; therefore, mothers were actively recruited to accompany their children. In the 2013 survey, blood was collected only from children and mothers were not actively recruited to accompany their children. The 2009 and 2013 questionnaires were similarly worded. Both contained modules on sociodemographic information and the use of micronutrient powders (see Appendix I and VIII). Both questionnaires were written in English and then translated into the Kyrgyz and Russian languages. Comparisons between 2009 and 2013 data are made based on children 6–29 months of age, excluding children residing in the city of Bishkek and limiting the 2009 age range to children 6-29 months.

The anthropometric equipment and methods used to measure children were the same for the 2009 and 2013 surveys. During both surveys, Shorr boards were used to measure weight/length and UNICEF Seca Uniscales were used to measure weight. For children ≥24 months standing height was measured. For children <24 months supine length, rather than height, was measured[8]. The same instructor conducted training for both surveys. The age in months of the participant was calculated by

8 For the purpose of this report, the term height will be used to indicate either length or height.

subtracting the date of measurement from the birth date and dividing by 30.4. The WHO growth reference (2006) was used to calculate anthropometric indicators (Z-scores) of height-for-age, weight-for-age, and weight-for-height.

Records with potentially erroneous data were excluded from the analysis based on standard Z-score cutoffs developed by WHO (WHO, 1995) (see Chapter 6). In the 2009 survey, anthropometric measurement (weight and height) were taken on 576 participants 6-29 months of age and living outside of Bishkek City. Of these, 3 participants were excluded based on out of range Z-scores. Of the 2162 participants from whom anthropometric measurements were taken in the 2013 survey, 7 participants were excluded based on out of range Z-scores.

A measure of the quality of the anthropometric measurements is the unweighted SD of the Z-score distribution (WHO, 1995). For the 2009 survey, among children 6-29 months of age and living outside of Bishkek City, the unweighted SD's for both WHZ and WAZ fall within the acceptable range for data quality; however, the SD for HAZ falls outside the acceptable range and measurements may be slightly inaccurate (most likely height/length measurements or inaccurate age determination) [HAZ: SD 1.331; WHZ: SD 0.986; WAZ: SD 1.018] (CDC/UNICEF/MOH, 2012). Although the SD for HAZ is wider than expected based on 1995 WHO, these guidelines were based on an earlier growth reference and it has been shown that higher standard deviations may be expected based on the 2006 WHO growth reference (Mei, 2007). For the 2013 survey, the unweighted SD's for all anthropometry indicators fall within the acceptable range [HAZ: SD 1.27; WHZ: SD 1.04; WAZ: SD 1.06] (see Chapter 6 of this report).

Biochemical indicators

In both the 2009 and 2013 surveys, hemoglobin was assessed in the field using the HemoCue® photometric instrument (Model 301, HemoCue AB, Angelholm, Sweden). Laboratory personnel collected capillary blood samples through a finger stick using a single-use retractable lancet. After the first two drops were wiped clean, the third drop was drawn into a HemoCue® cuvette. Afterwards, 500 uL of blood was collected in a Microtainer®. Analysis of biochemical indicators was conducted using the "sandwich assay" at the Erhardt VitA-Iron Tech research laboratory (Erhardt, 2004). The biochemical indicators measured were iron status (serum ferritin, soluble transferrin receptor [sTfR]) and inflammation status (C-reactive protein [CRP] and α1-glycoprotein acid [AGP]).

Anemia was defined as an altitude-adjusted hemoglobin concentration of <11.0 g/dL (Sullivan 2008, WHO 2001). Total iron deficiency was defined as either decreased serum ferritin concentration (<12 µg/L) or increased sTfR levels (>8.3 mg/L). Iron deficiency anemia was defined as having both a low hemoglobin value and either low serum ferritin or high sTfR. Inflammation was considered present if either indicator was elevated (CRP>5.0 mg/L or AGP>1.0 g/L) (Thurnman 2003, Thurnman 2010).

RBP was used as an indicator of vitamin A status (Gorstein 2008). The CDC Nutrition Laboratory compared RBP and plasma retinol on a subsample of participants in the 2009 survey; RBP concentration less than 0.71µmol/L was determined as the cut-off for vitamin A deficiency (personal communication, Rosemary Schleicher).

External Quality Assurance

Analysis of biochemical indicators was conducted using the "sandwich assay" at the Erhardt VitMin Laboratory (Erhardt, 2004). The laboratory measured ferritin, soluble transferrin receptor (sTfR), 1-acid glycoprotein (AGP), C-reactive protein (CRP), and retinol binding protein (RBP) concentrations in plasma using an enzyme-linked immunosorbent assay (ELISA) technique. During both surveys, the laboratory (Willstaett, Germany) participated in CDC's VITAL-EQA (Vitamin A Laboratory-External Quality Assurance) program, an external quality assurance program that assesses laboratory performance during the course of analyzing survey samples (http://www.cdc.gov/labstandards/vitaleqa.html; Haynes, 2008) (see Appendix VII). For the 2009 survey, the precision and bias were Optimal or Desirable for all of the above indicators (>90% precision of the VITAL-EQA results, with <0.5% bias). For the 2013 survey, the precision and bias were Optimal or Desirable for ferritin, sTfR, and CRP (>90% precision of the VITAL-EQA results, with <0.5% bias). However, the precision and bias shifted 15-20%

for RBP (>80-85% precision of the VITAL-EQA results, with 18.3% bias) due to a change in pools used by the VITAL-EQA program. In regard to internal quality control, the inter-assay coefficients of variation (CV) were 3.0% in for the 2009 survey and 3.8% for the 2013 survey. A CV of about 10% provides acceptable precision during an ELISA technique (Erhardt, 2004; Haynes, 2008).

The questions on infant and young child feeding were the same in 2009 and 2013. Questions on feeding practices were derived from a consensus meeting on indicators and held in 2007 (WHO, 2007) and the WHO Indicators for Assessing Infant and Young Child Feeding Practices (2008). Because children under 6 months of age were not included in the survey, we could not use the standard indicators for exclusive breastfeeding and age-appropriate breastfeeding. Instead we used maternal recall to estimate these indicators see Chapter 5, Table 5-1). In the 2009 baseline survey only mothers answered the infant feeding questions, whereas in 2013, all caretakers answered these questions. For consistency, the 2013 infant feeding analysis was also restricted to only those interviews where the mother was the respondent.

As the 2013 survey included only children 6-29 months living outside of Bishkek City, in the 2009 survey only children 6-29 months living outside Bishkek City were included in the analysis. Because children were first enrolled in the IYCF/MNP program either at the first well child check-up after they reached 6 months of age or when the health care worker visited them at home, we expected that children in the 6-11 months age category would have had a shorter degree of exposure to the micronutrient powder program than older children (i.e. they could not have been in the program for one full year). Children 24-29 months were no longer eligible for the micronutrient powder program, but we expected that MNP would have affected iron status for an additional 6 months after discontinuation (Ip 2009). Therefore, analyses were stratified by age (6-11, 12-17, 18-23 and 12-29 months of age). Because serum ferritin and RBP are acute-phase reactants, all biochemical results are presented for the total population and for the population without inflammation.

Data analysis was conducted using SPSS (version 20.0, USA). Bivariate statistical testing was used to determine the significance of differences in percent deficient between the 2009 and 2013 surveys. The 2009 survey was weighted to account for stratification (rural, urban) and non-response. The 2013 survey was weighted for non-response only (the sample was not stratified). P-values for the Pearson chi-square test are presented to indicate whether there are statistically significant differences in these indicators between the 2009 and 2013 surveys. The Pearson chi-square tests were run using methods that account for the design of the two surveys (standard errors were adjusted for the cluster survey design).

RESULTS

Comparisons between 2009 and 2013 data are made based on children 6–29 months of age, excluding children residing in the city of Bishkek. Table 8-1 compares various characteristics of the children living in the Kyrgyz Republic who were surveyed in 2009 and 2013. The proportion of males and females was similar. For both surveys, participation was fairly even across the four age groups. In the 2009 survey nearly all mothers were present for the interview (99.9%) whereas in 2013, 86.2% of mothers were present. The majority of mothers in both surveys had completed at least a secondary education. The prevalence of inflammation was higher in the 2013 survey compared to the 2009 survey: 22.3% of children had inflammation in the 2009 survey and 33.9% had inflammation in 2013.

Table 8 1: Characteristics of childrena 6–29 months and their mothers — Kyrgyzstan, 2009 and 2013

Characteristics	2009		2013		p- value[c]
	n[b]	% (95% CL)	n[b]	% (95% CL)	
Age of children	576		2156		0.822
6-11 months		24.7 (20.5 – 29.5)		22.7 (20.6 - 25)	
12-17 months		23.5 (20.1 – 27.2)		26.5 (24 - 29.3)	
18-23 months		25.4 (21.8 – 29.5)		25.1 (22.9 - 27.5)	
24-29 months		26.3 (22.1 - 31.0)		25.6 (23.5 - 27.7)	
Gender of children	576		2156		0.946
Male		50.5 (45.8 - 55.2)		50.7 (47.3 - 54.1)	
Female		49.5 (44.8 – 54.2)		49.3 (45.9 - 52.7)	
Relation of person interviewed to child[d]	576		2156		
Mother		99.9 (99.2 - 100)		86.2 (83.8 – 88.3)	0.000
Grandmother		0.1 (0.0 – 0.8)		7.7 (6.2 – 9.6)	
Other				6.1 (4.4 – 8.4)	
Mother's education[e] (highest level completed)	575		1823		0.038
Less than secondary		8.0 (4.6 – 13.7)		14.1 (8.9 - 21.7)	
Secondary		55.8 (49.8 – 61.6)		47.5 (42.7 - 52.5)	
Technical		16.0 (12.1 – 21.0)		12.6 (9.9 - 15.8)	
Higher education		20.1 (16.3 - 24.5)		25.8 (21.1 - 31.1)	
Inflammation status of children	576		2156		0.000
Have inflammation		22.3 (18.9 - 26.2)		33.9 (30.8 - 37.1)	
No inflammation[f]		77.7 (73.8 – 81.1)		66.1 (62.9 - 69.2)	

NOTE:CI=confidence interval; 95% CI's adjusted for survey design.
[a]Calculated for children who had valid measurements for anthropometry, hemoglobin, and/or other biochemical indicators. (If a child had a valid measurement for at least one of these indicators they were included in this description of the sample).
[b]n's are unweighted denominators; subgroups that do not sum to the total have missing data
[c]Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.
[d]In the 2009 survey, mothers were strongly encouraged to be present; in the 2013 survey either mothers or caretakers could be present for the interview.
[e] Mothers education was only reported by mothers who were present for the interview.
fInflammation not present (low C-reactive protein [CRP≤5 mg/L] and low α1-glucoprotein acid [AGP≤1.0 g/L]).

Anthropometry

Table 8-2 compares the prevalence of wasting, stunting, and underweight among children who were surveyed in 2009 and 2013. Between the 2009 and 2013 surveys, the prevalence of wasting (weight-for-height Z <-2.0) remained stable at ≤2.0% (p-value: 0.895). The prevalence of stunting (height-for-age Z <-2.0) decreased from 19.6% to 11.7% (p-value: 0.000). The largest percentage decline was in the 24 to 29 month age group where the percentage of stunting declined from 37.1% to 15.5%. It should also be noted that age pattern for stunting differed between the two surveys. In 2009 the prevalence of stunting doubled from 19.6% at 18-23 months to 40.3% at 24 to 29 months of age; whereas in 2013, the prevalence of stunting was similar across these same age groups. The prevalence of underweight (weight-for-age Z <-2.0) was similar between the two surveys, with 4.1% of children underweight in 2009 and 4.8% in 2013 (p-value: 0.701).

Table 8 2: Anthropometric characteristics by age among children 6–29 months — Kyrgyzstan, 2009 and 2013

	2009		2013		p- value[a]
Characteristics	N	% (95% CI)	N	% (95% CI)	
Wasted (weight-for-height Z<-2.0)	502	1.9 (0.7 – 3.1)	2160	2.0 (1.1 - 2.8)	0.893
6-11 months	131	1.9(0.0 – 4.1)	520	2.7 (0.8 - 4.5)	0.568
12-17 months	120	2.8(0.0 – 6.1)	568	2.5 (0.8 - 4.2)	0.866
18-23 months	123	0.9(0.0 - 2.7)	539	2.3 (0.5 - 4.2)	0.238
24-29 months	128	2.1(0.0 – 4.5)	533	0.5 (0.1 - 0.8)	0.168
Stunted (height-for-age Z<-2.0)	502	19.6 (15.7 – 23.5)	2155	11.7 (9.3 - 14.1)	0.001
6-11 months	131	6.9(2.8 – 11.2)	515	5.0 (2.3 - 7.6)	0.451
12-17 months	121	16.9(9.9 - 23.8)	568	8.6 (5.5 - 11.6)	0.032
18-23 months	123	18.5(10.2 – 26.9)	539	17.1 (12.5 - 21.7)	0.772
24-29 months	127	37.1(28.4 – 45.8)	533	15.5 (10.9 - 20.1)	0.000
Underweight (weight-for-age Z<-2.0)	505	4.1 (2.1 – 6.0)	2162	4.8 (3.7 - 5.9)	0.537
6-11 months	132	2.6(0.0 - 5.4)	520	3.4 (0.9 - 6)	0.671
12-17 months	122	3.8(0.1 - 7.5)	569	3.7 (1.9 - 5.6)	0.962
18-23 months	123	1.7(0.0 – 4.3)	539	6.3 (3.4 - 9.3)	0.015
24-29 months	128	8.2(3.1 – 13.3)	534	5.6 (3.1 - 8.1)	0.367

NOTE:CI=confidence interval; 95% CI's adjusted for survey design.
Anthropometric values based on WHO growth reference curves (WHO, 2006).
aBivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.

Biochemical indicators

Table 8-3 compares 2009 and 2013 prevalence figures for anemia, iron deficiency, and vitamin A deficiency among surveyed children 6–29 months of age living in the Kyrgyz Republic. The prevalence figures are presented for all survey participants, and for those without inflammation. Among all participants, the prevalence of anemia was 38.7% in 2009 and 32.7% in 2013 (p-value: 0.116). Among participants without inflammation, the prevalence of anemia decreased from 37.4% to 29.4% (p-value: 0.038).

Iron deficiency prevalence was analyzed separately based on each of the two biomarkers for deficiency, serum ferritin and sTfR. Among all participants, the prevalence of iron deficiency (defined by low ferritin) decreased from 50.6% to 34.2% (p-value: <0.001). Among those without inflammation, the prevalence of iron deficiency (defined by low ferritin) decreased from 56.7% to39.7% (p-value: <0.001). Among all participants, the prevalence of iron deficiency (defined by high sTfR) decreased from 48.9% to 39.3% (p-value: 0.007). Among those without inflammation, the prevalence of iron deficiency (defined by high sTfR) decreased from 48.0% to 38.9% (p-value: 0.021). Among all participants 6-29 months of age, the prevalence of iron deficiency anemia (defined as low hemoglobin and either low ferritin or high sTfR) decreased from 31.9% to 23.6% (p-value: 0.014). Among those without inflammation, the prevalence of iron deficiency anemia (defined using the same criteria) decreased from 31.7% to 22.4% (p-value: 0.009). Among all participants, the prevalence of vitamin A deficiency increased from 6.2% to 15.6%; p-value: <0.001). Among those without inflammation the prevalence of vitamin A deficiency increased from 3.3% to 7.8%; p-value: 0.001). (Appendix IX shows the anthropometric and biochemical findings of children 6 to 24 months in 2009 and 2013).

Table 8 3: Prevalence of anemia, iron deficiency, and vitamin A deficiency by age among chil-

dren 6–29 months —

	All Participants					Participants without Inflammation				
	2009		2013			2009		2013		
Characteristics	**N**	**% (95% CI)**	**N**	**% (95% CI)**	**P**	**N**	**% (95% CI)**	**N**	**% (95% CI)**	**p**
Anemia[a]	576	38.7(32.2 - 45.2)	2156	32.7(28.9 - 36.4)	**0.116**	447	37.4(30.8 - 44.0)	1436	29.4(25.7 - 33.1)	**0.038**
6-11 months	137	40.7(29.9 - 51.5)	519	35.6(27.8 - 43.4)	**0.450**	112	35(25 - 45.1)	354	33.6(25.4 - 41.7)	**0.831**
12-17 months	135	42.9(30.5 - 55.3)	568	35.8(30.5 – 41.0)	**0.299**	101	39.9(25.5 - 54.3)	381	33.3(27.5 - 39.1)	**0.402**
18-23 months	148	37.4(29.5 – 44.7)	538	35.0(30.1 - 39.9)	**0.601**	111	40.5(31.3 - 49.7)	354	29.2(23.6 - 34.7)	**0.039**
24-29 months	156	34.3(24.6 – 43.9)	531	24.5(17.7 - 31.2)	**0.102**	123	34.6(23.5 - 45.7)	347	21.7(15.6 - 27.8)	**0.046**
Low ferritin (<12 µg/L)	576	50.6(45.8 – 55.4)	2156	34.2(31.3 - 37.2)	**0.000**	447	56.7(51.5 – 61.8)	1436	39.7(36.4 - 43.1)	**0.000**
6-11 months	137	44.9(35.1 - 54.7)	519	29.9(23.7 - 36.1)	**0.012**	112	48.7(37.9 - 59.6)	354	34.2(25.5 - 42.9)	**0.041**
12-17 months	135	56.5(46.2 - 66.8)	568	34.9(29.0 - 40.8)	**0.000**	101	60.5(48.9 - 72.1)	381	44.3(37.6 - 50.9)	**0.018**
18-23 months	148	51.3(42.5 - 60.1)	538	35.3(30.1 - 40.6)	**0.002**	111	61.5(52.9 - 71.9)	354	38.8(33.2 - 44.4)	**0.000**
24-29 months	156	49.9(41.9 - 57.7)	531	36.3(30.8 - 41.9)	**0.006**	123	56.5(48.1 - 64.9)	347	41.1 (34.1 - 48.1)	**0.006**
High sTfR (>8.3 mg/L)	576	48.9(43.1 - 54.7)	2156	39.3(35.6 - 43.1)	**0.007**	447	48.0(41.6 - 54.5)	1436	38.9(34.6 - 43.1)	**0.021**
6-11 months	137	53.2(44.3 - 62.1)	519	38.5(33.0 - 44.1)	**0.006**	112	50.4(41.2 - 59.7)	354	37.7(30.8 - 44.6)	**0.031**
12-17 months	135	54.9(45.5 - 64.4)	568	43.7(36.8 - 50.5)	**0.060**	101	52.4(42.7 - 62.2)	381	43.7(35.7 - 51.6)	**0.174**
18-23 months	148	48.2(39.5 - 56.9)	538	38.4(32.7 - 44.2)	**0.065**	111	49.4(38.7 – 59.9)	354	36.6(29.4 - 43.7)	**0.050**
24-29 months	156	40.2(30.8 - 49.6)	531	36.4(30.5 - 42.3)	**0.499**	123	40.7(31.1 - 50.4)	347	37.3(30.5 - 44.2)	**0.571**
Iron deficiency anemia[c]	576	31.9(26.3 - 37.5)	2156	23.6(20.1 - 27.1)	**0.014**	447	31.7(25.8 – 37.6)	1436	22.4(18.7 - 26.1)	**0.009**
6-11 months	137	32.4(22.8 - 41.9)	519	24.1(16.9 - 31.4)	**0.173**	112	28.5(19.4 - 37.5)	354	22.3(14.3 - 30.3)	**0.312**
12-17 months	135	38.1(27.3 – 49.0)	568	25.7(20.8 - 30.6)	**0.041**	101	36.1(23.3 - 48.9)	381	26.4(19.9 - 32.9)	**0.184**
18-23 months	148	30.0(22.8 - 37.2)	538	26.0(21.8 - 30.3)	**0.346**	111	34.5(25.3 - 43.6)	354	22.9(18.3 - 27.4)	**0.026**
24-29 months	156	27.8(19.1 - 36.4)	531	18.6(12.6 - 24.7)	**0.087**	123	28.5(18.6 - 38.3)	347	17.8(11.1 - 24.5)	**0.078**
Vitamin A deficiency[e]	576	6.2(4.2 – 8.2)	2148	15.6(13.1 - 18.1)	**0.000**	447	3.3(1.7 - 4.9)	1436	7.8(5.7 - 9.8)	**0.001**
6-11 months	137	9.2(4.8 - 13.6)	517	16.0(11.1 – 20.9)	**0.007**	112	5.3(1.3 - 9.2)	354	9.5(5.3 - 13.8)	**0.155**
12-17 months	135	4.0(0.7 - 7.3)	568	13.7(10.0 - 17.5)	**0.000**	101	2.9(0.05 - 6.4)	381	4.0(1.6 - 6.5)	**0.590**
18-23 months	148	7.2(2.8 - 11.5)	537	16.1(11.2 - 20.9)	**0.000**	111	2.3(0.05 - 5.1)	354	8.2(3.2 - 13.2)	**0.039**
24-29 months	156	4.5(1.0 - 7.9)	526	16.7(12.2 - 21.3)	**0.000**	123	2.5(0.0 - 5.3)	347	9.6(5.1 - 14.1)	**0.008**

NOTE:CI=confidence interval; 95% CI's adjusted for survey design.

