

Medical Checks for Children

Medical Report Uganda Oyam 2024



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Introduction

From July 1st to July 6th 2024 Medical Checks for Children (MCC) performed a medical camp in the Oyam District for the third time. The MCC team checked and treated free of cost 905 children in 6 days.

The medical checks were organized in close cooperation with Link to Progress (LTP). LTP is a non-governmental organization which aims to serve vulnerable communities in Northern and Eastern Uganda through provision of safe water, sanitation, and hygiene as well as other community developmental services, such as education, school lunches and environmental protection.

The cooperation of LTP existed out of the following (amongst others):

- Announcement of the medical camp in the different villages.
- All contacts with districts/governmental officers, the Health Center (HC), the Mission hospital and other hospitals if needed.
- Selection of translators/local helpers.
- Ordering medication listed by MCC.
- Arrangements for food, drinks and lodging of the MCC team.
- Transportation of the MCC team from lodge to the villages.
- Follow-up on the referred children: arranging hospital visits.

The MCC team consisted of ten members from The Netherlands: Iris Jansen (medical-end-responsible and mission leader, general practitioner), Iris van de Gevel (organization-end-responsible, toxicologist), Lenny Geurts-van Bon (Rheumatologist), Andrea de Koning-Lievens (general practitioner), Marieke van de Water (general practitioner), Hedwig Gosseling (educational advisor), Sjoerd Mesker (Marketing / Strategy consultant), Nina de Jong (nurse), Lizzy Ooms (medical doctor, tropical medicine) and Marike Meulemeester (retired).

The medical checks were performed in collaboration with the two health centres in the region, Loro and Agulurude, both being very an important partner in referring children to hospitals in the area and follow-up for some of the children referred to the Health Centre. Technical equipment, medical supplies and toothbrushes were brought from the Netherlands by MCC team members. Medication was ordered by LTP in Lira.

The aim of the mission is to make an inventory of the health situation of the children in Oyam District, treat the children if necessary and to advise LTP on the future steps to take. In addition, we also focussed on the malaria situation (education, amount of bed nets, knowledge about the disease etc.), to learn more and to see if further actions or advise is required.

Since the medical camp was organized in collaboration with the Loro Health Centre, the data of the children were shared with the HC (limited to the information recorded for regular patient visits at the HC), but only if informed consent was given by the caretakers (recorded on the CRF, 85%).

Medical Checks for Children on location:

During the free of costs medical checks, the children were checked following the MCC carousel:

1. Registration of the child. All children received a registration form.
2. Education on hygiene, nutritious food and tooth brushing (a toothbrush was given to each child).
3. Measuring height and weight.
4. Blood test (haemoglobin) and malaria test (and urine test when indicated).
5. Physical examination by a medical doctor.
6. Giving medication (pharmacy).
7. Enter children's files in data base.

Based on the experience of last year, and in order to have an overall indication of the malaria prevalence in this area, the malaria test was added as a standard test for all children. Blood was only taken from the children once, and it was possible to test for haemoglobin and malaria at the same time. Malaria testing was done with a rapid antigen test for *Plasmodium falciparum*.

Special attention was given to the transfer of knowledge on hygiene, nutritious food and dental care to the children and parents by use of the information provided by Aisha and Friends (www.aishaandfriends.com).

Results Medical Camp in Oyam District

During the third medical camp in Oyam district MCC saw in total 905 children in 3 locations, Agulurude, Loro HC and Amido. Most important findings are described below, and detailed tables of the findings are given in Annex A.

Table 1: Number of checked children per day and geographical location

Check location	01-07-24	02-07-24	03-07-24	04-07-24	05-07-24	06-07-24	Total
Agulurude	157	173	0	0	0	0	330
Loro HC	0	0	147	155	0	0	302
Amido	0	0	0	0	173	100	273
Total	157	173	147	155	173	100	905



Children and caretakers of multiple villages around the check locations visited the medical camp, which were grouped into the 3 locations we visited.

Due to the high number of children at the registration, we could not examine all presented children every day.

