Medical Report
Kenia, Nairobi 2013

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Introduction

From June 21 up to June 28, a team of Medical Checks for Children (MCC) visited Nairobi, Naiwasha and Nyeri in Kenia and checked and treated, free of cost, 1042 children aged newborn untill 12 years of age. In the last years MCC conducted an explorative mission in August 2008 to Njeri and four MCC misions to Nairobi in March 2009, 2010, 2011 and 2012.

The MCC mission KeNa13 team was headed by Karlien Bongers, medical-end-responsible and mission leader, general surgeon and Anne Vlietstra, organization-end-responsible, family doctor in daily life. The team was completed by the three family doctors Eveline Resing, Wim Vermeulen and Randi van Oijen, Nadine Wijders, tropical medicine doctor in training, paediatric nurse Jankine Ligtvoet, medical analyst Marjan Bolt, product specialist Jet van Griethuijsen and consultant Harald Beekman.

Again, our host patron durning the Kenia stay was Archbishop Makarios, Head of the Orthodox Seminary in Riruta, Nairobi and 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.

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

- Transfer of data on demographics.
- Selection of primary schools and orphanages.
- Providing facilitating board and lodging of all MCC team members.
- Transportation of the MCC team from the airport and transportation to the check locations.
- Prior announcement of the medical camp in the locations.
- Ordering and delivery of medications.
- Giving all kinds of support to the MCC team during the medical camp.
- Managing facilitating and (pre)-payment of hospital in/out patient referrals to the Riruta Clinic and the 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. We missed Matheos Demetriades and Nopi Nicolaou Telemachou during the week of checking and like to thank them for their preparational work.

Our special thanks go to Nelson Aderi, David Alimasi, Wilson Mungai, Gerasmus Mavisi, Gerald Muchiri Hesbon Aderi, Panajota Panajotis, Chara Tsingi and Marina Shakola for their joyfull company and their hard work. 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 also go to the local translators, teachers and helpers. We enjoyed working together and 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 and 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:

The medical checks of the children were performed on seven days at different locations (see table 1).

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

	Total 2013	*Total 2012*	22-6	23-6	24-6	25-6	26-6	27-6	28-6
St Clemens	**147**	*142*	147						
Jamii Outreach	**48**	-							48
Joy Springs	**128**	*224*						54	74
Kibera village	**13**	-		3				1	9
St George	**217**	*125*		164				53	
St Paul	**105**	*150*						105	
Imani	**161**	*143*			161				
Naiwasha	**72**	*95*				72			
Makarios Home	**61**	*64*					61		
School Nyeri	**90**	*89*					89	1	
Total	**1042**	*1032*	**147**	**167**	**161**	**72**	**150**	**214**	**131**

St. Clemens school, St.Pauls school and St.George school in Kibera are supported by the Archbishop Makarios of the Greek Orthodox Church in Africa.
At the St.George school, the Sophia Foundation for Children (SFFC) started a feeding program in 2009.
The Joy Spring school in Kibera is not structual supported by any organisation, though they are involved in an deworming program of the World Health Organisation (WHO).
Jamii Outreach is a small school In Kibera nearby St George and Joy spring ans was visited for the first time.
In Navaisha we saw the vulnerable children of whom the local organisation called Monica Memorial Development Centre for Needed Children (Mmemo) takes care for and depends on financial gifts of the local church and is supprted by SFFC as well.
In Nyeri the MCC team checked the children from the Makarios Children Home supported by the Sophia Foundation for Children and children attending the local school.
For the second time, a MCC team visited "The Imani childrens home", located in Kayole, a suburb of Nairobi. "The Imani childrens home", started in 1992, is a charitable children institution (CCI) registered with the Ministry of Gender, children and social development and also has three welfare programs for abandoned and/or abused children and children with imprisoned parents. The Imani Childrens home is (partly) sponsored by the Dutch organisation FEMI (www.femi.org).

Since one of the main target of the MCC intervention is health education, it is important to see the children together with their care taker. Around half of the children (the orphange's not included) has been checked without a care taker though we are still happy, 438 children came with their care taker.

Table 1b: Child with care taker at the day of the check?

	Total		Jamii Outreach		Joy Springs		Kibera village		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1042		48		128		13		72		90		147		217		105	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No	509	49%	46	96%	127	99%	3	23%	2	3%	12	13%	0	0%	209	96%	104	99%
Yes	438	42%	2	4%	1	1%	10	77%	25	35%	78	87%	140	95%	7	3%	1	1%
Teacher	88	8%	0	0%	0	0%	0	0%	45	63%	0	0%	1	1%	0	0%	0	0%

Table 1c: Children checked last year?

	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
No	494	47%	101	63%	48	100%	68	53%	13	100%	23	38%	33	46%	17	19%	49	33%	73	34%	69	66%
Yes	548	53%	60	37%	0	0%	60	47%	0	0%	38	62%	39	54%	73	81%	98	67%	144	66%	36	34%

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.

Due to the high risk of mortality and morbidity under five years of age, the focus of MCC is checking young children.
Off all checked children, 38% of the children had the age under five (2012: 27%), 5% were babies, 56% had the age between five and ten years and 6% was older than 10 years of age. This last group is composed by the children in a special program/special location (Makarios home, Nyeri School and Naiwasha).
The age of the checked children was different at the different locations due to the setting (Kindergarten, school age, supporting vulnerable children). This makes the data from the different locations less comparable.

Table 2: Summary of checked children per geographical location, age and gender in 2013

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1042		Total	=161	Total	=48	Total	=128	Total	=13	Total	=61	Total	=72	Total	=90	Total	=147	Total	=217	Total	=105
Age (in years)																						
<=1	55	**5%**	33	20%	0	0%	1	1%	5	38%	2	3%	1	1%	1	1%	9	6%	2	1%	1	1%
>1-<5	354	**34%**	80	50%	16	33%	47	37%	9	69%	5	8%	6	8%	12	13%	29	20%	61	28%	89	85%
<5	398	**38%**	106	66%	16	33%	47	37%	12	92%	7	11%	7	10%	12	13%	38	26%	63	29%	90	86%
>=5-<=10	579	**56%**	56	35%	32	67%	81	63%	0	0%	28	46%	57	79%	64	71%	109	74%	137	63%	15	14%
>10	66	**6%**	0	0%	0	0%	0	0%	1	8%	26	**43%**	8	11%	14	16%	0	0%	17	8%	0	0%
Gender																						
Boy	553	**53%**	87	54%	20	42%	64	50%	4	31%	32	52%	47	65%	41	46%	87	59%	112	52%	59	56%
Girl	489	**47%**	74	46%	28	58%	64	50%	9	69%	29	48%	25	35%	49	54%	60	41%	105	48%	46	44%

Table 3: Number, age and gender distribution of the 1064 checked children at the different locations in 2011 and 2012

