Medical Checks for Children

Medical Rapport Kenya West 2016

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MCC Kenya West 2016

Introduction

From March the 30th of January untill February the 7th 2016, 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 1196 children aged newborn untill 13 years of age.
The team consisted of Nadine van Dijk, mission leader and medical-end-responsible, emergency physician; Paul de Vries, physiotherapist; Esther Anne Broekhuizen, family doctor; Lisette van de Broek, cardiologist in Training, Anne Visser, medical doctor and researcher; Josta Parigger, medical doctor; Karin van Gelderen, fysiotherapist; Chris Godthelp-Kortink; Carla Knaap, nurse and Wilma de Bie, fysiotherapist.

After a explorative mission in 2010, MCC visited Kenia West for the sixth 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.

Our special thanks go to Nopi and Tazos for their direct support during our medical camp and their help in all the necessary preparations during the year. Special thanks go to the translators and teachers.

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; St Peter's Kapkechui at Chipita , Nakuru childrens and reprimand home and Nakuru Womans prison.
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)

For the schools at Kimarek, Kesengei and St. Peters we did a sepate analysis for the baby classes. In Kenya children as old as 5 years can still be in babyclass. However, for this analysis all children of age 0-5 year seen at these locations were added to the baby class (e.g. Kesengei baby), in addition all other non-school—going-children of the community were added to this group. The rest of the school children were pooled together (all above 1, e.g. Kesengei).

Table 1: Total children per location

Kamalaibei baby	0	58	0	0	0	0	0	58
Kamalaibei school	0	150	0	0	0	0	0	150
Kamalaibei village	0	38	0	0	0	0	0	38
Kesengei baby	24	0	38	0	0	0	0	62
Kesengei school	0	0	141	133	0	0	0	274
Kesengei village	0	0	43	11	0	0	0	54
Kimarek baby	70	0	0	0	0	0	0	70
Kimarek school	120	0	0	0	0	0	0	120
Kimarek village	8	0	0	0	0	0	0	8
Nakuru remand home	0	0	0	0	0	0	39	39
Nakuru womans prison	0	0	0	0	0	0	29	29
St Peters school	0	0	0	0	156	88	0	244
St Peters village	0	0	0	0	34	16	0	50
Total	**222**	**246**	**222**	**144**	**190**	**104**	**68**	**1196**

Table 2: Number. age and gender distribution of the 1196 checked children at the different locations

	Total		**Kamalaibei baby**		**Kamalaibei school**		**Kamalaibei village**		**Kesengei baby**		**Kesengei school**		**Kesengei village**	
	1196		**Total= 58**		**Total= 150**		**Total= 38**		**Total= 62**		**Total= 274**		**Total= 54**	
Age	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
<=1 year	84	7%	0	0%	0	0%	18	47%	0	0%	2	1%	24	44%
>1 en <5 years	231	19%	32	55%	0	0%	24	63%	26	42%	7	3%	20	37%
<5 years	300	25%	32	55%	0	0%	36	95%	26	42%	9	3%	44	81%
>=5 en <=10 years	797	67%	26	45%	145	97%	2	5%	36	58%	236	86%	10	19%
>10 years	100	8%	0	0%	5	3%	0	0%	0	0%	29	11%	0	0%
Gender														
Boy	612	51%	27	47%	81	54%	19	50%	30	48%	139	51%	30	56%
Girl	584	49%	31	53%	69	46%	19	50%	32	52%	135	49%	24	44%

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Kimarek baby		Kimarek school		Kimarek village		Nakuru remand home		akuru womans priso		St Peters school		St Peters village	
Total= 70		Total= 120		Total= 8		Total= 39		Total= 29		Total= 244		Total= 50	
n	%	n	%	n	%	n	%	n	%	n	%	n	%
0	0%	0	0%	4	50%	0	0%	15	52%	0	0%	21	42%
34	49%	0	0%	6	75%	0	0%	15	52%	40	16%	27	54%
34	49%	0	0%	7	88%	0	0%	29	100%	40	16%	43	86%
36	51%	107	89%	0	0%	2	5%	0	0%	190	78%	7	14%
0	0%	13	11%	1	13%	37	95%	0	0%	15	6%	0	0%
30	43%	58	48%	3	38%	31	79%	19	66%	118	48%	27	54%
40	57%	62	52%	5	63%	8	21%	10	34%	126	52%	23	46%

Percentage of children also checked last year

Due to registration errors we weren't able to determine the prevalence of children who were checked last year.

