Medical Checks for Children

Medical Rapport Kenya West 2013

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Arnhem, november 2013

MCC Kenya West 2013

Introduction

From June 13th untill June 218th 2013, a Medical Checks for Children (MCC) team visited locations near Kisumu and Eldoret in western Kenya. Free of cost, the MCC team checked and treated 1281 children aged newborn untill 13 years of age (including one 17 year old child).
The team consisted of Nadine van Dijk, mission leader and organisation-end-responsible, emergency physician; Frank van Tunen, medical-end-responsible, accountant and chariman MCC;, Paul de Vries, physiotherapist; Joyce van Tunen, physiotherapist; Marriette Daniels, physiotherapist, Carolien Siersma, paediatrician; Ilse Broeks, Paediatrician and Chimay van der Horst, medical student.

Our host patron durning the Kenia stay was Archbishop Makarios, Head of the Orthodox Seminary in Riruta, Nairobi.
After a explorative mission in 2010, MMC visited Kenia West for the fourth time.
Again, the medical checks were organized in close cooperation with the Sophia Foundation for Children (SFFC) (www.sophia-foundation.com).

Technical equipment and some of the supplies were brought from Europe by the MCC team members. Most of the medication was ordered through SFFC in Kenia. Additional local medication was purchased from the main pharmacy in Nairobi and taken with us to Kenia West.

The cooperation of the Sophia Foundation for Children and the Archbishop Makarios existed out of the following (amongst others):

- Transfer of knowledge about expected diseases, through their earlier work in Kenia.
- Transfer of data on demographics.
- Selection of primary schools and orphanages.
- Arranging accomodation in Kisumu and Eldoret.
- Transportation of the MCC team from the airport, to Kenia Westan and to the check locations.
- Prior announcement of the medical camp in the locations.
- Ordering and delivery of medications.
- Giving support to the MCC team during the medical camp.
- Managing facilitating and (pre)-payment of hospital in/out patient referrals (Riruta Clinic and Coptic Hospital in Nairobi.

The MCC team was delighted by the cooperation with Archbishop Makarios and the strong input of the Sophia Foundation for Children. Our special thanks go Marina Shacola for her preparational work and to Matheos Demetriades for his direct support and enthusiasm in this years mission to Kenya West.
Special thanks go to the translators and teachers.
We are grateful to all the care takers and community people for bringing the children and helping to conduct the program. We are happy we got the opportunity to work with and to learn from all volunteers, translators and other supporting members who have helped directly or indirectly, despite their own obligations.

And last but not least, we would like to thank the children and their care-takers who came to the checks for their inspiring presence.

Medical Checks for Children on location:
During the medical checks, the children were checked following the MCC carrousel:
1. Registration of the child
2. Measuring height and weight
3. Blood test for haemoglobin
4. Physical examination
5. Giving medication and education about the correct use of it (pharmacy)
6. Education on hyginics and tooth brushing (a tooth brush was given to each child)

Anthropometric measurements were recorded, and a finger prick sample was taken for determination of the haemoglobin (Hb) concentration. Each child was examined by a Medical Doctor. History of illnesses in the preceding four weeks was recorded. Specifically, caretakers were asked if the child had diarrhoea, an upper respiratory infection, vomiting, eating soil (pica), decreased appetite and weight loss.
They were also asked if their child received treatment for any of these, and if so, from where. The data of the children were analysed through the MCC data base.

The medical checks were performed on six days at different locations in Kenia West near the cities of Kisumi at Lake Victoria and near Eldoret. The team visited Kesengei Nusery & Primeray at Kesengei; St. Pantelaimon Nursery & Primary Kalamai Bay Nursery, Kimerek Nursery and Kimbonze Nursery at Kimarek; Chipungundi Primary at Chipungundi and St Peter's Kapkechui at Chipita.
At the different locations we checked beside the schoolchildren some young non-schoolgoing children from the villages.
We analysed the data to make a comparison as a group but we did not make a computer analysis on individual basis (table 1)
Due to problems with acurate registron we pooled al data for kimarek and Kimarek Primary.