2012	Total		Imani		Joy Springs		Makarios home		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1032		Total	=143	Total	=224	Total	=64	Total	=95	Total	=89	Total	=142	Total	=125	Total	=150
<=1	**73**	**7%**	53	37%	4	2%	0	0%	8	8%	4	4%	4	3%	0	0%	0	0%
>1 and <5	**275**	**27%**	54	38%	65	29%	3	5%	24	25%	11	12%	19	13%	52	42%	47	31%
<5	**348**	**34%**	107	75%	69	31%	3	5%	32	34%	15	17%	23	16%	52	42%	47	31%
>=5 and <=10	**627**	**61%**	36	25%	154	69%	23	36%	56	59%	63	71%	119	84%	73	58%	103	69%
>10	**57**	**6%**	0	0%	1	0%	38	59%	7	7%	11	12%	0	0%	0	0%	0	0%
Gender																		
Boy	**553**	**54%**	80	56%	122	54%	33	52%	56	59%	44	49%	85	60%	61	49%	72	48%
Girl	**479**	**46%**	63	44%	102	46%	31	48%	39	41%	45	51%	57	40%	64	51%	78	52%
2011	**1064**				Total	=383	Total	=81	Total	=123	Total	=89			Total	=122	Total	=72
and <1	**16**	**2%**			3	1%	0	0%	2	2%	5	4%			1	1%	0	0%
>=1 and <5	**235**	**22%**			63	16%	6	7%	17	14%	20	17%			59	48%	15	21%
>=5 and <12	**618**	**58%**			273	71%	30	37%	82	67%	63	53%			62	51%	55	76%
>=12 and <18	**180**	**17%**			44	11%	45	56%	22	18%		25%			0	0%	2	3%
Gender											30							
Boy	**544**	**51%**			184	48%	41	51%	79	64%	52	44%			58	48%	35	49%
Girl	**519**	**49%**			199	52%	40	49%	44	36%	66	56%			64	52%	37	51%

*The data of Nyeri School/village include 101 children of the Nyeri School and 17 children of Nyeri village.

In total the amount of checked boys (53%) was slightly higher than the amount of checked girls (47%). The percentage's of checked boy's and girls were different at the different locations (see table 2).

On each location the children stood in line for the check up in the medical carrousel. They were given a numbered form and were admitted to the first station where their name, age and MCC number were written on the form by a local helper. This paper was than given to the child who kept it until his or her treatment had been completed. If checked by MCC in former years (53% of total), efforts were taken to collect the form(s) of earlier checks and compare the results on individual basis.
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.
Afterwards the child was sent to the station where the clinical forms were kept after medication was dispensed and information was given with the help of a local worker.
When indicated by the doctors, the child was referred to a local dentist or hospital.
At the end of the medical carrousel, every child got a toothbrush, tooth paste and soap together with instructions for the child and the care taker about how to brush their teeth, proper hand washing and healthy food.
At locations where a lot of care takers came along with the children and/or where older children were seen, we used an extra station for individual education about healthy (food) habits with (local) examples of healthy food.
Wherever in the medical carrousel we made efforts to include local volunteers (medical workers, teachers, students etc.) in the care of the children.

Diagnosis and categories of ailments:
During the week, the MCC team checked 1042 children in Nairobi, Naiwasha and Nyeri.
Most of the medical cases which received the attention of the MCC team were growth abnormalities (stunting 14%, Underweight 5%, wasting 1%), anaemia (26%), skin problems and worm infections.
Most of the ailments, (except the dental problems, since a dentist was not part of the medical; carrousel), could be treated on the spot.
For more detailed information on all diagnoses see table 4a for comparisson of prevalence of selected diseases with the prevalence in 2012 see table 4b. For treatment given during the medical camp see table 5 and 6 and for information about referrals see table 7.

Table 4a : Disease prevalence among all children per geographical location in 2013

	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Underweight	53	5%	12	7%	4	8%	1	1%	0	0%	3	5%	14	19%	6	7%	5	3%	7	3%	1	1%
Stunting	151	14%	58	36%	12	25%	4	3%	0	0%	20	33%	19	26%	9	10%	14	10%	10	5%	5	5%
Wasting	12	1%	1	1%	1	2%	0	0%	0	0%	1	2%	1	1%	2	2%	3	2%	1	0%	2	2%
Anaemia	275	26%	53	33%	12	25%	21	16%	3	23%	24	39%	9	13%	43	48%	36	24%	48	22%	26	25%
HIV pos. (suspected	18	2%	2	1%	0	0%	0	0%	0	0%	8	13%	2	3%	3	3%	1	1%	2	1%	0	0%
AIDS(confirmed)	3	0%	0	0%	0	0%	0	0%	0	0%	1	2%	0	0%	2	2%	0	0%	0	0%	0	0%
Malaria (suspected)	2	0%	1	1%	1	2%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
suspected (sexual) abuse	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
syndrome n.o.s.	8	1%	2	1%	0	0%	1	1%	0	0%	1	2%	1	1%	2	2%	0	0%	1	0%	0	0%
pneumonia (clinical)	42	4%	6	4%	2	4%	5	4%	2	15%	2	3%	0	0%	3	3%	6	4%	11	5%	5	5%
pneumonia (X-ray confirmed)	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%
tuberculosis (clinical)	3	0%	0	0%	0	0%	0	0%	1	8%	0	0%	0	0%	0	0%	1	1%	1	0%	0	0%
tuberculosis	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%	0	0%