1: Growth abnormality and malnutrition:
(underweight: 17% (204/1003), stunting: 20 % (244/963), wasting: 6% (50/727)
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%. These data are still the most recent WHO/Unicef country data from 2013.

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		Kamalaibei baby		Kamalaibei school		Kamalaibei village		Kesengei baby		Kesengei school		Kesengei village	
	1196		Total= 58		Total= 150		Total= 38		Total= 62		Total= 274		Total= 54	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%
Underweight	113	10%	4	7%	9	6%	6	16%	4	6%	41	16%	6	11%
No underweight	1001	90%	54	93%	137	94%	32	84%	58	94%	221	84%	48	89%
Unknown	82	7%	0	0%	4	3%	0	0%	0	0%	12	4%	0	0%
Underweight children per age														
<=1 year	7	8%	0	0%	0	0%	2	11%	0	0%	0	0%	0	0%
>1 en <5 years	17	7%	2	6%	0	0%	5	21%	1	4%	1	14%	2	10%
<5 years	22	7%	2	6%	0	0%	6	17%	1	4%	1	11%	2	5%
>=5 en <=10 years	81	10%	2	8%	9	6%	0	0%	3	8%	31	13%	4	40%
>10 years	10	50%	0	0%	0	0%	0	0%	0	0%	9	53%	0	0%
Underweight children per gender														
Boy	66	12%	1	4%	6	8%	4	21%	0	0%	25	19%	4	13%
Girl	47	8%	3	10%	3	4%	2	11%	4	13%	16	12%	2	8%

	Kimarek baby		Kimarek school		Kimarek village		Nakuru remand home		akuru womans prisol		St Peters school		St Peters village	
	Total= 70		Total= 120		Total= 8		Total= 39		Total= 29		Total= 244		Total= 50	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Underweight	7	10%	16	15%	1	14%	1	50%	0	0%	9	4%	9	18%
No underweight	63	90%	91	85%	6	86%	1	50%	28	100%	221	96%	41	82%
Unknown	0	0%	13	11%	1	13%	37	95%	1	3%	14	6%	0	0%
Underweight childre														
<=1 year	0	0%	0	0%	1	25%	0	0%	0	0%	0	0%	4	19%
>1 en <5 years	1	3%	0	0%	1	17%	0	0%	0	0%	1	3%	3	11%
<5 years	1	3%	0	0%	1	14%	0	0%	0	0%	1	3%	7	16%
>=5 en <=10 years	6	17%	15	14%	0	0%	1	50%	0	0%	8	4%	2	29%
>10 years	0	0%	1	100%	0	0%	0	0%	0	0%	0	0%	0	0%
Underweight childre														
Boy	3	10%	11	23%	0	0%	0	0%	0	0%	5	5%	7	26%
Girl	4	10%	5	8%	1	25%	1	50%	0	0%	4	3%	2	9%

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

	Total		Kamalaibei baby		Kamalaibei school		Kamalaibei village		Kesengei baby		Kesengei school		Kesengei village	
	1196		Total= 58		Total= 150		Total= 38		Total= 62		Total= 274		Total= 54	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%
Stunting	133	11%	2	3%	15	10%	10	26%	6	10%	34	12%	12	22%
No stunting	1057	89%	56	97%	135	90%	28	74%	56	90%	240	88%	42	78%
Unknown	6	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Stunting children per age														
<=1 year	15	18%	0	0%	0	0%	4	22%	0	0%	0	0%	6	25%
>1 en <5 years	27	12%	0	0%	0	0%	7	29%	2	8%	0	0%	4	20%
<5 years	40	13%	0	0%	0	0%	10	28%	2	8%	0	0%	10	23%
>=5 en <=10 years	75	9%	2	8%	13	9%	0	0%	4	11%	25	11%	2	20%
>10 years	18	19%	0	0%	2	40%	0	0%	0	0%	9	31%	0	0%
Stunting children per gender														
Boy	81	13%	1	4%	10	12%	6	32%	1	3%	21	15%	9	30%
Girl	52	9%	1	3%	5	7%	4	21%	5	16%	13	10%	3	13%

