Medical Report
Kenia Nairobi 2016

Medical Checks for Children

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medical checks for children

Introduction

From February 9th till February 17th 2016, a new Medical Checks for Children (MCC) team visited different schools and other locations in Nairobi and Nyeri. Free of cost, the MCC team checked and, as needed, treated 928 children, newborns to teenagers.

The team included:
- Nadine van Dijk, emergency physician, mission leader, end responsibility for medical issues & organization
- Carolien Siersma, pediatrician-fellow pediatric ICU, mission leader, end responsibility for medical issues & organization
- Rosa Immink, emergency physician
- Sanne Jongma, resident in emergency medicine
- Tesse Leunissen, physician engaged in research
- Veronique Schram, education advisor
- Marie-Hélène Schellekens, public relations & communication
- Silfke van Dijk, compliance officer
- Regina Ursinus, IT project manager
- Annemieke van Heerwaarden, nurse

As in former years our host patron during this medical camp was Archbishop Makarios, Head of the Orthodox Seminary in Riruta, Nairobi. The checks were organized in close collaboration with the Sophia Foundation for Children (SFFC, www.sophia-foundation.com).
Since the first explorative checks in Nairobi in 2008, yearly successful checks have been performed.

Technical equipment, medical supplies and toothbrushes were brought in from the Netherlands by our team members. Most of the medication was ordered by SFFC and supplied by the main Kenian pharmacy in Nairobi.

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

- Transfer of knowledge about expected problems and diseases, partly by experienced earlier work in Kenia
- Transfer of data on demographics
- Selection of primary schools and other check locations (orphanage, refugee camp)
- Accommodation arrangement around check locations
- Transportation of the MCC team

- Prior announcement of the medical camps at the different locations
- Ordering and delivery of medication
- Supporting the medical team during the medical camp
- Management of referrals and (pre-) payment of in- & outpatient hospital costs (at Riruta Clinic Nyeri and Coptic Hospital Nairobi)

The MCC team was delighted by the cooperation with Archbishop Makarios and the experienced input of the Sophia Foundation for Children. We would especially like to thank Marina Shacola, Nopi Telemachou, Matheos Demetriades, David Alimasi, Nelson Aderi, Hesbon Aderi, James Oloo, Gerald Mochirien and Lameck Koech for their work and support during our medical camp. Further regards go to all teachers and translators at the different locations, volunteers and the local community.
We are grateful to have had the opportunity to work with and learn from all these inspiring people who have helped us directly or indirectly. And last but not least of course thank you to all of the children for their happiness and smile, and their care takers for the trust they put in us.

Medical Checks for Children on location

The medical checks were performed on 6 days at 7 different locations in Nairobi and Nyeri. Apart from the children at the schools the team checked children brought in from the community by their care takers.
The different locations during this medical camp were:

- Joyspring School, Nairobi
- Kangaroo School and nearby community, Nairobi
- Makarios Orphanage and School and nearby community, Nyeri
- Ndunduini School and nearby community, Nyeri
- Rescue home, Nyeri
- St Clemens School and nearby community, Nairobi
- St George School and nearby community, Nairobi

During the medical camp the children were checked according to the MCC carrousel:

1. Registration
2. Anthropometric measurements (height and weight)
3. Blood testing for anemia (hemoglobin), urine testing when indicated
4. Health check by one of the medical doctors
5. Providing medication at the pharmacy (including explaining the mode of use)
6. Education about nutritious food and water intake, tooth brushing (every child was given a tooth brush) and hand washing

At each station special attention is focused on drinking water and good dietary habits, especially at the doctors and pharmacy. Furthermore attention focused on prevalence, treatment and prevention of anemia, growth abnormalities and infectious diseases. Children, care takers and teachers were educated on good nutrition and hygiene measures.

Results medical camp

For data analysis purposes several data were pooled and subgroup analyses were performed. Statistical support for the observations in our report are not possible due to small group sizes.

In total our MCC team checked 928 children (Table 1).