(X-ray confirmed)																						
BHR/asthma	9	1%	2	1%	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	5	3%	1	0%	0	0%
gardia	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
dysenteria	3	0%	0	0%	0	0%	0	0%	1	8%	0	0%	1	1%	0	0%	0	0%	1	0%	0	0%
dehydration : acute diarrhoea	5	0%	0	0%	0	0%	0	0%	2	15%	0	0%	2	3%	0	0%	0	0%	1	0%	0	0%
dehydration : chronic diarrhoea	1	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
diarrhoea without dehydration	10	1%	0	0%	0	0%	2	2%	2	15%	0	0%	1	1%	0	0%	2	1%	3	1%	0	0%
constipation	26	2%	2	1%	1	2%	5	4%	1	8%	0	0%	4	6%	2	2%	4	3%	4	2%	3	3%
active worm infection	11	1%	1	1%	0	0%	3	2%	1	8%	0	0%	1	1%	0	0%	3	2%	2	1%	0	0%
otitis media acuta	20	2%	4	2%	1	2%	3	2%	1	8%	0	0%	0	0%	0	0%	3	2%	3	1%	5	5%
otitis media with effusion	1	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
otitis externa	4	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	1	1%	2	1%	0	0%
tympanic perforation	1	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
mastoiditis	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
(adeno)tonsillitis	3	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%	2	2%
candida stomatitis	4	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	2	1%	1	0%	0	0%
hearing impairment	1	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
other	4	0%	0	0%	0	0%	1	1%	0	0%	0	0%	1	1%	1	1%	0	0%	0	0%	1	1%
cariës n.o.s.	125	12%	9	6%	6	13%	22	17%	0	0%	10	16%	7	10%	14	16%	25	17%	26	12%	6	6%
pain n.o.s	8	1%	1	1%	0	0%	3	2%	0	0%	0	0%	1	1%	1	1%	1	1%	1	0%	0	0%
fluorosis	52	5%	8	5%	1	2%	4	3%	0	0%	5	8%	31	43%	2	2%	0	0%	0	0%	1	1%
caries with pain	20	2%	0	0%	0	0%	4	3%	0	0%	1	2%	3	4%	2	2%	3	2%	6	3%	1	1%
wounds n.o.s.	5	0%	4	2%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%
eczema n.o.s.	16	2%	2	1%	0	0%	0	0%	0	0%	1	2%	0	0%	6	7%	4	3%	3	1%	0	0%
dermatomycosis	84	8%	11	7%	11	23%	8	6%	3	23%	1	2%	8	11%	9	10%	20	14%	12	6%	1	1%
Impetigo	12	1%	6	4%	1	2%	0	0%	0	0%	1	2%	0	0%	0	0%	1	1%	3	1%	0	0%
scabies	12	1%	1	1%	0	0%	1	1%	0	0%	1	2%	3	4%	1	1%	0	0%	5	2%	0	0%
erysipelas	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
wounds infected,	7	1%	0	0%	0	0%	3	2%	0	0%	1	2%	0	0%	0	0%	0	0%	3	1%	0	0%
psychomotoric retardation	7	1%	1	1%	0	0%	0	0%	0	0%	2	3%	0	0%	1	1%	1	1%	0	0%	2	2%
hypertonia	2	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	0	0%	1	1%
hypotonia	2	0%	0	0%	0	0%	0	0%	0	0%	1	2%	0	0%	0	0%	1	1%	0	0%	0	0%
epilepsy	3	0%	0	0%	0	0%	0	0%	0	0%	2	3%	0	0%	0	0%	1	1%	0	0%	0	0%
spina bifida	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%	0	0%
physiological murmer	5	0%	1	1%	0	0%	0	0%	0	0%	0	0%	2	3%	0	0%	0	0%	1	0%	1	1%
pathological murmur (suspected)	4	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	2	1%	0	0%	1	0%	0	0%
refractory problem	3	0%	0	0%	0	0%	0	0%	0	0%	1	2%	0	0%	0	0%	0	0%	2	1%	0	0%
keratoconjunctivits	5	0%	0	0%	0	0%	0	0%	0	0%	2	3%	1	1%	0	0%	2	1%	0	0%	0	0%
diabetes	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
epi/hypospadia	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
cryptorchism	2	0%	2	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
inguinal hernia	1	0%	0	0%	0	0%	0	0%	1	8%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
urinary infection	12	1%	1	1%	1	2%	2	2%	0	0%	0	0%	1	1%	0	0%	2	1%	5	2%	0	0%

chronic kidney	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
artralgia n.o.s.	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
septic arthritis	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
hip dysplasia	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
old fracture	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
new fracture	1	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
other abdomen	6	1%	1	1%	0	0%	0	0%	1	8%	0	0%	0	0%	1	1%	0	0%	2	1%	1	1%

Table 4b : (Selected) Disease prevalence among all children per geographical location in 2012 and 2013

2013	**Total**		**Imani**		**Jamii Outreach**		**Joy Springs**		**Kibera village**		**Makarios Home**		**Nai washa**		**School Nyeri**		**St Clemens**		**St George**		**St Paul**	
	1042		**161**		**48**		**128**		**13**		**61**		**72**		**90**		**147**		**217**		**105**	
	N	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Underweight	53	5%	12	7%	4	8%	1	1%	0	0%	3	5%	14	19%	6	7%	5	3%	7	3%	1	1%
Stunting	151	14%	58	36%	12	25%	4	3%	0	0%	20	33%	19	26%	9	10%	14	10%	10	5%	5	5%
Wasting	12	1%	1	1%	1	2%	0	0%	0	0%	1	2%	1	1%	2	2%	3	2%	1	0%	2	2%
Anaemia	275	26%	53	33%	12	25%	21	16%	3	23%	24	39%	9	13%	43	48%	36	24%	48	22%	26	25%
HIV pos. (suspected	18	2%	2	1%	0	0%	0	0%	0	0%	8	13%	2	3%	3	3%	1	1%	2	1%	0	0%
AIDS(confirmed)	3	0%	0	0%	0	0%	0	0%	0	0%	1	2%	0	0%	2	2%	0	0%	0	0%	0	0%
syndrome n.o.s.	8	1%	2	1%	0	0%	1	1%	0	0%	1	2%	1	1%	2	2%	0	0%	1	0%	0	0%
pneumonia (clinical)	42	4%	6	4%	2	4%	5	4%	2	15%	2	3%	0	0%	3	3%	6	4%	11	5%	5	5%

2012	**Total**		**Imani**			**Joy Springs**			**Makarios home**		**Nai washa**		**School Nyeri**		**St Clemens**		**St George**		**St Paul**	
	1032		**143**			**224**			**64**		**95**		**89**		**142**		**125**		**150**	
	N	**%**	**n**	**%**		**n**	**%**		**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Underweight	100	10%	56	39%		5	2%		3	5%	13	14%	6	7%	5	4%	5	4%	7	5%
Stunting	166	16%	83	58%		5	2%		14	22%	22	23%	5	6%	11	8%	12	10%	14	9%
Wasting	43	4%	15	10%		4	2%		1	2%	6	6%	3	3%	6	4%	2	2%	6	4%
Anaemia	251	24%	47	33%		53	24%		15	23%	16	17%	25	28%	45	32%	19	15%	31	21%
HIV pos.	19	2%	6	4%		0	0%		12	19%	0	0%	0	0%	1	1%	0	0%	0	0%
syndrome n.o.s.	7	1%	1	1%		0	0%		0	0%	5	5%	0	0%	1	1%	0	0%	0	0%
pneumonia (clinical)	32	3%	7	5%		6	3%		2	3%	5	5%	0	0%	7	5%	4	3%	1	1%