[a]Inflammation not present (low C-reactive protein [CRP≤5 mg/L] and low α1-glucoprotein acid [AGP≤1.0 g/L]).

[b]Anemia: hemoglobin <11.0 g/dL adjusted for altitude.

[c]Iron deficiency anemia: Hemoglobin < 11.0 g/dL and low plasma ferritin (<12 µg/L) or high sTfR (>8.3 mg/L).

[d]Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.

[e]Vitamin A deficiency, defined as RBP <0.71µmol/L.

Vitamin A Supplement Use

In the 2009 survey (before the vitamin A capsule program was discontinued), among children 6-29 months of age whose mother were surveyed (n=575), 94.2% (95% CI: 91.7 – 96.0) had ever received a vitamin A capsule. Among children who had received a vitamin A capsule, 66.8% (95% CI: 55.4 – 76.5) had received a capsule within 2 months of the survey.

IYCN Knowledge, Attitudes, and Practices

Table 8-4 compares changes in IYCN practices among children 6–23.9 months between the 2009 and 2013 surveys. Although the placement of the infant feeding module was different in the two surveys, the questions were worded identically. In the 2009 survey only mothers answered the infant feeding questions whereas in 2013, all caretakers answered the questions. For analytic purposes, the infant feeding analysis was restricted to interviews where the mother was the respondent. The definitions for IYCN indicators can be found in Tables 5.1 and 5.2. The algorithm for analysis was the same in both survey years (Appendix V).

Among children 6–23.9 months of age, the prevalence of children breastfed within the first hour after birth increased from 71.1% to 85.1% (p-value: <0.001); the prevalence of children ever breast fed was similar (98.1% vs 99.5%, respectively). An increase was observed in the prevalence of children who were exclusively breastfed during the first 6 months of life (22.1% vs. 40.2%, respectively, p-value: <0.001). The prevalence of children breastfeeding at 1 year was (72.4% vs. 80.1%, p-value: 0.320) and, at 2 years was 13.3% vs.26.2 %, p-value: 0.028.

Appropriate introduction of solid, semi-solid or soft foods increased from 79.0% to 90.9% (p-value: 0.051). The prevalence of children who met the criteria for minimum dietary diversity (four or more food groups) increased from 74.5% to 86.8% (p-value: 0.004) and the prevalence of children who met criteria for minimum meal frequency increased from 64.9% to 74.7% (p-value: 0.012). After combining the indicators of minimum dietary diversity and minimum meal frequency the prevalence of children reaching the criteria for minimum acceptable diet increased from 51.3% to 67.2% (p-value: < 0.001). Among children who were appropriately breastfed, the prevalence of age-appropriate breast feeding increased from 50.0% to 62.8% (p-value: <0.001). The prevalence of adequate milk feeding frequency (at least 2 milk feedings a day among non-breast fed children was 62.6% to 65.4%, respectively (p-value: 0.684).

Table 8 4: Changes in IYCN practices among children 6-23.9 months as reported by their mothers — Kyrgyzstan, 2009 and 2013

	2009		2013		p- value[a]
	N	%, mean (95% CI)	N	%, mean (95% CI)	
IYCN Indicators, % (Children 6–23.9 months)					
Early initiation of breastfeeding	419	71.1 (64.5 – 77.6)	1416	85.1 (82.1 - 88.1)	0.000
Exclusive breastfeeding under 6 months	410	22.1 (15.7 – 28.5)	1410	40.2 (34.9 – 45.6)	0.000
Ever breastfed	419	98.1 (96.3 - 99.9)	1416	99.5 (98.9 - 100.0)	0.144
Continued breastfeeding at 1 year	94	72.4 (59.0 – 85.7)	348	80.1 (72.7 - 87.5)	0.320
Continued breastfeeding at 2 years	96	13.3 (3.1 – 23.5)	295	26.2 (20.8 - 31.5)	0.028
Appropriate introduction of solid, semi-solid or soft foods	51	79.0(68.1 – 90.0)	212	90.9 (86.2 - 95.7)	0.051
Consuming minimum dietary diversity	419	74.5 (66.6 – 82.4)	1416	86.8 (84.1 – 89.6)	0.004

Consuming minimum meal frequency	419	64.9 (58.3 – 71.4)	1416	74.7 (70.9 - 78.5)	0.012
Consuming minimum acceptable diet	419	51.3 (43.6 – 58.9)	1416	67.2 (63.1 – 71.3)	0.000
Age-appropriate breastfeeding	419	50.0 (44.5 – 55.4)	1416	62.8 (59.3 - 66.3)	0.000
Adequate milk feeding frequency for non-breastfed Children	232	62.6 (52.5 – 72.8)	637	65.4 (56.4 - 74.4)	0.684

NOTE:CI=confidence interval; 95% CI's adjusted for survey design. Definitions for indicators can be found in Table 5.1 and 5.2.

[a]Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design

DISCUSSION

In June 2009, the government of the Kyrgyz Republic introduced an integrated IYCN/MNP program. Thus far, two nationally representative surveys (with the exclusion of Bishkek) to assess the micronutrient status of Kyrgyz children were conducted in June 2009 and August/September 2013. Among all children, statistically significant declines were observed in the prevalence of iron deficiency (as measured by either serum ferritin or sTfR) and iron deficiency anemia. Among children without evidence of inflammation, a similar magnitude of decline in prevalence of anemia, iron deficiency and iron deficiency anemia was observed. The percentage point declines observed between the 2009 and 2013 surveys was similar to those observed before and after a pilot home fortification program in the Talas oblast where declines were observed in the prevalence of anemia (50.6% versus 43.8%, p=0.05); total iron deficiency (either low ferritin or high sTfR) (77.3% versus 63.7%, p<0.01); and iron deficiency anemia (45.5% versus 33.4%, p<0.01) (Serdula 2013).

Between 2009 and 2013, the prevalence of wasting among children remained stable while the prevalence of stunting decreased from 19.6% to 11.7%. The decrease in the prevalence of stunting from 2009 to 2013 was surprising because in the Talas Oblast pilot program, the prevalence of stunting increased from 10.7% to 17.0% (CDC, 2011). The largest difference in stunting prevalence between the 2009 and 2013 surveys was seen among children 24 to 29 months of age. It should also be noted that the age pattern of stunting differed between the two surveys. In 2009, the prevalence of stunting nearly doubled from 18 to 23 months to 24 to 29 months whereas in 2013 the prevalence of stunting was similar across these age categories. Although the anthropometric equipment and training was the same in the 2009 and 2013 surveys and the variance (SD) in measurements was similar, it is still possible that possible that the decrease in stunting may be due to differences in measurement or ascertainment of age.

Unexpectedly, the prevalence of vitamin A deficiency was significantly higher at follow-up compared to the baseline. Given the positive laboratory bias observed by comparison with the VITAL-EQA standard, the actual prevalence of vitamin A deficiency could likely be higher than the reported prevalence in 2013. Unfortunately, there is no accepted quantitative method for adjusting the values. The laboratory internal QC however is acceptable (3.8% for the 2013 survey), where a CV of about 10% provides acceptable precision during an ELISA technique (Erhardt, 2004; Haynes, 2008). The reasons for the increase in prevalence of vitamin A deficiency remain unclear as previous micronutrient powder interventions have shown either no change or an improvement in vitamin A deficiency. The previous pilot intervention in one district of the Kyrgyz Republic showed no significant impact of home fortification on vitamin A status (Serdula 2013).

Because of the low prevalence of vitamin A deficiency in the 2009 survey, the Ministry of Health discontinued its routine vitamin A capsule distribution program. Although Vitamin A capsule distribution programs have been found to only transiently (<2 months) increase the distribution of serum retinol (Palmer 2102), the capsule distribution program may still have had an effect on retinol levels at baseline. In the 2009 survey, of children 6 to 29 months, 94% were reported to have received vitamin A capsules, 66.8% of whom had received capsules in the previous 2 months. Nonetheless, because vitamin A was included in the MNP, discontinuation of the capsule program would not have been expected to result in an increased prevalence of vitamin A deficiency.

IYCN indicators showed a general improvement. During both survey years, breastfeeding was initiated for almost all children. Comparing the 2009 and 2013 surveys, the prevalence of exclusive breastfeeding under 6 months increased nearly doubled from 22% to 40% and early initiation of breastfeeding increased from 71% to 85%. It is possible that at least some of these differences may have resulted from the IYCN program. However, it should also be noted that, although the IYCN questions were worded identically, the placement of the infant feeding module was different in the two surveys.

In any case, causal inferences cannot be made in comparing the two cross-sectional surveys. Although the demographic characteristics were similar between the baseline and follow-up surveys, without a control population, it is not possible to account for secular changes. During the four years between surveys, changes independent of the micronutrient program could have affected population micronutrient and anthropometric status. Government instability and decreased access to food caused by the increase in food prices which began in 2010, may have influenced the micronutrient status in the population (Ortiz, 2011). Furthermore, we cannot distinguish the effects of the nutrition education program from the micronutrient powder program. Strengths of our design are that indicators of iron and vitamin A status were measured and that inflammatory markers were measured to adjust for potential differences in inflammation status of the population in the pre- and post-surveys.

The Kyrgyz Republic will be among the first countries in the world to document improvement in iron status before and after implementing an integrated IYCN/MNP home fortification program on a national scale (with the exception of Bishkek). Our pre and post surveys showed a reduction in iron deficiency in the Kyrgz Republic after this national-scale micronutrient powder program was implemented through a primary health care system in combination with an IYCN health education program and extensive community mobilization.

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APPENDICES

APPENDIX I
QUESTIONNAIRE FOR 2013 NATIONAL NUTRITION SURVEY

English

2013 NATIONAL NUTRITION AND DIET SURVEY

May 6, 2013 - DRAFT

Fill the following information before beginning the interview.

HH1. Cluster number

HH2. Interviewer code

HH3. Day/Month/Year of interview: d d m m y y — 1 3

HH4. Supervisor's code

HH5. Data entry operator code

HH6 Oblast code

02 Issyk - kul	05 Batken	08 Chui
03 Jalalabad	06 Osh Oblast	11 Bishkek city
04 Naryn	07 talas	21 Osh City

HH7 Rayon code

HH8. Result of interview		HH9. Result of anthropometry		HH10. Result of capillary sample		HH11. Location of data collection	
Completed	1	Completed	1	Completed	1	Clinic	1
Refused	2	Not completed	2	Not completed	2	Home	2
Partially completed	3			Partially completed	3	Partial in clinic / partial in home	3
Not available to interview	4						

HH12. In what language was the interview conducted?

Kyrgyz	1
Russian	2
Uzbek	3
Other (specify) _____	4

HH13. Does this caretaker have more than one child in this survey?

yes	1
no	0

ID Label - **CHILD**

Affix child label here

HH14. Child's Date of Birth

d d m m y y →

If birthday is **before February 1, 2011** or **after January 31, 2013**, the child cannot participate. Explain this to the mother and thank her for coming.

If birthday falls **between February 1, 2011 and January 31, 2013 => G1**

For questions G1-G3, obtain information *from* ***Green Journal (GJ)* *in clinic*

G1. Has child ever received Gulazyk?

yes	1
no (or not listed in GJ)	0

G2. Has child received Gulazyk within 3 months of today's date?

yes	1
no (or not listed in GJ)	0

G3. What is the last date that the child received Gulazyk (*according to the GJ*)?

d d m m y y

If no data is collected on child: Find the following information (**NR1-NR5**) from the clinic, the medical worker, the VHC volunteer or by going to the child's home. If data is collected on a child: **SKIP TO CONSENT FORM**

NR1. What is the gender of the child?

1=male 2=female

NR2. What is the ethnicity of the mother?

Kyrgyz	1
Russian	2
Kazakh	3
Uzbek	4
Tajik	5
Uigher	6
Other (*specify*) _____	7
Don't know	8

NR3. How many brothers/sisters does the child have?

(put 88 if don't know/cannot find out)

NR4. Does the mother work/study outside of the home?

1= yes 0 = no 8 = don't know/can't find out

NR5. Reason for not coming to the interview?

family moved from village permanently	1
mother refused	2
family (husband, mother-in-law, etc.) refused	3
mother sick	4
child sick	5
mother had to work	6
was not invited by the health clinic	7
temporary migration	8
Other (specify) _____	9
Don't know/can't find out	10

Note: If no data is collected on child, form concludes here (after completing NR1-NR5). Interviewer should move on to the next child.

We are from the Ministry of Health and the National Statistics Committee. We are working on a joint project concerned with child diet, nutrition and health. I would like to talk to you about this and record your answers to some questions that I have. This interview will take approximately 20 minutes. After the interview, we will weigh and measure your baby and take a small blood sample the finger of your baby. From this sample we will be able to inform you if your baby has anemia. The only direct benefit to you is the knowledge of your baby's anemia status. The risks are small and consist of the possible discomfort caused by pricking the finger in order to draw the blood sample. The discomfort will only be temporary and will not be very great. All of the information we obtain will remain strictly confidential and nobody will know that the information is yours, however, your hemoglobin results will be shared with your village health clinic. You have the right to choose whether or not you would like to participate, and there are no consequences if you decide you would rather not participate. At any time during the interview, weight and length measurement, or blood sample collection you may decide that you no longer wish to participate, and we will stop the interview. If you agree to participate, I would like you to sign this form. May we begin?

Would you please sign?

If permission is given, ask respondent to sign here and begin the interview.

Agreed to participate? ☐

yes 1

no 0

(Signature)_____ (Name)_____

Permission for child's participation

Signature of interviewer confirming that the respondent agreed to participate and signed this form:

_____

Signature Date

HH15. What is your name?

(last, first, middle initial)

HH16. What is the name of the child?

(last, first, middle initial)

HH17. What is the gender of the child ☐

1= male 2=female

HH18. How many brothers/sisters does the child have? ☐☐

(put 88 if don't know/cannot find out)

HH19. What is the mother's date of birth?

d	d	m	m	y	y	y	y

(put 8888 for year if don't know/remember)

HH20. What is your relationship to (*child's name*): ☐

mother	1	
grandmother	2	**1→GU1**
aunt	3	
other _____	6	

(specify)

HH21. Why is (child's name)'s mother not here today? ☐

working/studying	1
sick	2
did not want to attend	3
family did not allow	4
busy at home/with housework	5
other _____	7
(*specify*)	
don't know	8

Gulazyk Module **GU**

GU1. Have you ever received a package of Gulazyk like this for (child's name)? ☐
(show Gulazyk sachets)

1=yes 0 = no 8= don't know **0→C3**

GU2. Is (child's name) currently taking Gulazyk? ☐

1=yes 0 = no 8= don't know **1→GU5**

GU3. Why isn't (child's name) currently taking Gulazyk?
Don't read out! Circle each answer mentioned.

A. Too difficult to remember to give Gulazyk	A
B. Child experienced side effects/diarrhea	B
R. Child experienced side effects/skin/allergy	R
S. Child experienced side effects/other	S
(*specify*)_____	
C. Child does not like food when Gulazyk is added	C
D. Gulazyk makes the food taste bad	D
E. Gulazyk changes the color of the food	E
F. Mother/caretaker doesn't like Gulazyk	F
G. Health care worker told me to stop using Gulazyk	G
H. Ran out of Gulazyk	H
I. Children should receive natural vitamins from food	I
L. We have been away from home	L
N. Child has been sick	N
O. Don't know	O
P. Belief that Gulazyk is harmful to the child	P
Q. Heard on the TV or radio that Gulayzk is harmful	Q
T. Child is >24 months	T
U. Other_____ (*specify*)	U

GU4. At what age in months did (child's name) stop consuming Gulazyk? ☐☐ m ☐☐ m
88 if don't know/remember
99 if still consuming
77 if never started

GU5. How did you obtain Gulazyk for (child's name)? ☐

I go to the health clinic	1
Medical worker brings Gulazyk to my home	2
Both (of above answers)	3
Other _____ (*specify*)	8

GU6. How often does/did (child's name) consume Gulazyk? ☐ **5→GU11**

Every day for one month	1
1 sachet per day for 15 days, then a break for 15 days	2
Every other day	3
Other schedule _____ (*specify*)	4
Never yet received	5
Don't know	8

GU7. How many sachets of Gulazyk has (child's name) consumed within 2 months? ☐☐
88 if don't know/remember
99 if haven't yet taken for 2 months
00 if none

GU8. Have you noticed any changes in the color of the food to which Gulazyk is added? ☐ **0→GU9**
1=yes 0 = no

GU8a. Is this change in color a concern for you or your child? ☐
1=yes 0 = no

GU9. Have you noticed any changes in the taste of the food to which Gulazyk is added? ☐ **0→GU10**
1=yes 0 = no

GU9a. Is this change in taste a concern for you or your child? ☐
1=yes 0 = no

GU10. Does/Did (child's name) usually consume the entire portion of food into which Gulazyk is/was mixed, or does he/she consume less than the entire portion? ☐

Consumes entire portion	1
Consumes less than full portion	2
Don't know	8

GU11. When you run out of Gulazyk sachets do you plan to continue? ☐ **1 or 2→E1**
1=yes 0 = no 2= child is >24 months 8= don't know

GU12. What are the reasons that you will probably not continue to give Gulazyk?
Do NOT read each item, circle all answers mentioned

A. Too difficult to remember to give Gulazyk
B. Child experienced side effects
C. Child does not like food when Gulazyk is added
D. Family member doesn't want to use
E. Health care worker told me to stop using Gulazyk
F. Children should receive natural vitamins from food
G. When I run out of Gulazyk my child will be >24 months
H. Belief that Gulazyk is harmful to children
I. Heard on TV or radio that Gulazyk is harmful
J. Other (*specify*) _____
K. Don't know

Effects Module **E**

E1. Have you noticed any positive changes in your child since he/she started taking Gulazyk that you believe are due to Gulazyk? ☐

1=yes 0 = no **0→E3**

E2. What are the positive changes that you noticed in your child?

Do NOT read each item, circle all answers mentioned

More energy	A
Better growth	B
More curiosity/intelligence	C
Improved eyesight	D
Gets sick less often	E
Increased appetite	F
Overall seems better/healthier	G
No positive changes noticed	H
Other _____ *(specify)*	I

E3. Have you recommended Gulazyk to other families? ☐

1=yes 0 = no 8= don't know

Communications Module **C**

C1. Did you receive this brochure about Gulazyk? ☐
(show brochure)
1=yes 0 = no 8= don't know

C2. Did you read the brochure? ☐
1=yes 0 = no 8= don't know

C3. Do you have a radio? ☐
1=yes 0 = no 8= don't know **0→C5**

C4. Have you heard about Gulazyk on the radio? ☐
1=yes 0 = no 8= don't know

C5. Do you have a television? ☐
1=yes 0 = no 8= don't know **0: if mother→WM1 if NOT mother→BF1**

C6. Have you heard about Gulazyk on the television? ☐
1=yes 0 = no 8= don't know

If respondent is mother→**WM1**
If respondent is NOT mother: **SKIP TO BF1**

Woman's Module **WM**

WM1. What is your ethnicity? ☐

Kyrgyz	1
Russian	2
Kazakh	3
Uzbek	4
Tajik	5
Uigher	6
Other (*specify*) _____	7
Don't know	8

WM2. What is the highest level of school you completed? ☐

Never attended	0
Primary (1-4 grades)	1
Incomplete secondary (5-9)	2
Complete secondary	3
Technical school	4
Higher	5
Religious curriculum	6
Don't know	8

WM3. Are you currently married? ☐
1= yes 0= no **0→WM5**

WM4. What is the highest level of school your spouse completed? ☐

Never attended	0
Primary (1-4 grades)	1
Incomplete secondary (5-9)	2
Complete secondary	3
Technical school	4
Higher	5
Religious curriculum	6
Don't know	8

WM5. Do you currently work or study outside the home (for example, as an employee, business owner, laborer in fields, etc.)? ☐
1 = yes 0 = no **0→BF1**

WM6. What type of work or study do you do? ☐

laborer (in the fields)	1
vender of food, fruit, homemade goods or other	2
employee in a business	3
business owner	4
professional (nurse, doctor, teacher, pharmacist, etc.)	5
student	6
other (specific) _____	7
Don't know	8

WM7. How many hours a day do you USUALLY work or study outside of the home? (put 88 if don't know) ☐☐

WM8. Who USUALLY feeds (child's name) while you are outside of the home? ☐

The mother *(takes the child with her)*	1
Baby's grandmother	2
Baby's sisters/brothers	3
Baby's father	4
Other family member	5
Baby sitter	6
Day care / children's garden	7
Other (specify) _____	8
Don't know	9

Breastfeeding and Infant Feeding — BF

Now I would like to ask you some questions about the breastfeeding and feeding of (child's name)

BF1. Was (child's name) ever breastfed? ☐
1=yes 0 = no 8=Don't know **0 or 8→BF3**

BF2. Approximately, how long after birth was (child's name) first put to the breast? ☐

Immediately (< 1 hour after birth)	0
During first 24 hours	1
Between 24 - 48 hours	2
> 48 hours	3
Don't know/remember	8

The next few questions are about the first time (child's name) was fed something other than breastmilk.