Table 2: Summary of checked children per geographical location, age and gender

Age	Total		Agulurude		Loro HC		Amido	
	905		Total=330		Total=302		Total=273	
	N	%	n	%	n	%	n	%
<=1 year	215	24%	76	23%	83	27%	56	21%
>1 and <5 years	341	38%	119	36%	122	40%	100	37%
<5 years	555	61%	195	59%	204	68%	156	57%
>=5 and <=10 years	346	38%	135	41%	94	31%	117	43%
>10 years	4	0%	0	0%	4	1%	0	0%
Gender								
Boy	447	49%	160	48%	149	49%	138	51%
Girl	457	50%	169	51%	153	51%	135	49%

In the announcement of the medical camp, children of age below 10 years were invited to come with their caretakers. Of the 905 children, 61% was below the age of 5 years and 38% of the children was between 5 and 10 years of age. Children below 5 years of age are considered to benefit most from a medical camp, so we were happy to see these young children and their parents visit the MCC medical camp.

Special attention was paid to the presence of caretakers during the medical camp, at the announcement of the medical camp and at registration. All children (100%) brought a caretaker (parent, grandmother/father, sister/brother). We are very pleased with this high attendance of caretakers, as an important part of the medical camp is the transfer and exchange of medical and healthcare information, from the parents to the doctors and vice versa. We learned from previous medical camps that the presence of caretakers will make the medical camp more sustainable.

The following findings can be highlighted:

- High prevalence of anaemia (38% both for the total group and for children <5 years), compared to 51.7% in Uganda (< 5 years) and 15.5% in the Netherlands (< 5 years) (WHO, 2019), and 43% compared to 2023.
- High prevalence of stunting (14% in total and 20% for < 5 years), compared to 28% in Uganda (for < 5 years), and 1.6% in the Netherlands (WHO, 2020). Stunting (height for age) is an indicator of chronic malnutrition. Equivalent findings were noted in 2023.
- High prevalence of wasting (4% for both total and for < 5 years), compared to 3,5% in Uganda (for < 5 years) and < 0.3% in the Netherlands (< 5 years) (WHO 2020). Wasting (weight for height) is an indicator of acute malnutrition. Equivalent findings were noted in 2023.
- High prevalence of malaria (total 50%, all confirmed). A lot of children suffered from malaria and complication of malaria. Active malaria could be treated on the spot, however, several children in severe condition were referred to the hospital immediately.
- High prevalence of acute worm infection (26%) and few children having access to a deworming program (only 15% of children were given a deworming tablet in the past 6 months).
- Other frequent diagnoses: pneumonia (28), cariës (148), cariës with pain (85) and various skin diseases (tinea capitis (38), eczema (27), dermatomycosis (37), scabies (23)).
- Several children with potential heart problems were identified, 3 children with a suspected pathological murmur, which were send to the cardiologist for further diagnosis and treatment.
- A total of 22 children were suspected or known of having sickle cell disease; 10 children will be brought to Lira hospital for further diagnosis and treatment if needed.
- Many mothers with children with disabilities came to the medical camp. In total 28 children with their parent(s) were identified to benefit from further follow-up. Together with the children identified in 2022 and 2023, there is a large group of children and parents who will benefit from activities of LTPs in this area.

Most frequent treatment given to the children was deworming (62%, both for preventive and curative), iron (15% of the children and 4% of the mothers), multivitamin (20%), malaria treatment (47%), antibiotics (8%), various cremes for skin diseases (12%).

There were no specific trends seen in either disease, treatment or follow-up related to a specific location, except that in Agulurude the prevalence of malaria was highest (57%) compared to other villages (47% in Loro HC and 45% in Amido). In addition, the prevalence of stunting was highest in Loro HC and Amido (both 19%), compared to 7% in Agulurude. In Agulurude however, more caries n.o.s. were seen (21%), compared to the other locations (13% in Loro HC and 15% in Amido).

Table 3: Most frequent or severe disease prevalence among all children per geographical location

