AFGHANISTAN

Rapid Nutrition Assessment (RNA) Report

Kabul Informal Settlements (KIS), Kabul Province

Afghanistan

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Reported by: Dr. Baidar Bakht Habib

ACF is a non-governmental, non-political and non-religious organization

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Abbreviations

ACF	Action Contre la Faim
ARI	Acute Respiratory Infections
BHC	Basic Health Center
CHF	Common Humanitarian Fund
CHW	Community Health Worker
DK	Don't Know
ENA	Emergency Nutrition Assessment
EPI	Extended Program for Immunization
GAM	Global Acute Malnutrition
HAZ	Height-for-Age in Z-scores
HF	Health Facility
HH	Household
IDP	Internally displaced persons
KIS	Kabul informal Settlements
MAM	Moderate Acute Malnutrition
MUAC	Mid-Upper Arm Circumference
OTP	Out-patient Therapeutic Programme
PD	Provincial District
PPS	Probability Proportion to Size
RNA	Rapid Nutrition Assessment
SAM	Severe Acute Malnutrition
SD	Standard Deviation
SFP	Supplementary Feeding Programme
SMART	Standardized Monitoring and Assessment of Relief and Transitions
U5	Under-Five
UNICEF	United Nation Children's Fund
UNOCHA	United Nation Office for the Coordination of Humanitarian Affaires
WAZ	Weight-for-Age in Z-scores
WFP	World Food Program
WHO	World Health Organization
WHZ	Weight-for-Height in Z-scores

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Executive Summary

The Rapid Nutrition Assessment was conducted in Kabul Informal Settlements (KIS) on 13th to 19th January 2016. A total of 407 children 0 to 59 months were assessed, with 216 households covered. The RNA report provides an analysis and interpretation of nutrition anthropometric, child morbidity and measles immunization among children 0-59 months (below).

Summary of key anthropometric findings:

- 375 children from 6-59 months of age assessed
- GAM prevalence by WHZ <-2 z-scores and/or MUAC<125 mm and/or the presence of bilateral oedema is 21,9% (95% CI 17,7 -26,1) and SAM is 5,9% (95% CI 3,5-8,2)
- GAM prevalence by WHZ<-2 and/or the presence of bilateral oedema was at **12.0%** (9.0-15.7 95% CI) and SAM is **1.9%** (0.9- 4.2 95% CI).
- GAM prevalence by MUAC<125 mm and/or the presence of bilateral oedema was at **14.9%** (9.8-22.0 95% CI) and SAM is **2.4%** (1.1- 5.5 95% CI).
- No oedema cases were identified
- Prevalence of stunting was at **51.1%** (44.9-57.3 95% CI) while severe stunting was at **22.5%** (17.3-28.7 95% CI).
- Total underweight was at **32.6%** (26.5-39.4 95% CI) and severe underweight was **12.3%** (8.0-18.5 95% CI).

Summary findings have excluded extreme values (SMART Flags— +/- 3SD from the observed mean).

Introduction

Since 2001, Kabul city population has significantly been increasing due to returnees of different origin: former immigrants, returnees and internally displaced people coming from rural and insecure zones of Afghanistan. The one who can afford it, purchase land to build houses, but the majority, settle in empty public or private spaces illegally. Thus, Kabul Informal Settlements were created and exist since more than 14 years. The settlers are in a constant movement, people come and go, and some of the settlements get forcibly moved or destroyed. Usually people leaving the settlement just move and squat in another area or join another settlement.

As of January 2016 humanitarian actors have identified 48 Kabul informal Settlements (KIS) with an estimated 7,889 families and 45,695 individuals[1]. This population is a mix of mainly conflict-induced IDPs, returnees from abroad in secondary displacement, flood and drought victims and among the forced displaced some economic migrants seemingly unaffected by conflict of disaster following the urbanization trend in hope of better livelihoods.

The populations settle mainly following an ethnic principle (Pashtun, Tajik, Jogi, Pashayee, Parachi etc.). They mainly settle close to markets where job opportunities can be found. An acute shortage of affordable housing forces people to build insecure muddy shelters. A part of the settlers are living under tents or in old destroyed building with risks of roof collapsing. There are no public services and infrastructures in the settlements. The high density of households and the proximity lead to unhealthy conditions of life, with a crucial lack of sanitary infrastructures. In many cases, families keep their animals between the tents. A lot of the women are prone to beggary using their emaciated children.

As the land is either occupied illegally or "unplanned" for construction, according Kabul City Master Plan Area, provision of any durable service or infrastructure is not possible. The most recent food security assessment conducted in the KIS indicates that there is high food insecurity. Food insecurity based on the food consumption score and food-based coping strategies is estimated at 80% (6,314 households) of the total 7,982 IDP households. Among them, an estimated 3,788 households (or 48%) are severely food insecure, and another 2,525 households (32%) are moderately food insecure[2]. In consequence it is also indicated that there is a likelihood that the most vulnerable members of this community (children <5years and pregnant and lactating women) may be at risk of malnutrition as a result of lack of food, poor sanitation and hygiene situation in these settlements.

It is in this regard that ACF proposed to conduct a Rapid Nutrition Assessment to better understand the nutrition situation on these vulnerable groups in these settlements and provide appropriate recommendations and actions to the cluster and other stakeholders. This assessment provides evidence based statistics on the current nutrition situation in the KIS. It is expected that the results of the assessment will be useful in designing proper nutrition interventions for the KIS.

Survey Objectives

Broad objective

- To evaluate the nutritional status of under-fives and need for emergency nutrition programming

[1] KIS Population data –Updated 4/01/2016- UN-OCHA

[2] Kabul Informal Settlement (KIS) Winter Needs Assessment-November 2015

Specific objectives

- To estimate Global Acute Malnutrition (GAM) rates among children from 6 to 59 months living in KIS
- To estimate two weeks recall morbidity among children from 0 to 59 months living in KIS
- To estimate measles vaccination coverage among children from 9 to 59 months living in KIS

Methodology

Sample size, sampling design and procedures

Sample size and sampling design

The population assessed included inhabitants of more than one settlement. In this case, the minimum required sample to get rapid but reliable estimations of under nutrition was fixed at 200 children from 6-59 months old. They were selected using two-stage cluster sampling. The number of clusters was also fixed to a minimum of 25.

The table below presents the precision which was expected to be reached, according to the GAM result.

Table 1: Expected precision (%) based on GAM prevalence

Expected GAM Prevalence	Minimum Sample size	Precision
20%	200 children	+/- 7.1%
15%	200 children	+/- 6.3%
10%	200 children	+/- 5.3%
5%	200 children	+/- 3.9%

To reach the required number of sample size, the RNA design for Afghanistan proposes simplified rule to convert children into households:

A. When the percentage of children under age of 5 is below 15%, 25 clusters of 12 households have to be selected
B. When the percentage of children under age of 5 is above 15%, 25 clusters of 10 households have to be selected

The reference percentage of under-five population for Afghanistan is 15.6%[3]. In this case, option B was applied. **25 clusters** were selected randomly using PPS by ENA software out of the total list identified above, while 10 households in each of clusters were selected. The cluster definition in KIS refers to smallest unit defined as settlement unit. According to latest reports from UNOCHA there are 48 settlements in KIS.

Sampling procedures

Households

Simple random sampling method was used where an up-to-date list of the households in each settlement was available. All houses were enumerated and given numbers by the survey team. The 10 households were then chosen at random from the total list of households. The survey team participated in random picking of listed households from a hat every morning, while at

[3] Afghanistan Mortality Survey, 2010

the field, in each of randomly selected clusters. In cases where it was difficult to obtain an updated list of households, a systematic random sampling was used to identify the households to be surveyed. The teams were trained on both methods of sampling (simple and systematic random sampling) and they were also offered with materials to assist in determining the households during the data collection exercise. In cases where there were large settlements in one cluster (more than 150 households), the settlement was divided into smaller segments. One segment was selected randomly to include the cluster. This division was done based on existing land marks in the settlement e.g. natural borders, masjid, schools, river, mountains, street and road. It's important to note, for the sake of simplification and rapidity, polygamous families were accounted as ONE household. In each selected settlement, one or more community member(s) was asked to help the survey teams to conduct their work by providing information about the settlement, its geographical organization or the number of households.