BF3. How old was [child's name] in months when (he/she) was first fed animal milk, powdered milk or formula?
(if less than 1 month put 00, if NEVER fed milk, powdered milk or formula put 99, if don't know put 88)
☐☐ m m *(round down to nearest whole month)*

BF4. The next question is about liquids. Please include all liquids such as animal milk, powdered milk, formula, juice, water, sugar or fruit water, tea, or anything else that (child's name) might have been given. How old was (child's name) in months when he/she was first given any liquid, even tea, other than breastmilk?
(if less than 1 month put 00, if NEVER fed anything other than breastmilk put 99 if don't know put 88)
☐☐ m m *(round down to nearest whole month)*

BF5. The next question is about solid or semi-solid foods. Please include all solids such as porridge, rice, cereal, bulymak or anything else that (child's name) might have been given. How old was (child's name) in months when he/she was first fed any solid food?
(if less than 1 month put 00, if NEVER fed anything other than breastmilk put 99 if don't know put 88)
☐☐ m m *(round down to nearest whole month)*

Now think about everything (child's name) has drunk or eaten since this time yesterday. Don't forget snacks and eating or drinking during the night or things (child's name) ate with someone other than yourself.

BF6. Since this time yesterday, was (child's name) fed any of the following items?
(read each item aloud and record response before continuing)
1=yes 0 = no 8= don't know

a	Breastmilk	a ☐
b	Animal milk, yogurt, kefir, cheese, etc.	b ☐
c	infant formula or powdered milk	c ☐
	(probe: what was the name?) Brand name? _____	
d	haricot, pea or nuts	d ☐
e	kasha, potatoes, noodles, beet	e ☐
f	meat, fish, poultry, liver/organ meat	f ☐
g	eggs	g ☐
h	carrots, pumpkin, tomatoes	h ☐
i	other fruit or vegetable (spinach, dried apricots, cucumbers, etc.)	i ☐
j	bread or biscuit	j ☐
k	baby cereal/food which was purchased Brand name? _____	k ☐

BF7. Since this time yesterday, how many times was (child's name) fed: *(if more than 7 put 7. If don't know put 8)*
("fed" means any meal or snack, excluding trivial amounts)

a	any solid, semisolid, or soft food such as porridge, cereal, meat, vegetables, cookies, fruit, etc.	a ☐
b	Breastmilk	b ☐
c	animal milk, powdered milk or formula	c ☐
d	anything from a bottle	d ☐

BF8. Has (child's name) stopped breastfeeding? ☐
1=yes 0 = no **0→AB1**

BF9. At what age in months did (child's name) stop breastfeeding? ☐☐
(put 88 if don't know/can't remember) m m

Attitude, Behavior Module — AB

We are interested in knowing what mothers think about breastfeeding and feeding of their babies. I would like to ask you what you think about breastfeeding and feeding of your baby. Remember there are no right or wrong answers to any of these questions. We just want to know what you think about these topics.

AB1. Using this scale, how would you describe the importance of breastfeeding for a baby's health and nutrition? ☐
(show the scale and note the number that corresponds to the answer)

AB2. In your opinion, should a baby be breastfed? ☐
1=yes 0=no 8= don't know **0 or 8→AB4**

AB3. In your opinion, how long in months should a baby be breastfed? ☐☐
(note 00 if < 1 m; 88 if don't know) m m

AB4. In your opinion, at what age in months should a baby start drinking other liquids like tea, water, milk, etc.? ☐☐
(note 00 if < 1 m; 88 if don't know) m m

AB5. In your opinion, at what age in months should a baby start eating foods like porridge, cereal, bulymak, etc.? ☐☐
(note 00 if < 1 m; 88 if don't know) m m

AB6. Some people think there are advantages to breast-feeding while some people do not. In your opinion, are there advantages to breastfeeding? ☐
1=yes 0=no 8= don't know

Dietary Advice Module — DA

When a family has a new baby, many people give advice on breastfeeding and feeding the baby. I want to ask just about the advice you have received, it doesn't matter if it is advice you followed or not. I am just interested in what people have told you and who you have heard it from.

DA1. Did a doctor, nurse, midwife or feldsher give you advice on breastfeeding? ☐
1=yes 0 = no 8= don't know **0 or 8→VS1**

DA2. For how long (in months) did a doctor, nurse, midwife

DA3. At what age (in months) did a doctor, nurse, midwife or feldsher advise you to stop breastfeeding? ☐☐
00 if < 1 m m m

or feldsher advise you to breastfeed without giving other liquids or solids? m m

(Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)

88 if don't know/remember
99 if they did not give advice on length or did not specify exact length)

Vitamins/Supplements Module **VS**

I am now going to ask some questions about vitamins and supplements your baby might have taken. Some people take these supplements and some don't and that is okay.

VS1. Has (child's name) ever taken a Vitamin A capsule like this one?
Show 100,000IU for 6-11 month old **0→VS3**
Show 200,000IU for 12-29 month old **8→VS3**
1=yes 0 = no 8= don't know

VS2. How long ago (in months) did (child's name) take the most recent vitamin A capsule? m m
(note 00 if < 1 m; note 88 if don't know/remember)

VS3. Have you ever been told by a doctor or nurse that (child's name) had anemia?
1=yes 0 = no 8= don't know

VS4. Has (child's name) ever taken iron syrup or drops like this?
(show iron syrup and drops) **0→VS8**
1=yes 0 = no 8= don't know **8→VS8**

VS5. Is (child's name) currently taking iron syrup or drops?
1=yes 0 = no 8= don't know **1→VS7**

VS6. How long ago (in months) did (child's name) stop taking the iron syrup or drops? m m
(mark 00 if <1 month; mark 88 if don't know/remember)

VS7. For how long (in months) did (child's name) consume, or has (child's name) been consuming, iron syrup or drops? m m
(note 00 if <1 month; note 88 if don't know/remember)

VS8. Have you, or someone else, ever given (child's name) any of these other vitamin or mineral supplements?
(read the list and mark each answer)
a Vitamin D a
b Fish oil b
c Multi-vitamins c
d Zinc d
e Other _____ e
(*specify*)
1=yes 0 = no 8= don't know

Household Characteristics Module **HC**

I would now like to ask you a few questions about your home and those who live in it.

HC1. Does your family currently receive the universal monthly benefit?
1=yes 0=no 8= don't know

Anthropometry **AN**

Now I am going to measure the length and weight of your baby.

AN1. Were anthropometrics taken from the child?
1 = yes 0= no **1→AN3**

AN2. Why not?
1 = refused (cried, kicked, etc.) 3=not present
2 = mother/guardian refused 4 other (specify)

AN3. Child's weight (kg) .

AN4. Child's length/height (cm) .

AN5. Was length/height of child measured lying down or standing up?
1 = Lying down (children less than 24 months of age)
2 = Standing up (children 24-29 months of age)

Blood Sample Module **BS**

The last thing we will do today is take a small sample of blood from the finger of your baby. This might cause a little discomfort from the stick but we will be able to tell you if your baby has anemia.

BS1. Was a capillary sample obtained from the child?
1=yes 0 = no **1→BS3**

BS2. Why not?
1 = refused (cried, kicked, etc.) 4 = technical difficulties
2 = mother/guardian refused 5 = other (specify)
3 = not present **Go to →BS5**

BS3. Approximately how many microliters of blood were collected in the microtainer?

BS4. Hemoglobin concentration from Hemocue . g/dL
(put 88.8 if not measured/don't know)

BS5. ID Label - **CHILD**
Affix child label for blood here

Signature of site supervisor confirming child was referred to primary health care provider for treatment if hemoglobin <8.0 g/dL

Signature Date

Don't forget to provide the mother with the hemoglobin measurement results for her child.
Ask mother to sign here to confirm receipt of hemoglobin measurement results and referral (if appropriate).

Signature Date

Signature of site supervisor confirming they have checked the questionnaire and it is complete:

Signature Date

Interviewer Comments:

2013 НАЦИОНАЛЬНОЕ ИССЛЕДОВАНИЕ ПО ПИТАНИЮ

6 мая, 2013 - Предварительный вариант

Заполните следующую информацию перед началом интервью.

HH1. Номер кластера

HH2. Код интервью

HH3. День/Месяц/Год проведения интервью: 1 3 (д д м м г г)

HH4. Код супервайзера

HH5. Код оператора введения данных

HH6. Код области

02 Иссык-Куль; 03 Жалалабад; 04 Нарын; 05 Баткен; 06 Ошская область; 07 Талас; 08 Чуй; 21 Город Ош

HH7 Код района

HH8. Результат интервью
- Проведено 1
- Отказ 2
- Частично проведено 3
- Отсутствие интервьюируемого 4

HH9. Результат антропометрии
- Проведено 1
- Не проведено 2

HH10. Результат анализа крови
- Проведено 1
- Не проведено 2
- Частично проведено 3

HH11. Место сбора данных
- Медучреждение 1
- На дому 2
- Частично в медучр., частично на дому 3

HH12. На каком языке проводилось интервью?
- Кыргызском 1
- Русском 2
- Узбекском 3
- Другом (укажите) _____ 4

Бирка с идентификационным номером ребенка
Прикрепить номер ребенка здесь

HH13. Имеет ли данное лицо, обеспечивающее уход за ребенком и участвующее в исследовании, более одного ребенка?
- Да 1
- Нет 0

HH14. Дата рождения ребенка (д д м м г г)

если ребенок родился **до 1 февраля 2011 г. или после 31 января 2013 г.**, ребенок не может принимать участие в исследовании. Объясните это матери и поблагодарите ее за визит.

если день рождения приходится между **1 февраля 2011г. и 31 января 2013г**. => ***G1***

Для вопросов G1-G3 возьмите информацию *из Зеленого Журнала (ЗЖ) в поликлинике*

G1.Получал ли когда-либо ребенок Гулязык?
- да 1
- нет (или не отмечено в ЗЖ) 0

G2. Получал ли ребенок Гулязык в течение 3 месяцев начиная с этого дня?
- да 1
- нет (или не отмечено в ЗЖ) 0

G3. Когда последний раз ребенок получал Гулязык (согласно ЗЖ)? (д д м м г г)

Если на ребенка отсутствует информация: Получите следующую информацию (**NR1-NR5**) в поликлинике, у медработника, волонтера СКЗ или во время посещения ребенка на дому. Если информация на ребенка имеется: **ПЕРЕХОДИТЕ К ФОРМЕ НА ДАЧУ СОГЛАСИЯ**

NR1. Каков пол ребенка? 1=муж 2=жен

NR2. Какова национальность матери?
- Кыргызка 1
- Русская 2
- Казашка 3
- Узбечка 4
- Таджичка 5
- Уйгурка 6
- Другое (укажите) _____ 7
- Не знаю 8

NR3. Сколько братьев/сестер у ребенка?

(поставьте 88 если неизвестно/невозможно узнать)

NR4. Работает/учится ли мать за пределами места проживания?

1= да 0 = нет 8 = неизвестно/невозможно узнать

NR5. Причина неучастия в интервью?
- семья навсегда уехала из села 1
- отказ матери 2
- отказ семьи (мужа, свекрови и т.д.) 3
- болезнь матери 4
- болезнь ребенка 5
- занятость матери на работе 6
- отсутствие приглашения из поликлиники 7
- временная миграция 8
- другое (укажите) _____ 9
- неизвестно/невозможно узнать 10

Прим: Если на ребенка нет информации, форма заканчивается здесь (после заполнения NR1-NR5). Переходите к опросу следующего ребенка

Мы из Министерства здравоохранения и Натстаткома. Мы работаем в рамках проекта по питанию и здоровью детей. Мне бы хотелось поговорить с вами об этом и записать ваши ответы на вопросы, которые я вам задам. Интервью займет примерно 20 мин. После интервью мы взвесим и измерим вашего ребенка, а также возьмем у него небольшой анализ крови, из которого мы узнаем есть ли у вашего ребенка анемия, что будет очень полезно для вас. При этом, риски очень небольшие, состоящие только из непродолжительного и несильного дискомфорта при протыкании пальца ребенка при заборе крови. Все ваши ответы будут строго конфиденциальны, никто не узнает, что это ваши данные, только результаты измерения уровня гемоглобина будут предоставлены в вашу поликлинику. Вы можете согласиться или отказаться от участия в интервью, никаких негативных последствий в случае вашего отказа не будет. В любой момент интервью, измерения веса и роста или анализа крови мы можете отказаться от дальнейшего участия. Если вы согласны участвовать, пожалуйста подпишите эту форму. Мы можем начинать?

Пожалуйста подпишите?

Если разрешение получено, попросите респондента подписать здесь и начинайте интервью.

Вы согласны участвовать?
- да 1
- нет 0

(Подпись)_____ (Имя)_____

Разрешение на участие ребенка

Подпись интервьюера, подтверждающая, что респондент дал согласие на участие и подписал данную форму:

Подпись Дата

HH15. Ваше имя?

(фамилия, имя, отчество)

HH16. Имя ребенка?

(фамилия, имя, отчество)

HH17. Пол ребенка

1= мужской 2= женский

HH18. Сколько у ребенка братьев/сестер?

(поставьте 88 если неизвестно/невозможно узнать)

HH19. Дата рождения матери?

д	д	м	м	г	г	г	г

(поставьте 88 если неизвестно/невозможно узнать)

HH20. Кем вы приходитесь ребенку (имя ребенка):

мать	1	**1→GU1**
бабушка	2	
тетя	3	
другое _____ *(укажите)*	6	

HH21. Почему сегодня мать ребенка (имя ребенка) не принимает участие в интервью?

работает/учится	1
больна	2
не захотела участвовать	3
запрет семьи	4
занята домашней работой	5
другое_____ (укажите)	7
не знаю	8

Модуль Гулязык — GU

GU1. Получали ли вы такой набор Гулязык для ~~вашего рабенка~~ (имя ребенка)?
(покажите пакетик Гулязык)

1=да 0 = нет 8= не знаю **0→C3**

GU2. Употребляет ли (имя ребенка) Гулязык в настоящее время?

1=да 0 = нет 8= не знаю **1→GU5**

GU3. Почему (имя ребенка) не употребляет Гулязык в настоящее время?
Не читать вслух! Обвести кружком ответ.

A. Тяжело помнить о том, что нужно дать Гулязык	A
B. У ребенка побочные явления/диарея	B
R. У ребенка побочные явления/кожные/аллергия	R
S. У ребенка побочные явления/другое (укажите)_____	S
C. Ребенку не нравится еда с Гулязыком	C
D. Гулязык портит вкус еды	D
E. Гулязык изменяет цвет еды	E
F. Матери/лицу, ухаживающему за ребенком не нравится Гулязык	F
G. Медработник сказал не употреблять Гулязык	G
H. Кончился Гулязык	H
I. Дети должны получать натуральные витамины из продуктов	I
L. Нас не было какое-то время дома	L
N. Болезнь ребенка	N
O. Не знаю	O
P. Считает Гулязык вредным для здоровья ребенка	P
Q. Слышала по ТВ или радио о вреде Гулязыка	Q
T. Ребенку больше 24 месяцев	T
U. Другое_____ (Укажите)	U

GU4. Во сколько месяцев ребенок (имя ребенка) прекратил употреблять Гулязык?

88 если не знает/не помнит
77 никогда не употреблял

м м

GU5. Где вы получаете Гулязык для (имя ребенка)?

Хожу в мед.учреждение	1
Медработник приносит Гулязык на дом	2
Оба варианта	3
Другое _____ (укажите)	8

GU6. Как часто (имя ребенка) употребляет Гулязык?

Каждый день в течение одного месяца	1
1 пакетик в день в течение 15 дней, после перерыва в 15 дней	2
Через день	3
Другое расписание_____ (укажите)	4
Никогда не употреблял	5
Не знаю	8

5→GU11

GU7. Сколько пакетиков Гулязыка ребенок (имя ребенка) употребил в течение 2 месяцев?
88 если не знает/не помнит
00 если ни одного

GU8. Заметили ли вы изменения цвета еды, в которую добавлялся Гулязык?

1=да 0 = нет **0→GU9**

GU8a. Беспокоит ли вас или вашего ребенка изменение цвета еды?

1=да 0 = нет

GU9. Заметили ли вы изменения вкуса еды, в которую добавлялся Гулязык?

1=да 0 = нет **0→GU10**

GU9a. Беспокоит ли вас или вашего ребенка изменение вкуса еды?

1=да 0 = нет

GU10. Съедает ли (имя ребенка) обычно всю порцию еды, в которую добавлен Гулязык или он употребляет меньшую порцию еды?

Съедает всю порцию	1
Съедает меньше	2
Не знаю	8

GU11. Когда у вас кончится Гулязык, вы планируете продолжить его употребление? **1 или 2→E1**

1=да 0 = нет 2= ребенку больше 24 мес 8= не знаю

GU12. Каковы причины возможного отказа от Гулязык?

Не читать вслух, обвести кружком ответ

A	A. Тяжело помнить о том, что нужно дать Гулязык
B	B. У ребенка побочные явления
C	C. Ребенку не нравится еда с Гулязык
D	D. Отказ члена семьи использовать Гулязык
E	E. Медработник сказал не употреблять Гулязык
F	F. Дети должны получать натуральные витамины из продуктов
H	H. Считает Гулязык вредным для здовья ребенка
I	I. Слышала по ТВ или радио о вреде Гулязыка
J	J. Другое (укажите) _____
K	K. Не знаю

Модуль Влияние Гулязыка — E

E1. Заметили ли вы улучшения у вашего ребенка благодаря Гулязыку с тех пор, как он начал его употреблять?

1=да 0 = нет **0→E3**

E2. Какие улучшения вы заметили у вашего ребенка?
Не читать вслух, обвести кружком ответ

A	Больше энергии
B	Лучший рост
C	Более любознательный/сообразительный
D	Улучшилось зрение
E	Меньше болеет
F	Улучшение аппетита
G	Вообщем выглядит лучше/здоровее
I	Другое _____ *(укажите)*

E3. Рекомендовали ли вы Гулязык другим семьям?

1=да 0 = нет 8= не знаю

Модуль Влияние Гулязыка **E**

E1. Заметили ли вы улучшения у вашего ребенка благодаря Гулязыку с тех пор, как он начал его употреблять? ☐
1=да 0 = нет **0→E3**

E2. Какие улучшения вы заметили у вашего ребенка?
Не читать вслух, обвести кружком ответ

A	Больше энергии
B	Лучший рост
C	Более любознательный/сообразительный
D	Улучшилось зрение
E	Меньше болеет
F	Улучшение аппетита
G	Вообщем выглядит лучше/здоровее
I	Другое _____ *(укажите)*

E3. Рекомендовали ли вы Гулязык другим семьям? ☐
1=да 0 = нет 8= не знаю

Модуль Информация **C**

C1.Получали ли вы эту брошюру про Гулязык? *(покажите брошюру)* ☐
1=да 0 = нет 8= не знаю

C2. Читали ли вы эту брошюру? ☐
1=да 0 = нет 8= не знаю

C3. Есть ли у вас радио? ☐
1=да 0 = нет 8= не знаю **0→C5**

C4. Слышали ли вы о Гулязыке по радио? ☐
1=да 0 = нет 8= не знаю

C5. Есть ли у вас телевизор? ☐
1=да 0 =нет 8= не знаю
0:если мать→**WM1**
если НЕ мать→**BF1**

C6. Слышали ли вы о Гулязыке по телевидению? ☐
1=да 0 = нет 8= не знаю

Если респондент мать→**WM1**
Если респондент НЕ мать: перейти на **BF1**

Модуль Женщина **WM**

WM1. Ваша национальность? ☐

Кыргызка	1
Русская	2
Казашка	3
Узбечка	4
Таджичка	5
Уйгурка	6
Другое (укажите) _____	7
Не знаю	8

WM2. Какой наивысший уровень вашего образования? ☐

Никогда не училась	0
Начальная школа (1-4 классы)	1
Незаконченное среднее (5-9)	2
Законченное среднее (11 классов)	3
Училище	4
ВУЗ	5
Религиозное образование	6
Не знаю	8

WM3. Вы замужем? ☐
1= да 0= нет **0→WM5**

WM4. Какой наивысший уровень образования вашего супруга? ☐

Никогда не учился	0
Начальная школа (1-4 классы)	1
Незаконченное среднее (5-9)	2
Законченное среднее (11 классов)	3
Училище	4
ВУЗ	5
Религиозное образование	6
Не знаю	8

WM5. Работаете ли вы или учитесь за пределами места проживания ☐
1 = да 0 =нет **0→BF1**

WM6. Кем вы работаете(или учитесь)? ☐

рабочий	1
продавец продуктов, домашних изделий и т.д.	2
наемный служащий в частном бизнесе	3
владелец бизнеса	4
специалист (медсестра, доктор, учитель, фармацевт и т.д.)	5
студент	6
другое (укажите) _____	7
не знаю	8

WM7. Сколько часов в день вы заняты на работе или учебе? (поставьте 88 если не знает) ☐☐

WM8. Кто обычно кормит (имя ребенка) когда вас нет дома? ☐

Мать *(берет ребенка с собой)*	1
Бабушка	2
Сестры/братья ребенка	3
Отец ребенка	4
Другой член семьи	5
Наня	6
В дневном центре/детском саду	7
Другое (укажите) _____	8
Не знаю	9

Модуль Грудное вскармлирвание и питание детей — BF

Теперь я хочу задать несколько вопросов о грудном вскармливании и питании (имя ребенка)

BF1. Находился когда-либо (имя ребенка) на грудном вскармливании?
1=да 0 = нет 8=Не знаю **0 или 8→BF3**

BF2. Как скоро (имя ребенка) после рождения впервые был приложен к груди?