Table 11: Pooling of locations for data analysis

Pool of locations:	**Kesengei**	**N**	**Kimarek**	**N**	**Kimarek Primary**	**N**	**St. Pantalaimon**	**N**
Included villages:	Kesengh Kesenghei village Kosengei		Kimarek village Kapkures Kimerek Kamalabei Kimerik	1	Kimarek school Kimerek school		St. Pantelaimon St. Patheleimon St. Paththeleimon	
Total		**244**		**395**				**46**

Pool of locations:	**Chebugundi**	**N**	**Kapkechui**	**N**
Included villages:	Chepaundi Chepaundi village Chepungi village Chipugundi		Kapkechui Kapkechui village	
Total		**247**		**339**

Table 1 b

Locatie	**13-06-2013**	**14-06-2013**	**15-06-2013**	**16-06-2013**	**17-06-2013**	**18-06-2013**	**Total**
Chebugundi	0	0	10	230	0	7	247
Kesengei	0	6	235	0	0	3	244
Kimarek	197	194	0	0	3	1	395
St. Pantalaimon	0	44	0	0	2	0	46
St. Peters Kapkechui	0	0	0	0	182	167	349
Total	**197**	**244**	**245**	**230**	**187**	**178**	**1281**

Table 2: Number. age and gender distribution of the 1067 checked children at the different locations

	Total		**Chebugundi**		**Kesengei**		**Kimarek**		**St. Pantalaimon**		**St. Peters Kapkechui**	
	1281		**Total=**	**247**	**Total=**	**244**	**Total=**	**395**	**Total=**	**46**	**Total=**	**349**
Age	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
<=1 year	48	4%	19	8%	7	3%	13	3%	0	0%	9	3%
>1 en <5 years	238	19%	92	37%	43	18%	30	8%	8	17%	65	19%
<5 years	286	22%	111	45%	50	20%	43	11%	8	17%	74	21%
>=5 en <=10 years	939	73%	133	54%	185	76%	329	83%	38	83%	254	73%
>10 years	56	4%	3	1%	9	4%	23	6%	0	0%	21	6%
Gender												
Boy	631	49%	102	41%	125	51%	200	51%	21	46%	183	52%
Girl	650	51%	145	59%	119	49%	195	49%	25	54%	166	48%

1: Growth abnormality and malnutrition:
(underweight: 13% (158/1070), stunting: 15% (195/1083), wasting: 3% (22/857)
Malnutrition has been related to poor cognitive and school performance. There is strong evidence to suggest that malnutrition places children under the age of 5 at increased risk for mortality. Malnutrition is thought to account for one third of all deaths of children under five years of age (UN Millennium Developmental Goals).
Percentages of growth retardation is correlated with poverty, malnutrition, living conditions, hygiene and the prevalence of chronic diseases.
The major causes of malnutrition are poor feeding practices and or lack of food inadequate childcare. Adequate food intake and education programs addressing nutrious food need to be provided.
Therefore, we assessed growth abnormalities, 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.
- 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.
- 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.

The reported incidence for underweight (Kenya Statistical Factsheet WHO) is 16,5 % and for stunting 36%.

Analysis of the nutritional status shows significant differences among the locations visited (see table 4, 5 and six) Within the children assessed, it is unknown how many children have HIV related weight loss (wasting syndrome).

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Table 4 *Prevalence of Weight/age (Underweight) on or below P3 per GEOGRAPHICAL LOCATION by AGE and GENDER*

	Total		Chebugundi		Kesengei	
	1281		Total= 247		Total= 244	
	N	%	n	%	n	%
Underweight	158	13%	27	11%	44	19%
No underweight	1070	87%	217	89%	191	81%
Unknown	53	4%	3	1%	9	4%
Underweight children per age						
<=1 year	5	10%	2	11%	3	43%
>1 en <5 years	32	14%	13	14%	8	19%
<5 years	37	13%	15	14%	11	22%
>=5 en <=10 years	121	13%	12	9%	33	18%
>10 years	0	0%	0	#DIV/0!	0	0%
Underweight children per gender						
Boy	81	14%	10	10%	24	21%
Girl	77	12%	17	12%	20	17%