Children

All children from 0 to 59 months of age living in selected households were included in the cluster. Careful age identification by use of locally developed event calendar, child dental chart, was adopted. Local event calendar were updated and elaborated with the staffs during the training using the official calendar in Afghanistan, the solar Hijri calendar (Iranian calendar).

Women

All eligible women residing in the sampled households aged between (15-49 years) were assessed for their nutritional status. The following information was collected: Mid Upper Arm Circumference (MUAC), physiological status, age. Their nutritional status was evaluated using the cut-off of 230 mm.

Data collection

A simple tally sheets instead of a questionnaire was used (Annex 4 and Annex 5). Surveyors would simply write down these data for each child. The number of the child in the household and the number of the household in the cluster was also recorded.

Anthropometric data (6-59 months age)

The **sex:** was recorded with codes: F = female and M = male.
The **age:** was written down in months.
Weight (in kg): children were weighed to the nearest 0.1 kg by using an electronic uniscale (or SECA). The children who could easily stand were asked to stand on the weighing scale and their weight recorded. In a situation when the children could not stand up, the double weighing method was applied[4].
Height (in cm): Measuring board was used to measure bare headed and barefoot children. The precision of the measurement was 1 mm. Children of less than 87 cm were measured lying down and those equal to or above 87 cm were measured standing up.
All children were also checked for **oedema**. If a child was suspected to have nutritional oedema then both enumerator MUST confirm this. It was essential that all staff be well trained to check for oedema.
MUAC: The MUAC measurement was recorded in millimetres. **MUAC** must only be taken on the **LEFT** arm using MUAC tape. Once measured, visible small mark on the left upper arm or on the fingernails of the child were made in order to avoid measuring the same child several times.
Bilateral pitting Oedema: recorded as "yes" or "no"

All children detected as SAM whether by presence of bilateral pitting oedema and/or weight-

[4] The first measurement is the weight of the care taker and the second is the weight of the caretaker with the child. The scale can record the first measurement and automatically extract it from the second measurement, showing only the weight of the child on the screen.

for-height <-3 z-score and/or MUAC < 115 cm, were referred to the nearest facility or agency responsible for therapeutic care for immediate treatment.

Measles immunization status (among aged 9-59 months)

For all children selected in the sample, the mother/caretaker (CT) was asked if the child has been immunized against measles or not, and if there is a vaccination card. The answers are recorded as 'Y' (Yes); 'VWC' (Vaccination without Card); 'N' (No); 'DK' (Does not Know), according to the situation.

Morbidity data (among aged 0-59 months)

All children selected in the sample, the mother or Care-taker (CT) was asked: If the child had diarrhea within the last 14 days.
Diarrhoea is defined as every episode of more than 3 liquid stools per day. Record was made as follows: 'Y' (Yes); 'N' (No) and 'DK' (Does not Know). Mother or caretaker was also asked if the child had Acute Respiratory Infection (ARI) within the last 14 days.
Acute Respiratory Infection is any episode with severe, persistent cough or difficulty breathing. Record was made as follows: 'Y' (Yes); 'N' (No); 'DK' (Don't Know), according to the situation.

Final Sampling Strategy

- 25 of Clusters
- Clusters were based mainly on settlements (cluster selection is in Annex 1)
- 0 of Reserve Clusters used

Table 2: Final sampling strategy

Number of HH planned	Number of HH surveyed	% surveyed /planned	Number of children 6-59 months planned	Number of children 6-59 months surveyed	% surveyed /planned
250HHs	204HHs	81.6%	200 children	375	187.5%

The survey attained 375 children as highlighted in table 2. A total of 204 households were surveyed representing 81.6% of actual number of households planned for the survey, based on the fact that the survey random selected 25 clusters in which the team had to cover 10 households from each. It is important to note that the minimum required sample size in RNA is children which the survey managed to reach and exceed. No clusters were missed during the survey however due to the high number of absent HH in the survey the number of HH reached was lower than the number of HH planned initially.

Training and supervision

The survey data collection team was composed of eight teams of two members each. Each team was composed of one team leader and one data collector. The previous experience from Afghanistan has shown that in some cases people are not eager to allow surveyors to measure female children. It was important to bear that in mind while conducting RNA and to have as much as possible mixed teams of surveyors that have adapted communication approach. The two teams will have one supervisor in the field together with teams and all teams were supervised by ACF Nut-SMART Senior Program Manager. The teams received 3 days training on data collection and measurement and one day standardization test.

One field guidelines document with instructions and household definition and selection document was provided to each team member. All documents, such as local event calendar, questionnaires or consent forms were translated in Dari and Pashto, local language, for better understanding and to avoid direct translation during the data field collection. The questionnaires were back translated using a different translator. Alterations were made as necessary. Daily data entry and analysis was done using ENA plausibility check, and feedback was provided to the data collection teams. Anthropometric data was directly entered into ENA.

Results

The anthropometric data was analysed using ENA for SMART software 2011 (update 9th July 2015). Survey results are presented in reference to WHO standards for overall final analysis.

Data quality check was done using ENA for SMART software. The software was also used to generate a survey report automatically. If all anthropometric measurements were collected, then ENA will generate results for acute malnutrition (WHZ and MUAC separately), stunting (HAZ), and underweight (WAZ)[5]. Results are presented in (**%**) z-scores with 95% Confidence Interval.

These are defined as follows in Table 3 and 4.

Table 3: Case definition based on MUAC

Classification	Normal	Moderate Acute Malnutrition	Severe acute malnutrition
MUAC	= or > 125mm	= or > 115 and < 125mm	< 115mm and/or oedema

Table 4: Case definition based on weight for height z-scores

	Acute Malnutrition	Underweight	Stunting
Global	**WHZ <-2 z scores and/or oedema**	**WAZ <-2 z scores**	**HAZ <-2 z scores**
Moderate	**-3 < WHZ < -2 z scores**	**-3 < WAZ < -2**	**-3 < HAZ < -2 z scores**
Severe	**WHZ < -3 z scores and/or oedema**	**WAZ < -3 z scores**	**HAZ < -3 z scores**

Anthropometric Results

The results are presented with exclusion of z- score from observed mean SMART flags: WHZ -3 to + 3, HAZ -3 to +3 and WHZ -3 to +3.the overall data quality check is shown in **Annex 2**.

Age ratio was of 0,9 and sex ratio was 0,85 (refer to plausibility check in Annex 2).

Table 4: Distribution of age and sex of sample

	Boys		Girls		Total		Ratio
AGE (mo)	**no.**	**%**	**no.**	**%**	**no.**	**%**	**Boy: girl**
6-17	28	36.4	49	63.6	77	20.5	0.6
18-29	42	44.2	53	55.8	95	25.3	0.8
30-41	45	45.5	54	54.5	99	26.4	0.8
42-53	40	58.8	28	41.2	68	18.1	1.4

[5] Overweight was included in automatic data analysis since recently.

54-59	23	63.9	13	36.1	36	9.6	1.8
Total	178	47.5	197	52.5	375	100.0	0.9

The following tables present the undernutrition rates as follows:

- ✓ Sex disaggregated weight-for-height z-scores (and/or oedema) and by sex (Table 6)
- ✓ Rates of oedema (Table 7)
- ✓ Sex disaggregated rates of MUAC cut-offs (Table 8)
- ✓ Sex disaggregated weight-for-age z-scores (Table 9)
- ✓ Sex disaggregated height-for-age z-scores (Table 10)

Table 5: Prevalence of acute malnutrition based on weight-for-height z-scores (and/or oedema) and by sex

	All n = 367	Boys n = 174	Girls n = 193
Prevalence of global malnutrition (<-2 z-score and/or oedema)	(44) 12.0 % (9.0 - 15.7 95% C.I.)	(21) 12.1 % (8.1 - 17.6 95% C.I.)	(23) 11.9 % (7.9 - 17.6 95% C.I.)
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	(37) 10.1 % (7.3 - 13.7 95% C.I.)	(18) 10.3 % (6.5 - 16.0 95% C.I.)	(19) 9.8 % (6.4 - 14.9 95% C.I.)
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	(7) 1.9 % (0.9 - 4.2 95% C.I.)	(3) 1.7 % (0.6 - 5.0 95% C.I.)	(4) 2.1 % (0.8 - 5.3 95% C.I.)