	10 feb	11 feb	13 feb	14 feb	15 feb	16 feb	Total
St Clemens	146						146
St Clemens village	5						5
St George baby		96					96
St George school		70			17		87
Makarios			72			1	73
Makarios village			18				18
Ndunduini school				159			159
Rescue Home Nyeri				29			29
Joyspring					180	7	187
Kangaroo school						122	122
Kangaroo village						6	6
Total	**151**	**166**	**90**	**188**	**197**	**136**	**928**

Table 1. Number of children checked at different locations

The St. George and St. Clemens schools in Kibera are supported by Archbishop Makarios of the Greek Orthodox Church in Africa. At St. George the Sophia Foundation for Children (SFFC) started a food program in 2009.
Makarios Children's Home is an orphanage founded and funded by SFFC, at which they supply full board, clothing, health care, education and recreation.

The Joyspring school at Kibera is not structurally supported by any organization, though they are involved in a deworming program funded by the World Health Organization. Kangaroo school has been visited since 2014, a small school for refugees from Uganda in the slums of Nairobi, also not supported by any organization.
The Rescue Home nearby Nyeri is a small unsupported project where street children are taken care of. It is visited by MCC since 2015. There were not as many children living there as compared to 2015.
The Ndunduini school was a new school this year to be checked by MCC.

	Total	≤ 1 year	1-5 years	<5 years	5-10 years	>10 years
St Clemens	146	6 (4)	20 (14)	26 (18)	117 (80)	3 (2)
St Clemens village	5	1 (20)	3 (60)	4 (80)	1 (20)	0 (0)
St George baby	96	0 (0)	56 (58)	56 (58)	40 42)	0 (0)
St George school	87	0 (0)	7 (8)	7 (8)	80 (92)	0 (0)
Makarios	73	0 (0)	18 (26)	18 (26)	49 (70)	6 (9)
Makarios village	18	2 (11)	10 (56)	12 (67)	5 (28)	1 (6)
Ndunduini school	159	3 (2)	28 (18)	31 (19)	115 (72)	13 (8)
Rescue Home Nyeri	29	0 (0)	3 (10)	3 (10)	17 (59)	9 (31)
Joyspring	187	3 (2)	29 (16)	32 (17)	154 (82)	1 (1)
Kangaroo school	122	8 (7)	38 (31)	46 (38)	76 (62)	0 (0)
Kangaroo village	6	4 (67)	2 (33)	6 (100)	0 (0)	0 (0)
	928	27	214	241	654	33

Table 2. Age distribution per location

	Total	Boy	Girl
St Clemens	146	86 (59)	60 (41)
St Clemens village	5	2 (40)	3 (60)
St George baby	96	41 (43)	55 (57)
St George school	87	37 (43)	50 (57)
Makarios	73	44 (63)	29 (41)
Makarios village	18	11 (61)	7 (39)
Ndunduini school	159	87 (55)	72 (45)
Rescue Home Nyeri	29	14 (48)	15 (52)
Joyspring	187	90 (48)	97 (52)
Kangaroo school	122	66 (54)	56 (46)
Kangaroo village	6	4 (67)	2 (33)
	928	482 (52)	446 (48)

Table 3. Gender distribution per location

Because we visit the schools for several consecutive years, we are able to follow-up on growth and development of the children. This year 329 (35%) of the checked children were also checked last year. (Table 4)

	Total	Yes (%)	No (%)
St Clemens	146	59 (40)	87 (60)
St Clemens village	5	0 (0)	5 (100)
St George baby	96	9 (9)	87 (91)
St George school	87	62 (71)	25 (29)
Makarios	73	32 (44)	41 (56)
Makarios village	18	1 (6)	17 (94)
Ndunduini school	159	0 (0)	159 (100)
Rescue Home Nyeri	29	0 (0)	29 (100)
Joyspring	187	155 (83)	32 (17)
Kangaroo school	122	11 (9)	111 (91)
Kangaroo village	6	0 (0)	6 (100)
	928	329 (35)	599 (65)

Table 4. Children checked last year

Since health education and transfer of knowledge are amongst the main goals of MCC, we believe attendance of care takers is of great importance. Therefore we are pleased to see that almost all children were accompanied by a parent or teacher. (Table 5)

