# Medical Checks for Children

## Medical Report

## South Africa, KwaZulu-Natal 2017

*In collaboration with*

LETCEE & Kinderfonds MAMAS

September - October 2017

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# 1.Introduction

From september 30th untill october 7th 2017, a Medical Checks for Children (MCC) team visited five locations in KwaZulu-Natal, a province in the south-east of South Africa. Free of cost, the MCC team checked and treated 1181 children, aged newborn until 12 years. The team consisted of Ines von Rosenstiel, paediatrician and medical mission leader; Mariette van Caulil, HR officer and Jeanine Terwindt, psychologist, dual organizational mission leaders; Shirley Martens, paediatric neonatologist; Michiel Palte, director financing; Jan Armin Roosjen, family physician; Jill Baars, consultant Child protection; Marlies Kok, pediatric nurse; Catelijne Coppens, paediatric resident; Jankina Ligtvoet, paediatric nurse and Erica van Maanen, family physician and ( ex )tropical doctor .

Our host patron during our stay was Mary James, director of 3 Letcee projects , in partnership with the Dutch organization Kinderfonds MAMAS. This was the second mission to this region in South Africa, and catering for different areas than the 2016 medical mission.
Technical equipment and some of the supplies were brought from the Netherlands by the MCC team members. Most of the medication was ordered through the local Dalton pharmacy, with the help of Rajin Naidoo.

Kinderfonds MAMAS (Children's Fund MAMAS) is a Dutch charity organisation that has been co-funding dozens of high quality grassroots childcare organisations all across South Africa since 2000. Kinderfonds MAMAS believes in MAMA POWER! LETCEE works under the umbrella of Kinderfonds MAMA as a local organisation.

LETCEE is a non-profit organization that operates from Greytown, in the heart of the KwaZulu-Natal midlands. The name (Little Elephant Training Centre for Early Education) is derived from the Zulu name for Greytown eNdlovana – the place of the little elephant. LETCEE's mission is to build the confidence and capacity of adults so that they will create nurturing environments for the children in their communities.

The cooperation with LETCEE consisted of the following (amongst others):

- Identifying and engaging the local stakeholders;
- Prior announcement and preparations of the medical camp in the locations;
- Selection of locations and selection of the children;
- Giving full support to the MCC team during the medical camp;
- Commitment to ensure relevant medical follow-up.

The MCC team was delighted by the cooperation with Mary James and her husband and all the local (healthcare) workers who helped us during this intense first medical camp under the strong leadership of our partner Kitso Maragelo.

## 2. Medical Checks for Children on location

During the medical checks, the children were checked following the MCC carrousel:

1. Registration of the child
2. Measuring height and weight
3. Blood test for haemoglobin
4. Physical examination
5. Giving medication and education about the correct use of it (pharmacy)
6. Education on hygiene and tooth brushing (a tooth brush was given to each child)

**Data collection**
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 was recorded. Specifically, caretakers were asked if the child had fever, diarrhea, an upper respiratory infection, vomiting, decreased appetite and/or weight loss. They were also asked if their child received treatment for any condition, and if so, from where. The data of the children are saved and analysed through the MCC database.

## 3. General information on the different locations

KwaZulu-Natal is located in the southeast of South-Africa, enjoying a long shoreline beside the Indian Ocean and sharing borders with three other provinces and the countries of Mozambique, Swaziland and Lesotho. Its capital is Pietermaritzburg and its largest city is Durban. It is the 2nd most populous province in South Africa with slightly less than Gauteng. 3.5 million children and adolescents live in the KwaZulu-Natal province, this approximately 23% of all the children living in South-Africa.

The average household has 5.5 members with an income of less than 1 dollar per day per member. Unemployment in this region is high: 50-75%. The result is that the circle of poverty, abuse, malnutrition and neglect becomes even wider.

The pediatric department of the Pietermaritzburg hospital complex is responsible for children's health both in Pietermaritzburg and in the Western half of KwaZulu-Natal. Our point of reference was Greytown Hospital with contactpoin medical manager Dr. Govender and other professionals from the Department of Health. Greytowwn hospital is a district hospital with 234 beds in the Umzinyathi health district. The hospital serves mainly the rural and semi urban population and provides a 24 hour inpatient/outpatient emergency service, a 24 hour laboratory, x-ray and blood bank facility.