Table 5: Treatment among all children per geographical location 2013

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
ferro	170	16%	22	14%	9	19%	17	13%	1	8%	13	21%	4	6%	33	37%	30	20%	24	11%	17	16%
mother iron	2	0%	0	0%	0	0%	0	0%	1	8%	0	0%	0	0%	0	0%	1	1%	0	0%	0	0%
multivitamins	200	19%	62	39%	10	21%	9	7%	2	15%	22	36%	24	33%	9	10%	20	14%	23	11%	19	18%
anti-worm	502	48%	4	2%	42	88%	5	4%	7	54%	3	5%	71	99%	74	82%	131	89%	61	28%	104	99%
acute worm	8	1%	1	1%	0	0%	3	2%	0	0%	0	0%	1	1%	0	0%	1	1%	2	1%	0	0%
anti-scabies	7	1%	0	0%	0	0%	0	0%	0	0%	0	0%	3	4%	0	0%	0	0%	4	2%	0	0%
niclosamide	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
amoxicillin	70	7%	8	5%	5	10%	11	9%	3	23%	2	3%	2	3%	2	2%	8	5%	19	9%	10	10%
augmentin	3	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	2	1%	0	0%
2e lijns antibiotica	1	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
metranidazol	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
co-trimoxazol	6	1%	2	1%	0	0%	0	0%	1	8%	0	0%	1	1%	1	1%	0	0%	1	0%	0	0%
ceftriaxon	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
AB urine infection	3	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	2	1%	1	0%	0	0%
paracetamol	2	0%	0	0%	1	2%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%	0	0%
ORS	1	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
eardrops	8	1%	3	2%	0	0%	1	1%	0	0%	1	2%	0	0%	0	0%	1	1%	2	1%	0	0%
nystatine	4	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	0	0%	2	1%	1	0%	0	0%
Bactroban	5	0%	2	1%	0	0%	0	0%	0	0%	1	2%	0	0%	0	0%	0	0%	2	1%	0	0%
cortisone cream	13	1%	1	1%	0	0%	0	0%	0	0%	1	2%	0	0%	5	6%	3	2%	3	1%	0	0%
dactarin cream	31	3%	4	2%	3	6%	4	3%	2	15%	1	2%	4	6%	3	3%	5	3%	5	2%	0	0%
dactacort cream	7	1%	2	1%	0	0%	0	0%	1	8%	0	0%	0	0%	0	0%	3	2%	1	0%	0	0%
fusidin cream	9	1%	3	2%	0	0%	1	1%	0	0%	0	0%	0	0%	1	1%	2	1%	2	1%	0	0%
iodine	2	0%	0	0%	1	2%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%	0	0%
griseofulvin	39	4%	6	4%	6	13%	3	2%	1	8%	0	0%	3	4%	6	7%	8	5%	6	3%	0	0%
eyedrops	4	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	2	1%	1	0%	0	0%

Table 6: Selected treatment per geographical location 2013, 2012 and 2011

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
Iron child	170	16%	22	14%	9	19%	17	13%	1	8%	13	21%	4	6%	33	37%	30	20%	24	11%	17	16%
mother iron	2	0%	0	0%	0	0%	0	0%	1	8%	0	0%	0	0%	0	0%	1	1%	0	0%	0	0%
multivitamins	200	19%	62	39%	10	21%	9	7%	2	15%	22	36%	24	33%	9	10%	20	14%	23	11%	19	18%
anti-worm	502	48%	4	2%	42	88%	5	4%	7	54%	3	5%	71	99%	74	82%	131	89%	61	28%	104	99%
acute worm	8	1%	1	1%	0	0%	3	2%	0	0%	0	0%	1	1%	0	0%	1	1%	2	1%	0	0%
amoxicillin	70	7%	8	5%	5	10%	11	9%	3	23%	2	3%	2	3%	2	2%	8	5%	19	9%	10	10%
2012	**1032**		**143**				**224**				**64**		**95**		**89**		**142**		**125**		**150**	
Iron child	174	17%	6	4%			47	21%			10	16%	10	11%	20	22%	40	28%	16	13%	25	17%
mother iron	4	0%	0	0%			2	1%			0	0%	1	1%	0	0%	1	1%	0	0%	0	0%
multivitamins	189	18%	88	62%			6	3%			13	20%	28	29%	10	11%	16	11%	13	10%	15	10%
anti-worm	429	42%	1	1%			0	0%			0	0%	23	24%	1	1%	132	93%	124	99%	148	99%
acute worm	3	0%	0	0%			0	0%			0	0%	0	0%	0	0%	1	1%	2	2%	0	0%
amoxicillin	24	2%	5	3%			6	3%			2	3%	5	5%	0	0%	3	2%	3	2%	0	0%
2011	**1064**						**383**				**81**		**123**		**118**				**122**		**72**	
iron child	239	22%					96	25%			18	22%	9	7%	22	19%		51		42%	15	21%
mother iron	6	1%					2	1%			0	0%	1	1%	1	1%		0		0%	0	0%
multivitamins	181	17%					35	9%			16	20%	36	29%	16	14%		24		20%	4	6%
anti-worm	544	51%					13	3%			11	14%	114	93%	98	83%		108		89%	70	97%
acute worm	16	2%					0	0%			0	0%	5	4%	0	0%		10		8%	1	1%

Table 7: Follow-up of all children per geographical location in 2013 and 2012

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Dentist	5	0%	0	0%	0	0%	1	1%	0	0%	0	0%	1	1%	2	2%	0	0%	1	0%	0	0%
Specialist in hospital	25	2%	1	1%	1	2%	3	2%	1	8%	2	3%	2	3%	4	4%	5	3%	5	2%	1	1%

2012	Total		Imani		Joy Springs		Makarios home		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1032		Total	=143	Total	=224	Total	=64	Total	=95	Total	=89	Total	=142	Total	=125	Total	=150
Dentist	11	1%	0	0%	7	3%	1	2%	0	0%	1	1%	0	0%	0	0%	2	1%
Specialist in hospital	13	1%	2	1%	3	1%	0	0%	3	3%	0	0%	3	2%	2	2%	0	0%

1: Growth abnormality and malnutrition:

Malnutrition has been related to poor cognitive and school performance. There is strong evidence to suggest that malnutrition places children under the age of five 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.

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 5% (10% in 2012), stunting 14 % (16 % in 2012) and wasting 1% (6 % in 2012).

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Underweight	53	5%	12	7%	4	8%	1	1%	0	0%	3	5%	14	19%	6	7%	5	3%	7	3%	1	1%
Stunting	151	14%	58	36%	12	25%	4	3%	0	0%	20	33%	19	26%	9	10%	14	10%	10	5%	5	5%
Wasting	12	1%	1	1%	1	2%	0	0%	0	0%	1	2%	1	1%	2	2%	3	2%	1	0%	2	2%

Analysis of the nutritional status shows significant differences among the locations visited.

Within the children assessed, it is unknown how many children exactly have HIV related weight loss (wasting syndrome) since in only 21 children (2%) HIV positivity/AIDS was reported which seems an underestimation.

In Imani Children's Home we found as in 2012 a higher prevalence of growth abnormalities (underweight 7% (39% in 2012), stunting 36% (58% in 2012), wasting 1% (12% in 2012) though it has improved tremendiously. It seems the staff of the Imani Children Home followed othe advice to change the composition of the food with more vitamins and fat. Still the finding of 41% of the children between 1 and 5 years of age having stunting should be a call to evaluate feeding procedures since at this age children will not eat by themselves and should be supported.

The higher percentage of growth abnormalities in Naiwasha (underweight 19% (15% in 2012), stunting 26% (23% in 2012), wasting 1% (9% in 2012) is partly a reflection of the selection of the vulnerable children by the local organisation Monica Memorial Development Centre for Needed Children (Mmemo) and partly biased by age selection.

At Makarios Home we only found stunting in the children older than ten years of age. This seems a refelection of the selection of children living in Nyeri orphage (orphans, streetchildren, children from prison, children with AIDS etcetera) which were not well taken care for at a younger age.

Striking is the fact that although the background of the younger children is the same as the older children, the children younger than 10 years of age did not have any growth disturbance which reflect the enourmous importance of a well designed supporting plan for children at a young age including a good and balanced diet.