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
Underweight	63	7%	13	4%	30	10%	20	7%
Stunting	131	14%	23	7%	56	19%	52	19%
Wasting	35	4%	10	3%	15	5%	10	4%
Anaemia	347	38%	135	41%	114	38%	98	36%
Malaria (confirmed)	452	50%	187	57%	141	47%	124	45%
pneumonia (clinical)	28	3%	13	4%	8	3%	7	3%
BHR/asthma	17	2%	2	1%	8	3%	7	3%
diarrhea without dehydration	15	2%	3	1%	6	2%	6	2%
active worm infection	246	27%	89	27%	77	25%	80	29%
otitis externa	11	1%	4	1%	4	1%	3	1%
caries n.o.s.	148	16%	69	21%	39	13%	40	15%
caries with pain	85	9%	36	11%	22	7%	27	10%
eczema n.o.s.	27	3%	12	4%	8	3%	7	3%
dermatomycosis	37	4%	10	3%	12	4%	15	5%
Impetigo/furunculosis	40	4%	14	4%	15	5%	11	4%
scabies	23	3%	9	3%	6	2%	8	3%
Tinea Capitis	38	4%	15	5%	13	4%	10	4%
wounds infected,	15	2%	3	1%	5	2%	7	3%
Skin other (psoriasis etc)	29	3%	7	2%	12	4%	10	4%
Neuromusc other (e.g. hydrocephalus)	19	2%	4	1%	12	4%	3	1%
pathological murmur (suspected)	3	0%	1	0%	2	1%	0	0%
keratoconjunctivitis	15	2%	4	1%	2	1%	9	3%
eye other	10	1%	2	1%	2	1%	6	2%
Sickle Cell	22	2%	10	3%	7	2%	5	2%
hernia(umbilical etc)	22	2%	9	3%	9	3%	4	1%

Further explanation of some of the results

Anaemia

38% of the checked children was suffering from anaemia, and 5% (53 children) had severe anaemia (Hb < 5 mmol/L).

In the villages in Oyam, the high prevalence of anaemia might be due several factors, such as the high incidence of malaria (50%), the high incidence of acute worm infection (27%) (and low coverage by a deworming program), and the lack of important vitamins and minerals from fruit and vegetables in the diet. The prevalence of sickle cell disease could also be a contributing factor.

Anaemia is a condition in which the number of red blood cells or the haemoglobin concentration within them is lower than normal. Haemoglobin is needed to carry oxygen and if you have too few or abnormal red blood cells, or not enough haemoglobin, there will be a

decreased capacity of the blood to carry oxygen to the body's tissues. This results in symptoms such as fatigue, weakness, dizziness and shortness of breath, among others. The most common causes of anaemia include nutritional deficiencies, particularly iron deficiency, but also deficiencies in folate, vitamins B12 and A are also important causes. Furthermore, infectious diseases as malaria, tuberculosis, HIV and parasitic infections are common causes.

School performance of children (and work productivity in adults) might be affected due to anaemia, which can have a future impact on social and economic development of the individual and family.

To reduce anaemia in the population, a multifactorial approach is necessary. This includes improving the nutritional status (more nutritious food), reducing the number of malaria infections, detect and treat children with sickle cell disease, and also encouraging deworming programs. Deworming in particular, see paragraph below, is the easiest and cheapest intervention that should be tackled first.



Deworming

Of all children seen during the medical camp, only 31% received deworming treatment in the last 6 months. In addition, an acute worm infection was seen in 27% of the children.

The presence of intestinal parasites in a population is indicative of lack of proper sanitation, low economic standards and poor educational background. The parasite consumes the nutrients from the children they infect and worsens malnutrition and retards the physical development. There is a strong relationship between a parasitic worm infection and anaemia. The parasitic infection can also cause abdominal pain, diarrhea, intestinal obstruction and various other health problems. Prolonged infection affects growth, development and educational achievements.

During the medical camp MCC provided deworming treatment to all children above 2 years of age, and who did not receive deworming treatment in the last 6 month. In total deworming treatment was provided to 562 children, of these children 254 suffered from an acute worm infection. Furthermore, during the medical camp special attention was given to provide education on hand hygiene to prevent worm infections using the information developed in cooperation with Aisha & Friends.

LTP might consider taking further action to increase the general deworming status of the children in this area. All children above 2 years of age should be treated every 6 months. Several actions can be considered, such as connecting with health authorities to emphasize the needs to provide deworming treatment in this area every 6 months. If government is not providing deworming treatment, a project might be started to provide deworming treatment at the LTP schools, together with sharing information on hygiene and sanitation.

Malaria

During the medical camp, all children were tested for malaria to have further information on the malaria prevalence in this area. A high prevalence of malaria was seen during the medical camp (50%). Most of the children were diagnosed with malaria based on a malaria test for *Plasmodium falciparum*, and all children (with suspected and confirmed malaria) were treated.

According to WHO¹, although the numbers in malaria cases globally are decreasing, Uganda has still a high number of malaria case. Based on data from the Ministry of Health, Uganda, in the Lira area (close to Oyam) a 68.8% test positivity rate is recorded (based on data of week 9, 2024²). UNICEF³ reports for 2017-2018, also a total of 12 million cases, with a prevalence of 45% for children under 5, and a total of estimated malaria deaths of 13200, with a prevalence of 63% for children under 5. An increase in malaria cases and deaths is reported due to malaria service disruptions (e.g. distribution of mosquito net campaigns).