The medical checks were performed on five days at six different locations.

**Program:**
Day 1: Njengabantu
Day 2: Matimatolo
Day 3: Mbuba
Day 4: Nseleni/Sgedlane
Day 5: Coloured Village (Greytown)

We were thanksful to carry out the medical checks in designated areas such as the official tribal office in Njengabantu, the Busana High school in Matimatolo, Bangumuzi Primary in Mbuba Nseleni Primary in Nseleni, Potspruit primary in Sgedlane and the Izingane centre in Greytown.

At the different locations we checked children who were included in the LETCEE program and other children from the villages.

| Locations | 02-10-17 | 03-10-17 | 04-10-17 | 05-10-17 | 06-10-17 | Total |
|---|---|---|---|---|---|---|
| Coloured village | 0 | 0 | 0 | 0 | 127 | 127 |
| Matimatolo | 0 | 263 | 0 | 0 | 0 | 263 |
| Mbuba | 0 | 0 | 349 | 0 | 0 | 349 |
| Njengabantu | 228 | 0 | 0 | 0 | 0 | 228 |
| Nseleni | 0 | 0 | 0 | 81 | 0 | 81 |
| Sgedlane | 0 | 0 | 0 | 133 | 0 | 133 |
| (blank) | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **228** | **263** | **349** | **214** | **127** | **1181** |

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

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | Nseleni | | Sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| **Age** | **N** | **%** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| <=1 year | 105 | 9% | 12 | 9% | 29 | 11% | 23 | 7% | 28 | 12% | 3 | 4% | 10 | 8% |
| >1 en <5 years | 352 | 30% | 24 | 19% | 87 | 33% | 104 | 30% | 70 | 31% | 23 | 28% | 44 | 33% |
| <5 years | 446 | 38% | 36 | 28% | 116 | 44% | 116 | 33% | 98 | 43% | 26 | 32% | 54 | 41% |
| >=5 en <=10 years | 571 | 48% | 71 | 56% | 100 | 38% | 201 | 58% | 97 | 43% | 45 | 56% | 57 | 43% |
| >10 years | 183 | 15% | 20 | 16% | 47 | 18% | 51 | 15% | 33 | 14% | 10 | 12% | 22 | 17% |
| **Gender** | | | | | | | | | | | | | | |
| Boy | 532 | 45% | 64 | 50% | 116 | 44% | 139 | 40% | 105 | 46% | 42 | 52% | 66 | 50% |
| Girl | 647 | 55% | 63 | 50% | 147 | 56% | 210 | 60% | 122 | 54% | 38 | 47% | 67 | 50% |

*Table 2: Summary of checked children per geographical location by age and gender*

## 4. Specific diagnoses

**1. Growth abnormality and malnutrition**

Undernutrition has long been considered a consequence and cause of poor human health, development, and achievement throughout life. There are severe forms of malnutrition, characterized by classical clinical signs such as extreme thinness or edematous extremities and hair signs. More prevalent are the hidden forms of undernourishment that can stunt child growth and development and impair the immune system[1]. It is reported that over one-third of child deaths in South-Africa are due to undernutrition, mostly from increased severity of disease[2].

The following definitions categorize the different types of malnutrition:

- 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.

According to the UNICEF 2009 State of the World's Children report, 27% of South-African children under the age of five are stunted, 12% are underweight, and 5% are wasted. In 2011 it was reported that South-Africa is classified as one of the 36 high burden countries for child malnutrition with specific reference to a stunting prevalence of higher than 20% and 10% underweight[3].

In the area surrounding Greytown which we have visited for our medical mission, 5% of the children was classified as underweight. Seventeen percent of the children suffered from stunting and 2% suffered from wasting. If we look at children under five specifically (high risk group), we see that 6% of children is underweight, 24% is stunting and 2% is wasting.