	Total	Parent (%)	None (%)	Teacher (%)
St Clemens	146	15 (10)	0 (0)	131 (90)
St Clemens village	5	5 (100)	0 (0)	0 (0)
St George baby	96	0 (0)	1 (1)	95 (99)
St George school	87	0 (0)	0 (0)	87 (100)
Makarios	73	29 (40)	0 (0)	44 (60)
Makarios village	18	17 (94)	0 (0)	1 (6)
Ndunduini school	159	154 (97)	1 (1)	4 (3)
Rescue Home Nyeri	29	29 (100)	0 (0)	0 (0)
Joyspring	187	5 (3)	0 (0)	182 (97)
Kangaroo school	122	9 (7)	0 (0)	113 (93)
Kangaroo village	6	6 (100)	0 (0)	0 (0)
	928	269 (29)	2 (0.2)	657 (71)

Table 5. Child accompanied by care taker at check

1. *Growth abnormality and malnutrition*

Growth retardation is correlated with poverty, malnutrition, poor living conditions, poor hygiene and the prevalence of chronic diseases. The major causes of malnutrition are lack of food, poor feeding habits and inadequate nutritional child care.

Malnutrition is related to poor cognitive and school performances. Also there is strong evidence to suggest that malnutrition places children under the age of five at increased risk of mortality. It is thought to account for one third of all deaths in children under five years of age (UN Millennium Developmental Goals).

Therefore school meals and educational programs for parents and teachers, addressing nutritious food and child care, are provided. We assessed growth abnormalities, measuring weight and length in a standardized fashion, using the following criteria.
- *underweight*: weight for age at or under third percentile for the reference population (WHO growth curves, for children up to the age of 10 years). This is an indicator of malnutrition or weight loss due to disease.
- *stunting*: height for age at or under third percentile for the reference population (WHO growth curves, for children up to 19 years of age). This is an indicator of chronic malnutrition.
- *wasting*: weight for height at or under third percentile for the reference population (WHO growth curves, for children up to 120 cm in height). This is an indicator of acute malnutrition.

It also has to be noted that reference data are only available for certain heights, weights and ages, as specified above. This leads to the general prevalence of growth abnormalities;
- underweight 5% (table 6) (8% in 2015, 5% in 2014, 5% in 2013, 10% in 2012)
- stunting 7% (table 8) (15% in 2015, 12% in 2014, 14% in 2013, 16% in 2012)
- wasting 3% (table 10) (7% in 2015, 2% in 2014, 1% in 2013).

In different age and gender groups there are no significant differences for underweight. For stunting and wasting there is no difference in male / female distribution.

The most notable differences will be discussed here.

Nutritional status shows significant differences among the locations visited. The prevalence of HIV related underweight (wasting syndrome) is unknown and might be underestimated.
The higher prevalence of underweight, stunting and wasting at Ndunduini School, the Rescue Home, and the children from the several different communities may be caused by the absence of a food program for these children. Also the selection of children can be a possible explanation. Especially at the Rescue Home where orphans and street children are taken care of for a limited period of time (mostly 1 to 2 years).
The above mentioned stresses the importance of adequate food intake and the impact of food programs like that provided by SFFC. We are confident that long term food programs at these locations would improve long term anthropometric data and physical wellbeing of these children.

Stunting is more prevalent among the youngest and oldest children. Wasting seems to be less prevalent with the progression of age.
During the medical checks we paid special attention to issues like hygiene and nutrition. We emphasized on hand washing, fruit & vegetable and water intake in order for the children to grow up healthy and strong. We noticed the habitude of mothers to feed their babies up to the age of one year or even beyond solely with breast milk. For babies, we advised exclusive breastfeeding up to the age of six months, after which additional foods should be introduced. We are aware of the financial issues and scarcity of healthy foods because of drought. This is one of the most important reasons for MCC to link up and cooperate with organizations like SFFC, to facilitate and fund school lunches.

	Total	Yes (%)	No (%)	Unknown (%)
St Clemens	146	7 (5)	136 (95)	3 (2)
St Clemens village	5	0 (0)	5 (100)	0 (0)
St George baby	96	1 (1)	95 (99)	0 (0)
St George school	87	2 (2)	85 (98)	0 (0)
Makarios	73	1 (1)	66 (90)	6 (8)
Makarios village	18	1 (6)	16 (94)	1 (6)
Ndunduini school	159	22 (15)	122 (85)	15 (9)
Rescue Home Nyeri	29	3 (15)	17 (85)	9 (31)
Joyspring	187	3 (2)	182 (98)	2 (1)
Kangaroo school	122	4 (3)	118 (97)	0 (0)
Kangaroo village	6	1 (17)	5 (83)	0 (0)
	928	45 (5)	847 (91)	36 (4)

