Introduction

In the second week of July 2008, a team from Medical Checks for Children (MCC) led by physician Luc Coffeng, checked and treated 507 children, aged 16 years and below, free of cost. The health camp was organised for six days starting the 10th of July, at four different locations in the vicinity of Kaza, Spiti Valley, India. Starting in 2006, MCC visited Spiti Valley for the third time in 2008.

The MCC team consisted of ten members from The Netherlands of which three had already participated in earlier MCC checks in Spiti Valley (marked with * below). Besides Luc Coffeng, the other doctors in the team were Karlien Bongers (general surgeon*), Anne Vlietstra (resident family medicine), Renske Oegema (resident paediatrics) and Tamara Soeterik (family doctor). Dental checks were performed by Mariette van Spronsen (dental hygienist*) and Hetty Garrelfs (dentist*). The team was completed by Hansje van Loon (consultant for children with special needs), Iris van de Gevel (toxicologist) and Suzanne van Peppel (paediatric nurse).

The medical checks were organised in close cooperation with the Munsel-ling School and the Rinchen Zangpo Society for Spiti Development in Rangrik. The Munsel-ling School is a Tibetan based Buddhist school which was inaugurated by H.H. the the 14th Dalai Lama in 1996. The school currently teaches about 350 children of which about 180 live in hostels on the school premises where they are cared for by 'hostel-mothers'. As the name suggests, the Rinchen Zangpo Society for Spiti Development does not only manage the Munsel-ling School, but is also looking for ways to improve the well-being of the Spiti valley community at large.
MCC also collaborated with a Canadian team of medical students and residents from the University of British Columbia, led by dr. Videsh Kapoor (family doctor). Their objective was to assess, advise and set up programmes for the school in matters of Public Health problems (sanitation, hygiene, nutrition, helminth-infections, anaemia). Upon arrival of the MCC team, all children from the Munsel-ling School had already been checked by the Canadian students and residents. Furthermore, all children had received prophylactic treatment against helminth infections the week before and were about to start a three month iron suppletion programme. Therefore, only sick, severely aneamic or dubious cases were referred to MCC for a recheck. On several occasions, Videsh Kapoor and two of her students joined the MCC team in it's medical camps.

Technical equipment and some of the supplies were brought from Europe by MCC team members. Most of the medication was ordered through the internet from the Lady Willington Mission Hospital In Manali and delivered to Kaza Mission Hospital with the help of dr. Sheila Varghese and dr. Laji Varghese. As clarithromycin syrup and tablets were not available in the region, these were bought in Shimla from the Himalayan Med Store (Sanjeev Sood, pharmacist) on the way to Kaza. An overview of all purchased medicine can be found in Appendix A.

The Munsel-ling School provided accommodation, transport, food, and local human resources (translators and volunteers) in order to facilitate the medical checks. Our specials thanks go to Lama Tashi (head of school), Tsering Dorje (principal) and Videsh Kapoor because their joined efforts gave MCC the opportunity to expand it's project to cover other villages in the Spiti Valley.

We are grateful to all the parents, 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.
Special thanks go to the people of Kachen Dugyal Memorial Old aged / Handicapped Society in Ki village for letting us work in their living room.
We enjoyed working together with the teachers, health workers and senior students of the Munsel-ling School. 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 health and it's importance for children in reaching their developmental potential. And last but not least, we would like to thank the children who came to the checks for their inspiring presence.

Medical Checks for Children on location:

The medical checks where performed in the Munsel-ling School (Rangrik, 10th, 11th and 15th of July), the Government School of Kibber (12th of July), Kachen Dugyal home for the aged and handicapped (Ki village, 13th of July) and a private residence (under construction) in Lossar (14th of July). The data presented below were subdivided into seven distinct regions (table 1).

