

Introduction

From March 19th until March 26th, 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 1131 children aged newborn until 14 years of age. The team consisted Karlien Bongers, mission leader, general surgeon; Nadine van Dijk, organisation-end-responsible, emergency physician; Naomi Ketharanathan, medical-end-responsible, pediatrician in training; Robert Stalpers pediatrician; Lissette vd Broek, medical doctor; Madyline van Rykervorst, medical doctor general children health, Floor Viveen and Joanna de Jong, both anthropologist; Ria Schmitz, physiotherapist and Marlies Koster, doctor's assistant.

Our host patron during 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 second 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 to Marina Shakola and Matheos Demetriades. Their pro-active, direct support and enthusiasm gave MCC the opportunity to work in Kenia and they facilitated all aspects of the medical camp.

Special thanks go to the translators and teachers. We enjoyed working together with all the local helpers. We hope they will continue to inspire their communities in the same way they inspired us as they play a vital role in spreading awareness and knowledge about child health & hygiene.

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 tooth brushing (a tooth brush was given to each child), and hand washing.

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.

Unfortunately we weren't able to locate the Case Report Forms (CRF) from 2010.

The medical checks were performed on six days at different locations in Kenia West near the cities of Kisumu at Lake Victoria and near Eldoret. The team visited Kesengei Nursery & Primary 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. For analysing purposes we had to combine certain locations to make data extraction possible (table 1).

Table 1: Pooling of locations for data analysis

Pool of locations:	Kesengei	N	Kimarek	N	Kimarek Primary	N	St. Pantalaimon	N
Included villages:	Kesengei	199	Kimarek	1	kimarek primary	65	St. Pantalaimon	61
	Tuigoin	2	Kemika	9	Kimarke prima	1		
	Chepkered	1	vilKimerek	3	Kimerekprimary	85		
	Kipchedwon	1	villKimerek	21				
	Kobos	2	village Kimerek	2				
	Nyintira	2	Kimarek	1				
	Village Kesengei	7	Kimarek village	1				
Total		214		38		151		61

Pool of locations:	Kalamlaibei/Kibonze	N	Chebugundi	N	St. Peter	N
Included villages:	Kamalaibei	87	Chebugundi village	192	St. Peter	256
	village Kamalaibei	17	Chebugundi	9	StPeter/Village village Chipsaita	17
	Kibonze primary	14			StPeter	29
	Kibonzepprimary	1				
Total		119		201		302

Due to the high risk of mortality and morbidity under five years of age, the focus of MCC is checking young children. Of all 1131 checked children (see table 2), 99% of the children had the age of twelve years or younger and 20% of the children had the age of five or younger. The age of the checked children was different at the different locations due to the setting (Kindergarten, school age, supporting vulnerable children). The total amount of checked boys-girls was the same although at some locations the percentage's of checked boy's and girls were not equally divided.

Table 2: Number, age and gender distribution of the 1131 checked children at the different locations

LOCATION	Kesengei		Kimarek		Kimarek Primary		St. Pantalaimon	
	N	%	N	%	N	%	N	%
Total	214	100%	102	100%	151	100%	61	100%
Age								
>=0 and <1	1	0%	4	4%	0	0%	0	0%
>=1 and <5	46	21%	28	27%	10	7%	6	10%
>=5 and <12	164	77%	70	69%	140	93%	55	90%
>=12 and <18	3	1%	0	0%	1	1%	0	0%
Boy	112	52%	54	53%	82	54%	28	46%
Girl	102	48%	48	47%	69	46%	33	54%
LOCATION	Kalamlaibei/Kibonze		Chebugundi		St. Peter		Total	
	N	%	N	%	N	%	N	%
Total	118	100%	201	100%	302	100%	1131	100%
Age								
>=0 and <1	4	3%	6	3%	0	0%	15	1%
>=1 and <5	26	22%	55	27%	45	15%	212	19%
>=5 and <12	87	74%	140	70%	250	83%	891	79%
>=12 and <18	0	0%	0	0%	7	2%	11	1%
Boy	54	46%	95	47%	146	48%	563	50%
Girl	64	54%	106	53%	156	52%	567	50%

Diagnosis and categories of ailments:

During the week, MCC checked 1131 children. The overall health and nutritional status of the children was moderately poor, with 15 %of stunting and 29% of anaemia.