	Kimarek baby		Kimarek school		Kimarek village		Nakuru remand home		akuru womans prisol		St Peters school		St Peters village	
	Total= 70		Total= 120		Total= 8		Total= 39		Total= 29		Total= 244		Total= 50	
Stunting	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No stunting	8	11%	10	9%	4	50%	6	15%	4	14%	12	5%	10	20%
Unknown	62	89%	105	91%	4	50%	33	85%	25	86%	231	95%	40	80%
Stunting children pe	0	0%	5	4%	0	0%	0	0%	0	0%	1	0%	0	0%
<=1 year														
>1 en <5 years	0	0%	0	0%	2	50%	0	0%	2	13%	0	0%	1	5%
<5 years	1	3%	0	0%	3	50%	0	0%	2	13%	2	5%	6	22%
>=5 en <=10 years	1	3%	0	0%	4	57%	0	0%	4	14%	2	5%	7	16%
>10 years	7	19%	10	9%	0	0%	1	50%	0	0%	8	4%	3	43%
Stunting children pe	0	0%	0	0%	0	0%	5	14%	0	0%	2	14%	0	0%
Boy														
Girl	4	13%	6	11%	2	67%	5	16%	1	5%	8	7%	7	26%
	4	10%	4	7%	2	40%	1	13%	3	30%	4	3%	3	13%

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

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	Total		Kamalaibei baby		Kamalaibei school		Kamalaibei village		Kesengei baby		Kesengei school		Kesengei village	
	1196		Total= 58		Total= 150		Total= 38		Total= 62		Total= 274		Total= 54	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%
Wasting	40	5%	4	7%	3	5%	1	3%	2	3%	9	6%	3	6%
No wasting	720	95%	53	93%	60	95%	37	97%	60	97%	132	94%	47	94%
Unknown	435	36%	1	2%	87	58%	0	0%	0	0%	133	49%	4	7%
Wasting children per age														
<=1 year	6	7%	0	0%	0	0%	0	0%	0	0%	0	0%	1	4%
>1 en <5 years	7	3%	3	9%	0	0%	1	4%	1	4%	0	0%	0	0%
<5 years	11	4%	3	9%	0	0%	1	3%	1	4%	0	0%	1	2%
>=5 en <=10 years	29	6%	1	4%	3	5%	0	0%	1	3%	9	7%	2	33%
>10 years	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Wasting children per gender														
Boy	19	5%	1	4%	2	6%	1	5%	0	0%	2	3%	3	11%
Girl	21	5%	3	10%	1	4%	0	0%	2	6%	7	9%	0	0%

	Kimarek baby		Kimarek school		Kimarek village		Nakuru remand home		akuru womans priso		St Peters school		St Peters village	
	Total= 70		Total= 120		Total= 8		Total= 39		Total= 29		Total= 244		Total= 50	
Wasting	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No wasting	7	10%	3	5%	1	14%	0	0%	1	4%	3	2%	3	6%
Unknown	63	90%	56	93%	6	86%	1	100%	27	96%	131	98%	47	94%
Wasting children pe	0	0%	60	50%	1	13%	38	97%	1	3%	110	45%	0	0%
<=1 year														
>1 en <5 years	0	0%	0	0%	1	25%	0	0%	1	7%	0	0%	3	14%
<5 years	0	0%	0	0%	1	17%	0	0%	0	0%	0	0%	1	4%
>=5 en <=10 years	0	0%	0	0%	1	14%	0	0%	1	4%	0	0%	3	7%
>10 years	7	19%	3	5%	0	0%	0	0%	0	0%	3	3%	0	0%
Wasting children pe	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Boy														
Girl	6	20%	0	0%	0	0%	0	0%	1	6%	2	3%	1	4%
	1	3%	3	11%	1	25%	0	0%	0	0%	1	1%	2	9%