Table 6: Distribution of acute malnutrition and oedema based on weight-for-height z-scores

	<-3 z-score	>=-3 z-score
Oedema present	Marasmic kwashiorkor No. 0 (0.0 %)	Kwashiorkor No. 0 (0.0 %)
Oedema absent	Marasmic No. 14 (3.7 %)	Not severely malnourished No. 361 (96.3 %)

Table 7: Prevalence of acute malnutrition based on MUAC cut offs (and/or oedema) and by sex

	All n = 370	Boys n = 177	Girls n = 193
Prevalence of global malnutrition (< 125 mm and/or oedema)	(55) 14.9 % (9.8 - 22.0 95% C.I.)	(14) 7.9 % (4.1 - 14.8 95% C.I.)	(41) 21.2 % (14.6 - 29.8 95% C.I.)
Prevalence of moderate malnutrition (< 125 mm and >= 115 mm, no oedema)	(46) 12.4 % (7.8 - 19.1 95% C.I.)	(11) 6.2 % (3.0 - 12.4 95% C.I.)	(35) 18.1 % (11.8 - 26.8 95% C.I.)
Prevalence of severe malnutrition (< 115 mm and/or oedema)	(9) 2.4 % (1.1 - 5.5 95% C.I.)	(3) 1.7 % (0.5 - 5.3 95% C.I.)	(6) 3.1 % (1.2 - 7.7 95% C.I.)

Table 8: Prevalence of underweight based on weight-for-age z-scores and by sex

	All n = 374	Boys n = 177	Girls n = 197

Prevalence of underweight (<-2 z-score)	(122) 32.6 % (26.5 - 39.4 95% C.I.)	(60) 33.9 % (25.7 - 43.2 95% C.I.)	(62) 31.5 % (24.4 - 39.5 95% C.I.)
Prevalence of moderate underweight (<-2 z-score and >=-3 z-score)	(76) 20.3 % (16.2 - 25.2 95% C.I.)	(37) 20.9 % (14.6 - 29.0 95% C.I.)	(39) 19.8 % (14.3 - 26.7 95% C.I.)
Prevalence of severe underweight (<-3 z-score)	(46) 12.3 % (8.0 - 18.5 95% C.I.)	(23) 13.0 % (7.6 - 21.3 95% C.I.)	(23) 11.7 % (7.3 - 18.2 95% C.I.)

Table 9: Prevalence of stunting based on height-for-age z-scores and by sex

	All n = 364	Boys n = 173	Girls n = 191
Prevalence of stunting (<-2 z-score)	(186) 51.1 % (44.9 - 57.3 95% C.I.)	(95) 54.9 % (46.6 - 63.0 95% C.I.)	(91) 47.6 % (39.0 - 56.4 95% C.I.)
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	(104) 28.6 % (24.2 - 33.4 95% C.I.)	(47) 27.2 % (21.3 - 34.0 95% C.I.)	(57) 29.8 % (23.3 - 37.3 95% C.I.)
Prevalence of severe stunting (<-3 z-score)	(82) 22.5 % (17.3 - 28.7 95% C.I.)	(48) 27.7 % (20.4 - 36.5 95% C.I.)	(34) 17.8 % (12.5 - 24.8 95% C.I.)

The summary of the Mean Z-scores with their Standard Deviations, the design effects and number of the out of range data per index is the table 11 below.

Table 10: Mean z-scores, design effect and excluded subjects

Indicator	n	Mean z-scores ± SD	Design Effect (z-score < -2)	z-scores not available*	z-scores out of range
Weight-for-Height	367	-0.67±1.09	1.00	0	8
Weight-for-Age	374	-1.61±1.05	1.67	0	1
Height-for-Age	364	-2.02±1.32	1.31	0	11

Child Health and immunization

Retrospective morbidity data was collected among 407 children 0 -59 months (two weeks recalls) to assess the incidence of main diseases and child immunization status. Analysis of data and findings is well illustrated in table 12 and 13.

Table 11: Under-five morbidity, two week recall, n=407

Parameter	Frequency	Results
Diarrhea	192	47,2%
Acute Respiratory infection	245	60,2%

Table 12: Measles immunization status, children 9-59 mounts, n=355

Parameter	Frequency	Results
Yes	63	17,7%
Yes, Recall	124	34,9%

No	145	40,8%
Do not know	23	6,5%

Maternal Nutritional status

Dara are presented in table 13 and table 14 below.

Table 13: Physiological status of women of reproductive age (15-49 years), n=249

Parameter	Frequency	Results
Pregnant	46	18.5%
Lactating	128	51.4%
Pregnant & Lactating	12	4.8%
None of both	63	25.3%

Table 14: Maternal nutritional status based on MUAC cut off, n=249

MUAC cut off	Frequency	Results
MUAC< 230 mm	44	17.7%
MUAC ≥ 230 mm	205	82.3%

Discussion note

Data Quality and reliability of the results

The age and sex ratios were within accepted limits confirming the respect of the sampling method. The digit preferences were classified as excellent for weight and MUAC, and acceptable for the height, confirming good quality of the anthropometric measurements applied by the team. The precision of the result for weight-for-height z-scores are better than planned: 12.0 % (9.0 - 15.7 95% C.I.), refer to table 2. The mean Z-scores per index (refer to table 10) were within the limits of WHO recommended[6] except for stunting, going slightly beyond the limit of 1.30.

Overall, the results of this rapid assessment are reliable and recommended for emergency programming.

Undernutrition rates

The GAM rates based on weight-for-height <-2 z-scores of 12.0 % (9.0 - 15.7 95% C.I.) and based on MUAC<125 mm of 14.9 % (9.8 - 22.0 95% C.I.) confirmed the possible existence of serious situation7. Although not significantly, both rates are higher than those found during the SMART survey conducted by ACF in KIS from December 2011, indicated respectively weight-for-height <-2 z-scores of 7.9 % (5.6 - 10.9 95% C.I.) and MUAC<125 mm 10.4 % (7.8 – 13.6 95% C.I.).

Further analysis of the data suggests that these rates do not refer to same children. Children classified as wasted based WHZ are not fully overlapping with those classified wasted based on MUAC. If both criteria are combined, overall rate of children likely to be eligible for SAM and MAM management in KIS rises to 21,9% (95% CI 17,7-26,1). Only SAM combined rates is estimated to be 5,9% (3,5 – 8,2). Combined rates are recommended to be used for caseload estimation if SAM and MAM management is implemented in KIS.

[6] http://www.who.int/nutgrowthdb/about/introduction/en/index5.html

[7] WHO acute malnutrition classification: < 5 % acceptable, 5-9 % poor, 10-14 % serious , > 15 % critical

Chronic under-nutrition that is stunting prevalence was at 51.1% (44.9-57.3 95% CI) indicating one in every second child below five years of age is stunted in KIS. Based on this findings, stunting prevalence in KIS was at very high levels (>40%) based on WHO classification on the gravity of chronic under-nutrition.

The prevalence of underweight was at32.6% (26.5-39.4 95% CI), this form of under-nutrition depicts the burden of acute and chronic under-nutrition among under-fives.

High incidence rates of diarrhoea and ARI at 60.2% and 47.2% reported, is directly linked to current under-nutrition rates in KIS. Continuous monitoring and immediate provision of life-saving services are required in KIS to counteract the high burden of under-nutrition.

Maternal status based on MUAC<230 mm is also low.