Most of the ailments, except the dental problems, could be treated on the spot.

For more detailed information see table 1 of the appendix. For treatment given during the medical camp see table of the appendix.

Table 3: Prevalence of selected diagnosis per GEOGRAPHICAL LOCATION

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon		
	n /	N	%	n /	N	%	n /	N	%	n /	N	%
Pneumonia (clinical diagnosis)	6 /	214	3%	6 /	102	6%	3 /	151	2%	0 /	61	0%
Caries n.o.s.	35 /	214	16%	15 /	102	15%	33 /	151	22%	18 /	61	30%
Caries with pain	12 /	214	6%	0 /	102	0%	5 /	151	3%	7 /	61	11%
Dermatomycosis	18 /	214	8%	4 /	102	4%	24 /	151	16%	2 /	61	3%
Physiological murmur	11 /	214	5%	2 /	102	2%	2 /	151	1%	1 /	61	2%
LOCATION	Kalamlaibei/Kibonze			Chebugundi			St. Peter			Total		
	n /	N	%	n /	N	%	n /	N	%	n /	N	%
Pneumonia (clinical diagnosis)	2 /	118	2%	4 /	201	2%	6 /	302	2%	25 /	1131	2%
Caries n.o.s.	20 /	118	17%	33 /	201	16%	51 /	302	17%	202 /	1131	18%
Caries with pain	3 /	118	3%	6 /	201	3%	32 /	302	11%	65 /	1131	6%
Dermatomycosis	7 /	118	6%	33 /	201	16%	65 /	302	22%	153 /	1131	14%
Physiological murmur	5 /	118	4%	1 /	201	0%	1 /	302	0%	24 /	1131	2%

1: Growth abnormality and malnutrition:

(underweight: 20% (222/1131), stunting: 12% (138/1131), wasting: 15% (119/775)

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 nutritious 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.

It has to be noted that reference data are only available for certain heights, weights and ages (as specified above), leading to the general prevalence's of growth abnormalities of being underweight 4%, stunting 10 % and wasting 2 %.

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).

Due to missing CRF we weren't able to analyse the children who were checked in 2010 and the children who were checked in 2011 for the first time.

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

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon						
	n	/	N	%	n	/	N	%	n	/	N	%	n	/	N	%
Total	38	/	208	18%	42	/	101	42%	52	/	145	36%	3	/	61	5%
not possible	6	/	214	3%	1	/	102	1%	6	/	151	4%	0	/	61	0%
age category																
>=0 and <1	0	/	1	0%	1	/	4	25%	0	/	0	n.a.	0	/	0	n.a.
>=1 and <5	6	/	46	13%	9	/	27	33%	4	/	10	40%	0	/	6	0%
>=5 and <12	32	/	161	20%	32	/	70	46%	48	/	135	36%	3	/	55	5%
>=12 and <18	0	/	0	n.a.	0	/	0	n.a.	0	/	0	n.a.	0	/	0	n.a.
Boy	17	/	106	16%	23	/	54	43%	28	/	77	36%	1	/	28	4%
Girl	21	/	102	21%	19	/	47	40%	24	/	68	35%	2	/	33	6%
LOCATION	Kalamlabei/Kibonze			Chebugundi			St. Peter			Total						
	n	/	N	%	n	/	N	%	n	/	N	%	n	/	N	%
Total	40	/	117	34%	27	/	201	13%	37	/	288	13%	222	/	1103	20%
not possible	1	/	118	1%	0	/	201	0%	14	/	302	5%	28	/	1131	2%
age category																
>=0 and <1	1	/	4	25%	1	/	6	17%	0	/	0	n.a.	3	/	15	20%
>=1 and <5	10	/	26	38%	7	/	55	13%	3	/	45	7%	35	/	211	17%
>=5 and <12	29	/	86	34%	19	/	140	14%	34	/	243	14%	184	/	875	21%
>=12 and <18	0	/	0	n.a.	0	/	0	n.a.	0	/	0	n.a.	0	/	0	n.a.
Boy	16	/	53	30%	7	/	95	7%	17	/	138	12%	101	/	543	19%
Girl	24	/	64	38%	20	/	106	19%	20	/	150	13%	121	/	559	22%