*Table 1: Place of stay of checked children per geographical area and location of medical camp.**

Camp Munsel-ling School						Camp Kibber		Camp Ki village				Camp Lossar	
ML school	61	Kaza	61	KPS	68	Kibber	81	Ki village	58	Ki Mon.	34	Lossar	144
Hostel	31	Rangrik	56	KPS	68	Kibber	69	Ki village	53	Ki Mon.	34	Lossar	92
Rangrik	16	Kaza	2			Chicham**	12	Tashi Giang	5			Chichong	21
Kaza	12	Morang	1									Kyamo	19
Hull	1	Khurig	1									Hansa	7
Lithang	1											Khulasa	4
												Bajaura	1

* ML school = attending at Munsel-ling School and living either at home or in hostel; KPS: Kaza Public School; Ki Mon: Ki Monastery.
** Children from Chicham were actually seen in Ki village (13th of July) because Chicham people had been misinformed about our presence in Kibber on the 12th of July. Therefore, the next day a selection of the youngest and sick children of Chicham were driven to Kibber in a jeep. Of all medical camps, Kibber is geographically closest to Chicham.

In these first two areas, the Munsel-ling School and Kaza, MCC had already performed check-ups free of charge in July 2006 and July 2007. However, the children of Kaza Public School, a new department of the Munsel-ling School for the youngest children of Kaza, were checked for the first time in MCC history. All other areas (Kibber, Ki village and Monastery, Lossar) were visited for the first time as well. Of special notice was that the village of Lossar and it's surroundings for having bad access to healthcare (table 2). Reputedly, the village had never seen a doctor visiting it before.

Table 2: Locations and distance to nearest hospital.

Location	Nearest hospital	Distance	Altitude*
Munseling / Rangrik	Kaza	15 minute drive	~3500 m
Kibber	Kaza	1 hour drive	~4000 m
Chicham	Kaza	2 hour walk + 1 hour drive	~4000 m
Ki village / Monastery	Kaza	0.5 hour drive	~3500 m
Lossar	Kaza	1.5 – 2 hour drive	~3500 m

* Altitudes used for adjustment of CDC Hb threshold values for anaemia.

MCC sent local volunteers to the candidate communities in advance, asking local leaders to present the communities' youngest and sick children first. On each location numerous children stood in line for medical care. Children were given a numbered form and were admitted to the first station where their name, age and a preliminary medical history were written on the form by Ms. Wang-mo, the Munsel-ling School health worker. A unique MCC-number was allocated to each child to make future follow-up possible. This paper was then given to the child who kept it until his or her treatment had been completed. After their weight and height had been taken, pulse and temperature and oxygenation of the blood were measured. At the third station haemoglobin levels were checked, using a simple drop of blood. The CDC criteria for anaemia[1] were used for assessing haemoglobin levels, adjusted for long-term altitude exposure[2]. A complete physical examination was done by one of the doctors who subscribed treatment when needed. Finally, the child was sent to the last station where the clinical forms were kept after medication was dispensed by a MCC-member with help of a local translator. At the end of the MCC carrousel, every child got a toothbrush, toothpaste and soap.

All data was digitally registered on location. Every evening an analysis of the charts and diagnosis was made. The forms with medical findings for children attending Munsel-ling school or Kaza Public school were also incorporated in their medical journals which were provided for by the Canadian team from the University of British Columbia.

As with all medical missions, we made efforts to include local volunteers (medical workers, teachers, students etcetera) in taking care of the children. We greatly respect their vast knowledge and experience. Without their help MCC could not have worked so effectively.

Diagnosis and categories of ailments:

During the week, MCC checked 507 children.

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, 86% of the children had the age of twelve years or younger and 35% of the children were below five years of age (table 3).

Table 3: Age and gender distribution of checked children, total and per area. Figures represent absolute numbers with percentage of children in the area between brackets.

Age category	Total (%)	ML school	Kaza	KPS	Kibber	Ki village	Ki Mon.	Lossar
< 1 year	30 (6)	1 (2)	9 (15)	-	8 (10)	3 (5)	-	9 (6)
1 – 5 years	145 (29)	5 (8)	22 (36)	27 (40)	28 (35)	20 (35)	-	43 (30)
5 – 12 years	261 (51)	31 (51)	23 (38)	40 (59)	37 (46)	31 (53)	22 (65)	77 (54)
≥ 12 years	71 (14)	24 (39)	7 (12)	1 (1.5)	8 (10)	4 (7)	12 (35)	15 (10)
Boy	249 (49)	29 (48)	28 (46)	34 (50)	37 (46)	26 (45)	34 (100)	61 (42)
Girl	258 (51)	32 (52)	33 (54)	34 (50)	44 (54)	32 (55)	-	83 (58)
Total	**507**	**61**	**61**	**68**	**81**	**58**	**34**	**144**

Most of the medical cases which received our attention were anaemia (90% of all children), pneumonia (8.5%), growth abnormalities (e.g. 57% height for age ≤ P3) and active worm infections (13%) (table 4). Most ailments could be treated on the spot. However, 17 children were referred to a specialist for further diagnoses and/or treatment: corset for

[1] *CDC criteria for anaemia in children and childbeating age women*. MMWR, 1989, 38:400-404.