Table 6. Prevalence of underweight (weight/age <P3)

	Total	≤ 1 year (%*)	1-5 years (%*)	<5 years (%*)	5-10 years (%*)	>10 years (%*)
St Clemens	7	1 (17)	2 (10)	3 (12)	4 (3)	0 (0)
St Clemens village	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
St George baby	1	0 (0)	1 (2)	1 (2)	0 (0)	0 (0)
St George school	2	0 (0)	0 (0)	0 (0)	2 (3)	0 (0)
Makarios	1	0 (0)	0 (0)	0 (0)	1 (2)	0 (0)
Makarios village	1	0 (0)	0 (0)	0 (0)	1 (20)	0 (0)
Ndunduini school	22	0 (0)	4 (14)	4 (13)	18 (16)	0 (0)
Rescue Home Nyeri	3	0 (0)	0 (0)	0 (0)	3 (18)	0 (0)
Joyspring	3	0 (0)	1 (4)	1 (3)	2 (1)	0 (0)
Kangaroo school	4	1 (13)	2 (5)	3 (7)	1 (1)	0 (0)
Kangaroo village	1	0 (0)	1 (50)	1 (17)	0 (0)	0 (0)
	45	2 (7)	11 (5)	13 (5)	42 (6)	0 (0)

Table 7. Prevalence of underweight (weight/age <P3) by age

*** Percentages presented of total age group at different locations**

	Total	Yes (%)	No (%)	Unknown (%)
St Clemens	146	7 (5)	139 (95)	0 (0)
St Clemens village	5	0 (0)	5 (100)	0 (0)
St George baby	96	2 (2)	94 (98)	0 (0)
St George school	87	3 (3)	84 (97)	0 (0)
Makarios	73	5 (7)	68 (97)	0 (0)
Makarios village	18	1 (6)	17 (94)	0 (0)
Ndunduini school	159	20 (13)	139 (87)	0 (0)
Rescue Home Nyeri	29	6 (21)	23 (79)	0 (0)
Joyspring	187	2 (1)	184 (99)	1 (1)
Kangaroo school	122	16 (13)	106 (87)	0 (0)
Kangaroo village	6	3 (50)	3 (50)	0 (0)
	928	65 (7)	862 (93)	1 (0.1)

Table 8. Prevalence of stunting (length/age <P3)

	Total	≤ 1 year (%*)	1-5 years (%*)	<5 years (%*)	5-10 years (%*)	>10 years (%*)
St Clemens	7	1 (17)	2 (10)	3 (12)	3 (3)	1 (33)
St Clemens village	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
St George baby	2	0 (0)	2 (4)	2 (4)	0 (0)	0 (0)
St George school	3	0 (0)	0 (0)	0 (0)	3 (4)	0 (0)
Makarios	5	0 (0)	1 (6)	1 (6)	2 (4)	2 (33)
Makarios village	1	0 (0)	0 (0)	0 (0)	1 (20)	0 (0)
Ndunduini school	20	1 (33)	1 (4)	2 (6)	13 (11)	5 (38)
Rescue Home Nyeri	6	0 (0)	0 (0)	0 (0)	2 (12)	4 (44)
Joyspring	2	0 (0)	2 (7)	2 (6)	0 (0)	0 (0)
Kangaroo school	16	3 (38)	6 (16)	9 (20)	7 (9)	0 (0)
Kangaroo village	3	3 (75)	0 (0)	3 (50)	0 (0)	0 (0)
	65	8 (30)	14 (7)	22 (9)	31 (5)	12 (36)

Table 9. Prevalence of stunting (length/age <P3) by age

*** Percentages presented of total age group at different locations**

	Total	Yes (%)	No (%)	Unknown (%)
St Clemens	146	7 (8)	82 (92)	57 (39)
St Clemens village	5	1 (20)	4 (80)	0 (0)
St George baby	96	0 (0)	96 (100)	0 (0)
St George school	87	3 (7)	42 (93)	42 (48)
Makarios	73	2 (4)	51 (102)	20 (29)
Makarios village	18	0 (0)	16 (100)	2 (11)
Ndunduini school	159	9 (12)	64 (88)	86 (54)
Rescue Home Nyeri	29	1 (11)	8 (89)	20 (69)
Joyspring	187	3 (4)	71 (96)	113 (60)
Kangaroo school	122	5 (5)	99 (95)	18 (15)
Kangaroo village	6	1 (17)	5 (83)	0 (0)
	928	32 (3)	538 (58)	358 (39)