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

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon		
	n	/	N	%	n	/	N	%	n	/	N	%
Total	21	/	214	10%	25	/	101	25%	27	/	151	18%
not possible	0	/	214	0%	1	/	102	1%	0	/	151	0%
age category												
>=0 and <1	0	/	1	0%	2	/	4	50%	0	/	0	n.a.
>=1 and <5	5	/	46	11%	9	/	27	33%	4	/	10	40%
>=5 and <12	16	/	164	10%	14	/	70	20%	22	/	140	16%
>=12 and <18	0	/	3	0%	0	/	0	n.a.	1	/	1	100%
Boy	12	/	112	11%	15	/	54	28%	15	/	82	18%
Girl	9	/	102	9%	10	/	47	21%	12	/	69	17%
LOCATION	Kalamlaibei/Kibonze			Chebugundi			St. Peter			Total		
	n	/	N	%	n	/	N	%	n	/	N	%
Total	21	/	118	18%	23	/	201	11%	23	/	302	8%
not possible	0	/	118	0%	0	/	201	0%	0	/	302	0%
age category												
>=0 and <1	1	/	4	25%	1	/	6	17%	0	/	0	n.a.
>=1 and <5	5	/	26	19%	10	/	55	18%	2	/	45	4%
>=5 and <12	15	/	87	17%	12	/	140	9%	19	/	250	8%
>=12 and <18	0	/	0	n.a.	0	/	0	n.a.	2	/	7	29%
Boy	10	/	54	19%	8	/	95	8%	10	/	146	7%
Girl	11	/	64	17%	15	/	106	14%	13	/	156	8%

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

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon		
	n	/	N	%	n	/	N	%	n	/	N	%
Total	19	/	143	13%	24	/	88	27%	28	/	82	34%
not possible	71	/	214	33%	14	/	102	14%	69	/	151	46%
age category												
>=0 and <1	0	/	1	0%	1	/	4	25%	0	/	0	n.a.
>=1 and <5	7	/	46	15%	6	/	27	22%	1	/	10	10%
>=5 and <12	12	/	96	13%	17	/	57	30%	27	/	72	38%
>=12 and <18	0	/	0	n.a.	0	/	0	n.a.	0	/	0	n.a.
Boy	7	/	67	10%	9	/	43	21%	12	/	40	30%
Girl	12	/	76	16%	15	/	45	33%	16	/	42	38%
LOCATION	Kalamlaibei/Kibonze			Chebugundi			St. Peter			Total		
	n	/	N	%	n	/	N	%	n	/	N	%
Total	18	/	108	17%	16	/	190	8%	25	/	158	16%
not possible	10	/	118	8%	11	/	201	5%	144	/	302	48%
age category												
>=0 and <1	0	/	4	0%	0	/	6	0%	0	/	0	n.a.
>=1 and <5	7	/	26	27%	1	/	55	2%	3	/	45	7%
>=5 and <12	11	/	77	14%	15	/	129	12%	22	/	112	20%
>=12 and <18	0	/	0	n.a.	0	/	0	n.a.	0	/	1	0%
Boy	9	/	48	19%	7	/	88	8%	8	/	81	10%
Girl	9	/	60	15%	9	/	102	9%	17	/	77	22%

During the medical check-ups of this year, we paid again attention to issues of hygiene and nutritional advise. We emphasised on hand-washing, vitamin C, fruit and vegetable intake, so the children may grow healthy and strong. We noticed the policy of mothers to feed their babies up to the age of one year or even more, sourly only with breast milk. 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. This is one the strongest arguments of MCC to link up and cooperate with other organisations, like SFFC, facilitating/paying for school lunches.

2: Anaemia: (29%, 326/1131)

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 which, through integrative interventions, addresses the various factors that play a significant role in producing anaemia in a given community. 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 326 (29%) children anemia was diagnosed. In four children (4/1131, <1%) the haemoglobin level was less than 5.0 mmol/l. One child with an Hb of 2.6 was transferred to the hospital for bloodtransfusions. We asked for a re-check of the haemoglobin level in three months in the other three children.