[2] Adapted from Hurtado et al. *Influence of anoxemia on haematopoietic activities.* Archives of Internal Medicine, 1945 75:284-323.

correction of hyperlordosis; deep anaemia (10); epilepsia; strabismus; refractory problem; psoriasis; a umbilical mass (possibly a hernia); proteinuria. One child was referred for X-ray (pneumonia).

Anaemia

Anaemia is the most prevalent micronutrient disorder. In India no national policy has been implemented 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 development of anaemia is multifactorial. Therefore, anaemia control is best approached through integrative interventions, addressing the various factors that play a significant role in producing anaemia in a given community. For instance, in addition to iron deficiency, infectious diseases such as helminth infections, other chronic infections (HIV-AIDS and tuberculosis), malaria as well as other nutritional deficiencies are important.

In Spiti valley, 506 out of 507 checked children were succesfully assessed for haemoglobin levels. A total of 455 children (90%) were anaemic (adjusted for long-term altitude exposure). Anaemia prevalence was similarly high in all areas (81–97%) (table 4). A general trend over age categories was seen with slightly higher prevalence of anaemia among children between one and five ($\chi = 6.645$, $p = .084$). This trend has also been observed by MCC in other South Asian communities in the past (Nov 2007: Chitwan, Nepal; Feb 2008: Rajihar, Bangladesh). It is likely due to high anaemia prevalence in the current population that differences between age categories were compressed .

Children with anaemia (and in case of breastfeeding, mothers as well) were given supplements to last for three months. The standard supplement consisted of either iron tablets or syrup. However, if children showed signs of vitamin deficiency (stunting, heterogenous depigmentations, brittle hair and nails) they were treated with a vitamin supplement instead. The exact treatment protocol and contents of supplements, as well as the total amount of dispensed supplements can be found in Appendices A and B.

Table 4: Anaemia prevalence among 506 children from who succesful bloodsamples were obtained, total and per agecategory and area. Figures represent absolute numbers with percentageof children in age category between brackets.

Age category	**Total** (%)	**M-L school**	**Kaza**	**KPS**	**Kibber**	**Ki village**	**Ki Mon.**	**Lossar**
< 1 year	27 (90)	1 (100)	9 (100)	-	5 (63)	3 (100)	-	9 (100)
1 – 5 years	138 (95)	5 (100)	20 (91)	25 (93)	27 (96)	20 (100)	-	41 (95)
5 – 12 years	229 (88)	25 (81)	21 (91)	34 (85)	29 (81)	30 (97)	19 (86)	71 (92)
≥ 12 years	61 (86)	19 (79)	7 (100)	1 (100)	4 (50)	3 (75)	12 (100)	15 (100)
Hb ≤ 5.0 mmol/l	20 (4.0)	1 (1.7)	5 (8.2)	2 (2.9)	2 (2.5)	4 (6.9)	-	6 (4.2)
Total	**455 (90)**	**50 (82)**	**57 (93)**	**60 (88)**	**65 (81)**	**56 (97)**	**31 (91)**	**136 (94)**

Worm infections

Ascariasis is a intestinal disease caused by the roundworm *Ascaris lumbricoides* and is particularly prevalent in tropical regions and areas of poor hygiene. Infection occurs through ingestion of food contaminated with worm eggs from feces or contact with contaminated soil (children playing outside, later with their fingers in their mouth etc.). Infections are usually asymptomatic, especially if the number of worms is small. However, in a few persons, large worm loads cause bloated bellies and sometimes obstruction of the intestines. Furthermore, this worm infection contributes to anaemia by causing malabsorption of nutrients from the gut.