During this medical camp we saw 8 children with malaria in very bad condition, and they were sent to hospital immediately.

Currently, there are 2 malaria vaccines available and recommended by WHO to use in regions with moderate to high *Plasmodium falciparum* transmission. The availability of 2 malaria vaccines is expected to make broad-scale deployment in Uganda possible. In October 2024, the media⁴ announced that in April 2025, the malaria vaccine will be included in the immunisation schedule for children in Uganda, as a result of a collaboration between the Uganda Ministry of Health and USAID. If indeed the malaria vaccination will be rolled out in Uganda, it will be a significant step to protect the children of Oyam district against malaria infection.

Irrespective of the presence of a vaccination program, malaria can be prevented by avoiding mosquito bites:

- Use mosquito nets when sleeping.
- Use mosquito repellents (containing DEET, IR3535 or Icaridin) after dusk.
- Use coils and vaporizers.
- Wear long sleeves and long trousers/skirts.
- Use window screens.

Although there are governmental programs in place, there is limited knowledge on alarm symptoms and when to go to a local health centre for treatment. In addition, we learned that in a lot of cases treatment is not available at the health centre, or people receive only part of the necessary tablets. Early diagnosis and treatment of malaria reduces the severity of the disease and prevents deaths.

During the medical camp education was given with regard to preventing mosquito bites and the importance of early diagnosis and treatment.

Sickle cell

During the medical camp 22 children were identified with or suspected of sickle cell disease. These children will be brought to the hospital in Lira for further diagnosis. If diagnosed with sickle cell disease, these children can be enrolled in the governmental Sickle cell program for further follow-up and treatment for free.

¹ <https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2022> (page 213)

² <https://library.health.go.ug/communicable-disease/malaria/weekly-malaria-report-epi-week-9-26th-feb-3rd-mar-2024> (no recent data are published).

³ Unicef, WMD Covid 2020_DataSnapshot_UGA. Uganda Malaria: Status update on children – data snapshot, 2020.

⁴ <https://nilepost.co.ug/health/221648/uganda-to-introduce-malaria-vaccine-in-immunisation-schedule-for-children#:~:text=The%20malaria%20vaccine%20is%20set,during%20a%20media%20orientation%20today.>

Sickle cell anaemia (also known as sickle cell disorder or sickle cell disease) is a common genetic condition leading to disorders that affect haemoglobin, the major protein that carries oxygen in the red blood cells. A child who is homozygote - who inherits two of the same mutated ('sickle cell') genes, one from each parent - will be born with the disease. If the child only inherits one mutated gene of one of it's parents, the child will be called a 'carrier'. In Uganda, 13%⁵ of the children are carrier of the sickle cell gene, which is approximately 20% in Oyam. The overall number of children with sickle cell disease in Uganda is 0.7%, and approximately 1.5% in Oyam. Sickle cell disease is a chronic disease, patients can be supported with pain medication, high fluid intake, antibiotics and folic acid supplementation. Seeing the higher risk of severe malaria in homozygote children, it's also very important to prevent malaria or at least detect and treat malaria in a very early stage.



Malnutrition

Of the children seen in the medical camp 7% showed underweight, 14% stunting and 4% wasting. Especially the prevalence of stunting and wasting is high. In addition, we saw several severely malnourished children, 4 of them were immediately brought to the hospital.

Within MCC, growth abnormalities were assessed by measuring and weighing all children in a standardized fashion, using the following criteria:

- Underweight = weight for age at or under the third percentile of the reference population (WHO growth curves), only children up to 10 years old. This is an indicator of malnutrition or weight loss because of disease.
- Wasting = weight for height at or under the third percentile of the reference population (WHO growth curves), only children up to 120 cm in height. This is an indicator of acute malnutrition.
- Stunting = height for age at or under the third percentile of the reference population, (WHO growth curves), only children up to 19 years of age. This is an indicator of chronic malnutrition.

⁵ [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(15\)00288-0/fulltext#:~:text=Overall%2C%20the%20prevalence%20of%20sickle,sickle%20cell%20disease%20in%20Uganda.](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(15)00288-0/fulltext#:~:text=Overall%2C%20the%20prevalence%20of%20sickle,sickle%20cell%20disease%20in%20Uganda.)