The double burden of malnutrition: there is a worrying increase in obesity and obesity-related diseases in South Africa. The double burden of malnutrition is characterised by the coexistence of undernutrition along with overweight and obesity. In 2008 the prevalence of combined overweight/ obesity was moderate in early childhood and low in late childhood. The prevalence rose progressively in girls above 10 years of age, with a prevalence of overweight of 10% en obesity of 3% (10-12 year old girls). Individual risk factors are older children, girls and pubertal en post-pubertal age. At a household level,

[1] Merson, Global Health Disease Programs, Systems and Policies, page 243.
[2] UNICEF 2009 State of the World's Children report
[3] South-African National Health and Nutrition Survey SANHANES 1 study
[4] http://www.who.int/nutrition/double-burden-malnutrition
[5] Kimani-Murage. Exploring the paradox: double burden of malnutrition in rural South Africa. Global Health action 2013. 193-205.

risk factors of overweigt/obesity due to overnutrition are mothers >50 years of age, food security, little education en low socio-economic status. [4,5] During this years medical check we saw (na survey data available) more children with stunting and obesity, particulary among girls. The combination of early stunting and adolescent obesity raises critical concerns in the wake of the rising public health importance of metabolic diseases in low/middle income countries. This is because, both paediatric obesity and adult short stature are risk factors for metabolic syndrome en disease in adulthood. This calls for interventions to alleviate the dual burden of malnutrition in South-Africa.[5]

Undernutrition in South African children younger than ten years old has dropped significantly since 2005 with the exception of 0-3 years. In the group aged 0-3 years, in 2012 the prevalence of stunting is 26.9% for boys an 25.9% for girls. In group aged 7-9 the percentage of stunting for boys was 10% with 8.9% for girls. This shows the vulnerability of the younger group of children.

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | Nseleni | | Sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Underweight | 45 | 5% | 5 | 5% | 7 | 3% | 18 | 6% | 7 | 4% | 4 | 6% | 4 | 4% |
| No underweight | 933 | 95% | 96 | 95% | 203 | 97% | 275 | 93% | 185 | 93% | 67 | 94% | 107 | 96% |
| Unknown | 194 | 16% | 26 | 20% | 53 | 20% | 54 | 15% | 29 | 13% | 10 | 12% | 22 | 17% |
| **Underweight children per age** | | | | | | | | | | | | | | |
| <=1 year | 6 | 6% | 0 | 0% | 1 | 4% | 2 | 9% | 1 | 4% | 1 | 33% | 1 | 10% |
| >1 en <5 years | 23 | 7% | 1 | 5% | 5 | 6% | 9 | 9% | 3 | 4% | 3 | 13% | 2 | 5% |
| <5 years | 28 | 6% | 1 | 3% | 6 | 5% | 10 | 9% | 4 | 4% | 4 | 15% | 3 | 6% |
| >=5 en <=10 years | 20 | 4% | 4 | 6% | 1 | 1% | 11 | 6% | 3 | 3% | 0 | 0% | 1 | 2% |
| >10 years | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| **Underweight children per gender** | | | | | | | | | | | | | | |
| Boy | 24 | 5% | 3 | 6% | 5 | 5% | 8 | 6% | 5 | 5% | 1 | 3% | 2 | 3% |
| Girl | 21 | 4% | 2 | 4% | 2 | 2% | 10 | 6% | 2 | 2% | 3 | 9% | 2 | 4% |

*Table 3: Prevalence of weight/age at or under P3 (underweight) per geographical location by age and gender*

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | Nseleni | | Sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Stunting | 199 | 17% | 14 | 12% | 52 | 21% | 55 | 16% | 28 | 12% | 13 | 16% | 37 | 28% |
| No stunting | 957 | 82% | 107 | 88% | 199 | 79% | 291 | 83% | 197 | 86% | 68 | 84% | 95 | 72% |
| Unknown | 19 | 2% | 6 | 5% | 12 | 5% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 1% |
| **Stunting children per age** | | | | | | | | | | | | | | |
| <=1 year | 26 | 25% | 1 | 9% | 10 | 36% | 5 | 22% | 2 | 7% | 2 | 67% | 6 | 60% |
| >1 en <5 years | 82 | 24% | 4 | 18% | 21 | 25% | 22 | 21% | 12 | 17% | 7 | 30% | 16 | 36% |
| <5 years | 105 | 24% | 5 | 15% | 31 | 28% | 24 | 21% | 14 | 14% | 9 | 35% | 22 | 41% |
| >=5 en <=10 years | 64 | 11% | 5 | 7% | 12 | 13% | 25 | 12% | 11 | 11% | 3 | 7% | 8 | 14% |
| >10 years | 33 | 18% | 4 | 20% | 9 | 21% | 9 | 18% | 3 | 9% | 1 | 10% | 7 | 32% |
| **Stunting children per gender** | | | | | | | | | | | | | | |
| Boy | 98 | 19% | 7 | 12% | 24 | 22% | 23 | 17% | 18 | 17% | 9 | 21% | 17 | 26% |
| Girl | 101 | 16% | 7 | 11% | 28 | 20% | 32 | 15% | 10 | 8% | 4 | 11% | 20 | 30% |