Summary of recommendations

Nutrition

- To organize and provide Outpatient Therapeutic Programmes (OTP) sites through mobile outreaches to detect, minimize and treat SAM cases in all areas of KIS.
- To start Supplementary Feeding Programme(SFP), this will provide targeted solutions for under-fives and maternal nutritionals issues
- To provide active screening and strengthen referral systems in community level.
- Integration of nutrition, WaSH and FSL programming within the community to address the high under-nutrition.
- To increase health education on nutrition and environmental hygiene
- Launching food demonstration program in the community to increase knowledge of women on proper using of nutritious local foods.
- Training/orientation of mobile clinic staff on how to detect underlying causes in the community and apply for their solution as soon as possible.
- Strengthening provision of IFA to all CBA women both in Mobile Clinics (MCs) level by MCs staff and in community by CHWs.
- To increase awareness on utilization of nutrition and antenatal care (ANC) services

Child health status

- Strengthening provision of all types of micronutrients (zinc, vitamin A) both in MCs and community levels by HFs staff and CHWs.
- Need to scale up awareness campaigns for reach out to the intended target population
- To increase health education on management of ARI and diarrhoea at Settlements
- Provide WaSH community mobilization to increase access safe drinking water and hygiene.
- To increase health education on personal and environmental hygiene.

Annexes

Annex 1: Selected Cluster/Villages for data collection, KIS RNA, January 2016

Geographical unit	Population size	Cluster
Parwane Do (3), PD 4, Kabul City	329	1
Shahrake Police (Chamani Babrak), PD 4, Kabul City	4669	2,RC
Sarake Panj Proja Tamani, PD 4, Kabul City	483	3
Puli Campany No 1, PD 5 Kabul City	6118	4,5,6
Puli Campany No 2, PD 5 Kabul City	1414	7
Qalai Wazir, PD 5, Kabul City	497	8
Charahi Qamber (2), PD 5, Kabul City	10192	9,10,11,12,13,14
Sarak Awal Silo, PD 5, Kabul City	63	15
Nasaji Bagrami (1) (Tapa Bagrami), PD 8, Kabul City	1561	16
Kodakistane Bagrami, PD 8, Kabul City	798	17
Qalai Barqi (2) PD 8, Kabul City	336	18
Ghaibi Baba (Tapa Karte Naw), PD 8, Kabul City	1092	19
In front of Hewadwall Blocks, PD 8, Kabul City	1897	RC
Proje Hussain Khil, Bagrami/ PD 12, Kabul	5460	20,21,22
Puli Shina No 1 Bagrami/ PD 12, Kabul	2926	RC
Pule Shina No 2 PD Kabul City	2163	23
Block Hai Qasaba, PD 15, Kabul City	763	24
Ada Mazar, PD 17, Kabul City	280	25

Annex 2: Plausibility check for data quality: KIS _ KABUL_ RNA _ 2016_JAN.as

Standard/Reference used for z-score calculation: WHO standards 2006
(If it is not mentioned, flagged data is included in the evaluation. Some parts of this plausibility report are more for advanced users and can be skipped for a standard evaluation)

Overall data quality

Criteria	Flags*	Unit	Excel.	Good	Accept	Problematic	**Score**
Flagged data (% of out of range subjects)	Incl	%	0-2.5 0	>2.5-5.0 5	>5.0-7.5 10	>7.5 20	**0** (2.1 %)
Overall Sex ratio (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**0** (p=0.327)
Age ratio(6-29 vs 30-59) (Significant chi square)	Incl	p	>0.1 0	>0.05 2	>0.001 4	<=0.001 10	**0** (p=0.975)
Dig pref score - weight	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (6)
Dig pref score - height	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**4** (18)
Dig pref score - MUAC	Incl	#	0-7 0	8-12 2	13-20 4	> 20 10	**0** (7)
Standard Dev WHZ . .	Excl Excl	SD SD	<1.1 and >0.9	<1.15 and >0.85	<1.20 and >0.80	>=1.20 or <=0.80	
			0	5	10	20	**0** (1.09)
Skewness WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**1** (-0.21)
Kurtosis WHZ	Excl	#	<±0.2 0	<±0.4 1	<±0.6 3	>=±0.6 5	**1** (-0.36)
Poisson dist WHZ-2	Excl	p	>0.05 0	>0.01 1	>0.001 3	<=0.001 5	**0** (p=0.992)
OVERALL SCORE WHZ =			0-9	10-14	15-24	>25	**6** %

The overall score of this survey is 6 %, this is excellent.

There were no duplicate entries detected.
Percentage of children with no exact birthday: 79 %

Anthropometric Indices likely to be in error (-3 to 3 for WHZ, -3 to 3 for HAZ, -3 to 3 for WAZ, from observed mean - chosen in Options panel - these values will be flagged and should be excluded from analysis for a nutrition survey in emergencies. For other surveys this might not be the best procedure e.g. when the percentage of overweight children has to be calculated):

Line=159/ID=159: **WHZ (-5.303)**, WAZ (-5.748), Weight may be incorrect
Line=211/ID=211: HAZ (1.367), Height may be incorrect
Line=214/ID=214: HAZ (1.964), Age may be incorrect
Line=264/ID=264: HAZ (1.746), Height may be incorrect
Line=286/ID=286: **WHZ (-3.777)**, Height may be incorrect
Line=303/ID=303: **WHZ (-4.605)**, Height may be incorrect
Line=306/ID=306: HAZ (-5.658), Age may be incorrect
Line=309/ID=309: HAZ (1.525), Height may be incorrect
Line=315/ID=315: **WHZ (2.301)**, Height may be incorrect

Line=334/ID=334: HAZ (-5.147), Age may be incorrect
Line=352/ID=352: HAZ (1.224), Age may be incorrect
Line=370/ID=370: HAZ (1.797), Age may be incorrect
Line=380/ID=380: HAZ (-5.277), Age may be incorrect
Line=381/ID=381: HAZ (-6.593), Age may be incorrect
Line=393/ID=393: **WHZ (-4.050)**, Weight may be incorrect
Line=394/ID=394: **WHZ (-5.301)**, Height may be incorrect
Line=397/ID=397: **WHZ (-3.786)**, Weight may be incorrect
Line=405/ID=406: **WHZ (-4.499)**, Weight may be incorrect
Line=407/ID=408: HAZ (1.571), Height may be incorrect
Percentage of values flagged with SMART flags:WHZ: 2.1 %, HAZ: 2.9 %, WAZ: 0.3 %

Age distribution:
Month 6 : #####
Month 7 : #######
Month 8 : ########
Month 9 : ####
Month 10 : #########
Month 11 : ####
Month 12 : #######
Month 13 : ###
Month 14 : #######
Month 15 : ######
Month 16 : #####
Month 17 : ##########
Month 18 : ############################
Month 19 : ###
Month 20 : ######
Month 21 : #####
Month 22 : ##########
Month 23 : ##
Month 24 : ########################
Month 25 : ######
Month 26 : ####
Month 27 : ##
Month 28 : ###
Month 29 : ##
Month 30 : ######################
Month 31 : ####
Month 32 : #######
Month 33 : ######
Month 34 : ######
Month 35 : #####
Month 36 : ##############################
Month 37 : ######
Month 38 : ######
Month 39 : ##
Month 40 : ###
Month 41 : ####
Month 42 : ########
Month 43 : #####

Month 44 : ###
Month 45 : #
Month 46 : ####
Month 47 : #####
Month 48 : ##############################
Month 49 : ####
Month 50 : #####
Month 51 : #
Month 52 :
Month 53 : ##
Month 54 : ########
Month 55 : #
Month 56 : #######
Month 57 : #
Month 58 : ###########
Month 59 : #########

Age ratio of 6-29 months to 30-59 months: 0.85 (The value should be around 0.85).:
p-value = 0.975 (as expected)

Statistical evaluation of sex and age ratios (using Chi squared statistic):

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	28/41.3 (0.7)	49/45.7 (1.1)	77/87.0 (0.9)	0.57
18 to 29	12	42/40.3 (1.0)	53/44.6 (1.2)	95/84.8 (1.1)	0.79
30 to 41	12	45/39.0 (1.2)	54/43.2 (1.3)	99/82.2 (1.2)	0.83
42 to 53	12	40/38.4 (1.0)	28/42.5 (0.7)	68/80.9 (0.8)	1.43
54 to 59	6	23/19.0 (1.2)	13/21.0 (0.6)	36/40.0 (0.9)	1.77
6 to 59	54	178/187.5 (0.9)	197/187.5 (1.1)		0.90