Table 8: Prevalence of weight/age at or under P3 (underweight) per geographical location by age and gender in 2012 and 2013 *(measurable up to10 years of age)*

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
Underweight	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Underweight	53	5%	12	7%	4	8%	1	1%	0	0%	3	9%	14	22%	6	8%	5	3%	7	4%	1	1%
No underweight	921	95%	149	93%	44	92%	127	99%	12	100%	32	91%	50	78%	70	92%	141	97%	192	96%	104	99%
Unknown	68	7%	0	0%	0	0%	0	0%	1	8%	26	43%	8	11%	14	16%	1	1%	18	8%	0	0%
per age																						
<=1 year	5	9%	3	9%	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	1	13%	0	0%	0	0%
>1 - <5 years	14	4%	8	10%	1	6%	0	0%	0	0%	0	0%	1	17%	1	8%	1	3%	1	2%	1	1%
<5 years	17	4%	10	9%	1	6%	0	0%	0	0%	0	0%	1	14%	1	8%	2	5%	1	2%	1	1%
>=5 - <=10 years	36	6%	2	4%	3	9%	1	1%	0	0%	3	11%	13	23%	5	8%	3	3%	6	4%	0	0%
per gender																						
Boy	36	7%	9	10%	1	5%	1	2%	0	0%	2	10%	11	26%	3	9%	4	5%	4	4%	1	2%
Girl	17	4%	3	4%	3	11%	0	0%	0	0%	1	7%	3	14%	3	7%	1	2%	3	3%	0	0%
2012	**1032**		**143**				**224**				**64**		**95**		**89**		**142**		**125**		**150**	
Underweight	100	**10%**	56	39%			5	2%			3	12%	13	15%	6	8%	5	4%	5	4%	7	5%
per age																						
<=1	24	33%	22	42%			0	0%			0	0%	2	25%	0	0%	0	0%	0	0%	0	0%
>1 en <5	41	15%	30	56%			2	3%			1	33%	3	13%	0	0%	1	5%	2	4%	2	4%
<5	65	19%	52	49%			2	3%			1	33%	5	16%	0	0%	1	4%	2	4%	2	4%
>=5 en <=10	35	6%	4	11%			3	2%			2	9%	8	14%	6	10%	4	3%	3	4%	5	5%
per gender																						
Boy	70	13%	43	54%			3	2%			2	11%	9	17%	3	8%	3	4%	3	5%	4	6%
Girl	30	7%	13	21%			2	2%			1	13%	4	12%	3	7%	2	4%	2	3%	3	4%

Table 9: Prevalence of length/age at or under P3 (stunting) per geographical location by age and gender in 2012 and 2013*(measurable up to19 years of age)*

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St	Paul
	1042		161		48		128		13		61		72		90		147		217		105	
Stunting	151	15%	58	36%	12	25%	4	3%	0	0%	20	33%	19	27%	9	10%	14	10%	10	5%	5	5%
No stunting	887	85%	103	64%	36	75%	124	97%	13	100%	41	67%	52	73%	81	90%	132	90%	206	95%	99	95%
Unknown	4	0%																				
per age (years)	19	35%	14	42%	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	4	50%	0	0%	0	0%
<=1	51	14%	33	41%	6	38%	0	0%	0	0%	1	20%	0	0%	2	17%	3	10%	2	3%	4	5%
>1 - <5	65	16%	43	41%	6	38%	0	0%	0	0%	1	14%	0	0%	2	17%	7	19%	2	3%	4	4%
<5	64	11%	15	27%	6	19%	4	5%	0	0%	4	14%	14	25%	5	8%	7	6%	8	6%	1	7%
>=5 - <=10	22	34%	0	0%	0	0%	0	0%	0	0%	15	58%	5	71%	2	14%	0	0%	0	0%	0	0%
per gender																						
Boy	98	18%	40	46%	5	25%	2	3%	0	0%	11	34%	14	30%	6	15%	12	14%	5	4%	3	5%
Girl	53	11%	18	24%	7	25%	2	3%	0	0%	9	31%	5	21%	3	6%	2	3%	5	5%	2	4%
2012																						
Stunting	166	**16%**	83	58%			5	2%			14	26%	22	23%	5	6%	11	8%	12	10%	14	9%
per age																						
<=1	44	60%	37	70%			2	3%			0	0%	5	63	0	0%	1	25	0	0%	0	0%
>1 - <5	55	20%	38	70%			3	2%			0	0%	5	21	0	0%	2	11	6	12%	3	6%
<5	99	28%	75	70%			0	0%			0	0%	10	31%	0	0%	3	13%	6	12%	3	6%
>=5 - <=10	50	8%	8	22%			2	2%			3	13%	8	14%	3	5%	8	7%	6	8%	11	11%
>10 years	17	40%	0	0%			3	3%			11	41%	4	57%	2	29	0	0%	0	0%	0	0%
per gender																						
Boy	102	19%	56	70%			56	70%			6	20%	12	21%	3	7%	9	11%	9	15%	5	7%
Girl	64	14%	27	43%			27	43%			8	35%	10	26%	2	5%	2	4%	3	5%	9	12%

Table 10: Prevalence of weight/length at or under P3 (wasting) per geographical location by age and gender *(measurable up to 1.20m)*

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
Wasting	12	2%	1	1%	1	2%	0	0%	0	0%	1	5%	1	2%	2	5%	3	3%	1	1%	2	2%
No wasting	742	98%	150	99%	41	98%	101	100%	12	100%	20	95%	41	98%	40	95%	93	97%	144	99%	100	98%
Unknown	288	28%	10	6%	6	13%	27	21%	1	8%	40	66%	30	42%	48	53%	51	35%	72	33%	3	3%
Per age																						
<=1 year	0	0%	0	0%	0		0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
>1 en <5 years	4	1%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	2%	2	2%
<5 years	4	1%	1	1%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	2%	2	2%
>=5 en <=10 years	8	2%	0	0%	1	4%	0	0%	0	0%	1	6%	1	3%	2	7%	3	5%	0	0%	0	0%
>10 years	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
per gender																						
Boy	6	2%	1	1%	0	0%	0	0%	0	0%	1	8%	1	4%	0	0%	2	4%	0	0%	1	2%
Girl	6	2%	0	0%	1	4%	0	0%	0	0%	0	0%	0	0%	2	8%	1	2%	1	2%	1	2%
2012																						
Wasting	43	**6%**	15	12%			4	3%			1	7%	6	9%	3	7%	6	7%	2	2%	6	5%
per age																						
<=1	11	15%	10	19%			0	0%			0	0%	1	13%	0	0%	0	0%	0	0%	0	0%
>1 en <5	13	5%	5	9%			0	0%			1	33%	3	13%	0	0%	1	5%	1	2%	2	4%
<5	24	7%	15	14%			0	0%			1	33%	4	13%	0	0%	1	4%	1	2%	2	4%
>=5 en <=10	19	5%	0	0%			4	5%			0	0%	2	6%	3	10%	5	8%	1	1%	4	6%
>10	0	0%	0	0%			0	0%			0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
per gender																						
Boy	25	6%	11	15%			2	2%			1	11%	5	14%	1	4%	1	2%	1	2%	3	5%
Girl	18	5%	4	7%			2	3%			0	0%	1	4%	2	10%	5	16%	1	2%	3	5%

During the medical check-ups, 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:
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 litreature it is known that one should suspect an infection with H. pylori when the iron deficiency anaemia is refractory to iron administration.