*Table 4: Prevalence of length/age at or under P3 (stunting) per geographical location by age and gender*

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | Nseleni | | Sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Wasting | 12 | 2% | 0 | 0% | 3 | 2% | 6 | 3% | 3 | 2% | 0 | 0% | 0 | 0% |
| No wasting | 678 | 96% | 56 | 100% | 163 | 98% | 193 | 95% | 134 | 91% | 50 | 100% | 82 | 100% |
| Unknown | 475 | 40% | 71 | 56% | 97 | 37% | 145 | 42% | 80 | 35% | 31 | 38% | 51 | 38% |
| **Wasting children per age** | | | | | | | | | | | | | | |
| <=1 year | 4 | 4% | 0 | 0% | 1 | 4% | 1 | 4% | 2 | 7% | 0 | 0% | 0 | 0% |
| >1 en <5 years | 4 | 1% | 0 | 0% | 2 | 2% | 2 | 2% | 0 | 0% | 0 | 0% | 0 | 0% |
| <5 years | 7 | 2% | 0 | 0% | 3 | 3% | 2 | 2% | 2 | 2% | 0 | 0% | 0 | 0% |
| >=5 en <=10 years | 6 | 2% | 0 | 0% | 0 | 0% | 5 | 5% | 1 | 2% | 0 | 0% | 0 | 0% |
| >10 years | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| **Wasting children per gender** | | | | | | | | | | | | | | |
| Boy | 4 | 1% | 0 | 0% | 1 | 1% | 1 | 1% | 2 | 3% | 0 | 0% | 0 | 0% |
| Girl | 8 | 2% | 0 | 0% | 2 | 2% | 5 | 4% | 1 | 1% | 0 | 0% | 0 | 0% |

*Table 5: Prevalence of weight/length at or under P3 (wasting) per geographical location by age and gender*

A large portion of the children stated during their visit to our medical camp that they only drank 1 or 2 cups of water a day. Unsafe water and inadequate sanitation and hygiene are significant contributors to the 1.8 million deaths caused by diarrhoea every year. For children under five years of age, this burden is greater than that covered by HIV and malaria combined. Lack of water and chronic thirst in schoolchildren have negative effects on their concentration in school and on further academic achievements, often causing headaches.

*Suggestions:*

- MCC advises to execute the strategy to ensure appropriate nutrition during the first 1000 days of a child's life.
- MCC advises that children drink at least 4 cups of water each day. We advise LETCEE to play a counseling role for parents and children herein.
- Strenghten awareness for the paradox of double burden of malnutrition in rural South Africa

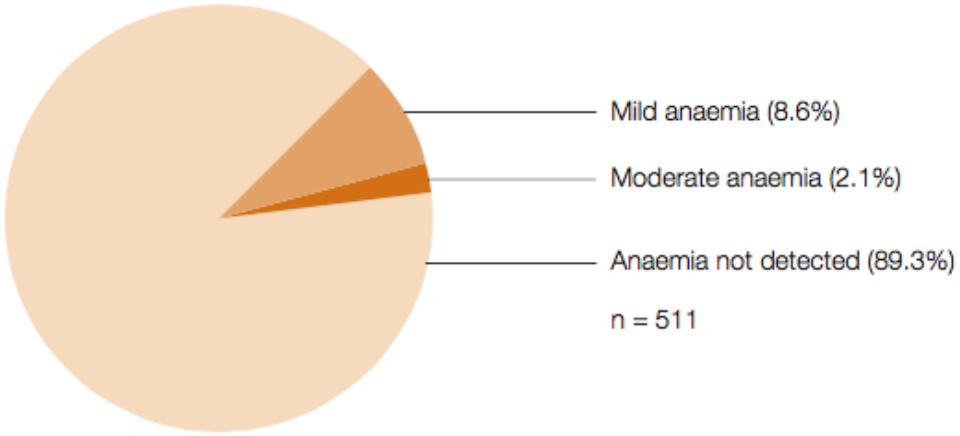
**2. Anaemia**

Iron is essential in the body for oxygen transportation and cellular respiration - functions that are especially critical in red cells, brain and muscle. Iron deficiency is considered the most common micronutrient deficiency in the world; anemia, characterized by abnormally low blood hemoglobin concentration, is its major clinical manifestation. In addition to iron deficiency, other micronutrient deficiencies (such as folate, vitamin B12 and vitamin A), chronic inflammation and inherited disorders of haemoglobin structure can all cause anaemia (WHO/UNICEF/UNU 2001)[4].