We did a subgroup analysis of the baby classes in Kimarek, Kesengei and St.Peters. The incidence in wasting and stunting was higher in the baby classes, when compared to the school-children. The SFFC runs a feeding program at this school and we expected that lower prevalence in stunting and wasting in the higher classes incidences would drop because the children received the benefits of the feeding program for a longer time than the young children in the nursery classes. As wasting is a long term sign of malnutrition the much lower prevalence in St.Peters children 0-5 yearss compared to the schoolchildren who have had the benefits of the feeding programm for at least 2 years, is a indirect marker of the positive effect of the feeding programm on this school.
No trends could be seen for underweight. In St. Peters the prevalence of underweight was 25% in the baby classes, when compared to 10% in the other school children. In Kimarek, the prevalence of underweight was 11% in the baby class and 20% in the other school children, while in Kesengei equal prevalence was seen in the baby class and other school children (15%).

In 2015 the incidence of underweight, stunting and wasting in Kimarek Nursery was 13%, 35% and 1% compared to 15%, 9%, 10% this year. In 2015 the numbers for St Peters overall were 6%, 8% and 2% compared to 4%, 5% and 2%.

Some of the findings are a challenge to read. We would expect the children in nursery to have more growth problems as these young children are just joining the feeding programm and are vulnerable. *Which we do see in Kesengei and St.Peters but in Kimarek there is a lower percentage of underweight in baby than overall.*

Of the 29 babies seen in the Nakuru woman's prison 4 had severe mulnutrition (14% stunting). The reality of growing up in these conditions is harse and we do realize that interventions are problematic due to strict regulations and control. We hope the innitiative to provide the babies with fruids and vegetables will be a sustainable one.

The overall prevalence for underweight, stunting and wasting showed minimal decrease in 2016 (10%, 11%, 5%) compared to 2015 (17%, 20%, 6%, respectively), It is difficult to find a cause for this as the parameters are multifacorial and the groups of children we see show a lot of heterogeneity during the years.

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In comparison with previous years 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.

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.

On the schools that are in the feeding programm of the SFFC, each month dry foods are given. Fruit and vegetables are locally purchased and depend on the availablity and the season. Also we know that if the schools accept more children as was the case in St.Peters the amount of food is divided between more children. Most of the children get their first meal of the day at school, 11 am porridge and somewhere around noon lunch. The amount of food the children receive at home for dinner could vary widely.

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

2: Anaemia: (39%, 470/1196; 2% Hb<5; 2015:37%, 446/1209)
Anemia is the most prevalent micronutrient disorder in the world. In Kenya, no national policy has been implemented so far to provide iron supplements to pregnant woman 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 470 (39%) children anemia was diagnosed (see table 7). In 21 children (2%, 21/1196) the haemoglobin level was less than 5.0 mmol/l; these children were treated and their Hb was checked 3 months later.

This year the prevalence was in concordence with previous years.

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

	Total		Kamalaibei baby		Kamalaibei school		Kamalaibei village		Kesengei baby		Kesengei school		Kesengei village	
	1196		Total= 58		Total= 150		Total= 38		Total= 62		Total= 274		Total= 54	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%
Anaemia	470	39%	19	33%	71	47%	17	45%	28	45%	102	37%	17	31%
No anaemia	673	56%	38	66%	78	52%	20	53%	34	55%	172	63%	37	69%
Unknown	51	4%	1	2%	0	0%	1	3%	0	0%	0	0%	0	0%
Hb <5,0 mmol	21	2%	1	2%	2	1%	3	8%	2	3%	3	1%	1	2%
Anaemia per age														
<=1 year	41	49%	0	0%	0	0%	10	56%	0	0%	1	50%	9	38%
>1 en <5 years	79	34%	9	28%	0	0%	6	25%	10	38%	1	14%	5	25%
<5 years	115	38%	9	28%	0	0%	15	42%	10	38%	2	22%	14	32%
>=5 en <=10 years	323	41%	10	38%	66	46%	2	100%	18	50%	88	37%	3	30%
>10 years	33	33%	0	0%	5	100%	0	0%	0	0%	12	41%	0	0%
Anaemia per gender														
Boy	242	40%	9	33%	37	46%	8	42%	12	40%	50	36%	7	23%
Girl	228	39%	10	32%	34	49%	9	47%	16	50%	52	39%	10	42%