Malnutrition is thought to account for one third of all deaths of children under five (UN Millennium Development Goals). Malnutrition has been related to poor cognitive and school performance. The main factors contributing to malnutrition are rural poverty, lack of sanitation, poor living conditions and a lack of intake of energy, proteins, iron and multivitamins.

Dental problems

We identified 25% of the children with dental problems, 16% children with caries and 9% children with caries with pain. As we did not have a dentist in the team we consider this an underestimation of the prevalence of dental problems. Professional dental care is limited in this area and is aimed at treating pain. This underlies the need for good dental programs to educate children and parents on the importance of dental care.

During the medical camp we provided education on dental care, and all children were given a toothbrush.



Referrals to hospital and special needs children

During the medical camp 16 children were immediately brought to the hospital, 8 with severe malaria and/or sickle cell crisis, 4 children with severe malnutrition and 4 children with several other conditions (e.g. intoxication, hydrocephalus).

10 children were referred to Lira hospital for sickle cell screening and further treatment.

3 children were referred to the urologist, 2 to the pediatricist, 2 to the surgeon, 3 to the cardiologist, most of them to the mission hospital, some to the Lira Referral Hospital. In addition 1 child with hydrocephalus was referred to a specialized hospital in Mbale for diagnosis and treatment.

All the children referred to hospital (Mission hospital, Lira Referral hospital and other facilities) were given follow-up by LTP, and diagnosis and treatment were paid by MCC. LTP has done a tremendous amount of work to make appointments at the hospitals, connecting with parents, making transport arrangements, and reporting back to MCC.

This year a Memorandum of Understanding was signed between the Mission hospital, LTP and MCC, to facilitate the referral of children with immediate needs, especially with regard to the financial aspects.

For the 28 disabled children, further follow-up is considered necessary, as there is lack of care for this specific group of children, and in addition support and training of the parents. During the medical camp in 2023, 26 children were identified with disabilities, and in 2022 15 children were identified. MCC endorses the importance of a program for disabled children and their

families in this region, and MCC hopes that LTP can further build this program with financial and knowledge support from third parties.

Table 4: Overview of referrals

Type of referral	Total	
	905	
	N	%
Immediate referral	16	1.8
Urologist	3	0.3
Pediatrist	2	0.2
Surgeon	2	0.2
Cardiologist	3	0.3
Mbale for hydrocephalus	1	0.1
Sickle cell investigation	10	1.1
LTP disabled program/social program	28	3.1
Total	66	7.3



Conclusions and recommendations

Based on the large crowds during the medical camp and the observations made, it seems that there is certainly a need for accessible and high-quality healthcare for children in Oyam district. A lot of children directly benefit from the medical camp, either by treatment or by referral to a hospital. Besides the support to these children, we can also make some recommendations for the future.

1. Deworming

During the medical camp we saw 246 children (27%) with an acute worm infection.

In Uganda, deworming programs are in place, however, not all children are reached. In Oyam district, approximately 50% of the children above the age of 2 years did not receive deworming treatment. It should be investigated what the reasons are for not receiving deworming treatment, and to consider connecting with governmental deworming programs, or otherwise implement a low-cost deworming program.

Considering the high incidence of acute worm infections, and in addition the high incidences in anaemia and malnutrition, a good intervention might be to work on further enrolment of a deworming program, as 50% of the children did not receive the half-year preventive deworming treatment.

We would like to ask LTP to investigate in specific areas, e.g. in the schools with an LTP connection, to set up a deworming program⁶, investigate what is done by the government (for which groups is deworming planned, and when and where is this executed), and to make plans to increase awareness, or to enrol 6-months deworming program, with the overall aim to increase the total number of treated children of an age above 2 years.

2. Malaria

A high prevalence of malaria was seen during the medical camp (50%). During the medical camp we can focus on diagnosis and treatment of malaria, however, the best improvement for the health of these children can be made in prevention. For coming years, we will have to investigate together with LTP what the best methods in malaria prevention are in this area. Education, distribution of mosquito nets, indoor residual spraying, etc⁷. In addition, LTP might consider discussing this topic with the district health authorities in order to learn and discuss how the best measures in malaria prevention can be taken in close collaboration with the health authorities. In addition, it is advised to be informed about the planned malaria vaccination implementation in the immunisation schedule, which might be planned for 2025. However, irrespective of the vaccination program, prevention education will remain an important topic for the coming years.