Iron deficiency, a common form of nutritional deficiency during childhood, results from sustained negative iron balance, which is caused by inadequate dietary intake, absorption and/or utilisation of iron, increased iron requirements during the growth period, or blood loss due to parasitic infections such as malaria, soil-transmitted helminth infestations and schistosomiasis. In later stages of iron depletion, the haemoglobin concentration decreases, resulting in anaemia.

The South African National Health and Nutrition Survey, 2012 (Sanhanes-1 study)[5] is a survey about the national health and nutritional status of the South African nation. This study states that it is estimated that 600 million preschool- and school-age children worldwide are anaemic, and it is assumed that at least half of these cases are attributable to iron deficiency (WHO/ CDC 2008). Current rates of anemia among preschool aged children in South-Africa are 24%[4]. In the South African National Health and Nutrition Survey, 2012 (Sanhanes-1 study) the prevalence of anaemia was 10.7% (children under five years of age) (see figure 3.8.2.1 from the Sahanes-1 study). The huge decrease is correlated to the beneficial effect of the Food Fortification Program.

*Figure 3.8.2.1: Anaemia status of children under five years of age, South Africa 2012*




** There no cases of severe anaemia among children under five years of age*

[5]*Source: Sahanes-1 study*

Overall the prevalence of anemia seems to drop, although the recent publication in South-African Journal for Child Health, *Persistent and new-onset anaemia in children aged 6 - 8 years from KwaZulu-Natal Province, South Africa*, the prevalence of anemia seems to be higher. The baseline anaemia prevalence in this article was 56.9% and at follow-up the anaemia prevalence was 41.9%.

In South Africa 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. 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 are risk factors for anemia, and as well as side effects of ART medication in HIV positive children.

[4] WHO. 2008. Worldwide Prevalence of Anemia 1993-2005: WHO Global Database on Anemia
[5] The South African National Health and Nutrition Survey, 2012 (SANHANES-1 study)

Anaemia is always multifactorial in cause. Household factors are important when considering malnutrition and anaemia. If we look at the baseline menu provided in KwaZulu-Natal a few observations can be made:

- the diet is rich in carbohydrates (high caloric food), such as putu
- fat is added.
- the vegetables are mostly roots and cabbage, spinach being the exception.

The diagnosis anemia in 286 of the 888 children allegible for testing their blood was made in 1181 of the children. Of the children under five, 37% was anemic. Cut-off values were determined based on age and height of the place where the children lived, using the World Health Organization cut-off values for anemia. In fourtheen children (1%) the Hb level was lower than 5.0 mmol/l marking a more sever form of anemia, and suggesting possible underlying pathologies other than iron deficiency. Depending on the age and presence of growth abnormalities, children were given iron supplements or multivitamins for at least two months. Children with severe anemia (<5.0 mmol/l) were treated with supplementation as well as referred for further diagnostics.

In the table below percentages of anemia on the different locations are displayed.