	Kimarek baby		Kimarek school		Kimarek village		Nakuru remand home		Nakuru womans prisol		St Peters school		St Peters village	
	Total= 70		Total= 120		Total= 8		Total= 39		Total= 29		Total= 244		Total= 50	
Anaemia	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No anaemia	23	33%	44	37%	2	25%	8	21%	12	41%	95	39%	32	64%
Unknown	47	67%	76	63%	6	75%	31	79%	17	59%	99	41%	18	36%
Hb <5,0 mmol	0	0%	0	0%	0	0%	0	0%	0	0%	49	20%	0	0%
Anaemia per age	1	1%	0	0%	0	0%	0	0%	0	0%	2	1%	6	12%
<=1 year														
>1 en <5 years	0	0%	0	0%	2	50%	0	0%	7	47%	0	0%	12	57%
<5 years	10	29%	0	0%	1	17%	0	0%	6	40%	16	40%	15	56%
>=5 en <=10 years	10	29%	0	0%	2	29%	0	0%	12	41%	16	40%	25	58%
>10 years	13	36%	39	36%	0	0%	0	0%	0	0%	77	41%	7	100%
Anaemia per gende	0	0%	5	38%	0	0%	8	22%	0	0%	3	20%	0	0%
Boy														
Girl	13	43%	24	41%	1	33%	6	19%	9	47%	48	41%	18	67%
	10	25%	20	32%	1	20%	2	25%	3	30%	47	37%	14	61%

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

3: Worm treatment: (no antiworm 28%, 338/1196, prophylactic given in 243 children, 20%; active worminfection 2% 26/1196;
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 Kenya 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 an active worm infection or anemnestic clues of a gardia infection, children where treated either with albendazol for na active worm infection or with a course of metronidazol for a suspected gardia infection. We did not treat children below 2 years with profylactic antiwormtreatment following the international guidelines on the subject.

Dysenteria was suspected in 1 children (<1%) who was treated with a course of cotrimoxazol. This year no children were diagnosed with suspected guardia.

Last year we left antiworm tablets to be distributed at the SFFC schools for the twice annual deworming and we see this in the results. We hope the schools and the SFFC will find a way to ensure the twice annual deworming without help from MCC to ensure this programm will last wel into the future.