Table 7: prevalence of anaemia per GEOGRAPHICAL LOCATION by AGE and GENDER

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon		
	n	N	%	n	N	%	n	N	%	n	N	%
anaemia	55	213	26%	26	100	26%	27	150	18%	20	61	33%
Hb unknown	1	214	0,5%	2	102	2,0%	1	151	0,7%	0	61	0,0%
age category												
>=0 and <1	1	1	100%	2	4	50%	0	0	n.a.	0	0	n.a.
>=1 and <5	11	46	24%	8	27	30%	2	10	20%	3	6	50%
>=5 and <12	41	163	25%	16	69	23%	25	139	18%	17	55	31%
>=12 and <18	2	3	67%	0	0	n.a.	0	1	0%	0	0	n.a.
Boy	32	111	29%	17	53	32%	15	81	19%	5	28	18%
Girl	23	102	23%	9	47	19%	12	69	17%	15	33	45%
LOCATION	Kalamlaibei/Kibonze			Chebugundi			St. Peter			Total		
	n	N	%	n	N	%	n	N	%	n	N	%
anaemia	39	118	33%	77	199	39%	79	302	26%	326	1126	29%
Hb unknown	0	118	0,0%	2	201	1,0%	0	302	0,0%	5	1131	0,4%
age category												
>=0 and <1	2	4	50%	3	6	50%	0	0	n.a.	8	15	53%
>=1 and <5	9	26	35%	29	53	55%	24	45	53%	86	209	41%
>=5 and <12	27	87	31%	45	140	32%	55	250	22%	229	889	26%
>=12 and <18	0	0	n.a.	0	0	n.a.	0	7	0%	2	11	18%
Boy	19	54	35%	35	94	37%	36	146	25%	159	560	28%
Girl	20	64	31%	42	105	40%	43	156	28%	167	565	30%

We treated the children with anaemia (and their mothers if they were breast fed) with supplements for three months (21% iron, 25% multivitamins, seven mothers).

If we suspected a vitamin deficient and/or a infection we gave multivitamins instead of iron supplements.

When it comes to the prevention of anaemia, the vitamin C intake is important because vitamin C facilitates the uptake of iron in the gut (as milk counterparts it). Cheap and available sources for vitamin C in Kenia are lemon and passion fruit.

For babies, we advised exclusive breastfeeding up to six months, then start with the introduction of additional foods.

3: Worm treatment: (prophylactic 94%, 1065/1131; therapeutic 2%, 24/1131)

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%.

Table 8 shows the frequency of worm treatment of the children checked in this years mission in the last six months.

Table 8: Frequency of handing out preventive antiworm treatment per GEOGRAPHICAL LOCATION by AGE and GENDER

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon			
	n	/	N	%	n	/	N	%	n	/	N	%	
Total	184	/	214	86%	89	/	102	87%	148	/	151	98%	61 / 61 100%
Per age category													
>=0 and <1	0	/	1	0%	0	/	4	0%	0	/	0	n.a.	0 / 0 n.a.
>=1 and <5	31	/	46	67%	22	/	28	79%	7	/	10	70%	6 / 6 100%
>=5 and <12	151	/	164	92%	67	/	70	96%	140	/	140	100%	55 / 55 100%
>=12 and <18	2	/	3	67%	0	/	0	n.a.	1	/	1	100%	0 / 0 n.a.
Boy	97	/	112	87%	49	/	54	91%	81	/	82	99%	28 / 28 100%
Girl	87	/	102	85%	40	/	48	83%	67	/	69	97%	33 / 33 100%
LOCATION	Kalamlaibei/Kibonze			Chebugundi			St. Peter			Total			
	n	/	N	%	n	/	N	%	n	/	N	%	
Total	110	/	118	93%	192	/	201	96%	298	/	302	99%	1065 / 1131 94%
Per age category													
>=0 and <1	0	/	4	0%	1	/	6	17%	0	/	0	n.a.	1 / 15 7%
>=1 and <5	23	/	26	88%	54	/	55	98%	42	/	45	93%	183 / 212 86%
>=5 and <12	86	/	87	99%	137	/	140	98%	249	/	250	100%	870 / 891 98%
>=12 and <18	0	/	0	n.a.	0	/	0	n.a.	7	/	7	100%	10 / 11 91%
Boy	53	/	54	98%	93	/	95	98%	145	/	146	99%	538 / 563 96%
Girl	57	/	64	89%	99	/	106	93%	153	/	156	98%	527 / 567 93%