Немендленно (через 1 час после рождения)	0
В течение первых 24 часов	1
Между 24 - 48 часами	2
После 48 часов	3
Не знаю/не помню	8

Следующие вопросы о том, когда (имя ребенка) впервые покормили не грудным молоком.

BF3. Сколько месяцев было (имя ребенка), когда он впервые получил животное молоко, сухое молоко или молочную смесь?
м м *(укажите полных месяцев)*
(поставьте 00, если менее 1 мес.; 99-еще не получал; 88- не знаю)

BF4.Следующий вопрос про жидкости. Пож-та обозначьте все жидкости такие, как животное молоко, сухое молоко, смеси, сок, вода, сладкая или фруктовая вода, чай или другие, которые (имя ребенка) возможно получает. Во сколько месяцев (имя ребенка) начал получать любую жидкость, даже чай, кроме грудного молока?
м м *(укажите полных месяцев)*
(поставьте 00, если менее 1 мес.; 99-еще не получал; 88- не знаю)

BF5. Следующий вопрос о твердой или полутвердой пище. Пож-та обозначьте всю пищу такую, как каша, рис, крупа, буламык или что-то еще, что получает (имя ребенка).
Во сколько месяцев (имя ребенка) начал получать любую твердую пищу?
м м *(укажите полных месяцев)*
(поставьте 00, если менее 1 мес.; 99-еще не получал; 88= не знаю)

Теперь скажите что ел или пил (имя ребенка) со вчерашнего дня
Не забудьте закуски, еду или питье в ночное время, которые могли давать ребенку другие члены семьи.

BF6. Ел ли (имя ребенка) со вчерашнего дня что-то из этих продуктов?
(зачитайте вслух и запишите каждый ответ отдельно)
1=да 0 = нет 8= не знаю

a	грудное молоко	a
b	животное молоко, йогурт, кефир, сыр и т.д.	b
c	детскую смесь или порошковое молоко *(узнайте: название?)* Торговая марка? _____	c
d	фасоль, горох или орехи	d
e	каша, картофель, лапша, свекла	e
f	мясо, рыба, птица, печень/внутренности	f
g	яйца	g
h	морковь, тыква, помидоры	h
i	другие фрукты и овощи (шпинат, урюк, огурцы и т.д.)	i
j	хлеб или печенье	j
k	детские хлопья/питание которое было куплено Торговая марка? _____	k

BF7. Со вчерашнего дня сколько раз кормили (имя ребенка)
(если больше 7 поставьте 7. Если не знаю поставьте 8)
("кормили" означает любую пищу или закуску, кроме незначительной пищи) *(раз)*

a	твердая, полутвердая или мягкая пиша типа каши, крупы, мяса, овощей, печенья, фруктов и т.д.	a
b	грудное молоко	b
c	животное молоко, сухое молоко или смеси	c
d	что-то из бутылочки	d

BF8. (имя ребенка) уже перестали кормить грудью?
1=да 0 = нет **0→AB1**

BF9. Во сколько месяцев (имя ребенка) прекратили кормить грудью?
(поставьте 88 если не знаю/не помню) м м

Модуль - Отношение, Поведение — AB

Нам интересно что думают матери о грудном вскармливании и питании их детей. Мне хотелось бы спросить вас, что вы думаете о грудном вскармливании и питании вашего ребенка. Помните нет правильных или неправильных ответов на эти вопросы. Мы просто хотим знать ваше мнение по этим вопросам.

AB1. Используя эту шкалу, как бы вы оценили важность грудного вскармливания для здоровья и питания ребенка?
(покажите шкалу и запишите номер соответствующий ответу)

AB2. По вашему мнению, ребенка нужно кормить грудью?
1=да 0=нет 8= не знаю **0 или 8→AB4**

AB3. По вашему мнению, как долго ребенок должен находиться на грудном вскрамливании?
(поставьте 00 если < 1мес; м м
88 если не знаю)

AB4. По вашему, во сколько месяцев ребенку нужно начинать давать жидкости типа чая, воды, молока и т.д.?
(00 если < 1мес, 88 - не знаю) м м

AB5. По вашему, во сколько месяцев ребенка нужно начинать кормить пищей в виде каши, крупы и буламык и т.д.?
(00 если < 1 мес.; 88 - не знаю) м м

AB6. Некоторые считают, что грудное вскармливание полезно, некоторые - что нет, по вашему мнению грудное вскрамливание полезно?
1=да 0=нет 8= не знаю

Модуль Консультирование по пищевому рациону — DA

Когда в семье рождается ребенок, многие дают советы относительно грудного вскармливания и питания ребенка. Я хочу спросить про это, независимо следовали ли вы им или нет. Мне интересно что именно вам советовали и от кого вы получали эти советы.

DA1. Как давно(месяцев) доктор, медсестра, акушер или фельдшер консультировал по поводу грудного вскармливания?
1=да 0 = нет 8= не знаю **0 или 8→VS1**

DA2. Как давно(месяцев) доктор, медсестра, акушер или фельдшер советовал грудное вскармливание без использования других жидкостей или твердой пищи?
(поставьте 00 если < 1 мес; м м
88 - не знаю/не помню; 99 если не консультировали по поводу роста или не измеряли точный рост ребенка)

DA3. Как давно(месяцев) доктор, медсестра, акушер или фельдшер советовал прекратить грудное вскармливание?
00 если < 1 мес. м м
88 не знаю/не помню
99 если они не консультировали по поводу роста или не измеряли точный рост ребенка

Модуль Витамины/Добавки **VS**

Я задам несколько вопросов про витамины и добавки, которые вы возможно даете вашему ребенку. Некоторые употребляют такие добавки, некоторые - нет, это нормально.

VS1. Получал ли (имя ребенка) когда-либо такой Витамин А в капсулах? ☐

Покажите 100,000IU для 6-11-месячных детей
Покажите 200,000IU для 12-29-месячных детей **0 или 8→VS3**

1=да 0 = нет 8= не знаю

VS2. Как давно (месяцев) (имя ребенка) получал Витамин А в капсулах? ☐☐

(поставьте 00 если < 1 мес; 88 - не знаю/не помню) m m

VS3. Говорил ли вам доктор или медсестра, что у (имя ребенка) анемия? ☐

1=нет 0 = нет 8= не знаю

VS4. Получал ли (имя ребенка) такой железосодержащий сироп или капли? (покажите сироп и капли) ☐

1=да 0 =нет 8= не знаю **0 или 8→VS8**

VS5. Получает ли (имя ребенка) в настоящее время железосодержащий сироп или капли? ☐

1=да 0 =нет 8= не знаю **1→VS7**

VS6. Как давно (месяцев) (имя ребенка) получал такой железосодержащий сироп или капли? ☐☐

(поставьте 00 если <1 мес; 88-если не знаю/не помню) м м

VS7. Как долго (месяцев) (имя ребенка) употреблял или употребляет железосодержащий сироп или капли? ☐☐

(поставьте 00 если <1 мес; 88 -если не знаю/не помню) м м

VS8. Давали ли вы или кто-то еще (имя ребенка) какие-либо из этих витаминов и минеральных добавок?
(прочитайте вслух список и отметьте каждый ответ)

a Витамин Д a ☐
b Рыбий жир b ☐
c Мультивитамины c ☐
d Цинк d ☐
e Другое_____ e ☐
(укажите)

1=да 0 =нет 8=не знаю

Модуль Характеристики домохозяйства **HC**

Я задам еще один вопрос о вашем доме и ваших домочадцах.

HC1. Получает ли ваша семья универсальное ежемесячное пособие? ☐

1=да 0=нет 8= не знаю

Антропометрия **AN**

Сейчас я собираюсь измерить рост и вес вашего ребенка.

AN1. Были ли сделаны антропометрические замеры ребенка? ☐
1 = да 0= нет **1→AN3**

AN2. Если нет, почему? ☐
1 = не хотел (плакал, пинался и т.д.) 3=не пришли
2 = отказ матери/опекуна 4 другое (укажите **1→BS1**

AN3. Вес ребенка (кг) ☐☐ . ☐

AN4. Рост ребенка (см) ☐☐☐ . ☐

AN5. В каком положении был измерен рост ребенка -лежа или стоя? ☐

1 = Лежа (дети до 24 месяцев)
2 = Стоя (дети 24-29 месяцев)

Модуль Анализ крови **BS**

В конце мы возьмем небольшой образец крови из пальца вашего ребенка. Это может доставить небольшой дискомфорт, но зато вы можете узнать есть ли у вашего ребенка анемия.

BS1. Был ли получен анализ крови у ребенка? ☐
1=да 0 = нет **1→BS3**

BS2. Если нет, почему? ☐
1 = не хотел (плакал, пинался и т.д.) 4 = технические проблемы
2 = отказ матери/опекун 5 = другое (укажите)
3 = не пришли **перейти на BS5**

BS3. Сколько примерно микролитров крови было собрано в микротейнер? ☐☐☐

BS4. Концентрация гемоглобина в Гемокью ☐☐ . ☐ g/dL
(поставьте 88.8 если не было измерено/не знаю)

BS5. Идентификационная бирка РЕБЕНКА
Прикрепите здесь бирку ребенка

Подпись координатора, подтверждающего, что ребенок был направлен в медучреждение для лечения, если уровень гемоглобина <8.0 g/dL

Подпись Дата

Не забудьте отдать матери результаты измерение уровня гемоглобина ее ребенка.
Попросите мать подписать здесь для потдвержения получения результатов измерения уровня гемоглобина и медицинского направления (если необходимо)

Подпись Дата

Подпись координатора подверждающего, что вопросник был проверен и заполнен:

Подпись Дата

Комментарии интервьюера:

APPENDIX II
LIST OF CHILD HEMOGLOBIN RESULTS: FOR VILLAGE MEDICAL ATTENDANT

List of Child Hemoglobin Results: For Village Medical Attendant

Team supervisor: record hemoglobin results for all children in each cluster and indicating anyone with an Hgb co less than 8.0 g/dL; gave this form to the medical attendant at the end of each day.

Team #: ____ Cluster #: ____ ____

Date ____ ____ ____ ____ 1 3

d d m m y y

No.	Child name	Mother	Hb level (g/dLiter)	Hb < 8.0 g/dLiter? (Yes/No)	Commen
01					
02					
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					

APPENDIX III
CONFIDENCE INTERVALS, DESIGN EFFECTS, AND INTRA-CLASS CORRELATION COEFFICIENTS FOR MAJOR INDICATORS, CHILDREN 6–29 MONTHS — KYRGYZSTAN NATIONAL SURVEY, 2013

Indicator	Sample Size	Prevalence (%)	95% Confidence Interval	DEFF[a]	Number of Clusters	Average Cluster Size	ICC[b]
Anemia	2156	26	(22.2 - 29.8)	4.2	80	26.95	0.123
Hb<11.0 g/dL							
Serum Ferritin (<12µg/L)	2156	34.2	(31.3 - 37.2)	2.1	80	26.95	0.042
Serum Transferrin Receptor (sTfR)	2156	39.3	(35.6 - 43.1)	3.2	80	26.95	0.085
(>8.3 mg/L)							
Iron Deficiency Anemia (IDA)	2156	19.7	(16.5 - 22.9)	3.5	80	26.95	0.096
Hb<11.0 g/dL and sf<12 µg/L or elevated sTfR							
Serum Retinol Binding Protein (RBP)	2148	15.6	(13 - 18.1)	2.7	80	26.95	0.066
<0.71 µmol/L							
Alpha-1-glycoprotein (AGP)	2156	31.3	(27.9 - 34.7)	2.9	80	26.95	0.073
>1.0 g/L							
C-Reactive Protein (CRP)	2156	13	(11.4 - 14.6)	1.3	80	26.95	0.012
>5.0 mg/L							
Stunting	2149	11.7	(9.3 - 14.1)	3	80	26.95	0.077
Height-for-age z-score (HAZ) <-2 SD							
Underweight	2156	4.8	(3.7 - 5.9)	1.5	80	26.95	0.019
Weight-for-age z-score (WAZ) <-2 SD							
Wasting	2154	2.0	(1.1 - 2.8)	2.1	80	26.95	0.042
Weight-for-height z-score (WHZ) <-2 SD							

Note: CI=confidence interval; DEFF=design effect; ICC=intraclass correlation coefficient; Hb=hemoglobin; percent estimates weighted for non-response and 95% Confidence intervals adjusted for cluster survey design; average cluster size=sample size / number of clusters.

[a]The design effect or DEFF is the ratio of the actual variance to the variance computed under the assumption of simple random sampling, thus calculating the loss of effectiveness by the use of cluster sampling, instead of simple random sampling; the larger the DEFF, the greater the variance.

[b] ICC=(DEFF-1)/(average cluster size - 1).

APPENDIX IV
QUESTIONNAIRES FOR 2011 AND 2012 LOT QUALITY ASSURANCE SAMPLING SURVEYS

Fill the following information before beginning the interview.

HH1. Cluster number: ☐☐

HH2. Interviewer code ☐☐

HH3. Day/Month/Year of interview: ___ / ___ /11

HH8. Result of interview ☐

HH4. Supervisor's code ☐☐

HH5. Data entry operator code ☐

HH6. Oblast _____

HH7. Rayon _____

ID1. Child number ☐☐☐☐

Completed in person -1; Completed by phone -2; Refused in person - 3; Refused by phone – 4; Not available to interview - 5

If data is not collected on a child. Find the following information from the clinic, the medical worker, the VHC volunteer or by visiting the home of the mother/child.

HH9. Reason for not completing interview?

Family moved from village	1
Mother or family refused	2
Mother/caregiver is temporarily unavailable	3
Other (specify)_____	7
Can't find out	8

If 3, 7 or 8 try to identify family's phone number

0-996-_____ - ____ ____ ____

HH10. What is the child's birthdate?

___ / ___ / 20___

Write 8/8/2088 if DK

For all children in the survey: Please abstract the information below from the Green Journal

G1. Has (Child's name) ever received Gulazyk? ☐

1 = yes 0=no

If not listed in green Journal put 0

G2. Has the child received Gulazyk within 3 months of or to today's date? ☐

1 = yes 0=no

If not listed in green Journal put 0. ***Proceed to the interview!***

G3. What is the last date that the child received Gulazyk according to the green journal?

___ / ___ / 20___

Write 8/8/2088 if DK

Hello, my name is ____ and I am working with the Ministry of Health and the National Statistics Committee. I am working on a joint project concerned with nutrition of children 6 to 24 months of age. I would like to talk to you about this and record your answers to some questions that I have about your child (NAME of child). The interview will take approximately 5 minutes.

All of the information we obtain will remain strictly confidential and nobody will know that the information is yours. Participation is completely voluntary. If we come to any point at which you do not want to asnwer, let me know and I will go on to the next question, or the interview can be stopped at any time. If you agree If you agree to participate, I would like you to sign this form. May we begin? Would you please sign?

If permission is given, ask respondent to sign here and begin the interview.

(Signature)_____ Name: _____

HH11. What is the name of the child?

Name: _____

HH12. In what month and year was (child's name) born? - *Probe: What is his/her birthday?*

___ / ___ / 20___

Write 8/8/2088 if DK

Check the birthday with the calendar to be sure the child is between 6 and 24 months of age. If the mother is unsure of the birthday, check the birthdate with the registry at the clinic. It the child is not 6 to 24 months he cannot participate. Explain this to the mother and thank her for coming.

Receipt and Use of Gulazyk Module

GU1. Now I would like to ask you some questions about Gulazyk. Gulazyk is a vitamin and mineral powder that can be used to make a young child's food more nutritious. We would like to speak to a person in the household who knows what the child eats. May I speak to this person now?
1 = yes 0=no 8=don't know ☐
If there is no person in the household who can answer questions about the child, ask when that person could be available and arrange a time to return if possible.

GU2. Have you ever received a package of Gulazyk like this for (child's name)? - *Show Gulazyk sachets*
1 = yes 0=no 8=don't know ☐

If no, encourage her to visit the health clinic to receive Gulazyk. ***End interview.***

GU3. Is (child's name) currently taking Gulazyk?

1 = yes 0=no 8=don't know ☐
If 1→GU5

GU4. Why (child's name) is not currently taking Gulazyk?
Don't read out! Circle each answer mentioned.

Too difficult to remember to give Gulazyk	A
Child experienced side effects/diarrhea	B
Child experienced side effects/skin/allergy	R
Child experienced side effects/other	S
(*specify*)_____	
Child does not like food when Gulazyk is added	C
Gulazyk makes the food taste bad	D
Gulazyk changes the color of the food	E
Mother/caretaker doesn't like Gulazyk	F
Health care worker told me to stop using Gulazyk	G
Ran out of Gulazyk	H
Children should receive natural vitamins from food	I
We have been away from home	L
Child has been sick	N
Don't know	O
Other_____	P

(*specify*)

GU5. How did you obtain Gulazyk for (child's name)? ☐

I go to the health clinic	1
The medical worker brings Gulazyk to my home	2
Both (of above answers)	3
Other (*specify*)_____	8

GU6. How often does/did) (child's name) consume Gulazyk? ☐

1 - Every day for one month
2 - A sachet per day for 15 days, followed by a break for 15 days
3 - Every other day
4 - Other schedule (*specify*)_____
5 – Never yet received **=>GU10**
8 - Don't know

GU7. How many sachets of Gulazyk has (child's name) consumed within 2 months ☐☐

(put 88 if don't know/remember; put 00 if none)

GU8. How many full sachets of Gulazyk for (child's name) do you have remaining right now? - *Ask to see the remaining Gulazyk for this child and count the number of full sachets. Put 88 if cannot locate remaining sachets. Put 99 if more than 99*

GU9. Have you noticed any changes in the color or taste of the food to which Gulayzk is added? ☐☐

Yes	1
No	0

If 0 => GU10

GU9a. Is this a concern for you or your child? ☐

Yes	1
No	0

GU10. When you run out of Gulazyk sachets do you plan to continue?

1 = yes 0=no 8=don't know ☐

If 0 or 8 => GU11, otherwise ***End Interview***

GU11. What are the reasons that you will probably not continue to give Gulazyk? - *Do NOT read each item, circle all answers mentioned*

A -Too difficult to remember to give Gulazyk
B - Child experienced side effects
C - Child does not like food when Gulazyk is added
D - Family member doesn't want to use
E - Health care worker told me to stop using Gulazyk
F - Children should receive natural vitamins from diverse food
H - By the time I run out of Gulazyk my child will be >24 months
I – Other (*specify*) _____
J – Don't know

End Interview

ОПРОСНИК LQAS ПО ПРОГРАММЕ ГУЛАЗЫК

Перед началом интервью укажите следующую информацию.

HH1. Номер кластера: ☐☐☐

HH2. Код интервьюера ☐☐

HH3. дд/мм/гг проведения интервью: ___ / ___ /12

HH8. Результат интервью ☐

HH4. Код супервайзера ☐☐

HH5. Код оператора по воду данных ☐

HH6. Область _____

HH7. Район _____

ID. Номер ребенка ☐☐☐☐

Заполнено при встрече -1; Заполнено по телефону -2; Отказ участвовать в интервью при встрече - 3; Отказ участвовать в интервью по телефону – 4; Интервью не состоялось по причине отсутствия опрашиваемого - 5

В случае если не собраны данные о ребенке, обратитесь в медицинское учреждение, к медицинскому работнику или волонтеру СКЗ за информацией или посетите мать/ребенка на дому.