Table 10. Prevalence of wasting (weight/length <P3)

	Total	≤ 1 year (%*)	1-5 years (%*)	<5 years (%*)	5-10 years (%*)	>10 years (%*)
St Clemens	7	1 (17)	0 (0)	1 (4)	6 (10)	0 (0)
St Clemens village	1	1 (100)	0 (0)	1 (25)	0 (0)	0 (0)
St George baby	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
St George school	3	0 (0)	0 (0)	0 (0)	3 (8)	0 (0)
Makarios	2	0 (0)	0 (0)	0 (0)	2 (6)	0 (0)
Makarios village	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Ndunduini school	9	0 (0)	3 (11)	3 (10)	6 (14)	0 (0)
Rescue Home Nyeri	1	0 (0)	0 (0)	0 (0)	1 (17)	0 (0)
Joyspring	3	0 (0)	1 (4)	1 (3)	2 (5)	0 (0)
Kangaroo school	5	0 (0)	5 (13)	5 (11)	0 (0)	0 (0)
Kangaroo village	1	0 (0)	1 (50)	1 (17)	0 (0)	0 (0)
	32	2 (7)	10 (5)	12 (5)	20 (3)	0 (0)

Table 11. Prevalence of wasting (weight/length <P3) by age

*** Percentages presented of total age group at different locations**

2. *Anemia*

Anemia is caused by the most prevalent global micronutrient deficiency (iron). In Kenia no national policy has been implemented so far to provide iron supplements to pregnant women or young children. Because iron deficiency is frequently the primary factor contributing to anemia, it is important to recognize that healthy food apart from iron supplements are needed to address this health problem. In addition to iron deficiency, infectious diseases such as worm infections and chronic infections, especially HIV-AIDS and tuberculosis, contribute to the prevalence of anemia. Other nutritional deficiencies can also cause this medical problem.
Ferritin measurement could help differentiate between iron deficiency and other causes of anemia, such as hemoglobinopathies (sickle cell disease, thalassemia), and lead, mercury and arsenic intoxications. As to date this is not possible in our medical camps.

Anemia was diagnosed in 29% of all checked children (22% in 2015, 33% in 2014, 26% in 2013, 24% in 2012). (Tables 12-14)

	Total	Yes (%)	No (%)	Unknown (%)	Hb < 5 mmol/l
St Clemens	146	39 (27)	104 (71)	3 (2)	1 (1)
St Clemens village	5	1 (20)	4 (80)	0 (0)	0 (0)
St George baby	96	42 (44)	54 (56)	0 (0)	0 (0)
St George school	87	33 (38)	54 (62)	0 (0)	0 (0)
Makarios	73	20 (27)	53 (73)	0 (0)	1 (1)
Makarios village	18	6 (33)	12 (67)	0 (0)	0 (0)
Ndunduini school	159	39 (25)	120 (75)	0 (0)	0 (0)
Rescue Home Nyeri	29	7 (24)	21 (72)	1 (3)	0 (0)
Joyspring	187	40 (21)	147 (79)	0 (0)	0 (0)
Kangaroo school	122	33 (27)	85 (70)	4 (3)	1 (1)
Kangaroo village	6	5 (83)	1 (17)	0 (0)	1 (17)
	928	265 (29)	655 (71)	8 (0.9)	4 (0.4)

Table 12. Prevalence of anemia

	Total (%)	Joyspring	Kangaroo (school)	Makarios	Rescue Home	St Clemens (school)	St George (school)
2016	265 (29)	40 (21)	33 (27)	20 (27)	7 (24)	39 (27)	33 (38)
2015	254 (22)	22 (16)	36 (22)	39 (38)	20 (32)	34 (21)	27 (13)
2014	354 (33)	38 (21)	48 (61)	58 (55)		27 (18)	61 (40)
2013	275 (26)	21 (16)		24 (39)		36 (24)	48 (22)
2012	251 (24)	53 (24)		15 (23)		45 (32)	19 (15)