Anemia was diagnosed in 26% of all checked children, which is higher then the number found in 2012 (24%). This higher prevalence is mailny due to the prevalence of anemia in children living in Imani Children's Home (33%), Makarios Children Home (39%) and the school of Nyeri (48%). In Imani this prevalence is the same as 2012.
In Makarios Home and Nyeri school the prevalence has detoriated since last years (23% - 28%, see table 11). Maybe this has to do with the financial crisis worl wide which had unfortunately its impact on the funding of SFFC and therefore on the availabilty of food at Nyeri.
In 2011 St George school the food program was very effective treating protein-energy malnutrition, but less successful to iron deficient anaemia (anaemia in 2011 in St George was 56%). We discussed our

findings with SFFC, the sponsor of the foodprogram and in 2012 and the program was changed. In 2012 only 15% of the children was anaemic (far less than at other locations). The prevalence of 33% anamia at Imani Children's Home should be addressed through close evaluation of the food-based strategy, especially dietary diversification with close attention to and vitamin C containing food and not giving milk togetjher with the food.

We treated the children with anaemia (and their mothers if they were there and breast fed) with supplements for three months. If we suspected a vitamin deficiet and/or an infection we gave multivitamins instead of iron supplements.
In ten children the Haemoglobin level was less than 5.0 mmol/l. In one we diagnosed a Sickle cell crisis. The Sophia Foundation paied for the clinical treatment.

Table 11: Prevalence of anemia per geographical location by age and gender in 2013, 2012 and 2011

2013	**Total**		**Imani**		**Jamii Outreach**		**Joy Springs**		**Kibera village**		**Makarios Home**		**Nai washa**		**School Nyeri**		**St Clemens**		**St George**		**St Paul**	
	1042		**161**		**48**		**128**		**13**		**61**		**72**		**90**		**147**		**217**		**105**	
Anaemia	**N**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Anaemia	275	26%	53	33%	12	25%	21	16%	3	23%	24	39%	9	13%	43	48%	36	24%	48	22%	26	25%
No anaemia	760	73%	106	66%	34	71%	107	84%	10	77%	37	61%	63	88%	47	52%	111	76%	169	78%	76	72%
Unknown	7	1%	2	1%	2	4%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	3	3%
Hb <5,0 mmol	10	1%	0	0%	1	2%	0	0%	0	0%	2	3%	1	1%	0	0%	3	2%	3	1%	0	0%
per age																						
<=1	21	38%	13	39%	0	0%	1	100%	2	40%	2	100%	1	100%	0	0%	1	11%	0	0%	1	100%
>1 en <5	103	29%	26	33%	2	13%	10	21%	1	11%	4	80%	1	17%	6	50%	13	45%	16	26%	24	27%
<5	122	31%	38	36%	2	13%	10	21%	3	25%	6	86%	2	29%	6	50%	14	37%	16	25%	25	28%
>=5 en <=10	135	23%	15	27%	10	31%	11	14%	0	0%	8	29%	6	11%	30	47%	22	20%	32	23%	1	7%
>10	18	27%	0	0%	0	0%	0	0%	0	0%	10	38%	1	13%	7	50%	0	0%	0	0%	0	0%
per gender																						
Boy	162	29%	34	39%	7	35%	12	19%	1	25%	8	25%	6	13%	26	63%	19	22%	33	29%	16	27%
Girl	113	23%	19	26%	5	18%	9	14%	2	22%	16	55%	3	12%	17	35%	17	28%	15	14%	10	22%

2012	**Total**		**Imani**				**Joy Springs**			**Makarios home**		**Naiwasha**		**School Nyeri**		**St Clemens**		**St George**		**St Paul**	
	1032		**143**				**224**			**64**		**95**		**89**		**142**		**125**		**150**	
Anaemia	251	**24%**	47	33%			53	24%		15	23%	16	17%	25	28%	45	32%	19	15%	31	21%
No anaemia	776	75%	96	67%			170	76%		49	77%	79	83%	63	71%	96	68%	104	83%	119	79%
Unknown	5	0%	0	0%			1	0%		0	0%	0	0%	1	1%	1	1%	2	2%	0	0%
Hb <5,0 mmol	**5**	0%	0	0%			0	0%		0	0%	1	1%	0	0%	1	1%	3	2%	0	0%
per age																					
<=1	34	47%	25	47%			3	75%		0	0%	3	38%	1	25%	2	50%	0	0%	0	0%
>1 en <5	69	25%	18	33%			15	23%		0	0%	5	21%	3	27%	7	37%	9	17%	12	26%
<5	103	30%	43	40%			18	26%		0	0%	8	25%	4	27%	9	39%	9	17%	12	26%
>=5 en <=10	138	22%	4	11%			35	23%		9	39%	7	13%	18	29%	36	30%	10	14%	19	18%
>10	10	18%	0	0%			0	0%		6	16%	1	14%	3	27%	0	0%	0	0%	0	0%

2011	**Total**				**Joy Springs**			**Makarios home**		**Naiwasha**		**School Nyeri**				**St George**		**St Paul**	
	1064				**383**			**81**		**123**		**118**				**122**		**72**	
Anaemia	322	31%			112	30%		22	28%	19	15%	32	27%			68	**56%**	16	22%
Hb <5,0 mmol	10	0,9%			4	1%		2	2,5%	0	0%	1	0,8%			0	0%	0	0%
per age																			
>=0 and <1	5	31%			0	0%		0	n.a.	1	50%	1	20%			1	100%	0	0%
>=1 and <5	95	41%			19	31%		3	50%	4	24%	11	55%			33	56%	3	20%
>=5 and <12	180	29%			82	30%		11	37%	11	13%	13	21%			34	55%	13	24%
>=12 and <18	39	22%			11	25%		8	19%	3	14%	7	23%			0	n.a.	0	0%

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. Four mothers of breastfed, anaemic babies were treated with iron supplementation for three months.

3: Worm treatment: (prophylactic 48%,502/1042; therapeutic 8 children, 1%)
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 in Kenia is around 19% and hookworm 8%. The incidence/prevalence of Taenia Saginata (tape worm) is not known.

Table 13: Frequency of handing out preventive anti-worm treatment and treatment for a suspected acute worm infection

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
anti-worm	502	48%	4	2%	42	88%	5	4%	7	54%	3	5%	71	99%	74	82%	131	89%	61	28%	104	99%
acute worm	8	1%	1	1%	0	0%	3	2%	0	0%	0	0%	1	1%	0	0%	1	1%	2	1%	0	0%

2012	Total		Imani		Joy Springs		Makarios home		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1032		Total	=143	Total	=224	Total	=64	Total	=95	Total	=89	Total	=142	Total	=125	Total	=150
preventive anti-worm	429	42%	1	1%	0	0%	0	0%	23	24%	1	1%	132	93%	124	99%	148	99%
acute worm treatment	3	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%	2	2%	0	0%
2011	**Total**				**Joy Springs**		**Makarios home**		**Naiwasha**		**School Nyeri**				**St George**		**St Paul**	
	1064				**Total**	**=383**	**Total**	**=81**	**Total**	**123**	**Total**	**118**			**Total**	**122**	**Total**	**=72**
preventive anti-worm	544	51%			13	3%	11	14%	114	93%	98	83%			108	89%	70	97%
acute worm treatment	16	2%			0	0%	0	0%	5	4%	0	0%			10	8%	1	1%

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 13 shows the frequency of worm treattment of the children checked in this years mission in the last six months. St Clemens and St George school waited untill the medical check of MCC to give the half yearly medication. In St Paul, after five years of checking there is still not a good working de-worming program exists yet.