Apart from prevention, it is very important for caretakers to be informed about the (alarm)symptoms of malaria and when to contact a doctor, to prevent severe malaria. MCC and LTP are trying to create awareness concerning this during the camps.

3. Future of medical camps

During the year, we have discussed with LTP what they want to achieve in the future with the medical camps that we are currently conducting together in Oyam district. It is indicated by LTP that they would like to continue these medical camps independently in the region in the future. In the coming period we will have to discuss together which steps they need to take and what support LTP needs from MCC to realize this goal.

⁶ <https://www.globalpartnership.org/sites/default/files/2018-07-gpe-guidelines-for-school-based-deworming-programs.pdf>

⁷ Bhatt et al. (2015) – The effect of malaria control on *Plasmodium falciparum* in Africa between 2000 and 2015. *Nature* 526, 207–211 (08 October 2015) doi:10.1038/nature15535

4. Nutrition and Hygiene

LTP has currently programs running related to WASH and nutrition (with the Green Food Foundation (GFF)). MCC emphasises the importance of these programs, to improve the health condition of the children in Oyam, especially related to certain diseases like worm infections, stunting, wasting, anaemia and skin infections. The prevalence of caries and skin diseases can be prevented by providing information about dental care and hygiene (clean blades when shaving the heads of the children amongst others). These topics will be addressed in future medical camps.

The high prevalence of stunting, wasting and anaemia is considered largely due to the limited availability (qualitative and quantitative) of nutritious food. LTP provides school lunches in several schools. During the medical camp we gave nutritional advice to all children and caretakers, with emphasis on eating a colourful plate, emphasizing the importance of eating from the 5 different food groups: vegetables, fruits, grains, dairy and meat. MCC recognizes the importance of LTP working together with GFF, to bring more knowledge on nutritious food and improve the school lunch given, in schools in Oyam. For this purpose, school gardens are made and supported. Learning at school on nutritious food and providing a school lunch containing vegetables and fruits, is endorsed by MCC.

5. Special needs children

During the medical camp in 2024, 28 children with disabilities were identified (in 2023 26 children, and in 2022 15 children). We believe that a lot can be done to improve the lives of these children and to support the parents. We are very happy to learn that LTP started, with the support of sponsors, a project to structure care and support for these children in Oyam district. MCC shared the lists of names and contact details of the caretakers to facilitate this project.

6. Next medical camp

MCC concludes that there is a need to continue with the medical camps in Oyam district. It might be good to focus on certain villages, where also the recommendations such as deworming, dental programs at school, school lunch improvement, and education on nutritious food, hygiene and malaria can be implemented.

We are very grateful for all work performed by Juliet, Isabella, Lazarus, Morice and Lillian of LTP, Dr. Richard of the Agulurude Health Centre, Dr. Francis of the Loro Health Center, Nancy, Fred, Caroline (District Health Officer), Betty, the group of translators and helpers during the medical camp in Oyam district. We could not have performed our work without their presence and hard work. We are also very grateful for all the effort made by LTP to support the children which were referred to hospital.

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Annex A- Detailed results

Table A-1: Prevalence of weight/age at or under P3 (underweight) per geographical location by age and gender

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
Underweight	63	7%	13	4%	30	10%	20	7%
No underweight	836	92%	317	96%	268	89%	251	92%
Unknown	6	1%	0	0%	4	1%	2	1%
Underweight children per age								
<=1 year	17	8%	2	3%	12	14%	3	5%
>1 and <5 years	30	9%	4	3%	15	12%	11	11%
<5 years	46	8%	6	3%	26	13%	14	9%
>=5 and <=10 years	17	5%	7	5%	4	4%	6	5%
>10 years	0	0%	0	0%	0	0%	0	0%
Underweight children per gender								
Boy	42	67%	8	62%	18	60%	16	80%
Girl	21	33%	5	38%	12	40%	4	20%

Table A-2: Prevalence of length/age at or under P3 (stunting) per geographical location by age and gender

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
Stunting	131	14%	23	7%	56	19%	52	19%
No stunting	770	85%	306	93%	245	81%	219	80%
Unknown	4	0%	1	0%	1	0%	2	1%
Stunting children per age								
<=1 year	41	19%	5	7%	21	25%	15	27%
>1 and <5 years	71	21%	10	8%	29	24%	32	32%
<5 years	112	20%	15	8%	50	25%	47	30%
>=5 and <=10 years	18	5%	8	6%	5	5%	5	4%
>10 years	1	33%	0	0%	1	33%	0	0%
Stunting children per gender								
Boy	73	56%	13	57%	33	59%	27	52%
Girl	58	44%	10	43%	23	41%	25	48%