Table 13. Prevalence of anemia in recent years

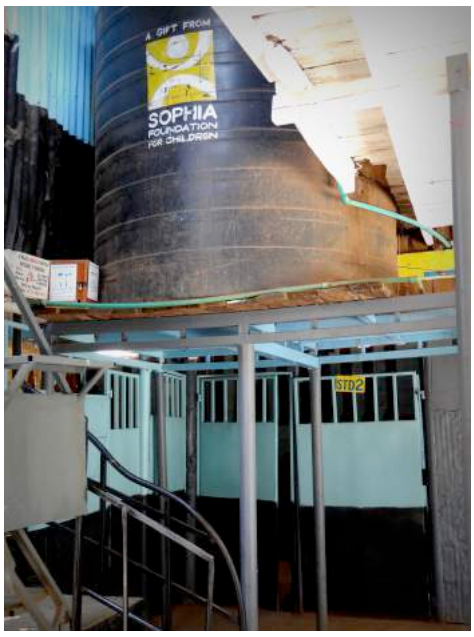
The prevalence of anemia is slightly higher in the younger age groups.
As opposed to more underweight, stunting and wasting at the Ndunduini School, the Rescue Home and the children from the community, there is no more prevalence of anemia. We can only speculate on the cause of regional differences in the prevalence of anemia. It might be due to comorbidities (especially at Makarios), nutritional deficiencies or malaria.

	Total	≤ 1 year (%*)	1-5 years (%*)	<5 years (%*)	5-10 years (%*)	>10 years (%*)
St Clemens	39	1 (17)	10 (50)	11 (42)	28 (24)	0 (0)
St Clemens village	1	0 (0)	1 (33)	1 (25)	0 (0)	0 (0)
St George baby	42	0 (0)	18 (32)	18 (32)	24 (60)	0 (0)
St George school	33	0 (0)	3 (43)	3 (43)	30 (38)	0 (0)
Makarios	20	0 (0)	3 (17)	3 (17)	13 (27)	4 (67)
Makarios village	6	0 (0)	4 (40)	4 (33)	1 (20)	1 (100)
Ndunduini school	39	1 (33)	6 (21)	7 (23)	28 (24)	4 (31)
Rescue Home Nyeri	7	0 (0)	1 (33)	1 (33)	5 (29)	1 (11)
Joyspring	40	0 (0)	9 (31)	9 (28)	31 (20)	0 (0)
Kangaroo school	33	4 (50)	8 (21)	12 (26)	21 (28)	0 (0)
Kangaroo village	5	3 (75)	2 (100)	5 (83)	0 (0)	0 (0)
	265	9 (33)	65 (30)	74 (31)	181 (28)	10 (30)

Table 14. Anemia by age group

*** Percentages presented of total age group at different locations**

Food stock at the Rescue Home



Water tank at Joyspring

3. *Worm treatment*

There is a relationship between the presence of worm infections like ascaris (prevalence 19% in Kenia), hookworm (prevalence 8% in Kenia) and tape worm (taenia saginata) and anemia, growth disturbances and school attendance and results. Worldwide studies have shown deworming to be the far most cost-effective way to improve school participation. As a result, the gain in literacy from deworming is 2.1 years and the gain in income is estimated at 4, just by giving an anti-worm tablet twice a year. Overall, the benefits of deworming can be up to 60 times higher than the costs.

Overall 328 children (35%) were treated with anti-worm treatment in the last six months before our checks. Although at some locations most children had had the anti-worm treatment, like at Joyspring, the Rescue Home and Makarios, at others only few children were treated. (Table 15)
At all locations we stressed the importance of bi-annual deworming. The residual albendazole was left in Nairobi, as SFFC will revisit different locations after six months to supply new treatment.

An active worm infection was suspected and treated in 10 children.

	Total	Yes (%)	No (%)
St Clemens	146	36 (25)	110 (75)
St Clemens village	5	0 (0)	5 (100)
St George baby	96	0 (0)	96 (100)
St George school	87	0 (0)	87 (100)
Makarios	73	58 (79)	15 (21)
Makarios village	18	4 (22)	14 (78)
Ndunduini school	159	13 (8)	146 (92)
Rescue Home Nyeri	29	29 (100)	0 (0)
Joyspring	187	185 (99)	2 (1)
Kangaroo school	122	3 (2)	119 (98)
Kangaroo village	6	0 (0)	6 (100)
	928	328 (35)	600 (65)