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. 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: (42; 3%)
The 42 children with a severe acute respiratory infection (ARI) were treated with appropriate antimicrobials and home treatment advice.

	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
pneumonia (clinical)	42	4%	6	4%	2	4%	5	4%	2	15%	2	3%	0	0%	3	3%	6	4%	11	5%	5	5%
pneumonia (X-ray confirmed)	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%
tuberculosis (clinical)	3	0%	0	0%	0	0%	0	0%	1	8%	0	0%	0	0%	0	0%	1	1%	1	0%	0	0%
tuberculosis (X-ray confirmed)	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	1	0%	0	0%
BHR/asthma	9	1%	2	1%	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	5	3%	1	0%	0	0%

"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).

For doctors working in Europe it is amazing how few children have asthma in Kenia. We only saw six children with symptoms of astma/bronchits/BHR. We referred one child to the Riruta clinic for additinal anti-asthma drugs because of the severity of the complains.

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 two months up to 12 months, and 40 breaths per minute or more in a child of 12 months up to five 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: (5; 0 %)
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 five children of having a pathological heart murmur.

	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
physiological murmer	5	0%	1	1%	0	0%	0	0%	0	0%	0	0%	2	3%	0	0%	0	0%	1	0%	1	1%
pathological murmur (suspected)	5	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%	2	1%	1	0%	1	0%	0	0%

The children and their care takers with the suspected pathological heart murmurs 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.
Two children from the schiool in Nyeri and one from the school of St Clemens needed a referral for further investigation (Outspan Hospital in Nyeri and Coptic Hospital in Nairobi) which was arranged by SFFC.

6: Skin diseases:
In respect to skin diseases we saw children with dermatomycoses (tinea capitis), eczema, wounds (burns and infectend wounds) but hardly any scabies and lice.
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.

	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
2013	1042		161		48		128		13		61		72		90		147		217		105	
wounds n.o.s.	5	0%	4	2%	0	0%	0	0%	0	0%	0	0%	0	0%	1	1%	0	0%	0	0%	0	0%
eczema n.o.s.	16	2%	2	1%	0	0%	0	0%	0	0%	1	2%	0	0%	6	7%	4	3%	3	1%	0	0%
dermatomycosis	84	8%	11	7%	11	23%	8	6%	3	23%	1	2%	8	11%	9	10%	20	14%	12	6%	1	1%
Impetigo	12	1%	6	4%	1	2%	0	0%	0	0%	1	2%	0	0%	0	0%	1	1%	3	1%	0	0%
scabies	12	1%	1	1%	0	0%	1	1%	0	0%	1	2%	3	4%	1	1%	0	0%	5	2%	0	0%
erysipelas	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
wounds infected,	7	1%	0	0%	0	0%	3	2%	0	0%	1	2%	0	0%	0	0%	0	0%	3	1%	0	0%

7: Eye problems:
We hardly diagnosed any eye problem. Only five children were diagnosed with a keratoconjunctivitis.
Especially in the group of children above five years of age a rather common complaint was dry and/or painful eyes. Xerophtalmia 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.

8: Dental:
In general, a high caries prevalence was found.
Unfortunately this year a dentist was not part of the MCC carroussel. Only the five worst case children were send to a local dentist which was paided by SFFC. The other children with cariës were told to go to the dentist themselves. After the medical check local volunteers gave out toothbrushes and educated the people in teethbrushing.
In Naiwasha, as in former years, a striking high prevalence of flurosis was found (43%) suggesting a contamination of water sources with fluor.

2013	Total		Imani		Jamii Outreach		Joy Springs		Kibera village		Makarios Home		Nai washa		School Nyeri		St Clemens		St George		St Paul	
	1042		161		48		128		13		61		72		90		147		217		105	
cariës n.o.s.	125	12%	9	6%	6	13%	22	17%	0	0%	10	16%	7	10%	14	16%	25	17%	26	12%	6	6%
pain n.o.s	8	1%	1	1%	0	0%	3	2%	0	0%	0	0%	1	1%	1	1%	1	1%	1	0%	0	0%
fluorosis	52	5%	8	5%	1	2%	4	3%	0	0%	5	8%	31	43%	2	2%	0	0%	0	0%	1	1%
caries with pain	20	2%	0	0%	0	0%	4	3%	0	0%	1	2%	3	4%	2	2%	3	2%	6	3%	1	1%

2012	Total		Imani		Joy Springs		Makarios home		Naiwasha		School Nyeri		St Clemens		St George		St Paul	
	1032		Total	=143	Total	=224	Total	=64	Total	=95	Total	=89	Total	=142	Total	=125	Total	=150
cariës n.o.s.	197	19%	14	10%	45	20%	13	20%	36	38%	13	15%	32	23%	20	16%	24	16%
fluorosis	41	4%	2	1%	3	1%	2	3%	25	26%	3	3%	4	3%	1	1%	1	1%
caries with pain	24	2%	0	0%	11	5%	2	3%	1	1%	1	1%	4	3%	4	3%	1	1%
2011	**1064**				Total	=383	Total	=81	Total	=123	Total	=118			Total	=122	Total	=72
cariës n.o.s.	216	20%			68	18%	24	**30%**	39	32%	18	15%			19	16%	11	15%
fluorosis	52	5%			10	3%	4	5%	31	25%	2	2%			3	2%	1	1%
caries with pain	66	6%			31	8%	1	1%	9	7%	3	3%			7	6%	8	11%

9: Stomach ache and other gastrointestinal complaints
During our health checks we encounter a huge amount of (older) schoolchildren with complaints of stomach pain (no exact data available). In the absence of weight loss, bloating or fever these pains could be stress induced. Pressure on adolescents to succeed academically is well known in Nepal, along with problems at home.
Data on milk products sensitivity, gastritis or peptic ulcers are currently lacking as well as the prevalence of Helicobacter pylori bacteria which has an overall higher incidence in an urban population compared with a rural population.
We also noticed a lot of children who have complains about constipation, leg cramps and headaches (no exact data available). These complaints can be due of the habit of drinking too little. We noticed the normal drinking habit of schoolchildren consists of drinking only one or two cups a day while they need at least a litre a day. We explained the children and their caretakers how and why they should change their drinking habits.