Kimarek		St. Pantalaimon		St. Peters Kapkechui	
Total= 395		Total= 46		Total= 349	
n	%	n	%	n	%
50	13%	1	2%	36	11%
324	87%	45	98%	293	89%
21	5%	0	0%	20	6%
0	0%	0	#DIV/0!	0	0%
2	7%	1	13%	8	13%
2	5%	1	13%	8	11%
48	15%	0	0%	28	11%
0	0%	0	#DIV/0!	0	0%
28	15%	1	5%	18	11%
22	12%	0	0%	18	11%

Table 5 *Prevalence of Height/age (Stunting)on or below P3 per GEOGRAPHICAL LOCATION by AGE and GENDER*

	Total		Chebugundi		Kesengei	
	1281		Total= 247		Total= 244	
	N	%	n	%	n	%
Stunting	195	15%	34	14%	33	14%
No stunting	1083	85%	213	86%	211	86%
Unknown	3	0%	0	0%	0	0%
Stunting children per age						
<=1 year	12	25%	3	16%	2	29%
>1 en <5 years	46	19%	16	17%	9	21%
<5 years	58	20%	19	17%	11	22%
>=5 en <=10 years	128	14%	15	11%	22	12%
>10 years	9	16%	0	0%	0	0%
Stunting children per gender						
Boy	111	18%	17	17%	17	14%
Girl	84	13%	17	12%	16	13%

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Kimarek		St. Pantalaimon		St. Peters Kapkechui	
Total= 395		Total= 46		Total= 349	
n	%	n	%	n	%
58	15%	1	2%	69	20%
336	85%	45	98%	278	80%
1	0%	0	0%	2	1%
4	31%	0	#DIV/0!	3	33%
3	10%	0	0%	18	28%
7	17%	0	0%	21	29%
48	15%	1	3%	42	17%
3	13%	0	#DIV/0!	6	29%
35	18%	0	0%	42	23%
23	12%	1	4%	27	16%

Table 6 *Prevalence of Weight/height (Wasting) on or below P3 per GEOGRAPHICAL LOCATION by AGE and GENDER*

	Total		Chebugundi		Kesengei	
	1281		Total= 247		Total= 244	
	N	%	n	%	n	%
Wasting	22	3%	4	2%	7	4%
No wasting	857	97%	185	98%	159	96%
Unknown	402	31%	58	23%	78	32%
Wasting children per age						
<=1 year	2	4%	1	5%	1	17%
>1 en <5 years	6	3%	3	3%	2	5%
<5 years	8	3%	4	4%	3	6%
>=5 en <=10 years	14	2%	0	0%	4	3%
>10 years	0	0%	0	#DIV/0!	0	#DIV/0!
Wasting children per gender						
Boy	7	2%	1	1%	3	4%
Girl	15	3%	3	3%	4	5%

Kimarek		St. Pantalaimon		St. Peters Kapkechui	
Total= 395		Total= 46		Total= 349	
n	%	n	%	n	%
8	3%	1	4%	2	1%
256	97%	22	96%	235	99%
131	33%	23	50%	112	32%
0	0%	0	#DIV/0!	0	0%
0	0%	1	13%	0	0%
0	0%	1	13%	0	0%
8	4%	0	0%	2	1%
0	0%	0	#DIV/0!	0	0%
2	2%	1	11%	0	0%
6	5%	0	0%	2	2%

In comparison with 2012 the reported incidence of malnutrition and growth retardation is stable and the incidence of stunting is again wel below the reported WHO incidence in Kenya. Selection bias due to the large population of school going kids may be a factor in underreporting severe malnutrition. Also Kimarek and St Peter are part of the foodprogramme of the SFFC.

During the medical check-ups of this year, we paid again attention to issues of hygiene and nutritional advise. For babies, we advised exclusive breastfeeding up to six months and then start with the introduction of additional foods.

We are aware of the financial problems and, because of draught, scarcity of healthy food for many families.