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

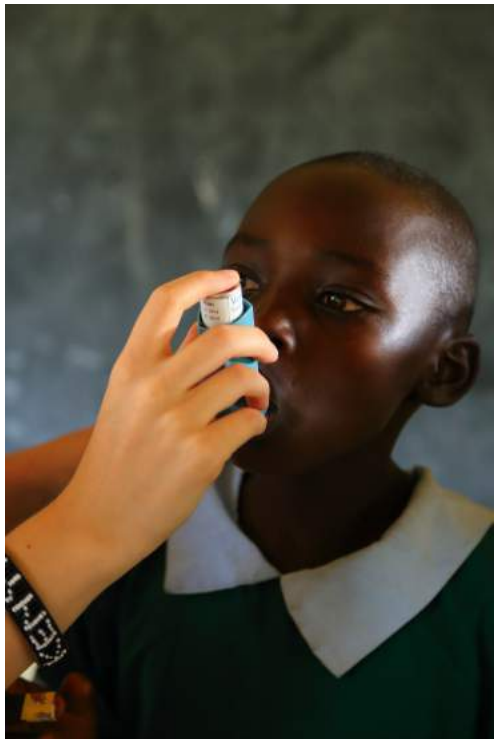
MCC Kenya West 2016

	Total		Kamalaibei baby		Kamalaibei school		Kamalaibei village		Kesengei baby		Kesengei school		Kesengei village	
	1196		Total= 58		Total= 150		Total= 38		Total= 62		Total= 274		Total= 54	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%
Anti-worm	858	72%	30	52%	150	100%	0	0%	27	44%	269	98%	2	4%
No anti-worm	338	28%	28	48%	0	0%	38	100%	35	56%	5	2%	52	96%
Anti-worm per age														
<=1 year	3	4%	0	0%	0	0%	0	0%	0	0%	0	0%	2	8%
>1 en <5 years	18	8%	8	25%	0	0%	0	0%	1	4%	6	86%	0	0%
<5 years	21	7%	8	25%	0	0%	0	0%	1	4%	6	67%	2	5%
>=5 en <=10 years	737	92%	22	85%	145	100%	0	0%	26	72%	234	99%	0	0%
>10 years	100	100%	0	0%	5	100%	0	0%	0	0%	29	100%	0	0%

	Kimarek baby		Kimarek school		Kimarek village		Nakuru remand home		Nakuru womans prison		St Peters school		St Peters village	
	Total= 70		Total= 120		Total= 8		Total= 39		Total= 29		Total= 244		Total= 50	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Anti-worm	36	51%	120	100%	1	13%	37	95%	1	3%	185	76%	0	0%
No anti-worm	34	49%	0	0%	7	88%	2	5%	28	97%	59	24%	50	100%
Anti-worm per age														
<=1 year	0	0%	0	0%	0	0%	0	0%	1	7%	0	0%	0	0%
>1 en <5 years	1	3%	0	0%	0	0%	0	0%	0	0%	2	5%	0	0%
<5 years	1	3%	0	0%	0	0%	0	0%	1	3%	2	5%	0	0%
>=5 en <=10 years	35	97%	107	100%	0	0%	0	0%	0	0%	168	88%	0	0%
>10 years	0	0%	13	100%	1	100%	37	100%	0	0%	15	100%	0	0%

Of all children 72 % received deworming treatment in the last 6 months. We hope to see next year that this represents a structural improvement in the health care system. We spoke to the teachers and headteachers of all schools about the need to install an programm for profylatic deworming and adviced in trying to establish a cooperation with the local healtclinics.

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. At all 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: (17/1196, 1%) (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 8 children with a severe acute respiratory infection (ARI) were treated with appropriate antimicrobials and home treatment advice. We saw 2 children with astma/bronchitis. One child with astma was treated with ventolin on the spot with good results.

5: Cardial problems: (7/1196, 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 3 children of having a new 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. These 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. In follow up we saw the cardiac kids who were referred in the previous years with good results.

6: Skin diseases: (124/1209, 11%)(see table 1of the appendix)
This year we saw 99 (99/1196, 8%)children with dermatomycoses including tinea capitits; compared to 2014 and 2015 the numbers do slowly increase. We hope this positive trend will continue in the future and is due to education and the use of clean razorblades. We've treated 4 children with ivermectin for scabies (<1%). We encountered a broad range of different kind of wounds and skin disorders (52/1196, 4%).

We accept a certain degree of underscoring. As tinea capitis is widespread in the schools due to transmission of the fungus bij razorblade and other factors, we only reported and treated the serious cases.

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

The reported incidence of skin related problems is stable. We interpreted this as a good sign as we do see a lot on newcomers in our medical camp each year. The awereness at the schools, especially the SFFC schools, for hygiene, sanitation and healthy food could also have an impact here.

7: Dental: (caries not otherwise specified: 98/1196, 8%; painful caries: 344/1196, 4%; flurosis: 44/1196 4%)
In general a high caries prevalence was found. Our reported incidence of 4 % for painfull caries is low. This is due to underscoring. We still see a need for a dental camp en will try to bring our dentis with us next year.