Another helminth infection, hook worm (*Ankylostoma duodenale*) infects the small intestines of nearly 1 billion people worldwide, mostly in developing countries in the tropics. Hookworm eggs are passed in the feces, hatch in the soil, and infect persons through the skin. Larvae pass through the blood to the lungs, where they mature and are coughed up and swallowed. Next, larvae further mature into adult worms, which attach to the intestinal wall with large teeth and suck the blood of the host. Hookworms, which consume 0.2 ml of blood per day per worm, cause severe anemia because individuals may be infected with more than 100 worms. Further, individuals infected with hookworm are frequently malnourished and iron deficient, making anemia even worse.

Whipworm (*Trichuris trichiura*) is a common world-wide worm infection and is spread by ingestion of contaminated soil. Similar to the worms describes above, whipworm eggs hatch in the host and the worms attach themselves to wall of the large intestine. Chronic infection may lead to anemia due to chronic blood loss from the intestinal wall, without even showing any symptoms. Heavily infected persons may suffer from bloated bellies and bloody diarrhoea.

A major preventive measure for worm infection (and concomitant anaemia) is hygiene: handwashing with soap after toilet visits and before and after meals; enclosed toilet facilities; hygienic food preparation. The rate of transmission between individuals will drop only after the wormload in a population has decreased dramatically, meaning that all sources of infection (infected persions, contaminated soil) should have decreased very much. This can be achieved by hygiene measures and enclosed toilets (described above), combined with treatment of active worm infections (bloated bellies) and prophylactic (preventive) treatment with albendazol or mebendazol.

In Spiti Valley, active worm infections were identified as children having bloated bellies. About 6-23% of all checked children showed signs of active worm infection, depending on location (table 5). These children were treated with a five day course of albendazol 400 mg once per day (200 mg if <2 years of age). All other children who had not received anti-worm treatment in the past six months also received a single dose of albendazol 400 mg (200 mg if <2 years of age). The week before MCC arrived, all children of the Munsel-ling school had already received a single prophylactic dose of albendazol from the Canadian team.

Unfortunately, the latrines in the Munseling-ling school yard were not being used by the children, probably because they weren't being cleaned. In their current unhygienic state, these toilets could even be a source for infection for children who would use them. Fortunately, the schoolyard soil is probably too dry for worm eggs to survive in. However, some small children were seen relieving themselves in corners of the schoolyard. If this is custom among children, some stretches of soil may actually be continually moist and serve as a source of infection for children playing in the area. The Canadian team has been working on setting up hand-wash stations (including soap) around the school property to improve general hygiene. However, MCC would like to emphasize the importance of combining all possible measures at once (hygiene, enclosed toilet facilities, treatment). Only then can these measures ever be successful. We hope that this knowledge will serve and help the Munsel-ling school in providing for it's children.

<u>Scabies</u>

Scabies is an infective skin disease caused by a mite (*Sarcoptes scabiei*) and is transmitted in situations of poor hygiene and prolonged physical contact (>15 min) with an infected person or contaminated bed sheets or clothing. The female mite burrows just beneath the upper skin layer, producing 0.2 - 0.6 cm long lines on the skin, primarily between and on the fingers, palms, wrists, around nipples (women) and genital areas (men). In severe cases, the mite spreads even to the skin of the belly and sometimes the back. Itching and sometimes secondary infection of scratch lesions are the main symptoms. Chronic severe scabies infection may lead to dark (hyperpigmented) spots on the skin.

On average, scabies was seen among 2% of all children in the Spiti Valley (Table 5). Children were treated with a course of ivermectin. Severe secondary infection of scratch lesions were treated with fusidin and hydrocortisone cream.

Lice

Lice are a common phenomenon, especially in groups of children living close together. Long hair is another risk factor for contracting lice. Therefore, it's not to surprising to see lice more often in schools (Table 5) and in girls. The more distant communities of Kibber and Lossar had relatively the most cases of lice. The boys from Ki Monastery had no lice at all, of course because of their short hair. In case of lice, MCC advised caretakers to purchase lice shampoo and gave basic hygienic advise about keeping possibly infected clothes separate and combing hair.

Pneumonia and tuberculosis

The United Nations defined a number of Millennium Developmental Goals which are to be reached in 2015. One of them is reducing child mortality under five by at least two thirds. In India, the under five mortality was 76 per 1000 live births in 2006, as opposed to only 5 per 1000 in the Netherlands during the same year (www.mdgmonitor.org, accessed 13-10-2008).