2: Anaemia: (32%, 405/1281)
Anaemia is the most prevalent micronutrient disorder in the world.
In Kenia no national policy has been implemented so far to provide iron supplements to pregnant women or young children. While iron deficiency is frequently the primary factor contributing to anaemia, it is important to recognise that the control of anaemia requires a multi-faceted approach.
In addition to iron deficiency, infectious diseases such as worm infections, other chronic infections, particularly HIV-AIDS and tuberculosis, as well as other nutritional deficiencies, and as side effects of ART medication in HIV positive children.
It is unknown how many children with abdominal problems have iron deficiency anaemia and a coexisting H. pylori infection. From literature it is known that one should suspect an infection with H. pylori when the iron deficiency anaemia is refractory to iron administration.

In 405 (32%) children anemia was diagnosed (see table 7). In fifteen children (1 %, 15/1281) the haemoglobin level was less than 5.0 mmol/l; these children were treated and there Hb was checked in 3 months. List of referrals and results can be found in appendix E.

In 2011 the prevalence of anemia was 29% with a similar age en sex distribution profile and 67% in 2012. This year the prevalence was in concordence with previous years which leads us to the conclusion that last years unexplainable rise in reported anemias must be due to either equipment problems or human error.

Table 7: Prevalence of anaemia per geographical location by age and gender

	Total		**Chebugundi**		**Kesengei**	
	1281		**Total= 247**		**Total= 244**	
	N	**%**	**n**	**%**	**n**	**%**
Anaemia	405	32%	105	43%	59	24%
No anaemia	779	61%	106	43%	153	63%
Unknown	94	7%	36	15%	32	13%
Hb <5,0 mmol	15	1%	2	1%	5	2%
Anaemia per age						
<=1 year	25	52%	9	47%	5	71%
>1 en <5 years	90	38%	45	49%	13	30%
<5 years	115	40%	54	49%	18	36%
>=5 en <=10 years	281	30%	51	38%	39	21%
>10 years	9	16%	0	0%	2	22%
Anaemia per gender						
Boy	225	36%	49	48%	36	29%
Girl	180	28%	56	39%	23	19%

Kimarek		St. Pantalaimon		St. Peters Kapkechui	
Total= 395		Total= 46		Total= 349	
n	%	n	%	n	%
95	24%	7	15%	139	40%
295	75%	39	85%	186	53%
2	1%	0	0%	24	7%
3	1%	0	0%	5	1%
6	46%	0	#DIV/0!	5	56%
11	37%	1	13%	20	31%
17	40%	1	13%	25	34%
73	22%	6	16%	112	44%
5	22%	0	#DIV/0!	2	10%
57	29%	3	14%	80	44%
38	19%	4	16%	59	36%

We treated the children with anaemia (and their mothers if they were breast fed) with supplements for three months (63 % iron , 40% multivatimins and 14mothers were given iron).
If we suspected a vitamin deficiet and/or a infection we gave multivitamins instead of iron supplements.

3: Worm treatment: (prophylactic 100%; active worminfection 1% 9/1282; suspected gardia 1% 13/1281)
A strong relationship exists between a Helminth, an Ascaris Lumbricoides, a Hookworm, a Taenia Trichiura or Saginata (tapeworm) infection and anaemia. In studies Ascaris prevalence percentage is 19.3% and hookworm 7.6%. The incidence/prevalence of Taenia Saginata (tape worm) is not known.
In the last years a de-worming program was established in Kenia where there is a high prevalence of these infections in (school-aged) children yet. Official data show a coverage of this de-worming program of 80%.

If there was a clinical supsicion of a active worminfection or anemnestic clues of a gardia infection, children where treated either with albendazol for a active worminfection or with a course of metronidazol for a suspected gardia infection.

Dysenteria was suspected in 6 children (<1%) who where treated with a course of cotrimoxazol.