Preventive antiworm treatment was given to 94% 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 geographical, remote lcoation of the villages visited.

We treated children who were not in a de-worming program and/or an active worm infection was suspected with Albendazol on the spot. Anamnestic information gave us the suspicion of a high prevalence of *Taenia Saginata* (tape worm) infection. Tape worm can not be treated by Albendazol/Mebendazol. The for this treatment needed niclosamide seems not available in Kenia.

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. MCC left deworming treatment for every checked child at the different locations. Pre- and non- school children got a anti-worm tablet and explanations why and when this treatment should be taken.

Simple ways of improving personal hygiene and sanitation through hand washing, nail trimming, wearing of shoes and use of a latrine and clear water supplies were encouraged.

Although all members of a population can be infected by worms, those who are at most risk and would benefit most from preventive interventions are the pre-school and school age children.

4: Pneumonia: (25/1131, 2%) (see table 2)

"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 25 children with a severe acute respiratory infection (ARI) were treated with appropriate antimicrobials and home treatment advice.

For doctors working in Europe it is amazing how few children have asthma in Kenia. We only saw five children with symptoms of asthma/bronchitis.

The principles of the Integrated Management of Childhood Illness (IMCI, see www.who.int/child-adolescent-health/integr.htm) (respiratory rate of 50 breaths per minute or more in a baby of 2 months up to 12 months, and 40 breaths per minute or more in a child of 12 months up to 5 years, lower chest wall indrawing and stridor which is a harsh noise made when the child inhales) for recognition and treatment of pneumonia were transferred to the teachers and caretakers.

5: Cardial problems: (6/1131, <1 %) (see table 1 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 life.

The MCC carousel includes a cardiac examination. We suspected six 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.

In 2010, MCC referred Vincent Kilkosgei from Kesengei to Koptic Hospital in Nairobi where he, with the support of SFFC underwent a cardiac operation. When we checked him in 2011, he was happy and healthy.

6: Skin diseases: (219/1131, 19%)(see table 1 of the appendix)

In respect to skin diseases we saw children with dermatomycoses (tinea capitis), eczema, wounds (burns and infected wounds) and scabies (26/1131, 2%).

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. The high incidence of tinea capitis (153/1131, 14%) is probably due to the habit to shave the hair of the children without changing razorblades.

7: Eye problems: (26/111, 2%) (see table 1 of the appendix)

Especially in the group of children above five years of age a rather common complaint was dry and/or painful eyes (only five children were reported (see table 1 of the appendix) but this is due underreport). Xerophthalmia can be attributed to Vitamin A deficiency. Vitamin A deficiency effect growth, the differentiation of epithelial tissues and immune competence. The most dramatic impact, however is on the eye and includes night blindness, xerosis of the conjunctiva and cornea and ultimately corneal ulceration and necrosis of the cornea. Vitamin A deficiency occurs when body stores are exhausted and supply fails to meet the body's requirements, either because there is a dietary insufficiency, requirements are increased, or intestinal absorption, transport and metabolism are impaired as a result of conditions such as diarrhoea. The most important step in preventing Vitamin A deficiency is insuring that children's diets include adequate amounts of carotene containing cereals, tubers, vegetables and fruits. We treated children with painful eye's with extra vitamin suppletion and eyedrops.

Refraction problems were reported bij 2 children.

8: Dental: (caries not otherwise specified: 202/1131,18%; painful caries: 65/1231, 6%)

In general a high caries prevalence in was found. Three 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 know association between poor dentation, health

and prevalence of disease, would make it beneficial in the future to provide dental care in this area.