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.327 (boys and girls equally represented)
Overall age distribution: p-value = 0.083 (as expected)
Overall age distribution for boys: p-value = 0.186 (as expected)
Overall age distribution for girls: p-value = 0.014 (significant difference)
Overall sex/age distribution: p-value = 0.000 (significant difference)

Digit preference Weight:
Digit .0 : ##
Digit .1 : ##############################
Digit .2 : ##
Digit .3 : ################################
Digit .4 : ########################
Digit .5 : ################################
Digit .6 : ##
Digit .7 : ##############################
Digit .8 : ##
Digit .9 : ##
Digit preference score: **6** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.225

0Digit preference Height:
Digit .0 : ##################################

Digit .1 : ####################
Digit .2 : ########################
Digit .3 : ######################
Digit .4 : ##############
Digit .5 : ##################################
Digit .6 : ########
Digit .7 : ##########
Digit .8 : ######
Digit .9 : ##########

Digit preference score: **18** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.000 (significant difference)

Digit preference MUAC:
Digit .0 : ##
Digit .1 : ##################################
Digit .2 : ######################################
Digit .3 : ####################################
Digit .4 : ##################################
Digit .5 : ##
Digit .6 : ##############################
Digit .7 : ##################################
Digit .8 : ##############################
Digit .9 : ##############################

Digit preference score: **7** (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)
p-value for chi2: 0.060

Evaluation of Standard deviation, Normal distribution, Skewness and Kurtosis using the 3 exclusion (Flag) procedures

.	no exclusion	exclusion from reference mean (WHO flags)	exclusion from observed mean (SMART flags)
.			
.			
WHZ			
Standard Deviation SD:	1.21	1.17	1.09
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	13.6%	13.1%	12.0%
calculated with current SD:	14.7%	13.4%	11.2%
calculated with a SD of 1:	10.2%	9.8%	9.1%
HAZ			
Standard Deviation SD:	1.45	1.43	1.32
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	50.7%	50.5%	51.1%
calculated with current SD:	49.9%	49.5%	50.7%
calculated with a SD of 1:	49.8%	49.3%	50.9%
WAZ			
Standard Deviation SD:	1.07	1.07	1.05
(The SD should be between 0.8 and 1.2)			
Prevalence (< -2)			
observed:	32.8%	32.8%	32.6%
calculated with current SD:	36.3%	36.3%	35.6%
calculated with a SD of 1:	35.4%	35.4%	34.9%
Results for Shapiro-Wilk test for normally (Gaussian) distributed data:			
WHZ	p= 0.000	p= 0.012	p= 0.056
HAZ	p= 0.773	p= 0.394	p= 0.011
WAZ	p= 0.000	p= 0.000	p= 0.000

(If p < 0.05 then the data are not normally distributed. If p > 0.05 you can consider the data

normally distributed)

Skewness

WHZ	-0.58	-0.39	-0.21
HAZ	0.00	0.07	-0.07
WAZ	-0.52	-0.52	-0.42

If the value is:
-below minus 0.4 there is a relative excess of wasted/stunted/underweight subjects in the sample
-between minus 0.4 and minus 0.2, there may be a relative excess of wasted/stunted/underweight subjects in the sample.
-between minus 0.2 and plus 0.2, the distribution can be considered as symmetrical.
-between 0.2 and 0.4, there may be an excess of obese/tall/overweight subjects in the sample.
-above 0.4, there is an excess of obese/tall/overweight subjects in the sample

Kurtosis

WHZ	0.80	0.19	-0.36
HAZ	-0.08	-0.22	-0.57
WAZ	0.03	0.03	-0.35

Kurtosis characterizes the relative size of the body versus the tails of the distribution. Positive kurtosis indicates relatively large tails and small body. Negative kurtosis indicates relatively large body and small tails.
If the absolute value is:
-above 0.4 it indicates a problem. There might have been a problem with data collection or sampling.
-between 0.2 and 0.4, the data may be affected with a problem.
-less than an absolute value of 0.2 the distribution can be considered as normal.

Test if cases are randomly distributed or aggregated over the clusters by calculation of the Index of Dispersion (ID) and comparison with the Poisson distribution for:

WHZ < -2: ID=0.42 (p=0.992)
WHZ < -3: ID=1.03 (p=0.426)
GAM: ID=0.42 (p=0.992)
SAM: ID=1.03 (p=0.426)
HAZ < -2: ID=1.38 (p=0.109)
HAZ < -3: ID=1.42 (p=0.090)
WAZ < -2: ID=1.02 (p=0.436)
WAZ < -3: ID=1.55 (p=0.049)

Subjects with SMART flags are excluded from this analysis.

The Index of Dispersion (ID) indicates the degree to which the cases are aggregated into certain clusters (the degree to which there are "pockets"). If the ID is less than 1 and p > 0.95 it indicates that the cases are UNIFORMLY distributed among the clusters. If the p value is between 0.05 and 0.95 the cases appear to be randomly distributed among the clusters, if ID is higher than 1 and p is less than 0.05 the cases are aggregated into certain cluster (there appear to be pockets of cases). If this is the case for Oedema but not for WHZ then aggregation of GAM and SAM cases is likely due to inclusion of oedematous cases in GAM and SAM estimates.

Are the data of the same quality at the beginning and the end of the clusters?

Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster per day is measured then this will be related to the time of the day the measurement is made).

```
Time                                        SD for WHZ
point                0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.37 (n=23, f=1)  ########################
02: 1.65 (n=22, f=2)  ####################################
03: 1.43 (n=22, f=1)  ##########################
04: 1.19 (n=21, f=0)  ################
05: 1.51 (n=22, f=2)  ##############################
06: 1.62 (n=22, f=1)  ###################################
07: 1.14 (n=21, f=0)  ###############
08: 0.96 (n=17, f=0)  #######
09: 0.96 (n=20, f=0)  #######
10: 0.90 (n=19, f=0)  ####
11: 1.00 (n=18, f=0)  #########
12: 0.77 (n=19, f=0)
```

```
13: 1.47 (n=18, f=1)  ############################
14: 1.00 (n=15, f=0)  ########
15: 0.99 (n=16, f=0)  ########
16: 0.89 (n=09, f=0)  OOOO
17: 1.16 (n=11, f=0)  ###############
18: 0.92 (n=09, f=0)  OOOOO
19: 1.07 (n=09, f=0)  OOOOOOOOOO
20: 1.21 (n=07, f=0)  OOOOOOOOOOOOOOOO
21: 1.25 (n=07, f=0)  OOOOOOOOOOOOOOOOOO
22: 0.61 (n=07, f=0)
23: 0.87 (n=05, f=0)  OOO
24: 0.25 (n=03, f=0)
25: 0.49 (n=03, f=0)
26: 1.74 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
27: 1.46 (n=02, f=0)  ~~~~~~~~~~~~~~~~~~~~~~~~~~~

(when n is much less than the average number of subjects per cluster different symbols are used: 0
for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the
different time points)
```

Analysis by Team

Team	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
n =	78	53	30	33	44	45	49	43
Percentage of values flagged with SMART flags:								
WHZ:	0.0	0.0	3.3	3.0	9.1	2.2	0.0	0.0
HAZ:	1.3	7.5	6.7	0.0	2.3	2.2	2.0	2.3
WAZ:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Age ratio of 6-29 months to 30-59 months:								
	0.86	1.04	1.00	1.36	0.52	0.61	1.04	0.72
Sex ratio (male/female):								
	1.00	0.89	0.58	0.94	1.00	0.55	0.81	1.69
Digit preference Weight (%):								
.0 :	10	13	7	15	9	16	4	12
.1 :	8	6	17	6	2	16	8	7
.2 :	10	9	20	6	11	11	10	16
.3 :	10	4	3	0	20	11	10	9
.4 :	5	8	10	3	5	13	4	9
.5 :	10	9	7	6	5	9	18	5
.6 :	12	13	3	18	14	9	14	12
.7 :	8	11	10	15	7	4	8	7
.8 :	8	19	7	15	14	2	18	9
.9 :	19	8	17	15	14	9	4	14
DPS:	12	14	19	20	18	14	17	11

Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)