Table 8: Prevalence preventive anti-worm treatment in the last half-year per geographical location by age and gender

	Total		Chebugundi		Kesengei	
	1281		Total= 247		Total= 244	
	N	%	n	%	n	%
Anti-worm	4	0%	4	2%	0	0%
No anti-worm	1277	100%	243	98%	244	100%
Anti-worm per age						
<=1 year	1	2%	1	5%	0	0%
>1 en <5 years	1	0%	1	1%	0	0%
<5 years	2	1%	2	2%	0	0%
>=5 en <=10 years	2	0%	2	2%	0	0%
>10 years	0	0%	0	0%	0	0%

Kimarek	St. Pantalaimon	St. Peters Kapkechui

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Total= 395		Total= 46		Total= 349	
n	%	n	%	n	%
0	0%	0	0%	0	0%
395	100%	46	100%	349	100%
0	0%	0	#DIV/0!	0	0%
0	0%	0	0%	0	0%
0	0%	0	0%	0	0%
0	0%	0	0%	0	0%
0	0%	0	#DIV/0!	0	0%

Preventive antiworm treatment was given to 100 % of all checked children. In the area we visited in Kenia West the coverage of the de-worming programm is almost non-existing. This could be due to the greograhical, remote lcoation of the villages visisted.

Health education on the spot was aimed at increasing awareness of worm transmission, the divers problems caused by intestinal helminth and the importance of bi-annual de-worming every six months. The fact that none of the checked children received a deworming tablet in the last year is alarming. At al the visited schools we tried to explain to the teachers and people in charge why this deworming is so important for the children.

4: Pneumonia: (29/1281, 2%) (see table appendix)
"Pneumonia", "coughing", "fast/difficult breathing", "chest indrawing" and "inability to suck milk" are the key words used by care-takers indicating a (severe) ARI (fever with tachypnoe).
The 29 children with a severe acute respiratory infection (ARI) were treated with appropriate antimicrobials and home treatment advice.

5: Cardial problems: (14/1281, 1 %) (see table appendix)
Mitral regurgitation or ventricular atrial septal defects being the most common heart problems in the third world. For this condition no treatment is available although a good dental situation is essential for a healthy live.
The MCC carrousel includes a cardial examination. We suspected fourteen children of having a pathological heart murmur. The children and their care takers with this condition were stressed on teeth brushing procedures. Besides this, they were told to give their child antibiotics when going to a dentist for a teeth extraction. Four children were transferred to the Coptic Hospital in Nairobi with a clinical suspicion of severe congenital defect. If necessary we will provide costs for treatment with the NIeuwendijk Foundation.

One child was already transferred in 2011 for further cardiac investigations and operation but didn't follow up, but even after stern talks with the grandmother in 2012 they still did not go to the hospital. This year we again tried to persuade her to take the child to the hospital because he had sings of decompensated heartfailure.

6: Skin diseases: (311/1281, 24%)(see table 1of the appendix)
In respect to skin diseases we saw 240 (240/1281 19%)children with dermatomycoses including tinea capitits. We've treated 13 children with ivermectin for scabies (<1%). We encountered a broad range of different kind of wounds (50/1281)and two children were treated on the spot with surgical incision and drainige, local antiseptic treatment and antibiotic coverage.

Antifungal cream (eventually in combination with hydrocortison) was given for fungal infections (dermatomycosis) and hydrocortison crème was given for different forms of dermatitis. We did treat the children with severe or infected forms of tinea capitis with griseofulvin.

7: Dental: (caries not otherwise specified: 216/1281,17%; painful caries: 48/1281, 4%)
In general a high caries prevalence was found. Four children were referred to the local hospital for dental care (local dentist) because of very poor sanitation and infection.

The high prevalence of caries in this area and the known relation between poor dentation, health and prevalence of disease, would make it benificial in the future to provide dental care in this area.
At the last station of the medical carroussel local volunteers gave out toothbrushes and educated the children and their caretakers in teethbrushing.

8: Other

One orphan child who was supsected of severe emotional neglect was referred to the SFFC. They will conduct a home visit to talk with the grandmother to asses the situation and propose transfer to the Njeri orhphange.

One unemployed single mother with nine children to raise on her own was supported with food and will hopefully be incorparated in the foodprogramme in some way to try to give this family some basic necessities of life.

One orphan baby whose mother died at birth and who is raised lovingley by her aunt was transferred to the SFFC to provide babyformula which is not available to the aunt in this remote area but is necessary to help her grow and survive her first year in life.

The boy with a hydrocephalus who was transferred in 2012 was treated with an VP-shunt was again checked at location and was in relatively good health. We did arrange a transfer for mother again for outpatient treatment and follow-up with the SFFC.