At the last station of the medical carroussel local volunteers gave out toothbrushes and educated the children and their caretakers in teethbrushing.

After starting the brush at school prograam in 2015 in Kimarek and St.Peters, we were happy to see that the schools were still brushing the teeth in the classes. The aim of this project is that all children have their own toothbrush at school. And the whole school brushes their that at school together with the teachers. Washing hands and hygiene is also part of the programm.

We as MCC provided education, instruction folders, brush posters and tooth brushes for the schools. The folders and posters were based on the program developed by NIOSH. The SFFC provided the tooth brush holders for each classroom. In these schools we organized a meeting with all the teachers and selected students who were then in charge of training their classes. The SFFC still does follow-up visits in the classrooms during their montly visits.

8: Other

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MCC Kenya West 2016

Further recommendations

Deworming
This year most children of the SSFC schools did receive the antiworm tablet. These tablets were from the MCC/SSFC stock. Unfortunately, the outreach from the govermental programm still appears to differ greatly between locations.

We need to establish a structure were at least in the SFFC schools the coverage of this profylactic antiworm programme is 100%. I

We still recommened to contact the local healthclinics or hospitals responsible for the governmental deworming programme locally and make sure all children of the SSFC schools are reached by this programme.

E.g., is it possible for the teachers to get the albendazol directly from the health clinics for distribution? Or should the SFFC coordinate the twice annual distribuation of the antiworm pills?

Nutrition
The incidence of growth disorders seems to be stable when we compare the results to the results of the last 3 years. The schools were the SFFC has a feeding programm showns an even lower incidence rate of severe growth abnormalities. The anemia rates are stable also in the schools were the SFFC has a feeding programm. Like discussed during the medical camp the young newcommers in the nursery and baby classes seem to have a poor nutrutional state when entering the school. During the years they will benefit the most from the feeding programm.
We would encourange SFFC to proceed with the food programmes at the schools and nurseries.
There is a need for further education about nutrition and healthy living for teachers and health workers.

Cardiac problems

Every year we see children with suspected pathological heartproblems. In Kenya there is not any govermental programm for these needy children and the cost of medication and operations fall to their parents.

Heart operations are expensive (KS 100.000) and need extensive follow-up and chronic medication.

In the area of Njeri there is an ngo for heart children Ndugu Zangu who works together with a dutch ngo Heart for a Child's heart. In 2016 we will have a first meeting in Arnhem to see if we can pair together and transfer our heartproblems to them. We were planning to meet in december 2015 but had to postpone due planning difficulties.

Skin disorders
Fungal infections of the head are still common. Although the reported incidence is dropping through the years. A probable cause could be the govermental decreet for school children to shave their head. Unfortunately the fungus does spread through dirty razors. Is there a role the SFFC can play in this matter? Is it possible to provide clean razor blades?

In general we see a lot of children with dirty skin due to poor hygenic conditions. This poses a risk for getting skin infections. We do know that water is a problem but should stress that children should clean dirty wounds with water to prevent more serious infections.

Is there a rol a town nurse or dedicated teacher can play in hygiene and wound matters?
Are there local believes about skin and wounds we are not aware of?

Teeth
During the years we've seen a lot of children with dental problems. The last dental camp in Western Kenya has been some years ago. We should make sure to bring a dentist in 2017.
This year we were able to raise enough toothbrushes for the brush programm in 2016.

There is also a need for further education of teachers and healthcare workers on the importance of this subject and the role it has in the general health of the children.

Health and Hygiene
In general we notice that knowledge about what is good health and hygiene among children, caretakes and sometimes even teachers is little.

To change the first step is education. Does the SFFC think there is a need for education about food safety, clean water, cleanliness, fit for school and fit for life subjects?

Last words:
Thanks to the amazing support from Marina, Matt, Tazos and Noppi from the Sophia Foundation we were able to give a lot of children their share of medical care and personal attention. We all felt to be part of one big team and all teammembers expressed the wish to come back again next year.