Digit preference Height (%):								
.0 :	18	21	43	18	34	11	4	9
.1 :	5	13	3	21	11	13	14	12
.2 :	18	21	17	9	5	13	8	12
.3 :	13	15	7	9	11	20	8	12
.4 :	9	2	17	9	5	2	8	12
.5 :	26	15	7	18	16	20	18	19
.6 :	4	4	3	0	0	4	10	9
.7 :	1	2	3	3	7	13	8	7
.8 :	3	0	0	6	7	0	10	2
.9 :	4	8	0	6	5	2	10	7
DPS:	26	25	42	22	30	23	12	13

Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)

Digit preference MUAC (%):

.0 :	10	0	7	15	19	24	2	14
.1 :	9	18	17	9	7	2	6	7
.2 :	14	12	3	9	9	0	15	14
.3 :	6	14	20	3	12	9	4	17
.4 :	9	12	10	0	12	13	10	7
.5 :	22	16	17	30	19	11	6	5
.6 :	4	8	7	6	5	13	19	5
.7 :	9	4	3	6	7	18	19	7
.8 :	12	6	13	12	0	2	8	19
.9 :	5	12	3	9	12	7	10	5
DPS:	16	17	20	26	18	24	18	17

Digit preference score (0-7 excellent, 8-12 good, 13-20 acceptable and > 20 problematic)

Standard deviation of WHZ:

SD	1.13	0.96	1.42	1.24	1.50	1.15	1.01	1.32

Prevalence (< -2) observed:

%	11.5		26.7	27.3	18.2	8.9	6.1	11.6

Prevalence (< -2) calculated with current SD:

%	9.5		29.4	18.9	24.8	11.3	7.9	17.9

Prevalence (< -2) calculated with a SD of 1:

%	6.8		22.1	13.7	15.4	8.2	7.6	11.3

Standard deviation of HAZ:

SD	1.23	1.74	1.80	1.36	1.32	1.37	1.30	1.41

observed:

%	50.0	54.7	50.0	51.5	50.0	31.1	57.1	60.5

calculated with current SD:

%	46.7	51.1	43.9	47.6	50.9	34.8	62.3	61.2

calculated with a SD of 1:

%	45.9	51.9	39.1	46.7	51.2	29.6	65.8	65.6

Statistical evaluation of sex and age ratios (using Chi squared statistic) for:

Team 1:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	8/9.0 (0.9)	9/9.0 (1.0)	17/18.1 (0.9)	0.89
18 to 29	12	8/8.8 (0.9)	11/8.8 (1.2)	19/17.6 (1.1)	0.73
30 to 41	12	7/8.6 (0.8)	10/8.6 (1.2)	17/17.1 (1.0)	0.70
42 to 53	12	8/8.4 (1.0)	9/8.4 (1.1)	17/16.8 (1.0)	0.89
54 to 59	6	8/4.2 (1.9)	0/4.2 (0.0)	8/8.3 (1.0)	
6 to 59	54	39/39.0 (1.0)	39/39.0 (1.0)		1.00

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 1.000 (boys and girls equally represented)
Overall age distribution: p-value = 0.996 (as expected)
Overall age distribution for boys: p-value = 0.401 (as expected)
Overall age distribution for girls: p-value = 0.289 (as expected)
Overall sex/age distribution: p-value = 0.060 (as expected)

Team 2:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	3/5.8 (0.5)	8/6.5 (1.2)	11/12.3 (0.9)	0.38
18 to 29	12	8/5.7 (1.4)	8/6.3 (1.3)	16/12.0 (1.3)	1.00
30 to 41	12	7/5.5 (1.3)	7/6.1 (1.1)	14/11.6 (1.2)	1.00
42 to 53	12	3/5.4 (0.6)	3/6.0 (0.5)	6/11.4 (0.5)	1.00

54 to 59	6	4/2.7 (1.5)	2/3.0 (0.7)	6/5.7 (1.1)	2.00
6 to 59	54	25/26.5 (0.9)	28/26.5 (1.1)		0.89

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.680 (boys and girls equally represented)
Overall age distribution: p-value = 0.334 (as expected)
Overall age distribution for boys: p-value = 0.346 (as expected)
Overall age distribution for girls: p-value = 0.598 (as expected)
Overall sex/age distribution: p-value = 0.120 (as expected)

Team 3:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	0/2.6 (0.0)	6/4.4 (1.4)	6/7.0 (0.9)	0.00
18 to 29	12	5/2.5 (2.0)	4/4.3 (0.9)	9/6.8 (1.3)	1.25
30 to 41	12	1/2.4 (0.4)	6/4.2 (1.4)	7/6.6 (1.1)	0.17
42 to 53	12	5/2.4 (2.1)	1/4.1 (0.2)	6/6.5 (0.9)	5.00
54 to 59	6	0/1.2 (0.0)	2/2.0 (1.0)	2/3.2 (0.6)	0.00
6 to 59	54	11/15.0 (0.7)	19/15.0 (1.3)		0.58

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.144 (boys and girls equally represented)
Overall age distribution: p-value = 0.850 (as expected)
Overall age distribution for boys: p-value = 0.041 (significant difference)
Overall age distribution for girls: p-value = 0.441 (as expected)
Overall sex/age distribution: p-value = 0.007 (significant difference)

Team 4:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	4/3.7 (1.1)	2/3.9 (0.5)	6/7.7 (0.8)	2.00
18 to 29	12	4/3.6 (1.1)	9/3.8 (2.3)	13/7.5 (1.7)	0.44
30 to 41	12	5/3.5 (1.4)	4/3.7 (1.1)	9/7.2 (1.2)	1.25
42 to 53	12	3/3.5 (0.9)	2/3.7 (0.5)	5/7.1 (0.7)	1.50
54 to 59	6	0/1.7 (0.0)	0/1.8 (0.0)	0/3.5 (0.0)	
6 to 59	54	16/16.5 (1.0)	17/16.5 (1.0)		0.94

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.862 (boys and girls equally represented)
Overall age distribution: p-value = 0.060 (as expected)
Overall age distribution for boys: p-value = 0.651 (as expected)
Overall age distribution for girls: p-value = 0.033 (significant difference)
Overall sex/age distribution: p-value = 0.010 (significant difference)

Team 5:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	3/5.1 (0.6)	4/5.1 (0.8)	7/10.2 (0.7)	0.75
18 to 29	12	4/5.0 (0.8)	4/5.0 (0.8)	8/10.0 (0.8)	1.00
30 to 41	12	8/4.8 (1.7)	7/4.8 (1.5)	15/9.6 (1.6)	1.14
42 to 53	12	5/4.7 (1.1)	5/4.7 (1.1)	10/9.5 (1.1)	1.00
54 to 59	6	2/2.3 (0.9)	2/2.3 (0.9)	4/4.7 (0.9)	1.00
6 to 59	54	22/22.0 (1.0)	22/22.0 (1.0)		1.00

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 1.000 (boys and girls equally represented)
Overall age distribution: p-value = 0.343 (as expected)

Overall age distribution for boys: p-value = 0.522 (as expected)
Overall age distribution for girls: p-value = 0.831 (as expected)
Overall sex/age distribution: p-value = 0.320 (as expected)

Team 6:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	1/3.7 (0.3)	6/6.7 (0.9)	7/10.4 (0.7)	0.17
18 to 29	12	1/3.6 (0.3)	9/6.6 (1.4)	10/10.2 (1.0)	0.11
30 to 41	12	7/3.5 (2.0)	7/6.4 (1.1)	14/9.9 (1.4)	1.00
42 to 53	12	6/3.5 (1.7)	5/6.3 (0.8)	11/9.7 (1.1)	1.20
54 to 59	6	1/1.7 (0.6)	2/3.1 (0.6)	3/4.8 (0.6)	0.50
6 to 59	54	16/22.5 (0.7)	29/22.5 (1.3)		0.55

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.053 (boys and girls equally represented)
Overall age distribution: p-value = 0.446 (as expected)
Overall age distribution for boys: p-value = 0.049 (significant difference)
Overall age distribution for girls: p-value = 0.792 (as expected)
Overall sex/age distribution: p-value = 0.013 (significant difference)