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | Nseleni | | Sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Anaemia | 286 | 24% | 14 | 11% | 110 | 42% | 57 | 16% | 45 | 20% | 25 | 31% | 35 | 26% |
| No anaemia | 604 | 51% | 86 | 68% | 145 | 55% | 89 | 26% | 162 | 71% | 55 | 68% | 67 | 50% |
| Unknown | 280 | 24% | 27 | 21% | 8 | 3% | 197 | 56% | 17 | 7% | 1 | 1% | 30 | 23% |
| Hb <5,0 mmol | 14 | 1% | 0 | 0% | 2 | 1% | 1 | 0% | 7 | 3% | 3 | 4% | 1 | 1% |
| **Anaemia per age** | | | | | | | | | | | | | | |
| <=1 year | 43 | 41% | 3 | 25% | 16 | 55% | 13 | 57% | 5 | 18% | 1 | 33% | 5 | 50% |
| >1 en <5 years | 129 | 37% | 3 | 13% | 42 | 48% | 43 | 41% | 14 | 20% | 10 | 43% | 17 | 39% |
| <5 years | 163 | 37% | 6 | 17% | 58 | 50% | 47 | 41% | 19 | 19% | 11 | 42% | 22 | 41% |
| >=5 en <=10 years | 102 | 18% | 8 | 11% | 38 | 38% | 13 | 6% | 21 | 22% | 11 | 24% | 11 | 19% |
| >10 years | 24 | 13% | 0 | 0% | 14 | 30% | 0 | 0% | 5 | 15% | 3 | 30% | 2 | 9% |
| **Anaemia per gender** | | | | | | | | | | | | | | |
| Boy | 134 | 25% | 8 | 13% | 46 | 40% | 22 | 16% | 24 | 23% | 12 | 29% | 22 | 33% |
| Girl | 151 | 23% | 6 | 10% | 64 | 44% | 35 | 17% | 21 | 17% | 12 | 32% | 13 | 19% |

*Table 6: Prevalence of anemia per geographical location by age and gender*

MCC complements LETCEE on providing nutritional meals on a daily basis for children in the Coloured Village.

*Suggestions:*

- MCC advises a diet rich in fruits and vegetables, greater diversity, and less added sugars
- MCC supports the general guidelines: mothers known to be HIV infected should exclusively breastfeed their infants for the first 6 months of life, introducing appropriate complementary foods thereafter and continue breastfeeding for the first 12 months of life. Breastfeeding should continue until the age of 2 years and should be supported by ART adherence strategies.

**3. Worm infections**

Worm infections are one of the major health problems confronting millions of school-age children. These parasites consume nutrients from the children they infect, thus aggravating malnutrition and retarding physical development. They also destroy the tissues and organs in which they live. They cause abdominal pain, diarrhoea, intestinal obstruction, anaemia, ulcers and various other health problems.

Heavy, prolonged infection adversely affects growth, development, and educational achievement, and significantly increases childhood morbidity. Parasite infections produce different manifestations according to the site, intensity and length of infection. The host response also influences the clinical course of the infection. In general, children experience the heaviest worm burden, and persistent infection is common in low- and middle-income settings.

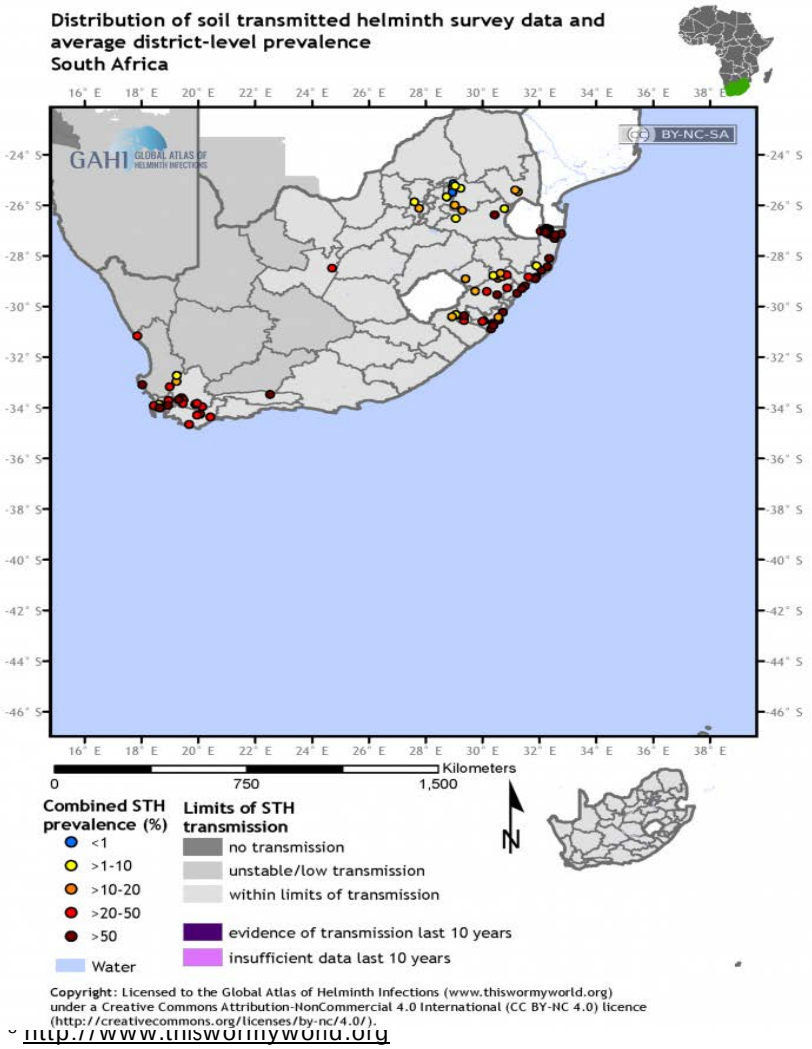
The three main types of common intestinal worms that infect humans are large intestinal roundworm (*Ascaris lumbricoides*), hookworm *(Ancylostoma duodenale and Necator americanus*) and whipworm (*Trichuris trichuira*)[6]. The highest rates of roundworm, hookworm and whipworm infections are often in children between age 5 and 15.