10: Ear-Nose-Throat (ENT)
The prevalence of acute ear infections was comparable with the prevalence in the Netherlands.
Although in the Netherlands treatment of middle ear infections with antibiotics is discouraged, in Africa it still has a big impact in preventing deafness.
Effective initiatives for better hygiene and nutrition will play a part in diminishing chronic ear infections and their complications.

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. We focused on nutritious food and vitamins , as well as hygienic and health promotion issues.

Future medical needs:

- The children in most of 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.
- Since the safety of deworming tablets under the age of two years can not be garanteed, our advice to the staff of Imani Children's Home is to start deworming from the age of two years and instead of giving the deworming pills four times a year, twice a year.
- 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). A good system of medical record keeping is especially needed in the the Imani Children's Home because of the number and selection of children who live there.
-To fight the growth abnormalities in the children in Imani Children's Home a good and balanced diet should be given with enough fat and vitamins.
- Since the Imani Children's Home is understaffed to have enough time for playing activities, we advice to implement stimulating standing and walking divices. The Sofia Foundation for Children is willing to support the staff of Imani Children's Home with knowledge about a balanced diet, a program to improve the food intake in todlers without enough adult care takers, a system of medical record keeping and the implementation of standing and walking divices.
- The idea of handwashing before you enter the the play ground of the Imani Children's Home is a good one, though the used handwashing device is not save for the small children playing who play there without continuous monitoring.
-Children at school should be save. Therefore it is important to find ways to prevent any hitting or whats so ever at schools.

Last words:

Once Africa gets into your heart she will never let you go.
It has been a memorable mission in the lives of all team members.
We will not forget Cliff, not happily running around in the slums of Kibera anymore, but in the beautiful new Makarios children home in Nyeri, nor Caleb, who is making everyone grazy with his attention defecit.
Nor will we forget Susan from Nawaisha after het heart operation in 2009 sponsored by the Emile Nieuwendijk Foundation she is a vived beautiful girl who clings at our side from the minute we arive.
So we will not forget the two boys from Nyeri school, Lewis and Alex, one wanted to become a doctor and one wanted to become a pilot, both with a serious heart problem who can go now with the help of the Sophia Foundation for Children for further investigation to the Outspan Hospital.
We defenitly will not forget the small girl Rachel, with Aids stage III who was given away to the Makarios Home for a better future by het grand mother without shedding a tear.

We all were impressed by the work the Sofia Foundation did at Makarios Home and inspired how people from different backgrounds and with different goals in life can form a close unit when the common goal is to help children.
For Anne it was the first time she joined the MCC mission to Kenia and she loved it!
Both teamleaders were impressed by the impact of the work of the Sophia Foundation for Children.
We both are very heppy the board of Medical Checks for Children dicided to continue the co-operation and we both hope we can be part of this team next year.

Amsterdam, 23 September 2013
Anne Vlietstra, organization-end-responsible MCC mission Nairobi, Kenia 2013
Karlien Bongers, medical-end-responsible MCC mission Nairobi, Kenia 2013

Appendix A: Medication	units	exp. date	Total stock mission 2013	End missie	used	expired	Left for 2014	Composition
1=Iron syrop+vitB	5 litres	Jul-2014	19	5	14		5	each 5 ml Ferrous Sulphate 100 mg, vitB1 1.5mg, vitB2 1 mg, vit B6 2 mg, Niacinamide 5 mg,
1=Iron tablets		Mar-16	46700	36080	10620		36080	Ferrous Sulphate 200 mg=40 mg iron
2=Multivitamine syryp	100 ml	Sep-14	458	232	226		232	5 ml : vitB1 1mg, vitB2 1 mg, vit B6 0.5 mg, vitA 1600IU, vitD3 100 IU, Niacinamide 15 mg,
2=Multivitamine tablets	tabl	Jan-15	22439	16660	5779	1100SFFC	15560	vitA 2500IU, vitD 300IU, Thiamine 1 mg, Riboflavin 0.5 mg, Nicotinamide 7.5mg, Ascorbic Acid 15 mg
3/6=Albendazole 200 mg							0	
3/6=Albendazole 400 mg			1726	1212	514		1212	
3/6=Mebendazol 100 mg		May-15	2000	2000	0		2000	
7=Praziquantel 600 mg		Mar-14	100	100	0		100	
10=Amoxycilline 125 mg	100 ml	Oct-14	22	10	12		10	
10=Amoxycilline 250 mg	tabl	Dec-13	1240	2000	600		2000	amoxy 250 tabl
10=Amoxycilline 500 mg	tabl		0	0	0		0	
11=Amoxycilline/clavulan acid syrup	70 ml	Oct-14	49	25	10		25	228 mg/5 ml 200mg Amoxy & 28.5 mg clavulan
11=Amoxycilline/clavulan acid 250/125	tabl			0			0	
11=Amoxycilline/clavulan acid 500/125	tabl	Sep-14	164	95	69		95	
12=Erythromycine susp	100 ml	Oct-14		25	0	1Riruta	24	each 5 ml 125 mg erythromycine
12=Erythromycine tabl 500 mg	tabl	Jul-13	111.5	100	11.5		100	
12=Azithromycin 200mg/5ml	15ml	Sep-15	14	13	1		13	
12=Clarithromycin 125/5ml	70ml	Apr-14	12	12	0		12	
20=Metronidazol 200 mg	tabl	Jun-16	1770	1770	0		1770	
21=Cotrimoxazol syrup	50ml	Jan-15	48	32	16	4Riruta	28	Trimethoprim 40 mg, Sulphamethoxazole 200mg =240 mg/5ml
21=Cotrimoxazol 240 mg	tabl	Jan-15	150	150	0		150	
21=Cotrimoxazol 960 mg	tabl	Jan-14	200	200	0	200Riruta	0	Sulphameth 800mg / Trimethoprim 160
60=Griseofulvin 125 mg	tabl	Jan-16	340	50	290		50	
60=Griseofulvin 250 mg	tabl	Apr -15	1140	280	860		280	
60=Griseofulvin 500 mg	tabl	Jun-14	2370	260	2110		260	
Chlorhexidine/cetrimide creme	225 gr	May-15	16	16	0		16	
Hydrocortison creme	15 gr	Jun -14	13	1	12		1	
Ivermectine 6 mg (brought from NL)	tabl		0		0		0	
Grabacin-3= bactroban	creme	July -14	45	19	26		19	Neomycine, poymixin, bacitracin

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Clotrimazole cream= daktarin	20gr	Jul-14	59	5	54		5	
Clotrim-B=daktacort	15 gr	Oct-14	29	21	8		21	
Silver Sulphadiazine	100 gr	Jan-16	10	5	5	5sffc	0	
Chlooramf eye drops		Jun-14	36	30	6		30	
Bet/neomysine eye/ ear drops		Jun-14	57	44	13		44	
Povidon jood creme 6%	15 gr	Jan-14		10	0		10	
Povidon jood lotion 10%	500 ml	Jan-14	12	7	5	7SFFC	0	
bottles 500 ml			100	100	0		100	
Nystatine				15			15	

SFFC=given to Makaraios Children Home in Nyeri Riruta=given to Riruta Clinic

Appendix B: Children with special follow up: remove data when published because of private medical information!