Team 7:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	3/5.1 (0.6)	9/6.3 (1.4)	12/11.4 (1.1)	0.33
18 to 29	12	6/5.0 (1.2)	7/6.1 (1.1)	13/11.1 (1.2)	0.86
30 to 41	12	4/4.8 (0.8)	9/5.9 (1.5)	13/10.7 (1.2)	0.44
42 to 53	12	6/4.7 (1.3)	0/5.8 (0.0)	6/10.6 (0.6)	
54 to 59	6	3/2.3 (1.3)	2/2.9 (0.7)	5/5.2 (1.0)	1.50
6 to 59	54	22/24.5 (0.9)	27/24.5 (1.1)		0.81

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.475 (boys and girls equally represented)
Overall age distribution: p-value = 0.587 (as expected)
Overall age distribution for boys: p-value = 0.785 (as expected)
Overall age distribution for girls: p-value = 0.061 (as expected)
Overall sex/age distribution: p-value = 0.017 (significant difference)

Team 8:

Age cat.	mo.	boys	girls	total	ratio boys/girls
6 to 17	12	6/6.3 (1.0)	5/3.7 (1.3)	11/10.0 (1.1)	1.20
18 to 29	12	6/6.1 (1.0)	1/3.6 (0.3)	7/9.7 (0.7)	6.00
30 to 41	12	6/5.9 (1.0)	4/3.5 (1.1)	10/9.4 (1.1)	1.50
42 to 53	12	4/5.8 (0.7)	3/3.5 (0.9)	7/9.3 (0.8)	1.33
54 to 59	6	5/2.9 (1.7)	3/1.7 (1.8)	8/4.6 (1.7)	1.67
6 to 59	54	27/21.5 (1.3)	16/21.5 (0.7)		1.69

The data are expressed as observed number/expected number (ratio of obs/expect)
Overall sex ratio: p-value = 0.093 (boys and girls equally represented)
Overall age distribution: p-value = 0.406 (as expected)
Overall age distribution for boys: p-value = 0.709 (as expected)
Overall age distribution for girls: p-value = 0.486 (as expected)
Overall sex/age distribution: p-value = 0.089 (as expected)

Evaluation of the SD for WHZ depending upon the order the cases are measured within each cluster (if one cluster per day is measured then this will be related to the time of the day the measurement is made).

Team: 1

```
Time                                                SD for WHZ
point                  0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.00 (n=04, f=0)   #########
02: 1.79 (n=04, f=0)   ##########################################
03: 1.11 (n=04, f=0)   #############
04: 0.35 (n=04, f=0)
05: 1.57 (n=04, f=0)   ################################
06: 0.86 (n=03, f=0)   ###
07: 1.01 (n=04, f=0)   #########
08: 0.84 (n=02, f=0)   OO
09: 1.08 (n=03, f=0)   ############
10: 1.05 (n=04, f=0)   ###########
11: 0.45 (n=02, f=0)
12: 0.83 (n=04, f=0)   #
13: 0.63 (n=04, f=0)
14: 0.46 (n=03, f=0)
15: 1.74 (n=04, f=0)   ######################################
16: 1.04 (n=03, f=0)   ##########
17: 1.66 (n=04, f=0)   ###################################
18: 1.31 (n=04, f=0)   ######################
19: 1.96 (n=03, f=0)   ################################################
20: 1.62 (n=03, f=0)   ###################################
21: 0.39 (n=02, f=0)
22: 0.20 (n=02, f=0)
23: 0.56 (n=02, f=0)

(when n is much less than the average number of subjects per cluster different symbols are used: 0
for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the
different time points)
```

Team: 2

```
Time                                                SD for WHZ
point                  0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.94 (n=03, f=0)   ######
02: 0.43 (n=03, f=0)
03: 1.01 (n=03, f=0)   #########
04: 1.39 (n=03, f=0)   ########################
05: 1.00 (n=03, f=0)   ########
06: 0.58 (n=03, f=0)
07: 0.57 (n=03, f=0)
08: 0.75 (n=03, f=0)
09: 0.54 (n=03, f=0)
10: 0.38 (n=03, f=0)
12: 0.63 (n=03, f=0)
13: 1.47 (n=03, f=0)   ############################
14: 1.47 (n=03, f=0)   ############################
15: 0.73 (n=03, f=0)
17: 0.36 (n=02, f=0)
18: 0.32 (n=02, f=0)
19: 0.17 (n=02, f=0)

(when n is much less than the average number of subjects per cluster different symbols are used: 0
for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the
different time points)
```

Team: 3

```
Time                                                SD for WHZ
point                  0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 2.46 (n=03, f=0)   ##################################################################
02: 1.80 (n=02, f=0)   ##########################################
03: 0.77 (n=03, f=0)
04: 0.83 (n=03, f=0)   #
05: 0.92 (n=03, f=0)   #####
06: 1.38 (n=03, f=1)   ########################
07: 0.07 (n=02, f=0)
08: 2.17 (n=02, f=0)   ############################################################
09: 0.05 (n=02, f=0)
```

```
10: 0.09 (n=02, f=0)
11: 2.53 (n=02, f=0)  ##################################################################
12: 1.49 (n=02, f=0)  ############################
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 4

```
Time                                          SD for WHZ
point                 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 1.42 (n=03, f=0)  ########################
02: 1.83 (n=03, f=0)  ##########################################
03: 1.17 (n=03, f=0)  ###############
04: 1.10 (n=02, f=0)  OOOOOOOOOOOO
05: 2.03 (n=03, f=0)  ####################################################
06: 1.05 (n=03, f=0)  ###########
07: 1.55 (n=03, f=0)  ################################
08: 1.29 (n=03, f=0)  ####################
09: 0.06 (n=02, f=0)
10: 1.25 (n=03, f=0)  ##################
11: 0.60 (n=03, f=0)
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 5

```
Time                                          SD for WHZ
point                 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 2.80 (n=02, f=1)  ##################################################################
02: 4.00 (n=02, f=1)  ##################################################################
04: 1.29 (n=02, f=0)  ####################
05: 2.08 (n=02, f=0)  ########################################################
06: 1.05 (n=02, f=0)  ##########
07: 1.11 (n=02, f=0)  #############
09: 0.13 (n=02, f=0)
10: 1.21 (n=02, f=0)  #################
11: 1.59 (n=02, f=0)  ###################################
12: 1.11 (n=02, f=0)  #############
13: 2.83 (n=02, f=1)  ##################################################################
14: 1.22 (n=02, f=0)  ##################
15: 1.16 (n=02, f=0)  ################
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 6