After the medical check local volunteers gave out toothbrushes and educated the people in teethbrushing.

9: HIV-AIDS, tuberculosis and malaria

The diagnosis "suspected HIV/Aids", "TB" and "possible malaria" were children who told us spontaneously they were on treatment for the disease. The very low prevalence of these diseases in the checked children is due to a lack of reorting since data of Kenia by the World Health Organisatiojn (WHO) show a under five years of age mortality of 5% due to HIV/AIDS and 11% due to malaria.

Education health workers, caretakers and other local helpers:

One of the important tasks of MCC is to encourage the continuation of health education of the caretakers and older children. During our week we talked about common diagnoses of frequent illnesses and medication. We especially focused on anaemia and malnutrition, balanced diet, infection, parasites and failure to thrive. Our information mainly to cused on nutritious food and vitamin supplements, as well as hygienic and health promotion issues.

Future medical needs:

- The children in the locations visited need more clean water for drinking and hygiene purposes. Especially providing a source of clean drinking water at the schools is important for lessons in hygiene and for giving the children a source of save drinking water when they are at school.
- It is important to stress the importance of regular (six monthly) de-worming of all children up to fourteen year of age. We have to find a way to implement such a program.
- The poor dental status in all of the visited villages show the need for a dental program. Like already proven in other third world countries, a brush at school program could be beneficial for the general health situation in these areas.
- In all locations visited, there is a strong need for comprehensive and systematic health promotion and preventive measures. Special emphasis needs to be put on personal hygiene (starting with the importance of hand washing with soap), dental care, good eating habits and nutritious food.
- There is a need to transfer information about health promotion and preventive measures to the mothers/caretakers of the children as well as knowledge of the alarming medical symptoms in children so they can find medical help in time.
- There is a need to find a method for keeping relevant medical information with the child (like the need of antibiotics before dental extraction in children with a cardial septal defect). We feel the Sophia Foundation is making a good start with trying to establish a pattern for follow-up.

Last words:

We all three feel very fortunate to be able to come back to Kenya and visit Kenya West for the first time. The KeWe11 mission has been a memorable mission in our lives.

We will never forget the support and friendship of Marina Shakola and Matheos Demetriades and the inspiring presence of our host patron Archbishop Makarios. We feel proud to form a close unit working together with people from different backgrounds and with different goals in life can when the common goal is to help children.

Arnhem, june 2011

Nadine van Dijk, organization-end-responsible MCC mission Kenia West 2011

Naomi Ketharanathan, medical-end-responsible MCC mission Kenia West 2011

Karlien Bongers, mission leader, MCC mission Kenia West 2011

Appendix Medical Report KeWe2011

Table 1 : Prevalence of selected diagnosis

LOCATION	Total	
	n / N	%
HIV positive	1 / 1131	0%
AIDS	1 / 1131	0%
Malaria (suspected)	1 / 1131	0%
Pneumonia (clinical diagnosis)	25 / 1131	2%
BHR/Asthma	5 / 1131	0%
Diarrhoea without dehydration	11 / 1131	1%
Obstipation	13 / 1131	1%
Otitis media acuta / n.o.s.	5 / 1131	0%
Otitis media with effusion	13 / 1131	1%
Otitis externa	1 / 1131	0%
Tympanic perforation	2 / 1131	0%
Caries n.o.s.	202 / 1131	18%
Fluorosis	12 / 1131	1%
Caries with pain	65 / 1131	6%
Wounds n.o.s.	9 / 1131	1%
Eczema n.o.s.	6 / 1131	1%
Dermatomycosis	153 / 1131	14%
Impetigo / furunculosis	9 / 1131	1%
Scabies	26 / 1131	2%
Wounds infected	10 / 1131	1%
Burn wound (fresh)	1 / 1131	0%
Physiological murmur	24 / 1131	2%
Pathological murmur (suspected)	6 / 1131	1%
Refractory problems	2 / 1131	0%
Strabismus	7 / 1131	1%
Keratoconjunctivitis	16 / 1131	1%
Amblyopia	1 / 1131	0%
Urinary tract infection	1 / 1131	0%
Artralgia n.o.s.	4 / 1131	0%
Fracture (old)	2 / 1131	0%
Fracture (new)	2 / 1131	0%
Hernia	1 / 1131	0%