Pneumonia and tuberculosis are still on the list of leading causes of child mortality. A total of 44 children (8.5%) were diagnosed with pneumonia. Only one case of tuberculosis was seen which had already been diagnosed and was receiving specialist treatment. The prevalence of pneumonia was similar in all geographical regions. All cases were treated with a course of antibiotics (amoxicillin or clarithromycine if already treated before).

Table 5: Disease prevalence among all 507 children, total and per area. Figures represent absolute numbers with percentages of children in area between brackets.

Major diagnoses	Active worm inf.	Scabies	Lice	Pneum.*	TBC	Path. Murmur	Protein.*	Painful caries
M-L school**	9 (15)	3 (5.0)	22 (37)	6 (10)	-	3 (4.9)	-	17 (28)
Kaza	14 (23)	2 (3.3)	18 (30)	4 (6.5)	1 (1.6)	2 (3.3)	-	7 (12)
KPS	8 (12)	1 (1.5)	11 (16)	4 (5.9)	-	3 (4.4)	-	21 (31)
Kibber	9 (11)	2 (2.5)	38 (47)	8 (9.9)	-	2 (2.5)	-	17 (21)
Ki village	12 (21)	1 (1.7)	15 (26)	8 (14)	-	3 (5.2)	1 (1.7)	14 (24)
Ki Mon.	2 (5.9)	1 (2.9)	-	4 (12)	-	1 (2.9)	-	13 (38)
Lossar	14 (10)	1 (<1)	82 (58)	10 (6.9)	-	4 (2.8)	-	31 (22)
Total	**68 (13)**	**10 (2.0)**	**187 (37)**	**44 (8.5)**	**1 (<1)**	**18 (3.6)**	**1 (<1)**	**120 (24)**

* Protein.: proteinuria on dipstick; Pneum.: pneumonia. All pneumonia diagnoses were clinically established, except for one of the four cases in Kaza area, which was confirmed by additional X-ray in Kaza hospital.
**Prevalence numbers of diagnoses in the Munsel-ling population are not representative of the whole school as only the sick, severly anaemic and/or dubious cases were referred to MCC for check-up.

Pathologic heart murmurs

The MCC carrousel includes a cardial examination. We suspected 18 children (3.6%) of having a pathological heart murmur, mainly due to septal defects.

In the province of Uttar Pradesh, India, the prevalence of congenital heart disease was estimated at 26.4 per 1000 (Kapoor et al, Indian Pediatr. 2005 Apr;45(4):309-11). Most common were ventricular septal defects (21 % of all cases), atrial septal defects (19 %) and patent ductus arteriosus (15 %). Compared to these numbers, the prevalence of heart murmurs in Spiti Valley was relatively high (3.6%). Genetic factors as well as marrying traditions may play a role.

For these condition no treatment was readily available although good dental condition is essential for a healthy life. The children and their care takers with the suspected pathological heart murmurs were stressed on teeth brushing procedures and were told to take antibiotics when going to a dentist for any teeth extraction.

<u>Proteinuria</u>

Only one case of proteinuria was detected during all medical check-ups: a nine year old girl from Ki village who had an active worm infection and was anaemic, underweight, stunted and wasting (see 'Growth abnormalities' for definitions). The girl was referred to Kaza hospital for further testing.

<u>Caries</u>

Dental conditions will be reported in a separate report by Mariette van Spronsen and Hetty Garrelfs.

<u>Growth abnormalities</u>

Malnutrition is thought to account for one third of all deaths of children under five years of age (UN Millennium Developmental Goals). 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 and indicator of malnutrition or weight loss because of disease.
- 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.
- 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.

It has to be noted that reference data were only available for certain heights, weights and ages (as specified above), leading to the following general prevalences of growth abnormalities: underweight: 34% (139/404), wasting: 8% (28/363), stunting: 57% (289/507).

Data on stunting were complete as opposed to underweight and wasting data. However, estimation of age is sometimes troublesome without official documents stating date of birth and children or even parents not knowing children's age, making the stunting data less reliable than wasting data.

The prevalence of growth abnormalities was similar in the different geographical areas, except for Kaza Public School and Ki Gompa. In these locations, wasting was far more prevalent than in other areas, respectively 20% (12/59) and 71% (24/34), meaning that children in these areas were far more often (acutely) malnourished.