Table 15. Preventive anti-worm treatment in the last 6 months

	Total	≤ 1 year (%*)	1-5 years (%*)	<5 years (%*)	5-10 years (%*)	>10 years (%*)
St Clemens	36	0 (0)	0 (0)	0 (0)	36 (31)	0 (0)
St Clemens village	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
St George baby	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
St George school	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Makarios	58	0 (0)	8 (44)	8 (44)	44 (90)	6 (100)
Makarios village	4	0 (0)	3 (30)	3 (25)	1 (20)	0 (0)
Ndunduini school	13	1 (33)	2 (7)	3 (10)	10 (9)	0 (0)
Rescue Home Nyeri	29	0 (0)	3 (100)	3 (100)	17 (100)	9 (100)
Joyspring	185	1 (33)	29 (100)	30 (94)	154 (100)	1 (100)
Kangaroo school	3	0 (0)	1(3)	1 (2)	2 (3)	0 (0)
Kangaroo village	0	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	328	2 (7)	46 (21)	48 (20)	264 (40)	16 (48)

Table 16. Preventive anti-worm treatment by age group

*** Percentages presented of total age group at different locations**

4. *Pneumonia and other pulmonary problems*

In all checked children 3 of them were suspected to have pneumonia on clinical findings (1 at the Joyspring School, 1 at the Kangaroo School and 1 baby at St George), for which they were all treated with antibiotics.
One child at the St George School was diagnosed with bronchitis. One child at the Kangaroo School was diagnosed with asthmatic complaints for which parents could not afford to buy medicine. These medicine were supplied by MCC.

5. *Cardiac abnormalities*

Mitral regurgitation & stenosis, and atrial & ventricular septal defects are among the most common heart defects in the third world. Treatment for these defects is not accessible for most of our children due to lack of financial means.
The MCC carousel includes a cardiac examination. Of all 928 checked children 12 of them (1%) were diagnosed with a physiological type of murmer, 2 with a suspected pathological murmer.
In two children a heart defect was already diagnosed (one at the Ndunduini School, one at the St Clemens School), but their situation and follow-up could not be sorted out. They were referred to a cardiologist again to clarify current cardiac status. If further treatment is necessary the costs will be rendered from the Nieuwendijk Foundation.
At Makarios two children are already known to have a heart problem amongst other problems. They were and will be regularly checked for their physical and cardiac well being, and treatment will be adjusted accordingly.
A good dental situation is essential in all children but especially for them having a cardiac problem. Children and their care takers were educated on teeth brushing and the importance was stressed. Besides this the care takers were told to give the child with a suspected cardiac defect antibiotics when visiting a dentist for teeth extraction.

6. *Skin diseases*

Tinea capitis is a widespread problem amongst school children in Kenia due to transmission of the fungi by shaving many children with the same razor blades. We accept a certain degree of underscoring, we only report on the most severe cases that were needed to be treated.
In total 29 children (3%) were reported to have serious fungal infections that were treated with griseofulvin. Especially at the Kangaroo School and the Rescue Home dermatomycosis was more prevalent (10%).
Many other skin problems were diagnosed, like (infected) wounds, eczema and scabies. These were all treated according to our protocols.
This year there were a number of children with burn wounds. These were all already treated at local medical centers. As the scars may cause future physical problems we stressed the importance of returning at the MCC medical camp next year.

7. *Dental care*

Poor dental care and a high prevalence of caries with or without pain were well recognized problems at earlier medical camps. Also this year we checked many children with dental problems. The reported data are assumed to be an underestimation of the actual prevalence.
As last year there were no dentists joining our medical camp this year. Therefore we needed to refer the children with caries with pain to a local dentist (33 children, 4%). To prevent reference to local specialists and concomitant costs, next year extension of the MCC team with a dentist will be advisable.