Table 2: Frequency of selected treatments per GEOGRAPHICAL LOCATION

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon		
	n	N	%	n	N	%	n	N	%	n	N	%
Ferro	41	214	19%	12	102	12%	12	151	8%	18	61	30%
Mother iron	3	214	1%	1	102	1%	0	151	0%	0	61	0%
Multivitamins	48	214	22%	47	102	46%	58	151	38%	4	61	7%
Preventive antiworm treatment	184	214	86%	89	102	87%	148	151	98%	61	61	100%
Acute worm treatment	20	214	9%	0	102	0%	0	151	0%	0	61	0%
Amoxicilline	9	214	4%	5	102	5%	4	151	3%	1	61	2%
Augmentin	5	214	2%	2	102	2%	2	151	1%	1	61	2%
Clarithromycine/erythromycine	0	214	0%	3	102	3%	2	151	1%	0	61	0%
Hydrocortison cream	1	214	0%	0	102	0%	0	151	0%	0	61	0%
Dactarin cream	1	214	0%	1	102	1%	4	151	3%	1	61	2%
Fusidin cream	3	214	1%	2	102	2%	1	151	1%	0	61	0%
Eyedrops	3	214	1%	1	102	1%	2	151	1%	0	61	0%

Frequency of selected treatments per GEOGRAPHICAL LOCATION

LOCATION	Kalamlaibei/Kibonze			Chebugundi			St. Peter			Total		
	n	N	%	n	N	%	n	N	%	n	N	%
Ferro	22	118	19%	64	201	32%	59	302	20%	236	1131	21%
Mother iron	4	118	3%	2	201	1%	2	302	1%	12	1131	1%
Multivitamins	51	118	43%	38	201	19%	50	302	17%	279	1131	25%
Preventive antiworm treatment	110	118	93%	192	201	96%	298	302	99%	1065	1131	94%
Acute worm treatment	0	118	0%	3	201	1%	1	302	0%	24	1131	2%
Amoxicilline	2	118	2%	4	201	2%	7	302	2%	30	1131	3%
Augmentin	2	118	2%	1	201	0%	7	302	2%	19	1131	2%
Clarithromycine/erythromycine	0	118	0%	0	201	0%	0	302	0%	3	1131	0%
Hydrocortison cream	0	118	0%	3	201	1%	3	302	1%	7	1131	1%
Dactarin cream	3	118	3%	4	201	2%	1	302	0%	15	1131	1%
Fusidin cream	2	118	2%	1	201	0%	1	302	0%	11	1131	1%
Eyedrops	3	118	3%	0	201	0%	8	302	3%	17	1131	2%

Table 3: Frequency of selected Follow-ups per GEOGRAPHICAL LOCATION

LOCATION	Kesengei			Kimarek			Kimarek Primary			St. Pantalaimon		
	n	N	%	n	N	%	n	N	%	n	N	%
Dentist	2	214	1%	0	102	0%	1	151	1%	0	61	0%
Specialist in hospital	0	214	0%	1	102	1%	0	151	0%	1	61	2%
Urine + Kidney function	0	214	0%	0	102	0%	0	151	0%	0	61	0%
Bloodtest after 3 months	0	214	0%	1	102	1%	0	151	0%	0	61	0%
International organisation	5	214	2%	4	102	4%	1	151	1%	1	61	2%
LOCATION	Kalamlaibei/Kibonze			Chebugundi			St. Peter			Total		
	n	N	%	n	N	%	n	N	%	n	N	%
Dentist	0	118	0%	0	201	0%	0	302	0%	3	1131	0%
Specialist in hospital	1	118	1%	0	201	0%	0	302	0%	3	1131	0%
Urine + Kidney function	0	118	0%	0	201	0%	1	302	0%	1	1131	0%
Bloodtest after 3 months	1	118	1%	0	201	0%	1	302	0%	3	1131	0%
International organisation	1	118	1%	0	201	0%	1	302	0%	13	1131	1%