During the medical check-ups, we gave all children's guardians hygiene and nutritional advise, with emphasis on hand-washing and vegetable intake, so that their children may grow healthy and strong. For babies, we advised exclusive breastfeeding up to six months. After that, most mothers fed their babies with rice and lentil soup and only little vegetables and hardly any fruit. We are aware that during winter, Spiti Valley is closed of from the outside world. Therefore, we advised people to store dried fruit (for instance, apricots) for during the winter. After the check-ups, we also gave local spokespersons, health workers, teachers and Lama Tashi the same advise and asked them to spread this knowledge. Lama Tashi offered to pass this advise to the Lama of Ki monastery, who was - unfortunately - not present at the time of our medical camp.

Education of health workers, caretakers and other local helpers

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

Future medical needs

- On all the 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, dental care, good eating habits and nutrious food. The student team from British Columbia University led by Videsh Kapoor worked on this at Munsel-ling School during the summer of 2008. So far in the surrounding area, surveys about living conditions and health awareness have been performed by the Canadian team. We are eager to hear their results and continue our collaboration.
- It is important to stress, over and over again, the importance of regular (half yearly) de-worming off all children up to fourteen year of age. Again, a start has been made for the children of Munsel-ling School by the Canadian team.
- There is a need to find a method for keeping relevant information with the child (like the need of antibiotics before dental extraction in children with a cardial septal defect), also for children outside Munsel-ling School who don't have the medical journals.
- Reference data for determining wasting and stunting in children beyond 10 years of age and taller than 120 cm would make it considerably easier to estimate the prevalence of growth abnormalities in a reliable way.

Last words

I feel it has been a tremendous privilege to work with an enthusiastic, diverse MCC team. Moreover, the commitment of Lama Tashi and all the other people of Spiti Valley who contributed to this project was heart-warming.

The cooperation with the University of British Columbia was rejuvenated and elaborated, showing that the result of a joint effort can be more than the sum of it's parts. The first steps towards structural prevention strategies were made in Munsel-ling school and Kaza Public School. On top of that, the project was made available to even more children in the Spiti Valley. I sincerely wish for this collaboration with the community of Spiti Valley and University of British Columbia to continue so that in the future, even more children of the Spiti Valley may have access to proper basic health care and knowledge, as this will contribute towards achievement of their full developmental potential.

Luc Coffeng, MD
Mission leader MCC mission Spiti July 2008

Utrecht, 17th of September, 2008

Appendix A: Overview of purchased medication			**Inventory at start of mission**					**Inventory at end of mission**				
Medication	**Units per package**		**Total units / bottles**	**Import from NL**	**L.W. mission hospital**	**Shimla pharm.**	**Munseling dispensory**	**Total units left over**	**Sold to L.W. mission hospital**	**Total used**	**Left in Munseling dispensory**	**Back to NL**
Iron sulfate tablet (1)	pot a 1000	tabl	20,000	-	15000	-	5000	90	-	19910	90	-
Ferron tablet (2)	box à 30	tabl	820	-	-	-	820	-	-	820	-	-
Iron syrup (3)	bottle a 200	ml	399	-	399	-	-	83	-	316	83	-
Capnifer (4)	bottle à 200	ml	31	-	0	-	31	2	-	29	2	-
Multivit tablet (5)	pot a 1000	tabl	7000	-	7000	-	-	125	-	6875	125	-
Vitamin syrup with calcium (6)	bottle a 200	ml	100	-	100	-	-	-	-	100	-	-
Zincovit multivit syrup (7)	bottle a 200	ml	100	-	100	-	-	-	-	100	-	-
Albendazole	tablet a 400	mg	891	-	600	-	291	-	-	891	-	-
Amoxycillin granulate (8)	bottle a 60	ml	64	-	64	-	-	15	-	49	15	-
Amoxycillin capsules	tablet a 250	mg	645	-	645	-	-	105	-	540	105	-
Amoxycillin capsules	tablet a 500	mg	640	-	640	-	-	330	-	310	330	-
Cotrimoxazole	pack a 10	tabl	120	-	120	-	-	110	-	10	110	-
Clarithromycin syrup (9)	bottle a 30	ml	22	-	-	22	-	20	20	2	-	-
Clarithromycin tablet	tablet a 250	mg	80	-	-	80	-	68	28	12	-	40
Ivermectin	tablet a 6	mg	48	-	48	-	-	38	-	10	-	38
Ciprofloxacin eye / ear drops	bottle a 5	ml	32	-	32	-	-	21	-	11	21	-
Mupirocin	tube a 7,5	g	30	-	30	-	-	29	-	1	29	-
Benzoyl peroxide gel	tube a 20	g	15	-	15	-	-	15	-	-	15	-
Benzoyl peroxide gel	tube a 50	g	5	5	-	-	-	4	-	1	4	-
Fusidin	tube a 10	g	17	-	17	-	-	14	-	3	14	-
Miconazole	tube a 25	g	15	-	15	-	-	13	-	2	13	-
Miconazole	tube a 30	g	8	-	-	-	8	8	-	-	8	-
Hydrocortisone cream	tube a 15	g	12	-	12	-	-	1	-	11	1	-
Dactacord	tube a 15	g	11	-	-	-	11	11	-	-	11	-