Table A-3: Prevalence of weight/length at or under P3 (wasting) per geographical location by age and gender

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
Wasting	35	4%	10	3%	15	5%	10	4%
No wasting	721	80%	268	81%	242	80%	211	77%
Unknown	149	16%	52	16%	45	15%	52	19%
Wasting children per age								
<=1 year	16	8%	6	8%	6	7%	4	7%
>1 and <5 years	9	3%	2	2%	7	6%	0	0%
<5 years	24	4%	8	4%	12	6%	4	3%
>=5 and <=10 years	11	5%	2	2%	3	6%	6	9%
>10 years	0	0%	0	0%	1	33%	0	0%
Wasting children per gender								
Boy	23	66%	6	60%	11	73%	6	60%
Girl	12	34%	4	40%	4	27%	4	40%

Table A-4: Prevalence of anaemia per geographical location by age and gender

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
Anaemia	347	38%	135	41%	114	38%	98	36%
No anaemia	554	61%	192	58%	187	62%	175	64%
Unknown	3	0%	3	1%	0	0%	0	0%
Hb <5,0 mmol	35	4%	13	4%	12	4%	10	4%
Anaemia per age								
<=1 year	83	39%	31	41%	31	37%	21	38%
>1 and <5 years	128	38%	49	41%	46	38%	33	33%
<5 years	210	38%	80	41%	76	37%	54	35%
>=5 and <=10 years	135	39%	55	41%	36	38%	44	38%
>10 years	2	50%	0	0%	1	33%	0	0%
Anaemia per gender								
Boy	177	51%	73	54%	60	53%	44	45%
Girl	170	49%	62	46%	54	47%	54	55%

Table A-5: Prevalence preventive anti-worm treatment in the last half-year per geographical location by age and gender

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
Anti-worm	279	31%	84	25%	70	23%	125	46%
No anti-worm	456	50%	184	56%	167	55%	105	38%
Below 2 years	170	19%	62	19%	65	22%	43	16%
Anti-worm per age								
>1 and <5 years	111	33%	28	24%	32	26%	51	51%
<5 years	158	28%	43	22%	51	25%	64	41%
>=5 and <=10 years	120	35%	41	30%	18	19%	61	52%
>1 and <5 years	111	33%	28	24%	32	26%	51	51%
>10 years	1	25%	0	0%	1	25%	0	0%

Table A-6: Children checked last year?

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
No	779	86%	292	88%	266	88%	221	81%
Yes	120	13%	38	12%	33	11%	49	18%