HH9. Причина по которой интервью не состоялось?

Семья съехала с деревни	1
Отказ матери или семьи	2
Мать/родитель временно не доступны	3
Другое (укажите)_____	7
Не смогли найти	8

В случае 3, 7 или 8 постарайтесь найти номер телефона семьи 0-996-_____ - ____ ____ ____

HH10. Дата рождения ребенка

___ / ___ / 20___

Напишите 8/8/2088 если не знает

Для всех детей, охваченных опросом: Пожалуйста, при ответе на нижеуказанные вопросы приведите информацию из зеленого журнала

G1. Получал ли (имя ребенка) когда-нибудь Гулазык?

1 = да 0=нет ☐

Если нет записи в зеленом журнале, укажите 0

G2. Получал ли ребенок Гулазык в течение последних 3 месяцев или в настоящее время?

1 = да 0=нет ☐

Если нет записи в зеленом журнале или со дня последней записи прошло более 3-х месяцев, укажите 0

G3. Согласно зеленому журналу укажите последнюю дату когда ребенок получал Гулазык?

___ / ___ / 20___

Напишите 8/8/2088 если не знает

Здравствуйте, меня зовут _____. Я работаю с Министерством здравоохранения и Национальным статистическим комитетом по программе Гулазык. Я хотел(а) бы поговорить с Вами на эту тему и записать ваши ответы на некоторые из наших вопросов относительно вашего ребенка. Это интервью займет приблизительно 5 минут.

Вся полученная нами информация будет носить строго конфиденциальный характер, и никто не узнает о том, что полученная информация была предоставлена Вами. Ваше участие является добровольным . Если вы не хотите отвечать на какой либо вопрос, мы можем перейти на следующий или прервать интервью. Если вы согласны принять участие в нашем опросе, то, пожалуйста, подпишите данную форму. Можно начинать? Подпишите пожалуйста.

Если разрешение получено, обратитесь с просьбой к респонденту поставить здесь подпись и начинайте интервью.

(Подпись)_____ Фамилия _____

HH11. Назовите имя ребенка?

Имя: _____

HH12. Укажите дату рождения (имя ребенка) ?

___ / ___ / 20___

Запишите 8/8/2088 если не знает

Убедитесь по календарю, что ребенок находится в возрасте от 6 до 24 месяцев. Если мама не помнит точную дату рождения, уточните эту дату в медпункте. Если ребенок не находится в возрасте от 6 до 24 месяцев, то он не может участвовать. Объясните ситуацию матери и поблагодарите ее за то, что она согласилась на интервью.

Как получают и используют Гулазык

GU1. Теперь я хотел бы задать вам несколько вопросов в отношении Гулазыка. Гулазык - это порошок, содержащий витамины и минералы, который можно использовать для того чтобы сделать еду вашего ребенка более питательной. Мы хотели бы поговорить с тем членом семьи, который знает чем ребенок питается. Можно поговорить с этим человеком сейчас?

1 = да 0=нет 8=не знаю ☐

Если дома не оказалось того человека, который мог бы ответить на вопросы о ребенке, спросите когда можно будет с ним поговорить и назначьте время для повторной встречи, если возможно.

GU2. Получали ли вы когда-нибудь вот такие пакетики Гулазыка для (имя ребенка)? - *Покажите пакетик Гулазыка*

1 = да 0=нет 8=не знаю ☐

Если нет, посоветуйте обратиться в медицинское учреждение для получения Гулазык. ***Конец интервью.***

GU3. Принимает ли (имя ребенка) Гульазык в настоящее время?

1 = да 0=нет 8=не знаю ☐

If 1=>GU5

GU4. Почему (имя ребенка) в настоящее время не принимает Гулазык?

Не зачитывайте варианты ответов.

Очень трудно вспомнить о том, что надо дать Г.	A
Наблюдались побочные эффекты, /диарея	B
Наблюдались побочные эффекты, сыпь/аллергия	R
Наблюдались побочные эффекты/прочие (укажите)_____	S
Ребенку не нравится пища, когда в нее добавлен Г,	C
Гульазык портит вкус пищи	D
Гульазык меняет цвет пищи	E
Матери/воспитателю не нравится Гулазык	F
Медработник сказал мне прекратить прием Г.	G
Закончился запас Гулазыка	H
Дети должны получать натуральные витамины посредством разнообразного питания	I
Прием Гулазыка может привести к смерти ребенка	K
Находились вдали от дома	L
Ребенок болел	N
Не знаю	O
Другое (укажите)_____	P

GU5. Каким образом вы получаете Гульазык для (имя ребенка)?

Я иду к врачу	1
Медработник приносит Гульазык мне домой	2
Оба варианта (вышеуказанные варианты ответа)	3
Другое (*укажите*)_____	8

GU6. Как часто (имя ребенка) принимает Гульазык?

1 – Каждый день в течение одного месяца
2 – Пакетик в день в течение 15 дней с перерывом в 15 дней
3 – Каждый второй день
4 – Другой график приема
5 - Никогда не принимал => **GU10**
8 - Не знаю

GU7. Сколько пакетиков Гульазыка (имя ребенка) употребил за последние 2 месяца ☐☐

(поставьте 88 в случае ответа не знаю/не помню; поставьте 00 в случае отсутствия ответа)

GU8. Сколько полных пакетиков Гулазыка осталось у (имя ребенка) в данный момент? ☐☐

Спросите можно ли посмотреть на оставшийся для ребенка запас Гулазыка и посчитайте количество полных пакетиков. Поставьте 88 в случае если не могут найти оставшиеся пакетики. Поставьте 99, если пакетиков 99 и более.

GU9. Заметили ли вы какие-либо изменения в цвете или вкусе пищи, в которую добавлен Гулазык? ☐

Да	1
Нет	0

If 0 => GU10

GU9a. Если да, это беспокоит Вас или Вашего ребенка? ☐

Да	1
Нет	0

GU10. Когда у вас закончатся пакетики Гулазыка. Вы планируете продолжить прием Гулазыка?

1 = да 0=нет 8=не знаю ☐

Если 1 => GU12

GU11. По каким причинам вы не будете продолжать прием Гульазыка? – *НЕ зачитывайте каждый вариант ответа, обведите все полученные ответы*

Очень трудно помнить о том, что надо дать Гулазык	A	☐
У ребенка наблюдались побочные эффекты	B	☐
Ребенку не нравится пища, когда в нее добавляют Г.	C	☐
Члены семьи не хотят, чтобы ребенок потреблял Г.	D	☐
Медработник сказал мне прекратить прием Гулазыка	E	☐
Дети должны получать натуральные витамины посредством разнообразного питания	F	☐
Прием Гулазыка может привести к смерти ребенка	G	☐
К тому времени, когда закончится у меня запас Гулазыка мой ребенок будет старше 24 месяцев	H	☐
Другое (укажите)_____	I	☐
Не знаю	J	☐

GU12. Получали ли вы когда-нибудь брошюру «Гулазык»

1 = да 0=нет 8=не знаю ☐

Завершите интервью!

APPENDIX V
ALGORITHMS FOR CALCULATING INDICATORS OF INFANT AND YOUNG CHILD FEEDING PRACTICES

The algorithm is patterned after the Indicators for Assessing Young Child Feeding Practices Part 2 (WHO, 2008); however the survey instruments used to assess infant feeding practices are not identical and therefore algorithm has been modified accordingly. Note that children with missing values or values out of acceptable range are excluded from all calculations

1. Early initiation of breastfeeding

Definition: Proportion of children 6 to 24 months who were put to the breast within one hour of birth.

Children 6 to <24 months who were put to the breast within one hour of birth
Children 6 to <24 months

Calculation (ages 6 to <24 months only):

_____BF2=0_____ X 100
All children 6 to <24 months

Note: Children who never initiated breast feeding (BF1=0) are included in the denominator.

2. Exclusive breastfeeding until 6 months of age

Definition: Proportion of infants fed exclusively with breast milk until 6 months of age.

Children 6 to <24 months who were exclusively breast feed until 6 months of age
Children 6 to <24 months

Calculation (ages 6 to <24 months only):

(BF3 ≥ 6 or 99) AND (BF4 ≥ 6 or 99) AND (BF4 ≥ 6 or 99) X100
All children 6 to <24 months

3. Continued breastfeeding at 1 year

Definition: Proportion of children 12–15 months of age who are fed breast milk.

Children 12–15 months of age who received breast milk during the previous day
Children 12–15 months of age

Calculation (ages 12 to 15 months only):

(BF6a =1) X100
Children 12 to 15 months of age

4. Introduction of solid, semi-solid or soft foods

Definition: Proportion of infants 6–8 months of age who receive solid, semi-solid or soft foods.

Infants 6–8 months of age who received solid, semi-solid or soft foods during the previous day
Infants 6–8 months of age

Calculation (ages 6 to 8 months only):

$$\frac{\text{BF7a = 1 or 2 or 3 or 4 or 5 or 6 or 7)}}{\text{Children 6 to 8 months of age}} \times 100$$

5. Minimum dietary diversity

Definition: Proportion of children 6–23 months of age who receive foods from 4 or more food groups.

$$\frac{\text{Children 6–23 months of age who received foods from ≥4 food groups during the previous day}}{\text{Children 6–23 months of age}}$$

Calculation (6 to <24 months only):
To calculate a value for this indicator, a 7 food group score variable needs to be created. The instructions below show how to calculate the 7 food group score. This is followed by instructions to calculate the Minimum dietary diversity indicator.

Calculation of 7 food group score:
The 7 foods groups used for calculation of this indicator are:

1. grains, roots and tubers
2. legumes and nuts
3. flesh foods (meat, fish, poultry and liver/organ meats)
4. eggs
5. vitamin-A rich fruits and vegetables
6. other fruits and vegetables
7. dairy products (milk, yogurt, cheese)

Construct the 7 food group score as follows:

Begin with a score of 0.
For each of the 7 food groups, add a point if any food in the group was consumed.
Food group 1 Add 1 point if: Bf6e=1 or Bf6j=1 or Bf6k=1
Food group 2 Add 1 point if: Bf6d=1
Food group 3 Add 1 point if: Bf6f=1
Food group 4 Add 1 point if: Bf6g=1
Food group 5 Add 1 point if: Bf6h=1
Food group 6 Add 1 point if: Bf6i=1
Food group 7 Add 1 point if: Bf6b=1 or Bf6c=1

Calculation of Minimum dietary diversity indicator:

$$\frac{\text{7 food group score ≥4}}{\text{All children 6 to <24 months}} \times 100$$

6. Minimum meal frequency

Definition: Proportion of breastfed and non-breastfed children 6–23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more.

$$\frac{\text{Breastfed children 6–23 months of age who received solid, semi-solid or soft foods the minimum number of times or more during the previous day}}{\text{Breastfed children 6–23 months of age}} \times 100$$

and

Non-breastfed children 6–23 months of age who received solid, semi-solid or soft foods or milk feeds the minimum number of times or more during the previous day_____X100_

Non-breastfed children 6–23 months of age

Calculation:

To calculate a value for the overall indicator of Minimum Meal Frequency, combine the two numerators shown above, and the two denominators.

[(Bf6a=1) AND (age=6 to 8 months) and BF7 ≥2)] OR [(Bf6a=1) AND (age=9 to <24 months) AND (Bf6a ≥3)] OR [(Bf6a=2) AND (age=6 to 24 months) AND (Bf7a + Bf7c) ≥4]_____X100

All children 6 to <24 months

Notes:

- For breastfed children, the minimum number of times varies with age (2 times if 6–8 months and 3 times if 9–23 months). For non-breastfed children the minimum number of times does not vary by age (4 times for all children 6–23 months)
- Bf6b and Bf6c ask about whether the child consumed infant formula, milk, etc. yesterday (each yes answer is counted in the numerator for non-breastfed children only.

Minimum acceptable diet

Definition: Proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breast milk).

Breastfed children 6–23 months of age who had at least the minimum dietary diversity and the minimum meal frequency during the previous day_____

Breastfed children 6–23 months of age

and

Non-breastfed children 6–23 months of age who received at least 2 milk feedings and had at least the minimum dietary diversity not including milk feeds and the minimum meal frequency during the previous day

Non-breastfed children 6–23 months of age

Calculation of Minimum acceptable diet indicator:

For non-breastfed children, the dietary diversity component of this indicator is different than for the Minimum dietary diversity indicator. A 6 food group score (instead of a 7 food group score) that excludes dairy products is used for non-breastfed children for this indicator. In addition, this indicator requires that non-breastfed children receive a minimum number of milk feeds.

The instructions below show how to calculate the 6 food group score for non-breastfed children. This is followed by instructions to calculate the Minimum acceptable diet indicator.

Calculation of 6 food group score:

The 6 foods groups used for calculation of the dietary diversity component of the indicator for non-breastfed children are:

1. grains, roots and tubers
2. legumes and nuts
3. flesh foods (meat, fish, poultry and liver/organ meats)
4. eggs
5. vitamin-A rich fruits and vegetables
6. other fruits and vegetables

Construct the 6 food group score as follows:

Begin with a score of 0.

For each of the 7 food groups, add a point if any food in the group was consumed.

Food group 1 Add 1 point if: Bf6e=1 or Bf6j=1 or Bf6k=1

Food group 2 Add 1 point if: Bf6d=1

Food group 3 Add 1 point if: Bf6f=1

Food group 4 Add 1 point if: Bf6g=1

Food group 5 Add 1 point if: Bf6h=1

Food group 6 Add 1 point if: Bf6i=1

(The 6 food group score is calculated by adding the 6 food groups the same as it was for minimum dietary diversity except for Food Group # 7 [Dairy products] which is not included in the calculation.)

Calculation:

[(Bf6a=1) AND (age 6 to 8 months) AND (7 food group score ≥4) AND (BF7 ≥2)] OR [(Bf6a=1) AND (age 9 to <24 months) AND (7 food group score ≥4) AND (BF7 ≥3)] OR ((Bf6a=0) AND (age 6 to <24 months) AND (BF7c ≥2) AND (6 food group frequency score ≥4) and AND (Bfa + Bf7c) ≥4))] X100

All children 6 to <24 months

Children ever breastfed

Definition: Proportion of children 6 to 24 months who were ever breastfed.

Children 6-24 months of age who were ever breastfed X100

Children born in the last 24 months

Calculation (age 6 -24 months):

BF1=1 X100

Children 6 -24 months of age

Continued breastfeeding at 2 years

Definition: Proportion of children 20–23 months of age who are fed breast milk.

Children 20 to <24 months of age who received breast milk during the previous day

Children 20 to <24 months of age

Calculation (children 20 to <24 months of age):

(Bf6a=1) и (Bf7a ≥1) X100

Children 20 to <24 months of age100

Age-appropriate breastfeeding

Definition: Proportion of children 6 to <24 months of age who are appropriately breastfed.

Children 6–23 months who received breast milk, as well as solid, semi-solid or soft foods, the previous day X100

Children 6–23 months of age

Calculation (Children 6 to <24 months):

(Bf6a=1) and (Bf7a ≥1)_____X100__
All children 6 to <24 months

Milk feeding frequency for non-breastfed children

Definition: Proportion of non-breastfed children 6–23 months of age who receive at least 2 milk feedings.

Non-breastfed children 6–23 months of age who received at least 2 milk feedings during the previous day____X100

Non-breastfed children 6–23 months of age

Calculation (children 6 to <24 months of age):

(Bf6a= 0) AND(Bf7c ≥2)

Bf6a=0)

APPENDIX VI
NATIONAL SURVEY OF NUTRITIONAL STATUS, KYRGYZSTAN 2013: RESULTS FOR THE WHO GLOBAL DATABASE ON CHILD GROWTH AND MALNUTRITION

GLOBAL DATABASE ON CHILD GROWTH AND MALNUTRITION

Ref. No.:

Country:
Author:
Reference:
Administrative level:
Month and year survey:

AGE GROUPS	N	WEIGHT/AGE (%)				HEIGHT (LENGTH)//AGE (%)				WEIGHT/HEIGHT (LENGTH)/ (%)							BMI/AGE (%)							NOTES
				Mean	SD			Mean	SD						Mean	SD						Mean	SD	
(Months)		<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	
TOTAL (6-29)	2 162	0.4	4.8	0.2	1.1	3.3	11.7	0.0	1.3	0.6	2.0	19.7	3.2	0.3	0.3	1.1	0.6	2.1	22.7	4.4	0.7	0.3	1.2	
6-11	520	0.7	3.4	-0.2	1.0	1.4	5.0	-0.5	1.2	1.3	2.7	27.4	4.1	0.2	0.1	1.0	1.4	3.7	24.3	3.9	0.2	0.2	1.1	
12-17	569	0.7	3.7	-0.3	1.0	2.6	8.6	-0.9	1.2	0.7	2.5	17.1	3.7	0.6	0.1	1.0	0.7	2.5	19.9	4.8	0.7	0.3	1.0	
18-23	539	0.2	6.3	-0.4	0.9	4.1	17.1	-1.2	1.0	0.5	2.3	13.2	2.2	0.1	0.3	1.0	0.5	1.8	19.6	3.8	0.7	0.5	1.0	
24-29	534	0.2	5.6	0.2	1.1	4.8	15.5	0.0	1.3	0.0	0.5	21.9	2.8	0.3	0.3	1.1	0.0	0.5	27.1	4.9	1.3	0.3	1.2	

AGE GROUPS	N	WEIGHT/AGE (%)				HEIGHT (LENGTH)//AGE (%)				WEIGHT/HEIGHT (LENGTH)/ (%)							BMI/AGE (%)							NOTES
				Mean	SD			Mean	SD						Mean	SD						Mean	SD	
(Months)		<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	
Male (6-29)	1 102	0.8	5.3	0.2	1.2	3.8	13.1	-0.1	1.4	1.1	3.0	18.3	2.6	0.5	0.3	1.2	1.1	3.1	21.4	3.4	1.0	0.3	1.2	
6-11	268	1.4	6.2	-0.3	1.1	2.4	8.9	-0.6	1.2	2.5	4.5	26.6	3.7	0.3	0.0	1.1	2.5	5.0	24.2	3.4	0.3	0.1	1.1	
12-17	283	1.1	6.0	-0.3	1.0	3.8	10.0	-0.9	1.2	1.2	4.7	14.1	3.9	0.9	0.1	1.0	1.4	4.7	16.8	4.0	1.1	0.3	1.0	
18-23	284	0.3	4.9	-0.4	1.0	3.9	16.4	-1.2	1.1	0.9	2.5	13.6	1.5	0.1	0.2	1.0	0.9	2.5	18.9	2.8	1.2	0.4	1.0	
24-29	267	0.4	4.1	0.2	1.2	4.8	16.3	-0.1	1.4	0.0	0.4	19.9	1.7	0.5	0.3	1.2	0.0	0.4	25.9	3.3	1.4	0.3	1.2	

GLOBAL DATABASE ON CHILD GROWTH AND MALNUTRITION Ref. No.:

AGE GROUPS	N	WEIGHT/AGE (%)				HEIGHT(LENGTH)//AGE (%)				WEIGHT/HEIGHT(LENGTH)/ (%)							BMI/AGE (%)							NOTES
				Mean	SD			Mean	SD						Mean	SD						Mean	SD	
(Months)		<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	
Female (6-29)	1 060	0.1	4.3	0.2	1.1	2.7	10.3	0.0	1.3	0.1	1.0	21.1	3.7	0.1	0.3	1.1	0.1	1.0	23.9	5.4	0.4	0.3	1.1	
6-11	252	0.0	0.6	-0.1	1.0	0.4	1.0	-0.5	1.1	0.2	0.9	28.2	4.5	0.0	0.2	1.0	0.4	2.3	24.3	4.5	0.0	0.2	1.0	
12-17	286	0.3	1.6	-0.3	1.0	1.5	7.2	-0.9	1.2	0.1	0.4	20.0	3.6	0.3	0.1	1.0	0.0	0.4	22.8	5.5	0.3	0.3	1.0	
18-23	255	0.1	7.9	-0.4	0.9	4.3	17.9	-1.1	1.0	0.1	2.2	12.9	3.0	0.1	0.3	0.9	0.0	1.1	20.3	4.9	0.1	0.5	1.0	
24-29	267	0.0	7.1	0.2	1.1	4.8	14.7	0.0	1.3	0.0	0.5	24.0	3.9	0.2	0.3	1.1	0.0	0.5	28.5	6.7	1.1	0.3	1.1	

	N	WEIGHT/AGE (%)				HEIGHT(LENGTH)//AGE (%)				WEIGHT/HEIGHT(LENGTH)/ (%)							BMI/AGE (%)							NOTES
				Mean	SD			Mean	SD						Mean	SD						Mean	SD	
		<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	<-3 CO	<-2 CO[1]	>+1 CO[1]	>+2 CO[1]	>+3 CO	z-score	z-score	
RESIDENCE																								
Urban	552	0.3	5.0	-0.2	1.1	3.6	11.3	-0.6	1.3	0.7	2.0	19.1	3.1	0.2	0.1	1.0	0.7	2.0	21.3	4.3	0.7	0.2	1.1	
Rural	1 610	0.7	4.3	-0.2	1.0	2.5	12.6	-0.7	1.2	0.4	2.0	21.0	3.5	0.6	0.2	1.0	0.4	2.3	25.7	4.4	0.7	0.3	1.1	
REGIONS																								

NOTES

[1] *% <-2SD includes %<-3SD; %>+2SD includes >+3SD; %>+1SD includes %>+2SD and %>+3SD.*

APPENDIX VII
BRIEF SUMMARY QUALITY ASSURANCE FOR MICRONUTRIENT MEASUREMENTS FROM THE 2009 AND 2013 KYRGYZSTAN SURVEYS

2009 SURVEY

External Quality Assurance

The VitMin Lab (Willstaett, Germany) has participated in CDC's external quality assurance program since 2006. The laboratory measures ferritin, soluble transferrin receptor (sTfR), C-reactive protein (CRP), and retinol binding protein (RBP) concentrations in plasma using an enzyme-linked immunosorbent assay (ELISA) technique. The precision and bias were Optimal or Desirable for all of the above indicators (>90% precision of the VITAL-EQA results, with <0.5% bias). This quality assurance analysis is based on exercises immediately preceding and during the survey (Rounds 12-13).