(1) Ferric sulfate 200 mg = 60 mg elemental iron.
(2) ?
(3) 15 ml = 160 mg ferric ammonium citrate = 30 mg elemental iron.
(4) 5 ml = 50 mg elemental iron; 5 mg elementary zinc; 7.5 mcg cyanocobalamine; 500 mcg folic acid.
(5) Thiamine 1 mg; 0.5 mg riboflavin; 0.5 mg pyridoxin; 100 IU cholecalciferol (vit D3); 800 IU vitamin A; 1 mg calcium pantothenate; 10 mg niacinamide; 0.1 mg folic acid.
(6) 5 ml = 200 IU cholecalciferol (vit D3); 2.5 mcg vit B12 , 82 mg calcium.
(7) 5 ml = 22.2 mg zinc sulfate; 7.5 mg nicotinamide; 5 mg lysine hydrochloride; D-panthenol 1.25 mg; thiamine 0.75 mg; riboflavine 0.75 mg; pyridoxine 0.5 mg; 100 mcg copper sulfate; 50 mcg potassium jodide; 10 mcg selenium; 0.5 mcg cynocobalamine; 1250 IU vitamine A; 100 IU cholecalciferol; 2.5 IU vitamine E.
(8) 60 ml = 125 mg amoxycillin.
(9) 5 ml = 125 mg clarithromycin.

Appendix B: Treatment protocol for anaemia

Anaemia standard treatment

Iron supplementation, optimal 3 mg elemental iron / kg bodyweight. Due to the small supply and high cost of iron syrup, children were given tablets if allowed for by bodyweight and if they could swallow them.

Iron syrup (bottle = 200 ml; 15 ml = 30 mg elemental iron)
- 4 kg: 1 x 5 ml per day for 3 months (2 bottles)
- 5 - 7 kg: 2 x 5 ml per day for 3 months (4 bottles)
- 8 - 11 kg: 3 x 5 ml per day for 2 months (4 bottles, due to short supply)
- 12 - 14 kg: 2 x 10 ml per day for 2 months (6 bottles, due to short supply)

Capnifer syrup (bottle = 200 ml; 5 ml = 50 mg elemental iron)
- 5 - 10 kg: 1 x 2.5 ml per day for 3 months (1 bottle)
- 10 - 15 kg: 1 x 5 ml per day for 3 months (2 bottles)

Iron sulfate tablet 200 mg (60 mg elemental iron per tablet)
- 10 - 40 kg: 1 tablet / day for 3 months (90 tablets)
- ≥ 40 kg: 2 tablets / day for 3 months (180 tablets)

Ferron tablet ? mg (? mg elemental iron)
- 20 - 40 kg: 1 tablet / day for 3 months (90 tablets)
- 40 - 60 kg: 2 tablets / day for 3 months (180 tablets)
- ≥ 60 kg: 3 tablets / day for 3 months (270 tablets)

Anaemia and signs of vitamin deficiency

Standard multivitamin syrup or multivitamin pills if children could swallow them. This was not combined with iron supplementation. Evaluation of data from a previous mission suggests that vitamin or iron together aren't any better than any of those given by themselves. However, in some cases a baby would receive vitamin drops and the mother would be given an iron supplement.

Anaemia and signs of zinc deficiency

Vitamin syrup with zinc (Zincovit).

Anaemia with haemoglobin levels ≤ 5.0 mmol/l

As in standard treatment for anaemia, irrelevant of assumed vitamin status.