```
Time                                          SD for WHZ
point                 0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.31 (n=02, f=0)
02: 0.14 (n=02, f=0)
03: 1.42 (n=02, f=0)  ########################
05: 1.01 (n=02, f=0)  #########
06: 0.79 (n=02, f=0)
07: 0.91 (n=02, f=0)  ####
09: 0.08 (n=02, f=0)
11: 1.12 (n=02, f=0)  ###############
12: 0.91 (n=02, f=0)  #####
13: 2.20 (n=02, f=0)  ############################################################
14: 0.66 (n=02, f=0)
15: 0.08 (n=02, f=0)
16: 0.82 (n=02, f=0)  #
17: 0.86 (n=02, f=0)  ###
18: 0.20 (n=02, f=0)
19: 0.70 (n=02, f=0)
21: 1.00 (n=02, f=0)  ########
22: 0.00 (n=02, f=0)
```

(when n is much less than the average number of subjects per cluster different symbols are used: 0 for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the different time points)

Team: 7

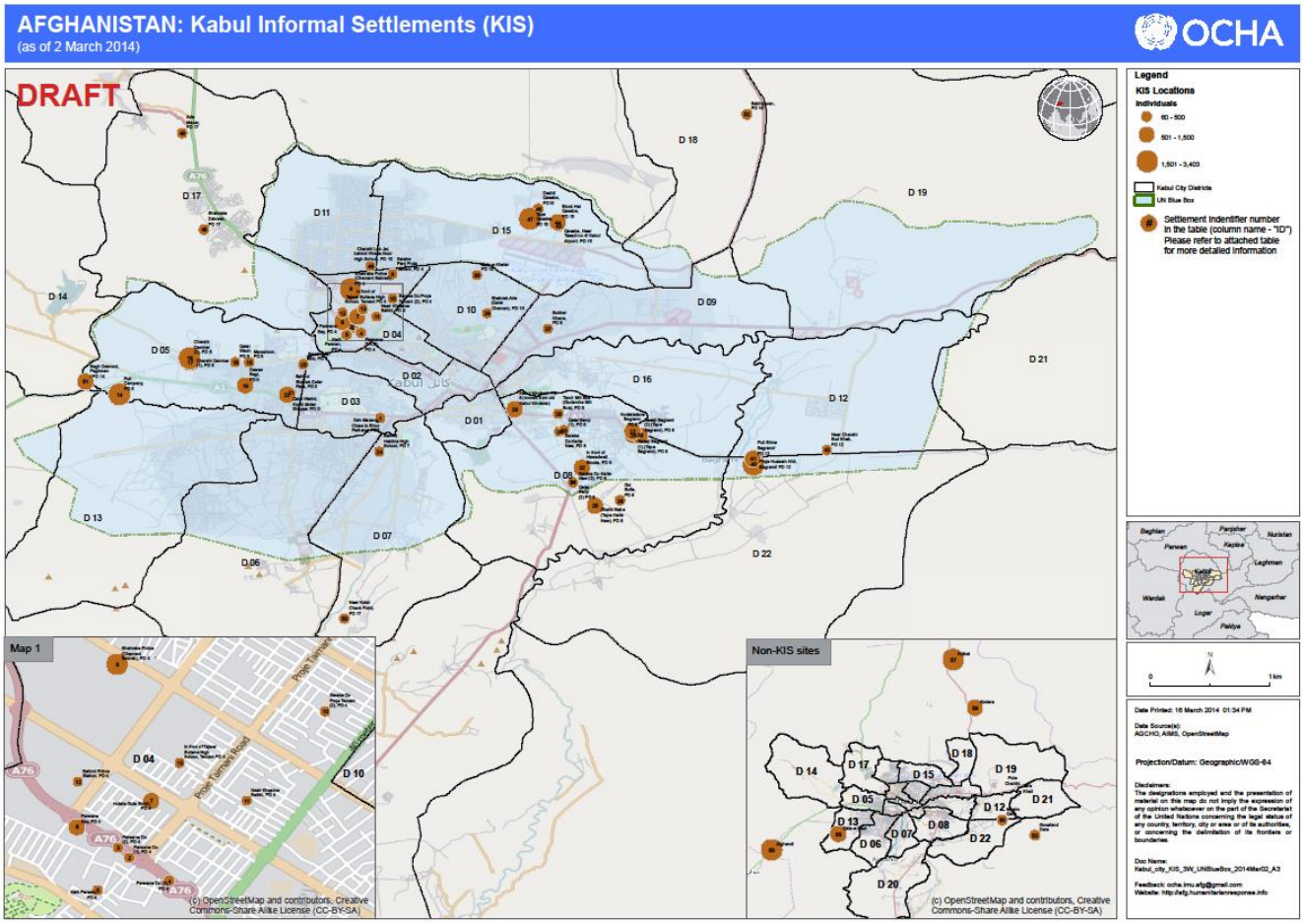
```
Time                                                SD for WHZ
point                  0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.53 (n=03, f=0)
02: 1.18 (n=03, f=0)  ################
03: 0.22 (n=03, f=0)
04: 1.45 (n=03, f=0)  ############################
05: 0.76 (n=03, f=0)
06: 1.72 (n=03, f=0)  ######################################
07: 1.19 (n=02, f=0)  ################
08: 0.69 (n=02, f=0)
09: 0.80 (n=03, f=0)
10: 0.97 (n=03, f=0)  #######
11: 0.25 (n=03, f=0)
12: 0.40 (n=03, f=0)
13: 0.81 (n=02, f=0)  #
14: 0.54 (n=02, f=0)
15: 0.22 (n=02, f=0)
16: 0.07 (n=02, f=0)

(when n is much less than the average number of subjects per cluster different symbols are used: 0
for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the
different time points)
```

Team: 8

```
Time                                                SD for WHZ
point                  0.8 0.9 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3
01: 0.47 (n=03, f=0)
02: 0.72 (n=03, f=0)
03: 2.85 (n=03, f=1)  ##################################################################
04: 2.05 (n=03, f=0)  ######################################################
05: 0.59 (n=02, f=0)
06: 2.10 (n=03, f=0)  ######################################################
07: 2.04 (n=03, f=0)  ######################################################
08: 0.50 (n=03, f=0)
09: 0.83 (n=03, f=0)  #
11: 0.69 (n=03, f=0)
12: 0.41 (n=02, f=0)
13: 0.45 (n=03, f=0)
14: 1.62 (n=03, f=0)  ###################################
15: 0.79 (n=03, f=0)
(when n is much less than the average number of subjects per cluster different symbols are used: 0
for n < 80% and ~ for n < 40%; The numbers marked "f" are the numbers of SMART flags found in the
different time points)
```

(for better comparison it can be helpful to copy/paste part of this report into Excel)

Annex 3: Kabul Informal Settlements (KIS) map



Annex 4: RNA questionnaire

د کور/ نمبر خانه نمبر	دکلی نوم /نام قریه	نمبر تیم /تیم نمبر	نمبر کلستر /دکلستر نمیر	د سروی تاریخ/تاریخ سروی

ایا ستاسی ماشوم د شری واکسین اخیستی دی ؟/ ایا طفل شما واکسین سرخکان گرفته است ؟ 1= بلی کارد دارد / هو کارت لری. 2= بلی کارد ندارد / هو کارت لری. 3= نخیر / نه . 4= نه پوهیژم / نمی فهمم .	ایا طفل شما در دوه هفته گذشته سرفه یا مشکلات تنفسی داشت؟/ ایا ستاسی ماشوم په تیرو دوه اونیو کی ناروغ شوی دی ؟ 1= بلی / هو 2= نه / نخیر	ایا طفل شما در دو هفته گذشته اسهال شده بود؟/ایا ستاسی ماشوم په تیرو دوه اونیو کی ناروغ شوی دی ؟ 1= بلی / هو 2= نه / نخیر	موک په ملی متر/ موک به ملی متر XXX	پرسوب/ پندیده گی 1= بلی / هو 2= نه / نخیر	قد په سانتی متر/ قد به سانتی متر XXX.X	وزن په کیلو گرام /وزن به کیلوگرام XX.X	عمرپه میاشت/ عمر به ماه	د ماشوم دپیدایش ت نیټه / دقیق تاریخ تولد	جنس /جنس F/M	دماشوم نمبر/ نمبر طفل

برای خانم های که سن شان از 15 الی 49 سال باشد/ دهغه زنانو لپاره چی عمرونه یی د 15 تر 49 کالو پوری وی

نام قریه / د کلی نوم: تاریخ / نیټه : نمبر کلستر /کلستر نمبر : نمبر تیم/تیم نمبر :

پرسوب / پندیدگی 1= بلی / هو 2= نخیر / نه	اندازه بازو به ملی متر / د متِ اندازه به ملی متر	عمر په کال /عمر به سال	حالت فزیالوژیک / فزیالوژیک حالت 1=حامله/ حامله 2 = شیر دهی / شیدی ورکونکی 3= شیرده و حامله / حامله او شیدی ورکونکی 4= هیچ کدام / یو هم نه	نمبر خانواده / د کورنی نمبر	شماره مسلسل / پرله پسی نمره

Annex 5: RNA tally sheet

15 – 49 years women برای خانم های که سن شان از 15 الی 49 سال باشد

Locationموقعت: Date: تاریخ (Cluster Noنمبر کلستر :) Team No:نمبر تیم

Mother No شماره مسلسل	HH No نمبر خانواده	Physiological status: حالت فزیالوژیک 1 = Pregnant/حامله 2 = Lactating / شیر دهی 3 = Pregnant & Lactating شیرده و حامله / 4 =None of both / هیچ کدام	Age عمر به سال /(years)	MUAC (mm) ### اندازه بازو به ملی متر	Oedema 1=Y بلی 2=N نخیر