Internal Quality Control

The VitMin Lab (Willstaett, Germany) analyzed the survey samples for ferritin, sTfR, CRP, RBP, and AGP using an ELISA technique. The lab routinely tested a single QC pool in 16 different wells randomly distributed in each 384-well plate. The inter-assay coefficients variation (CV) for these analytes were 3.3% for ferritin, 3.7% for TfR, 8.9% for CRP, 3.0% for RBP and 3.5% for AGP. A CV of about 10% provides acceptable precision using an ELISA technique. These data indicate that the lab's performance was good to excellent while analyzing the survey samples.

2013 SURVEY

External Quality Assurance

The VitMin Lab (Willstaett, Germany) has participated in CDC's external quality assurance program, VITAL-EQA, since 2006. The laboratory measures ferritin, sTfR, CRP, and RBP concentrations in plasma using an enzyme-linked immunosorbent assay (ELISA) technique. The precision and bias were Optimal or Desirable for ferritin, sTfR, and CRP (>90% precision of the VITAL-EQA results, with <0.5% bias). For the 2013 survey, the precision and bias were Minimal or Unacceptable for RBP (>80-85% precision of the VITAL-EQA results, with 15-20% bias). This quality assurance analysis is based on exercises immediately preceding and during the survey (Rounds 20-21).

Internal Quality Control

The VitMin Lab analyzed the survey samples for ferritin, sTfR, CRP, RBP, and AGP using an ELISA technique. The lab routinely tested a single QC pool in 10 different wells randomly distributed in each 384-well plate. The inter-assay coefficients variation (CV) for these analytes were 3.8% for RBP, 3.2% for ferritin, 5.1% for AGP, 3.0% for TfR, and 5.2% for CRP. A CV of about 10% provides acceptable precision using an ELISA technique (Erhardt, 2004; Haynes, 2008). These data indicate that the lab's performance exceeded the acceptable performance expectations while analyzing the survey samples.

APPENDIX VIII
QUESTIONNAIRES FOR 2009 NATIONAL NUTRITION SURVEY

English

NATIONAL NUTRITION AND DIET SURVEY

April 24, 2009 - MASTER

Fill the following information before beginning the interview.

HH1. Cluster number

HH2. Interviewer code

HH3. Day/Month/Year of interview: 0 9 (d d m m y y)

HH4. Supervisor's code

HH5. Data entry operator code

HH6. Oblast code

oblast codes…

HH7. Result of interview		HH8. Result of anthropometry		HH9. Result of blood collection		HH10. Location of data collection	
Completed	1	Complete on mother/child	1	Complete on mother/child	1	Clinic	1
Refused	2	Complete on mother only	2	Complete on mother only	2	Home	2
Paritally completed	3	Complete on child only	3	Complete on child only	3	Partial in clinic / partial in home	3
Not available to interview	4	Not completed on either	4	Not completed on either	4		

ID Label - **CHILD**

Affix child label here

L1. In what language was the interview conducted?

Kyrgyz 1
Russian 2
other (specify) 3

If no data is collected on a mother and child. Find the following information from the clinic, the medical worker, the VHC volunteer or by visiting the home of the mother/child.

HH11. How old (in years) is the mother?

(put 88 if don't know/cannot find out)

HH12. How old (in months) is the child?

(put 88 if don't know/cannot find out)

HH13. What is the gender of the child?

1=male 2=female

HH14. What is the ethnicity of the mother?

Kyrgyz 1
Russian 2
Kazakh 3
Uzbek 4
Tajik 5
Uigher 6
Other (*specify*) 7
Don't know 8

HH15. Where does the family live?

Near or in the village center 1
On the outskirts of the village 2
Not in the village 3
Other (*specify*) 4
Don't know 8

HH16. How many brothers/sisters does the child have?

(put 88 if don't know/cannot find out)

HH17. Does the mother work/study outside of the home?

1= yes 0 = no 8 = don't know/can't find out

HH18. Reason for not coming to the interview?

family moved from village 1
mother refused 2
family (husband, mother-in-law, etc) refused 3
mother sick 4
child sick 5
mother had to work 6
was not invited by the health clinic 7
Other (specify) 8
Don't know/can't find out 9

We are from the Ministry of Health and the National Statistics Committee. We are working on a joint project concerned with mother and child diet, nutrition and health. I would like to talk to you about this and record your answers to some questions that I have. This interview will take approximately 20 minutes. After the interview, we will weigh and measure you and your baby and take a small blood sample from your finger and the finger of your baby. From this sample we will be able to inform you if you or your baby has anemia. The only direct benefit to you is the knowledge of your and your baby's anemia status. The risks to you are small and consist of the possible discomfort caused by pricking the finger in order to draw the blood sample. The discomfort will only be temporary and will not be very great. All of the information we obtain will remain strictly confidential and nobody will know that the information is yours, however, your hemoglobin results will be shared with your village [illegible]. Would you please sign?

If permission is given, ask respondent to sign here and begin the interview.

(Signature)_____ (Name)_____

Permission for woman's participation

(Signature)_____ (Name)_____

Permission for child's participation

HH19. What is your name?

(last, first, middle initial)

HH20. What is the name of the child?

(last, first, middle initial)

HH21. In what day, month, and year was (child's name) born?

Probe: What is his/her birthday?

d	d	m	m	y	y

(put 88 for day, month, or year if don't know/remember)

Check to make sure the baby's birthday is between June 1, 2004 and December 31, 2008. If the birthday does not fall between these dates, the child cannot participate. Explain this to the mother and thank her for coming. If the mother is unsure of the birthday, check the birthdate with the registry at the clinic.

HH22. child's sex? ____

1=male 2=female

HH23. What is your relationship to (*child's name*): ____

mother	1	1→HC1
grandmother	2	
aunt	3	
other(specify)	6	

HH24. Why is (child's name)'s mother not here today? ____

working/studying	1	
sick	2	
did not want to attend	3	**IF MOTHER IS NOT PRESENT, RECORD REASON AND SKIP TO AN1**
family did not allow	4	
busy at home/with housework	5	
other (specify)	7	
don't know	8	

Household Characteristics Module **HC**

I would now like to ask you a few questions about your home and those who live in it.

HC1. Does your family currently receive the universal monthly benefit? ____

1=yes 0=no 8= don't know

HC2. Including (child's name) how many children age 6 - 59 months live in your home? ____ ____

Woman's Module **WM**

WM1. What is your native language?

Kyrgyz	1
Russian	2
Kazakh	3
Uzbek	4
Other (*specify*) _____	6
Don't know	8

WM2. What is your date of birth?

d	d	m	m	y	y

(put 88 for day, month, or year if don't know/remember)

WM3. How many live children do you have? ____

WM4. What is the highest level of school you completed?

Never attended	0
Primary (1-4 grades)	1
Incomplete secondary (5-9)	2
Complete secondary	3
Technical school	4
Higher	5
Religious curriculum	6
Don't know	8

WM5. Are you currently married?

1= yes 0= no **0→WM7**

WM6. What is the highest level of school your spouse completed?

Never attended	0
Primary (1-4 grades)	1
Incomplete secondary (5-9)	2
Complete secondary	3
Technical school	4
Higher	5
Religious curriculum	6
Don't know	8

WM7. Do you currently work or study outside the home (for example, as an employee, business owner, laborer in fields, etc.)?

1 = yes 0 = no **0→WM12**

WM8. What type of work or study do you do?

laborer (in the fields)	1
vender of food, fruit, homemade goods or other	2
employee in a business	3
business owner	4
professional (nurse, doctor, teacher, pharmacists, etc)	5
student	6
other (specific) _____	7
Don't know	8

WM9. How many hours a day do you USUALLY work or study outside of the home? (put 88 if don't know) ____

WM10. Who USUALLY takes care of (child's name) while you are outside of the home?

The mother *(takes the child with her)*	1
Baby's grandmother	2
Baby's sisters/brothers	3
Baby's father	4
Other family member	5
Baby sitter	6
Day care / children's garden	7
Other (specify) _____	8
Don't know	9

WM11. Who USUALLY feeds (child's name) while you are outside of the home?

The mother *(takes the child with her)*	1
Baby's grandmother	2
Baby's sisters/brothers	3
Baby's father	4
Other family member	5
Baby sitter	6
Day care / children's garden	7
Other (specify) _____	8
Don't know	9

WM12. How often does someone other than the mother feed (child's name) meals?

never	0
< 1 time / day	1
1 time / day	2
2 times / day	3
3 times / day	4
> 3 times / day	5
Don't know	8

Sometimes if mothers have to leave their child with a friend or family member while they are out of the house, they may not know everything the baby eats because someone else feeds them meals or snacks……

WM13. Using the scale, can you estimate how much you know about what (child's name) usually eats? ____

(show scale and note number that corresponds to the answer)

Breastfeeding and Infant Feeding **BF**

Now I would like to ask you some questions about the breastfeeding and feeding of (child's name)

BF1. Was (child's name) ever breastfed? ☐

1=yes 0 = no **0→BF3**

BF2. Approximately, how long after birth was (child's name) first put to the breast? ☐

Immediately (< 1 hour after birth)	0
During first 24 hours	1
Between 24 - 48 hours	2
> 48 hours	3
Don't know/remember	8

The next few questions are about the first time (child's name) was fed something other than breastmilk.

BF3. How old was [child's name] in months when (he/she) was first fed animal milk, powdered milk or formula?

(if less than 1 month put 00, if NEVER fed milk, powdered milk or formula put 99, if don't know put 88)

☐☐ *(round down to nearest whole month)*

m m

BF4. The next question is about liquids. Please include all liquids such as animal milk, powdered milk, formula, juice, water, sugar or fruit water, tea, or anything else that (child's name) might have been given. How old was (child's name) in months when he/she was first given any liquid, even tea, other than breastmilk?

(if less than 1 month put 00, if NEVER fed anything other than breastmilk put 99 if don't know put 88)

☐☐ *(round down to nearest whole month)*

m m

BF5. The next question is about solid or semi-solid foods. Please include all solids such as porridge, rice, cereal, bulymak or anything else that (child's name) might have been given. How old was (child's name) in months when he/she was first fed any solid food?

(if less than 1 month put 00, if NEVER fed anything other than breastmilk put 99 if don't know put 88)

☐☐ *(round down to nearest whole month)*

m m

Now think about everything (child's name) has drunk or eaten since this time yesterday. Don't forget snacks and eating or drinking during the night or things (child's name) ate with someone other than yourself.

BF6. Since this time yesterday, was (child's name) fed any of the following items? *(read each item aloud and record response before proceeding to the next item)*

1=yes 0 = no 8= don't know

a	Breastmilk	a ☐
b	Animal milk, yogurt, kefir, cheese, etc	b ☐
c	infant formula or powdered milk	c ☐
	(probe: what was the name?) Brand name?	
d	haricot, pea or nuts	d ☐
e	kasha, potatos, noodles, beet	e ☐
f	meat, fish, poultry, liver/organ meat	f ☐
g	eggs	g ☐
h	carrots, pumpkin, tomatoes	h ☐
i	other fruit or vegetable (spinach, dried apricots cucumbers)	i ☐
j	bread or biscuit	j ☐
k	baby cereal/food which was purchased	k ☐
	Brand name?	
l	any food with Sprinkles added (show packet)	l ☐

BF7. Since this time yesterday, how many times was (child's name) fed: *(if more than 7 put 7. If don't know put 8)*

("fed" means any meal or snack, excluding trivial amounts)

a	any solid, semisolid, or soft food such as porridge, cereal, meat, vegetables, cookies, fruit, etc.	a ☐
b	Breastmilk	b ☐
c	animal milk, powedered milk or formula	c ☐
d	anything from a bottle	d ☐

BF8. Has (child's name) stopped breastfeeding? ☐

1=yes 0 = no **0→AB1**

BF9. At what age in months did you stop breastfeeding (child's name)? ☐☐

(put 88 if don't know/can't remember) m m

Attitude, Behavior Module **AB**

We are interested in knowing what mothers think about breastfeeding and feeding of their babies. I would like to ask you what you think about breastfeeding and feeding of your baby. Remember there are no right or wrong answers to any of these questions. We just want to know what you think about these topics.

AB1. Using this scale, how would you describe the importance of breastfeeding for a baby's health and nutrition? ☐

(show the scale and note the number that corresponds to the answer)

AB2. Using this scale, how would you describe the importance of feeding other types of milk or formula for a baby's health and nutrition? ☐

(show the scale and note the number that corresponds to the answer)

AB3. In your opinion, should a baby be breastfed? ☐

1=yes 0=no

0→AB5

AB4. In your opinion, how long in months should a baby be breastfed? ☐☐

(note 00 if < 1 m; 88 if don't know) m m

AB5. In your opinion, at what age in months should a baby start drinking other liquids like tea, water, milk, etc? ☐☐

(note 00 if < 1 m; 88 if don't know) m m

AB6. In your opinion, at what age in months should a baby start eating foods like porridge, cereal, bulymak, etc? ☐☐

(note 00 if < 1 m; 88 if don't know) m m

AB7. Some people think there are advantages to breast-feeding while some people do not. In your opinion, are there advantages to breastfeeding? ☐

1=yes 0=no 8= don't know

0→AB9
8→AB9

AB8. In your opinion, what are some advantages to breasfeeding? (*don't read, mark all mentioned with 1)*

a	healthy for baby and/or mother	a ☐
b	breastmilk is rich with vitamins/nutrients	b ☐
c	saves money	c ☐
d	saves time	d ☐
e	protects baby from infections	e ☐
f	safer than feeding from a bottle	f ☐
g	Other *(specify)*	g ☐

AB9. Some people think there are disadvantages to breast-feeding while some people do not. In your opinion, are there disadvantages to breastfeeding? ☐

1=yes 0=no 8= don't know

0→DA1
8→DA1

AB10. In your opinion, what are some disadvantages to breastfeeding? The things that make it more difficult.

(don't read, mark all mentioned with 1)

a	mother cannot leave baby for very long (ie, to work or be outside the home)	a ☐
b	mother must be very careful about her diet	b ☐
c	causes sore nipples	c ☐
d	concerned they are not producing enough milk	d ☐
e	concerned mother's milk does not contain enough nutrients	e ☐
f	Other *(specify)*	f ☐

Dietary Advice Module **DA**

When a woman is pregnant and after she has a baby, many people give advice on her diet, breastfeeding and feeding the baby. I want to ask just about the advice you have received, it doesn't matter if it is advice you followed or not. I am just interested in what people have told you and who you have heard it from.

DA1. Did you ever receive advice on your diet or nutrition when you were pregnant? ☐ **0→DA4** **8→DA4**
1=yes 0 = no 8= don't know

DA2. Did a doctor, nurse, widwife or feldsher give you advice on your diet? ☐
1= yes 0 = no

DA3. Did a family member, friend or neighbor give you advice on your diet? ☐
1= yes 0 = no

DA4. Did a doctor, nurse, midwife or feldsher give you advice on breastfeeding? ☐ **0→DA8** **8→DA8**
1=yes 0 = no 8= don't know

DA5. For how long (in months) did a doctor, nurse, midwife or fledsher advise you to breastfeed without giving other liquids or solids? ☐☐ m m
(Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)

DA6. At what age (in months) did a doctor, nurse, midwife or fledsher advise you to stop breastfeeding? ☐☐ m m
(Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)

DA7. Using the scale, how important is the advice we get on breastfeeding from a doctor, nurse, midwife or feldsher? ☐
(show the scale and note the number that corresponds to the answer)

DA8. Did family, friends or neighbors give you advice on breastfeeding? ☐
1=yes 0 = no **0→VS1**

DA9. For how long (in months) did family, friends or neighbors advise you to breastfeed without giving other liquids or solids? ☐☐ m m
(Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)

DA10. At what age (in months) did family, friends, or neighbors advise you to stop breastfeeding? ☐☐ m m
(Put 00 if < 1 m; 88 if don't know/remember; 99 if they did not give advice on length or did not specify exact length)

DA11. Using the scale, how important is the advice we get on breastfeeding from family, friends or neighbors? ☐
(show the scale and note the number that corresponds to the answer)

Ask the Q. is at least on of answers of DA4, DA8=1

DA12. Using the scale, rate the extent to which this advice would influence your own decisions regarding breastfeeding. ☐
(show the scale and note the number that corresponds to the answer)

Vitamins/Supplements Module **VS**

I am now going to ask some questions about vitamins and supplements you and your baby might have taken. Some people take these supplements and some don't and that is okay. I will start with the supplements you might have taken.

VS1. During your most recent pregnancy, did you take a folic acid supplement like this? *(Show dispenser)* ☐
1=yes 0 = no 8= don't know

VS2. During your most recent pregnancy, did you take an iron supplement like this? *(Show dispenser)* ☐
1=yes 0 = no 8= don't know

VS3. In the first two months after the birth of your youngest child, did you take a Vitamin A dose like this? *(Show Vitamin A capsule)* ☐
1=yes 0 = no 8= don't know

VS4. Have you ever been told by a doctor or nurse that you have anemia? ☐
1=yes 0 = no 8= don't know **0→VS6** **8→VS6**

VS5. Did you take iron capsules or iron syrup to improve your anemia status? ☐
1=yes 0 = no 8= don't know

Now I'd like to ask a few questions about vitamins, minerals and supplements that (child's name) might have received. It is okay if (child's name) hasn't received these supplements.

VS6. Has (child's name) ever taken a Vitamin A capsule like this one? ☐
Show 100,000IU for 6-11 month old **0→VS8**
Show 200,000IU for 12-59 month old **8→VS8**
1=yes 0 = no 8= don't know

VS7. How long ago (in months) did (child's name) take the most recent vitamin A capsule? ☐☐
(note 00 if < 1 m; put 88 if don't know/remember) m m

VS8. Have you ever been told by a doctor or nurse that (child's name) had anemia? ☐
1=yes 0 = no 8= don't know **0→VS10** **8→VS10**

VS9.Did (child's name) take iron syrup or tablets to improve his/her anemia status? ☐
1=yes 0 = no 8= don't know

VS10. Have you, or someone else, ever given (child's name) any of these other vitamin or mineral supplements? *(read the list and mark each answer)*
a Vitamin D a ☐
b Fish oil b ☐
c Multi-vitamins c ☐
d Other (specify) _____ d ☐
1=yes 0 = no 8= don't know

VS11. Have you ever seen a Sprinkles package like this? *Show Sprinkles sachet* ☐
1=yes 0 = no 8= don't know **0→FF1** **8→FF1**

VS12. Have you ever received a Sprinkles package like this? ☐
Show Sprinkles sachet **0→FF1**
1=yes 0 = no 8= don't know **8→FF1**

VS13. Has (child's name) ever consumed Sprinkles? ☐
1=yes 0 = no 8= don't know

Fortified Flour Module **FF**

Now I would like to ask you about the flour you use for baking bread or cakes or any other food in your house.

FF1. How much flour does your family consume in one month (in kilos)

_____ . _____

If the family does not consume/use flour skip to FF6

FF2. What grade of flour do you usually use for cooking?