Table A-7: Disease prevalence among all children per geographical location

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
HIV pos.	3	0%	0	0%	1	0%	2	1%
AIDS	1	0%	0	0%	1	0%	0	0%
Malaria (suspected)	2	0%	0	0%	1	0%	1	0%
vitamin deficit (clinical signs)	4	0%	1	0%	2	1%	1	0%
Malaria (confirmed)	452	50%	187	57%	141	47%	124	45%
syndrome n.o.s.	5	1%	2	1%	2	1%	1	0%
pneumonia (clinical)	28	3%	13	4%	8	3%	7	3%
BHR/asthma	17	2%	2	1%	8	3%	7	3%
Respir. Other	2	0%	1	0%	0	0%	1	0%
gardia (suspected)	3	0%	2	1%	0	0%	1	0%
dysentery	2	0%	0	0%	2	1%	0	0%
dehydration : acute diarrhoea	3	0%	0	0%	2	1%	1	0%
diarrhoea without dehydration	15	2%	3	1%	6	2%	6	2%
constipation	7	1%	3	1%	2	1%	2	1%
active worm infection	246	27%	89	27%	77	25%	80	29%
GI other	4	0%	3	1%	1	0%	0	0%
otitis media acuta	1	0%	1	0%	0	0%	0	0%
otitis media with effusion	2	0%	1	0%	1	0%	0	0%
otitis externa	11	1%	4	1%	4	1%	3	1%
candida stomatitis	6	1%	0	0%	1	0%	5	2%
hearing impairment	4	0%	1	0%	1	0%	2	1%
other	8	1%	2	1%	2	1%	4	1%
cariës n.o.s.	148	16%	69	21%	39	13%	40	15%
pain n.o.s	2	0%	0	0%	1	0%	1	0%
fluorosis	27	3%	4	1%	12	4%	11	4%
caries with pain	85	9%	36	11%	22	7%	27	10%
wounds n.o.s.	3	0%	2	1%	1	0%	0	0%
eczema n.o.s.	27	3%	12	4%	8	3%	7	3%
dermatomycosis	37	4%	10	3%	12	4%	15	5%
Impetigo/furunculosis	40	4%	14	4%	15	5%	11	4%
scabies	23	3%	9	3%	6	2%	8	3%
Tinea Capitis	38	4%	15	5%	13	4%	10	4%
wounds infected,	15	2%	3	1%	5	2%	7	3%
Burn wound fresh	4	0%	4	1%	0	0%	0	0%
Skin other (psoriasis etc)	29	3%	7	2%	12	4%	10	4%
psychomotoric retardation	7	1%	0	0%	3	1%	4	1%
hypotonia	1	0%	0	0%	1	0%	0	0%
epilepsy / convulsions	7	1%	2	1%	1	0%	4	1%
spina bifida	2	0%	1	0%	0	0%	1	0%
Neuromusc other	19	2%	4	1%	12	4%	3	1%
physiological murmur	2	0%	0	0%	1	0%	1	0%
pathological murmur (suspected)	3	0%	1	0%	2	1%	0	0%
Cardio other	1	0%	1	0%	0	0%	0	0%
strabismus	2	0%	1	0%	0	0%	1	0%
keratoconjunctivitis	15	2%	4	1%	2	1%	9	3%
eye other	10	1%	2	1%	2	1%	6	2%
Sickle Cell	22	2%	10	3%	7	2%	5	2%
endocrin other	1	0%	0	0%	1	0%	0	0%
inguinal hernia	2	0%	1	0%	0	0%	1	0%
urinary infection	1	0%	0	0%	1	0%	0	0%
urogen other	7	1%	2	1%	5	2%	0	0%
chronic kidney path.	2	0%	0	0%	0	0%	2	1%
skeletal other	5	1%	2	1%	0	0%	3	1%
hernia(umbilical etc)	22	2%	9	3%	9	3%	4	1%

Table A-8: Treatment among all children per geographical location

	Total		Agulurude		Loro HC		Amido	
	905		Total= 330		Total= 302		Total= 273	
	N	%	n	%	n	%	n	%
ferro	132	15%	49	15%	43	14%	40	15%
mother iron	33	4%	10	3%	13	4%	10	4%
multivitamins	178	20%	52	16%	63	21%	63	23%
anti-worm	308	34%	125	38%	109	36%	74	27%
acute worm	254	28%	93	28%	80	26%	81	30%
anti-lice	0	0%	0	0%	0	0%	0	0%
anti-scabies	9	1%	3	1%	1	0%	5	2%
praziquantel	1	0%	0	0%	0	0%	1	0%
scabies soap	18	2%	7	2%	6	2%	5	2%
amoxicillin	28	3%	13	4%	7	2%	8	3%
augmentin	29	3%	10	3%	11	4%	8	3%
2e lijns antibiotica	2	0%	0	0%	1	0%	1	0%
malaria treatment	425	47%	171	52%	134	44%	120	44%
paracetamol	25	3%	14	4%	7	2%	4	1%
inhaler	19	2%	3	1%	8	3%	8	3%
metranidazol	1	0%	1	0%	0	0%	0	0%
co-trimoxazol	16	2%	1	0%	10	3%	5	2%
AB urine infection	1	0%	0	0%	1	0%	0	0%
ORS	4	0%	0	0%	2	1%	2	1%
eardrops	10	1%	2	1%	3	1%	5	2%
nystatine	7	1%	1	0%	1	0%	5	2%
mupirocine=Bactroban	23	3%	5	2%	9	3%	9	3%
hydrocortisone cream	21	2%	8	2%	8	3%	5	2%
dactarin cream	39	4%	11	3%	11	4%	17	6%
dactacort cream	21	2%	12	4%	6	2%	3	1%
iodine	9	1%	1	0%	5	2%	3	1%
fusidin cream	5	1%	2	1%	2	1%	1	0%
sudo cream	2	0%	1	0%	1	0%	0	0%
neutral cream	46	5%	13	4%	19	6%	14	5%
griseofulvine	16	2%	6	2%	7	2%	3	1%
eyedrops	18	2%	5	2%	3	1%	10	4%
AB urine infection	1	0%	0	0%	1	0%	0	0%