	Total	Caries n.o.s.	Pain n.o.s.	Fluorosis	Caries with pain
St Clemens	146	19 (13)	0 (0)	7 (5)	4 (3)
St Clemens village	5	0 (0)	0 (0)	0 (0)	0 (0)
St George baby	96	14 (15)	0 (0)	0 (0)	2 (2)
St George school	87	19 (22)	0 (0)	0 (0)	7 (8)
Makarios	73	17 (24)	0 (0)	2 (3)	2 (3)
Makarios village	18	2 (11)	0 (0)	0 (0)	1 (6)
Ndunduini school	159	26 (16)	0 (0)	3 (2)	10 (6)
Rescue Home Nyeri	29	9 (31)	0 (0)	2 (7)	2 (7)
Joyspring	187	57 (30)	2 (1)	0 (0)	5 (3)
Kangaroo school	122	10 (8)	1 (1)	2 (2)	0 (0)
Kangaroo village	6	0 (0)	0 (0)	0 (0)	0 (0)
	928	173	3	16	33

Table 17. Dental problems at different locations

In the medical carousel the last station is staffed by local volunteers that educate children and their care takers in brushing the teeth and tooth brushes are distributed to all children. We also stressed the need for brushing teeth to the teachers, and suggested to think about a school ritual in brushing teeth.

8. *Other*

Referrals

- At different locations we encountered several children with complaints of their eyes, including refractory problems (6 children) and amblyopia (2 children). To sort out what the costs for treating these problems will be, we referred two of them. If these problems can be solved with low costs we will also refer the rest of them.
- A child at Ndunduini (village) had complaints of progressive weakness of his legs. He was not able to walk anymore. He was referred to be checked for tuberculosis as the cause of his problem.
- At Makarios a girl was already diagnosed with hemolytic anemia and was treated by docters at the Riruta Clinic in Nyeri. There had already been put a lot of effort in finding a cause and the right treatment. MCC has been closely involved in the medical concerns, SFFC will pay the costs of the necessary medical treatment.

	Dentist	Specialist in hospital	Revisit	Blood test after 3 months	International organization
St Clemens	1	2	0	1	0
St Clemens village	0	0	0	0	0
St George baby	2	0	0	0	0
St George school	6	0	1	0	0
Makarios	1	4	1	0	0
Makarios village	0	0	0	0	0
Ndunduini school	3	5	1	0	1
Rescue Home Nyeri	2	1	0	0	0
Joyspring	4	1	1	0	2
Kangaroo school	0	1	0	1	1
Kangaroo village	0	0	1	0	0
	19	14	5	2	4

Table 18. Follow-up of children per location

Education of health workers, care takers and teachers

One of the important tasks of MCC is to enhance knowledge of health, hygiene and encourage the continuation of health education of care takers, teachers and older children. We focused on malnutrition and nutritional food, infections and transmission of these. One of the important issues in preventing infections is washing hands with soap before eating and after lavatory use. This will help reduce the prevalence of diarrhea, upper airway and skin infections.

Notes

- ✓ At Makarios we checked more children than those that were eventually analyzed. We hope we will be able to hunt down the missing data and complete the database.
- ✓ Like in earlier years, due to drought, water is scarce and crops don't grow. Children don't drink much water and they complain of headache. We educated the children, care takers and teachers about the importance of drinking water. To supply water to them, we filled empty water tanks at the Joyspring School and the Rescue Home. They will be refilled until the rainy season starts.
- ✓ We visited and checked at Ndunduini School for the first time this year. We were surprised to see the enthusiastic head teacher, teachers, children, care takers and volunteers. After the check we were invited to plant three trees behind the school as a symbol for a new inspiring collaboration.

- ✓ At the Ndunduini School we checked a four year old boy with mental retardation. His father took him to our medical camp. There weren't any options for this boy to join in at school even though he would be able to learn more skills, because he couldn't be provided with special attention in a normal class. Talking about this issue with the head teacher he reported that there are more 'special needs' children in this area.

  Because the importance of education is a message we want to carry out we evaluated any options to solve this problem with the head teacher and our SFFC workers. A new teacher will be hired at Ndunduini School and start with a small class of special needs children. Funding will be arranged by MCC.

- ✓ At the Kangaroo School the area around the school was very muddy. Because we would not be able to do the checks at this location, we arranged the children to be at another spot on another day to be checked. Transport was arranged for all of them and we were happy to see them all. To help improve the grounds around Kangaroo, we asked the teacher and care takers what would be necessary. They will, at their own effort, put new ground cover around the school and church, for which MCC gave them financial support.

Final words

Our thanks go out to all people we worked with; our MCC team, the SFFC team, teachers, volunteers, care takers and children. We have again enjoyed the medical camp, were inspired by the enthusiasm of all of them and are confident that we share the same goals to optimize future opportunities for children.