Extra	1	
First grade	2	
Second grade	3	1→FF4 2→FF4 3→FF4
Milled flour from own grain	4	4→FF3

FF3. With which type of flour do you mix your milled flour from your own grain?

0→FF6

Do not mix milled flour with other flour	0
Extra	1
First grade	2
Second grade	3
Don't know	8

FF4 Where do you usually buy the flour for baking?

Grocery store	1
Market	2
Local mill	3
other (specify) _____	4
Don't know	8

FF5. When you buy flour, what type do you most often purchase?

Kazakh	1
National (Kyrgyz)	2
Local (from your region)	3
Don't know	8

FF6. Have you ever heard about fortified flour?

0→VHC1

1=yes 0 = no

FF7. Do you think there are any benefits to using fortified flour?

1=yes 0 = no 8=don't know

0→VHC1

0→VHC1

FF8. In your opinion what are the benefits of fortified flour?

(Don't read. Probe and mark all mentioned with a 1. If not mentioned, mark with a 0)

1= yes
0 = not mentione

a	Flour is better quality	a
b	Flour tastes better	b
c	Kids like the flour more	c
d	Makes children grow better	d
e	Contains vitamins/minerals	e
f	It makes kids smarter	f
g	It makes kids stronger	g
h	It makes kids healthier	h
i	It makes women/men healthier	i
j	Prevents anemia	j
k	Prevents illness	k
m	It has adverse/negative effects	l
n	other (specify)	m

FF9. If you were given the choice of two loaves of bread of the same size and cost, but one had added iron and vitamins and the other did not, which would you prefer?

Loaf with added iron or vitamins	1
Loaf without added iron or vitamins	2
Don't care	3
Don't know	8

VHC Contact Module **VHC**

In some villages around Talas Oblast, there are Village Health Committees. I would like to ask you what you have heard of about these Villlage Health Committees, if anything. Remember no answers are right or wrong we just want to know what you have heard and your personal experience.

VHC1. Have you ever heard of the Village Health Committee (VHC)? ☐

1=yes 0 = no 8= don't know **0→P1**

VHC2. Have you ever talked to someone from the VHC about health issues? ☐

1=yes 0 = no 8= don't know **0→P1**
8→P1

VHC3. How long ago was the last time you talked with a VHC member about health issues? ☐

> 1 year ago	0
6-12 months ago	1
3 - 6 months ago	2
1- 3 months ago	3
< 1 month ago	4

VHC4. Have you talked to a VHC member about your diet during pregnany, or about breastfeeding or feeding your baby? ☐

1=yes 0 = no 8= don't know **0→P1**
8→P1

VHC5. Using the scale, how helpful do you think the visit(s) with the VHC member was (the visit(s) on diet, breastfeeding and feeding a baby)? ☐

(show the scale and note the number that corresponds to the answer)

VHC6. Are you interested in receiving more advice from the VHC? ☐

1=yes 0 = no 8= don't know **0→P1**
8→P1

VHC7. What topics would you be interested in receiving advice about?

(Write in all topics mentioned)

_____

_____

Pregnancy

Before we continue, I need to know if you are pregnant. Even if you think you may be pregnant, but do not know for sure, we would still like to know that.

P1. Are you pregnant right now? ____ **0→AN1**

1=yes 0 = no 7=may be, but not sure 8= don't know **7→AN1** **8→AN1**

P2. How many weeks pregnant are you right now? ____ ____
(put 88 if don't know)

If YES (1) Do not take blood or anthropometric measures from the mother. Take measurments only from the child.

Anthropometry **AN**

Now I am going to measure your height and weight and the length and weight of your baby.

AN1. Were anthropometrics taken from mother? ____
1 = yes 0= no **1→AN3**

AN2. Why not? ____
1 = refused 3= not present
2 = pregnant 4 other (specify)

AN3. Mother's height (cms) ____ ____ ____ . ____

AN4. Mother's weight (kg) ____ ____ ____ . ____

AN5. Were anthropometrics taken from the child? ____
1 = yes 0= no **1→AN7**

AN6. Why not? ____
1 = refused (cried, kicked, etc) 3=not present
2 = mother/guardian refused 4 other (specify)

AN7. Child's weight (kg) ____ ____ . ____

AN8. Child's length/height (cm) ____ ____ ____ . ____

Blood Sample Module **BS**

The last thing we will do today is take a small sample of blood from your finger and the finger of your baby. This might cause a little discomfort from the stick but we will be able to tell you if your or your baby has anemia.

BS1. What time did you eat for the last time? ____ ____ : ____ ____
h h m m

BS2. Was a capillary sample obtained from the mother? ____
1=yes 0 = no **1→BS4**

BS3. Why not? ____
1 = refused 3=Not present **→BS7**
2 = pregnant 4=Technial difficulties
5=other (specify)

BS4. Approximately how many microliters of blood were collected in the microtainer? ____ ____ ____

BS5. At what time was the sample obtained? ____ ____ : ____ ____
h h m m

BS6. Hemoglobin concentration from Hemocue ____ ____ . ____ g/dL
(put 88.8 if not measured/don't know)

BS7. ID Label - **MOTHER**
Affix mother label for blood here

BS8. At what time did (child's name) eat for the last time? ____ ____ : ____ ____
h h m m

BS9. Was a capillary sample obtained from the child? ____
1=yes 0 = no **1→BS11**

BS10. Why not? ____
1 = refused (cried, kicked, etc) 3=not present **→BS14**
2 = mother/guardian refused 4=technical difficulities
5=other (specify)

BS11. Approximately how many microliters of blood were collected in the microtainer? ____ ____ ____

BS12. At what time was the sample obtained? ____ ____ : ____ ____
h h m m

BS13. Hemoglobin concentration from Hemocue ____ ____ . ____ g/dL
(put 88.8 if not measured/don't know)

BS14. ID Label - **CHILD**
Affix child label for blood here

Signature of site supervisor confirming woman or child was referred to primary health care provider for treatment if hemoglobin <7.0 g/dL

Signature Date

Don't forget to provide the mother with the Hb measurement results for herself and her baby.
Ask mother to sign here to confirm receipt of Hb measurement results and referral (if appropriate).

Signature Date

Signature of site supervisor confirming they have checked the questionnaire and it is complete:

Signature Date

Interviewer Comments:

ИССЛЕДОВАНИЯ ПО ПИТАНИЮ НА НАЦИОНАЛЬНОМ УРОВНЕ

Заполните следующую информацию до проведения интервью.

HH1. Номер кластера

HH2. Код интервьюера

HH3. День/Месяц/Год интервью: 0 9 (д д м м г г)

HH4. Код руководителя

HH5. Код оператора ввода данных

HH6. Код области

02 Иссык-Кульская; 03 Джалал-Абадская; 04 Нарынская; 05 Баткенская; 06 Ошская; 07 Таласская; 08 Чуйская; 11 г.Бишкек; 21 г.Ош

HH7. Результат интервью		HH8. Результат антропометрии		HH9. Результат забора крови		HH10. Место сбора данных	
Заполнено	1	Заполнено на мать/ребенка	1	Заполнено на мать/ребенка	1	Клиника	1
Отказано	2	Заполнено только на мать	2	Заполнено только на мать	2	Дома	2
Заполнено частично	3	Заполнено только на ребенка	3	Заполнено только на ребенка	3	Частично в клинике	3
Нет на интервью	4	На обоих не заполнено	4	На обоих не заполнено	4	Частично дома	4

Наклейка с ИН - **РЕБЕНОК**

Вклейте ее сюда

L1. На каком языке было проведено интервью?

- На кыргызском языке 1
- На русском языке 2
- На другом (укажите) 3

Если нет данных, собранных на маму и ребенка. Найдите информацию в клинике, у медицинского работника, члена СКЗ или посетив дом матери/ребенка.

HH11. Сколько лет (в годах) матери?

(поставьте 88, если не знаете/не можете выяснить)

HH12. Каков возраст (в месяцах) ребенка?

(поставьте 88, если не знаете/не можете выяснить)

HH13. Каков пол ребенка?

1=мужской 2=женский

HH14. Какова этническая группа матери?

- Кыргызы 1
- Русские 2
- Казахи 3
- Узбеки 4
- Таджики 5
- Уйгуры 6
- Прочее (*укажите*) 7
- Не знаю 8

HH15. Где живет семья?

- Около или в центре села /города 1
- На окраине села/города 2
- Не в селе/городе 3
- Прочее (*укажите*) 4
- Не знаю 8

HH16. Сколько братьев/сестер есть у ребенка?

(поставьте 88, если не знаете/не можете выяснить)

HH17. Работает/учится мать вне дома?

1= да 0 = нет 8 = не знаю/не могу выяснить

HH18. Причина неявки на интервью?

- семья переехала из села/города 1
- мать отказалась 2
- семья (муж, свекровь, и т.д.) отказалась 3
- мать больна 4
- ребенок болен 5
- матери нужно работать 6
- не была приглашена в поликлинику 7
- Прочее (укажите) 8
- Не знаю/не могу выяснить 9

Мы из Министерства Здравоохранения и работаем по совместному проекту по вопросам питания и здоровья матери и ребенка. Я бы хотел(а) поговорить с вами об этом и записать ваши ответы на некоторые вопросы. На это интервью потребуется приблизительно 20 минут. После интервью мы взвесим и сделаем замеры вас и вашего ребенка, и возьмем небольшую пробу крови с вашего пальца и пальца вашего ребенка. На основе этой пробы мы сможем проинформировать вас, имеется ли у вас или вашего ребенка анемия. Единственной прямой выгодой для вас является знание статуса анемии у вас и вашего ребенка. Риск для вас маленький и состоит из возможного дискомфорта, вызванного прокалыванием пальца для получения пробы крови. Дискомфорт будет только временным и не будет очень большим. Вся полученная нами информация останется строго конфиденциальной и никто не будет знать, что это ваша информация, однако результаты гемоглобина будут переданы медицинскому работнику ФАПа/ГСВ. Вы вправе выбрать, участвовать в интервью, или нет, и если вы решите не участвовать, то это не будет иметь для вас никаких последствий. Если вы согласны участвовать, я бы хотел(а), чтобы вы подписали эту форму.

Мы можем начинать? Пожалуйста, подпишите.

Если вы получили разрешение, попросите респондента подписаться здесь, и начинайте интервью.

(Подпись)_____ (Ф.И.О.)_____

Согласие на участие женщины

(Подпись)_____ (Ф.И.О.)_____

Согласие на участие ребенка

HH19. Ваши Ф.И.О.?

(фамилия, имя, инициал отчества)

HH20. Имя ребенка?

(фамилия, имя, инициал отчества)

HH21. День, месяц и год рождения (имя ребенка)?

Спросите день его/ее рождения.

д	д	м	м	г	г

(напишите 88 вместо день, месяц, или год, в случае, если не знаете/ не помните)

Убедитесь, что ребенок родился в период между 1 июня 2004 г. и 31 декабря 2008 г. Если дата рождения не соответствует этому периоду, ребенок не может участвовать. Объясните это матери и поблагодарите ее за то, что пришла. Если мать не уверена, проверьте дату рождения по журналу регистрации в поликлинике.

HH22. Каков пол ребенка? ☐

1=мужской 2=женский

HH23. Кем вы являетесь (*имя ребенка*): ☐

мать	1	**1→HC1**
бабушка	2	
тетя	3	
прочее (укажите)	6	

HH24. Почему (имя ребенка) мать не пришла сегодня? ☐

на работе/на учебе	1	
болеет	2	
не захотела прийти	3	****ЕСЛИ МАТЬ ОТСУТСТВУЕТ, УКАЗАТЬ ПРИЧИНУ И ПЕРЕЙТИ К AN1****
семья не разрешила	4	
занята дома/домашней работой	5	
прочее (укажите)	7	
не знаю	8	

Модуль характеристики домохозяйств **HC**

Я теперь хотела бы задать вам несколько вопросов о вашем доме и о тех, кто живет в нем.

HC1. Ваша семья получает сейчас единое ежемесячное пособие малообеспеченным семьям (ЕЕП)? ☐

1=да 0=нет 8= не знаю

HC2. Сколько детей включая (имя ребенка) в возрасте 6-59 месяцев живут в вашем доме? ☐☐

Модуль для женщины **WM**

WM1. Какой у вас [у матери] родной язык?

Кыргызский	1
Русский	2
Казахский	3
Узбекский	4
Другой (*укажите*)	6
Не знаю	8

WM2. Дата вашего [матери] рождения?

д	д	м	м	г	г

(напишите 88 вместо день, месяц, или год, если не знаете/не помните)

WM3. Сколько живых детей вы [мать] имеете?

WM4. Какой самый высокий уровень образования вы закончили?

Никогда не посещала	0
Начальное (1-4 класс)	1
Неполное среднее (5-9)	2
Полное среднее	3
Средне-техническое образование	4
Высшее	5
Религиозная учебная программа	6
Не знаю	8

WM5. Вы замужем в настоящее время?

1= да 0= нет **0→WM7**

WM6. Какой самый высокий уровень образования получил ваш супруг?

Никогда не посещал	0
Начальное (1-4 класс)	1
Неполное среднее (5-9)	2
Полное среднее	3
Средне-техническое образование	4
Высшее	5
Религиозная учебная программа	6
Не знаю	8

WM7. В настоящее время вы [мать] работаете, либо учитесь вне дома (например, как сотрудник, владелец бизнеса, работник на поле, и т.д.)?

1 = да 0 = нет **0→WM12**

WM8. Какой вид работы или учебы у вас [у матери]?

работник (на полях)	1
продавец продуктов, фруктов, товаров домашнего приг. и др.	2
сотрудник предприятия	3
владелец бизнеса	4
специалист (медсестра, врач, учитель, фармацевт, т.д.)	5
студент	6
другое (укажите)	7
не знаю	8

WM9. Сколько часов в день вы [мать] ОБЫЧНО находитесь на работе или учебе вне дома? (напишите 88, если не знаете)

WM10. Кто ОБЫЧНО заботится о ребенке (имя ребенка) пока вы [мать] вне дома?

Мать (*берет ребенка с собой*)	1
Бабушка ребенка	2
Сестры/братья ребенка	3
Отец ребенка	4
Другой член семьи	5
Няня	6
Детский сад	7
Прочие (укажите)	8
Не знаю	9

WM11. Кто ОБЫЧНО кормит ребенка (имя ребенка) пока вы [мать] вне дома?

Мать (*берет ребенка с собой*)	1
Бабушка ребенка	2
Сестры/братья ребенка	3
Отец ребенка	4
Другой член семьи	5
Няня	6
Детский сад	7
Прочие (укажите)	8
Не знаю	9

WM12. Как часто кто-нибудь помимо матери кормит (имя ребенка)?

никогда	0
Менее 1 раза в день	1
1 раз в день	2
2 раза в день	3
3 раза в день	4
Более 3 раз в день	5
Не знаю	8

Иногда мамы оставляют своих детей с друзьями или членами семьи, чтобы куда-то уйти, поэтому они могут не знать всего, что ребенок ест в это время, потому что кто-то другой кормит ребенка……

WM13. Используя шкалу, оцените, как много вы знаете о том, что обычно ест (имя ребенка)?

(покажите шкалу и отметьте цифру, соответствующую ответу)

Грудное вскармливание и питание младенца **BF**

Теперь бы я хотела задать вам несколько вопросов о кормлении грудью и питании (имя ребенка)

BF1. (имя ребенка) когда-либо кормили грудью? ☐

1=да 0 = нет **0→BF3**

BF2. Приблизительно в течение какого времени после рождения (имя ребенка) был впервые приложен к груди? ☐

Сразу же (менее 1 часа после рождения)	0
В течение первых 24 часов	1
Между 24 - 48 часами	2
Более 48 часов	3
Не знаю/не помню	8

Следующие несколько вопросов касаются того, когда впервые (имя ребенка) дали что-то еще помимо грудного молока.

BF3. Сколько было [имя ребенка] в месяцах, когда (ему/ей) дали впервые молоко животных, сухое молоко или смесь?

(если младше 1 месяца, поставьте 00; если НИКОГДА не давали молоко, сухое молоко или смесь, поставьте 99; если не знаете, поставьте 88)

☐☐ *(округлите в меньшую сторону до ближайшего целого месяца)*

М М

BF4. Следующий вопрос будет о жидкостях. Пожалуйста, включите все жидкости, такие как молоко животных, сухое молоко, смесь, сок, воду, сладкую воду, компот, чай или другое, что могли давать (имя ребенка). Сколько было (имя ребенка) в месяцах, когда ему/ей впервые дали жидкость, даже чай, помимо грудного молока?

(если младше 1 месяца, поставьте 00, если НИКОГДА не давали ничего, кроме грудного молока, поставьте 99, если не знаете, поставьте 88)

☐☐ *(округлите в меньшую сторону до ближайшего целого месяца)*

М М

BF5. Следующий вопрос будет о густой или твердой пище. Пожалуйста, включите всю твердую пищу, такую как каши, рис, злаковые, буламык или другое, что могли давать (имя ребенка). Сколько было (имя ребенка) в месяцах, когда ему/ей впервые дали твердую пищу?

(если младше 1 месяца, поставьте 00, если НИКОГДА не давали ничего, кроме грудного молока, поставьте 99, если не знаете, поставьте 88)

☐☐ *(округлите в меньшую сторону до ближайшего целого месяца)*

М М

Теперь вспомните обо всем, что (имя ребенка) выпил или съел с этого часа со вчерашнего дня. Не забудьте про легкий прием пищи и еду, или жидкости ночью, или что (имя ребенка) ел с кем-то, помимо вас.

BF6. С этого времени вчера давалось ли (имя ребенка) что-нибудь из следующего: *(прочитайте вслух каждое название и сделайте запись ответа, прежде чем приступить к следующему наименованию)*

1=да 0 = нет 8= не знаю

a	Грудное молоко	a ☐
b	Молоко животных, йогурт, кефир, сыр и т.д.	b ☐
c	Молочная смесь, сухое молоко	c ☐
	(образец: как называется?) Название торговой марки?	
d	фасоль, горох или орехи	d ☐
e	каша, картофель, лапша, свекла	e ☐
f	мясо, рыба, птица, печень/внутренности	f ☐
g	яйца	g ☐
h	морковь, тыква, помидоры	h ☐
i	другие фрукты или овощи (шпинат, сушеный урюк, огурцы)	i ☐
j	хлеб или печенье	j ☐
k	купленная детская крупа/питание	k ☐
	Название торговой марки?	
l	любое питание с добавками Спринклз (показать пакет)	l ☐

BF7. С этого часа вчера сколько раз кормили (имя ребенка):

(если больше 7, поставьте 7. Если не знаете, поставьте 8)

("кормили" означает любая еда или перекус, не включая маленькие объемы)

a	любая твердая, густая или мягкая пища, типа каши, злаковых, мяса, овощей, печенья, фруктов и т.д.	a ☐
b	Грудное молоко	b ☐
c	Молоко животных, сухое молоко, смесь	c ☐
d	что-нибудь из бутылочки	d ☐

BF8. Вы перестали кормить грудью (имя ребенка)? ☐

1=да 0 = нет **0→AB1**

BF9. В каком возрасте в месяцах вы перестали кормить грудью (имя ребенка)? ☐☐

(поставьте 88, если не знаете/не помните) М М

Модуль отношения, поведения **AB**

Мы заинтересованы в том, чтобы знать, что матери думают о грудном вскармливании и питании своих детей. Я хочу спросить вас,что вы думаете о грудном вскармливании и питании своего ребенка. Помните, что здесь нет ни правильных, ни неверных ответов на любой из этих вопросов. Мы просто хотим знать, что вы думаете по этому поводу.

AB1. Используя эту шкалу, как бы вы описали важность грудного вскармливания для здоровья и питания ребенка? ☐

(покажите шкалу и отметьте цифру, которая соответствует ответу)

AB2. Используя эту шкалу, как бы вы описали важность кормления другими видами молока или смесью для здоровья и питания ребенка? ☐

(покажите шкалу и отметьте цифру, которая соответствует ответу)

AB3. По вашему мнению, следует ли вскармливать ребенка грудью? 1=да 0=нет ☐

0→AB5

AB4. По вашему мнению, сколько месяцев следует вскармливать ребенка грудью? *(поставьте 00, если<1 мес; 88 - если не знаете)* ☐☐ М М

AB5. По вашему мнению, в каком возрасте в месяцах ребенок должен начинать пить другие жидкости (чай, вода, молоко и т.д.)? *(поставьте 00, если < 1 мес; 88 - если не знаете)* ☐☐ М М

AB6. По вашему мнению, в каком возрасте в месяцах ребенок должен начинать есть пищу типа каши, злаковых, буламык, и т.д.? *(поставьте 00, если < 1 мес; 88 - если не знаете)* ☐☐ М М

AB7. Некоторые считают, что грудное вскармливание имеет преимущества, а некоторые так не считают. По-вашему, есть ли преимущества при грудном вскармливании? ☐

1=да 0=нет 8= не знаю

0→AB9
8→AB9

AB8. По вашему мнению, каковы преимущества грудного вскармливания? *(не читайте, отметьте упомянутое цифрой 1)*

a полезно для малыша и/или матери a ☐
b грудное молоко богато витаминами/ полезными веществами b ☐
c экономия денег c ☐
d экономия времени d ☐
e защита ребенка от инфекций e ☐
f безопаснее, чем кормление ч/з бутылочку f ☐
g Другое *(укажите)* g ☐

AB9. Некоторые считают, что грудное вскармливание имеет недостатки, а некоторые так не считают. По-вашему, есть ли недостатки при грудном вскармливании? ☐

1=да 0=нет 8= не знаю

0→DA1
8→DA1

AB10. По вашему мнению, каковы недостатки при грудном вскармливании? Причины, которые делают его более трудным.

(не читайте, отметьте упомянутое цифрой 1)

a мама не может оставить ребенка надолго (т.е., работа, гости) a ☐
b мама должна следить за своим питанием b ☐
c болезненность грудных сосков c ☐
d беспокойство о нехватке молока d ☐
e беспокойство о том, что молоко матери не содержит достаточно питательных веществ e ☐
f Другое *(укажите)* f ☐

Модуль советов о питании **DA**

Когда женщина беременна и после рождения ребенка, многие люди дают советы относительно ее питания, кормления грудью и питания ребенка. Некоторым советам мы следуем, а некоторым нет. Я хочу спросить вас именно о совете, полученном вами. не имеет значения следовали ли вы этому совету или нет. Мне просто интересно, какой совет вам дали и кто.

DA1. Получали ли вы советы по питанию в период вашей беременности? ☐

1=да 0 = нет 8= не знаю

0→DA4
8→DA4

DA2. Давали ли вам врач, медсестра, акушер или фельдшер советы по питанию? ☐

1= да 0 = нет

DA3. Давал ли вам член семьи, друг или сосед советы по питанию? ☐

1= да 0 = нет

DA4. Давали ли вам врач, медсестра, акушер или фельдшер советы по грудному вскармливанию? ☐

1=да 0 = нет 8= не знаю

0→DA8
8→DA8

DA5. Как долго (в месяцах) советовали вам врач, медсестра, акушер или фельдшер кормить грудью, не давая другие жидкости или густую пищу? ☐☐

(Поставьте 00, если < 1 мес; 88 - если не знаете/не помните; 99 - если не давали советы по длительности или не указывали длительность) М М

DA6. В каком возрасте (в месяцах) советовали вам врач, медсестра, акушер или фельдшер прекратить грудное вскармливание? ☐☐

(Поставьте 00 если <1мес; 88 - если не знает помните; 99 - если не давали советы по длительности или не указывали длительность) М М

DA7. Используя шкалу, оцените насколько важны советы по грудному вскармливанию, которые мы получаем от врача, медсестры, акушера или фельдшера? ☐

(покажите шкалу и отметьте цифру, соответствующую ответу)

DA8. Давали ли вам советы по грудному вскармливанию члены семьи, друзья или соседи? ☐

1=да 0 =нет **0→DA12**

DA9. Как долго (в месяцах) советовали вам члены семьи, друзья или соседи кормить грудью без кормления другими жидкостями или сухим питанием? ☐☐

(Поставьте 00, если < 1 мес; 88 -если не знаете/ не помните; 99 - если не давали советы по длительности или не указывали длительность) М М

DA10. В каком возрасте (в месяцах) советовали вам члены семьи, друзья, соседи прекратить грудное вскармливание? ☐☐

(Поставьте 00, если < 1 мес; 88 -если не знаете/ не помните; 99 - если не давали советы по длительности или не указывали длительность) М М

DA11. Используя шкалу, оцените насколько важны советы по грудному вскармливанию, которые мы получаем от семьи, друзей или соседей? ☐

(покажите шкалу и отметьте цифру, соответствующую ответу)

Интервьюер! Задайте вопрос, если хотя бы один из ответов DA4, DA8=1

DA12. Используя шкалу, оцените, насколько полученные советы повлияли на ваши собственные решения в отношении

грудного вскармливания.

(покажите шкалу и отметьте цифру, соответствующую ответу)

Модуль витаминов/добавок **VS**

Я теперь задам вам вопросы о витаминах и добавках, которые могли принимать вы и ваш ребенок. Некоторые люди принимают эти добавки, а некоторые не принимают их, и это нормально. Я начну с добавок, которые вы, возможно, могли принимать.

VS1. Во время вашей последней беременности принимали ли вы подобную добавку фолиевой кислоты?

(Покажите диспенсер)

1=да 0 = нет 8= не знаю

VS2. Во время вашей последней беременности принимали ли вы подобную добавку железа?

(Покажите диспенсер)

1=да 0 = нет 8= не знаю

VS3. Принимали ли вы подобную дозу витамина А в первые два месяца после рождения самого младшего ребенка?

(Покажите капсулу витамина А)

1=да 0 = нет 8= не знаю

VS4. Говорил ли вам врач или медсестра о том, что у вас анемия?

1=да 0 = нет 8= не знаю **0→VS6** **8→VS6**

VS5. Принимали ли вы железосодержащие капсулы или сироп для лечения анемии у вас?

1=да 0 = нет 8= не знаю

Теперь я хочу задать несколько вопросов насчет витаминов, минералов и добавок, которые, возможно, мог принимать (имя ребенка). Это нормально, если (имя ребенка) не принимал этих добавок.

VS6. Принимал ли (имя ребенка) подобную капсулу витамина А?

Покажите 100000МЕ для детей 6-11 месяцев **0→VS8**

Покажите 200000МЕ для детей 12-59 мес. **8→VS8**

1=да 0 = нет 8= не знаю

VS7. Как давно (в месяцах) (имя ребенка) в последний раз принимал капсулу с витамином А?

(поставьте 00, если < 1 мес; 88 - если не знаете/не помните) М М

VS8. Говорил ли вам врач или медсестра, что у (имя ребенка) анемия?

1=да 0 = нет 8= не знаю **0→VS10** **8→VS10**

VS9.(имя ребенка) принимал железосодержащий сироп или таблетки для лечения анемии?

1=да 0 = нет 8= не знаю

VS10. Давали ли вы, или кто-то другой, когда-либо (имя ребенка) что-нибудь из этих витаминно-минеральных добавок?

(прочитайте список и отметьте каждый ответ)

a Витамин Д a

b Рыбий жир b

c Мультивитамины c

d Другое (укажите) _____ d

1=да 0 = нет 8= не знаю

VS11. Вы когда-нибудь видели подобную упаковку Спринклз?

Покажите пакет Спринклз

1=да 0 = нет 8= не знаю **0→FF1** **8→FF1**

VS12. Вы когда-нибудь получали подобную упаковку Спринклз?

Покажите пакет Спринклз **0→FF1**

1=да 0 = нет 8= не знаю **8→FF1**

VS13. (имя ребенка) когда-нибудь употреблял Спринклз?

1=да 0 = нет 8= не знаю

Модуль обогащенной муки — FF

Сейчас я задам вам вопрос о муке, которую вы используете для выпечки хлеба или тортов, либо других блюд в вашем доме.

FF1. Сколько муки потребляет ваша семья за один месяц (в кг)? ____ . ____

Если семья не потребляет муку, перейдите к FF6

FF2. Какой сорт муки вы обычно используете в приготовлении пищи?

Высшего сорта	1	1→FF4
Первого сорта	2	2→FF4
Второго сорта	3	3→FF4
Муку, перемолотую из собственного зерна	4	4→FF3

FF3. С какой мукой вы смешиваете муку, перемолотую из собственного зерна?

Не смешиваю перемолотую муку с другой мукой	0	0→FF6
Высшего сорта	1	
Первого сорта	2	
Второго сорта	3	
Не знаю	8	

FF4 Где вы обычно покупаете муку для выпечки?

Продовольственный магазин	1	
Рынок	2	
Мельница	3	
Другое (укажите)	4	
Не знаю	8	

FF5. При покупке муки какую именно муку вы покупаете чаще?

казахстанскую	1	
национальную (кыргызскую)	2	
местную (из района)	3	
Не знаю	8	

FF6. Вы слышали когда-нибудь-о муке, обогащенной витаминно-минеральными добавками? ____ 0→VHC1

1=да 0 = нет

FF7. Есть ли, по-вашему, преимущества использования обогащенной муки? ____

1=да 0= нет 8= не знаю

0→VHC1
8→VHC1

FF8. По вашему мнению, каковы преимущества обогащенной муки?

(Не читайте. Отметьте упомянутые пункты цифрой 1, неупомянутые - 0)

a	Мука имеет более высокое качество	a
b	Вкус муки лучше	b
c	Дети больше любят муку	c
d	Дети растут лучше	d
e	Содержит витамины/минералы	e
f	Дети становятся умнее	f
g	Дети становятся крепче	g
h	Оздоровляет детей	h
i	Оздоровляет мужчин/женщин	i
j	Предупреждает анемию	j
k	Предупреждает болезни	k
l	Влияет отрицательно	l
m	другое (укажите)	m

FF9. Если бы у вас было право выбора из двух буханок хлеба одинакового веса и цены, но одна бы содержала витаминно-минеральные добавки, а другая - нет; какую буханку вы бы купили?

Буханка с витаминно-минеральными добавками	1	
Буханка без витаминно-минеральных добавок	2	
Мне все равно	3	
Не знаю	8	

Модуль контактов с СКЗ — VHC

В некоторых селах Кыргызской Республики существуют Сельские комитеты здоровья. Я хотела вас спросить, что вы слышали об СКЗ. Помните, нет правильных ответов или неправильных ответов, мы просто хотим знать что вы слышали об этом и ваш личный опыт.

VHC1. Вы когда-нибудь слышали о Сельском комитете здоровья (СКЗ)? ____

1=да 0 = нет 8= не знаю **0→P1**

VHC2. Вы когда-нибудь разговаривали с кем-нибудь из СКЗ о вопросах здоровья? ____

1=да 0 = нет 8= не знаю **0→P1** **8→P1**

VHC3. Сколько времени прошло с тех пор, как вы в последний раз разговаривали с членом СКЗ о вопросах здоровья?

> 1 года назад	0	
6-12 месяцев назад	1	
3 - 6 месяцев назад	2	
1- 3 месяца назад	3	
< 1 месяца назад	4	

VHC4. Разговаривали ли вы с членом СКЗ о вопросах вашего питания во время беременности, или о грудном вскармливании или питании ребенка? ____

1=да 0 = нет 8= не знаю **0→P1** **8→P1**

VHC5. Используя шкалу, насколько полезными, по-вашему, были визиты к членам СКЗ (по вопросам питания, грудного вскармливания или питания ребенка)? ____

(покажите шкалу и отметьте цифру, соответствующую ответу)

VHC6. Заинтересованы ли вы в получении советов от СКЗ? ____

1=да 0 = нет 8= не знаю **0→P1** **8→P1**

VHC7. По каким вопросам вы бы хотели получить совет?

(Запишите все упомянутые темы)

Беременность

Прежде чем мы продолжим, мне нужно знать, беременны ли вы. Даже если вы не уверены, но думаете, что возможно вы беременны, но не знаете точно, нам бы хотелось знать это.

P1. Вы беременны сейчас? ____ **0→AN1**

1=да 0 = нет 7=может быть, но не уверена 8= не знаю **7→AN1** **8→AN1**

P2. Сколько недель составляет ваша беременность на данный момент? ____ ____

(поставьте 88 - если не знаете)

Если ДА (1), то не нужно брать кровь или производить антропометрические замеры у матери. Возьмите кровь и замеры только у ребенка

Антропометрия **AN**

Теперь, я измерю ваш рост и вес и рост и вес вашего ребенка.

AN1. Были ли взяты антропометрические данные у матери? 1 = да 0= нет **1→AN3**	AN5. Были ли взяты антропометрические данные у ребенка? 1 = да 0= нет **1→AN7**
AN2. Почему нет? 1 = отказалась 3= не присутствовала 2 = беременна 4 прочее (укажите)	AN6. Почему нет? 1 =отказался (плакал, бил ножками и т.д.) 3=не присутствовал 2 = мать/сопровождающий отказались 4 прочее (укажите)
AN3. Рост матери (см) .	AN7. Вес ребенка (кг) .
AN4. Вес матери (кг) .	AN8. Рост ребенка (см) .

Модуль пробы крови **BS**

Последнее, что мы сделаем сегодня, это возьмем небольшое количество крови с вашего пальца и пальца вашего ребенка.
Это может причинить немного дискомфорта, но мы сможем сказать, есть ли у вас или вашего ребенка анемия.

BS1. Когда вы ели в последний раз? : (ч ч м м)	BS8. Когда (имя ребенка) в последний раз принимал питание? : (ч ч м м)
BS2. Была ли получена капиллярная проба от матери? 1=да 0 = нет **1→BS4**	BS9. Была ли получена капиллярная проба у ребенка? 1=да 0 = нет **1→BS11**
BS3. Почему нет? 1 = отказалась 2 = беременна 3=не присутствовала 4=технические трудности 5=прочее (укажите) **→BS7**	BS10. Почему нет? 1 = отказался (плакал, бил ножками и т.д.) 2 = мать/сопровожд. отказались 3=не присутствовал 4=технические трудности 5=прочее (укажите) **→BS14**
BS4. Приблизительно сколько микролитров крови было собрано в микротейнере?	BS11. Приблизительно сколько микролитров крови было собрано в микротейнере?
BS5. В какое время была взята проба? : (ч ч м м)	BS12. В какое время была взята проба? : (ч ч м м)
BS6. Концентрация гемоглобина из Гемокью . г/длитр *(поставьте 88.8 если не измерялось/не знаете)*	BS13. Концентрация гемоглобина из Гемокью . г/длитр *(поставьте 88.8 если не измерялось/не знаете)*
BS7. Идентификационная бирка - **МАТЬ** *Поставьте бирку крови матери здесь*	BS14. Идентификационная бирка - **РЕБЕНОК** *Поставьте бирку крови ребенка здесь*

Подпись супервайзера по исследованию, подтверждающая, что женщина или ребенок были направлены в медицинское учреждение на лечение, в случае, если гемоглобин <7,0 г/длитр

Подпись Дата

Не забудьте предоставить матери результаты ее анализа гемоглобина и анализы гемоглобина ее ребенка. Попросите мать расписаться здесь в подтверждение того, что она получила результаты анализа гемоглобина и направление (если необходимо).

Подпись Дата

Подпись супервайзера по исследованию, подтверждающая, что вопросник проверен и заполнен:

Подпись Дата

Комментарии интервьюера:

APPENDIX IX
COMPARISON OF VARIOUS CHARACTERISTICS AMONG CHILDREN (6-24 MONTHS) — KYRGYZSTAN, 2009 AND 2013

Table IX.1: Anthropometric characteristics by age — Kyrgyzstan, 2009 and 2013

	2009		2013		p- value[a]
Characteristics	**N**	**% (95% CI)**	**N**	**% (95% CI)**	
Wasted (weight-for-length Z<-2.0)	400	2.0 (0.6 - 3.5)	1722	2.4 (1.4 - 3.5)	0.659
6-11 months	131	1.9 (0.0 - 4.1)	520	2.7 (0.8 - 4.5)	0.568
12-24 months	269	2.1 (0.2 - 4)	1202	2.3 (1.1 - 3.5)	0.861
Stunted (length-for-age Z<-2.0)	401	14.1 (10.4 - 17.9)	1717	10.6 (8.4 - 12.9)	0.116
6-11 months	131	6.9 (2.8 - 11.2)	515	5.0 (2.3 - 7.6)	0.451
12-24 months	270	17.7 (12.5 - 22.9)	1202	12.9(10.2 - 15.7)	0.109
Underweight (weight-for-age Z<-2.0)	403	3.1 (1.1 - 5.2)	1724	4.5 (3.1 - 6)	0.272
6-11 months	132	2.6 (0.0 - 5.4)	520	3.4 (0.9 - 6)	0.671
12-24 months	271	3.4 (0.7 - 6.1)	1204	5 (3.4 - 6.6)	0.315

NOTE: CI=confidence interval; 95% CI's adjusted for survey design.

Anthropometric values based on WHO growth reference curves (WHO, 2006).

[a]Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.

TABLE IX.2
PREVALENCE OF ANEMIA, IRON DEFICIENCY, AND VITAMIN A DEFICIENCY BY AGE (6-24 MONTHS) — KYRGYZSTAN, 2009 AND 2013

	All Participants					Participants without Inflammation[a]				
	2009		2013			2009		2013		
Characteristics	N	% (95% ДИ)	N	% (95% CI)	p	N	% (95% CI)	N	% (95% CI)	p
Anemia[a]	450	40.1 (33.1 – 47.0)	1 720	34.5 (30.9 - 38.1)	**0.159**	342	38.6 (31.5 - 45.8)	1 147	31.4 (27.3 - 35.4)	**0.085**
6-11 months	137	40.7 (29.9 - 51.5)	519	35.6 (27.8 - 43.4)	**0.450**	112	35 (25 - 45.1)	354	33.6 (25.4 - 41.7)	**0.831**
12-24 months	313	39.8 (32.6 - 46.9)	1 201	34 (30.7 - 37.3)	**0.148**	230	40.4 (32.4 - 48.4)	793	30.4 (26.1 - 34.7)	**0.031**
Low ferritin (<12 µg/L)	450	50.3 (44.7 - 56)	1 720	33.6 (30.8 - 36.4)	**0.000**	342	56.7 (50.6 - 62.8)	1 147	39.8 (36.4 - 43.2)	**0.000**
6-11 months	137	44.9 (35.1 - 54.7)	519	29.9 (23.7 - 36.1)	**0.012**	112	48.7 (37.9 - 59.6)	354	34.2 (25.5 - 42.9)	**0.041**
12-24 months	313	52.8 (46.5 - 59.2)	1 201	35.1 (31.4 - 38.7)	**0.000**	230	60.6 (53.7 - 67.6)	793	42.2 (38.2 - 46.1)	**0.000**
High sTfR (>8.3 mg/L)	450	51.6 (45 - 58.1)	1 720	39.9 (36.1 - 43.7)	**0.003**	342	50.7 (43.6 - 57.8)	1 147	39.1 (34.6 - 43.5)	**0.007**
6-11 months	137	53.2 (44.3 - 62.1)	519	38.5 (33 - 44.1)	**0.006**	112	50.4 (41.2 - 59.7)	354	37.7 (30.8 - 44.6)	**0.031**
12-24 months	313	50.8 (43.6 - 58)	1 201	40.4 (35.6 - 45.2)	**0.019**	230	50.9 (42.5 - 59.3)	793	39.7 (34.1 - 45.2)	**0.030**
Iron deficiency anemia[c]	450	33.0 (27.2 - 38.9)	1 720	24.7 (21.1 - 28.3)	**0.018**	342	32.9 (26.5 - 39.3)	1 147	23.5 (19.7 - 27.4)	**0.014**
6-11 months	137	32.4 (22.8 - 41.9)	519	24.1 (16.9 - 31.4)	**0.173**	112	28.5 (19.4 - 37.5)	354	22.3 (14.3 - 30.3)	**0.312**
12-24 months	313	33.3 (27.3 - 39.3)	1 201	25.0 (21.6 - 28.3)	**0.018**	230	35.1 (27.8 - 42.4)	793	24.0 (19.7 - 28.4)	**0.011**
Vitamin A deficiency[e]	450	7.3 (5 - 9.6)	1 716	15.4 (12.9 - 17.9)	**0.000**	342	4 (2.1 - 6)	1 147	7.4 (5 - 9.7)	**0.029**
6-11 months	137	9.2 (4.8 - 13.6)	517	16.0 (11.1 – 20.9)	**0.007**	112	5.3 (1.3 - 9.2)	354	9.5 (5.3 - 13.8)	**0.155**
12-24 months	313	6.4 (3.8 - 9.1)	1 199	15.2 (12.3 - 18.1)	**0.000**	230	3.4 (1.1 - 5.7)	793	6.4 (3.8 - 9.1)	**0.093**

NOTE: CI=confidence interval; 95% CI's adjusted for survey design.

[a] Inflammation not present (low C-reactive protein [CRP≤5 mg/L] and low α1-glucoprotein acid [AGP≤1.0 g/L]).

[b] Anemia: hemoglobin <11.0 g/dL adjusted for altitude.

[c] Iron deficiency anemia: Hemoglobin < 11.0 g/dL and low plasma ferritin (<12 µg/L) or high sTfR (>8.3 mg/L).

[d] Bivariate tests of statistical significance were conducted using the Pearson chi-square test, accounting for the cluster survey design.

[e] Vitamin A deficiency, defined as RBP <0.71µmol/L.

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