In May 2001, South Africa endorsed the World Health Assembly (WHA) resolution 54.19 in which member states were urged "to sustain successful control activities in low-transmission areas in order to eliminate schistosomiasis and soil-transmitted helminth infections as a public health problem, and to give high priority to implementing or intensifying control of schistosomiasis and soil-transmitted helminth infections in areas of high transmission, while monitoring drug quality and efficacy". South-Africa Department of Health has translated this resolution into a national deworming programme, launched in 2016[7]. The department said the goal was to attain a minimum target of regular administration of deworming medication to at least 75% of school-age children and up to 100% of those at risk of morbidity. South-Africa has a program in which children are offered preventive anti-worm medication. In our group of children, only 21%, 250 of 1181 children, had received anti-worm treatment in the last half year. This is a slight improvemed compared to 2016, where 18% received anti-worm treatment in the last year. All of the children who had not received anti-worm treatment were given one dose of mebendazol 500 mg above the age of five and 250 mg for the age of 2-5 years. Children with severe acute worm infections were treated with mebendazol during three consecutive days.

[6] http://www.unicef.org/eapro/Prevention_of_intestinal_worm_infections.pdf
[7] http://allafrica.com/stories/201603010156.html

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | nseleni | | sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Anti-worm | 250 | 21% | 19 | 15% | 76 | 29% | 62 | 18% | 54 | 24% | 9 | 11% | 30 | 23% |
| No anti-worm | 877 | 74% | 108 | 85% | 161 | 61% | 269 | 77% | 164 | 72% | 72 | 89% | 103 | 77% |
| Unknown | 36 | 3% | 0 | 0% | 26 | 10% | 0 | 0% | 10 | 4% | 0 | 0% | 0 | 0% |
| **Anti-worm per age** | | | | | | | | | | | | | | |
| <=1 year | 29 | 28% | 2 | 17% | 8 | 28% | 8 | 35% | 7 | 25% | 0 | 0% | 4 | 40% |
| >1 en <5 years | 104 | 30% | 8 | 33% | 32 | 37% | 29 | 28% | 19 | 27% | 3 | 13% | 13 | 30% |
| <5 years | 127 | 28% | 10 | 28% | 40 | 34% | 31 | 27% | 26 | 27% | 3 | 12% | 17 | 31% |
| >=5 en <=10 years | 90 | 16% | 7 | 10% | 29 | 29% | 20 | 10% | 21 | 22% | 4 | 9% | 9 | 16% |
| >10 years | 34 | 19% | 2 | 10% | 7 | 15% | 12 | 24% | 7 | 21% | 2 | 20% | 4 | 18% |

*Table 7: Prevalence of preventive anti-worm treatment in the last 6 months per geographical location by age and gender*




[8] http://www.thiswormyworld.org

*Suggestions:*

- MCC advices to roll out a *community delivery strategy* of anti-worm medication delivered by trained teachers and other school personnel, twice a year one tablet of mebendazol 500 mg.

**4. Respiratory problems**

Acute respiratory infections comprise infections of various parts of the respiratory tract, ranging from mild viral and bacterial infections of the upper respiratory tract (e.g. common cold), to life-threatening infections of the lower respiratory tract. Lower respiratory tract infections are the cause of high morbidity and of mortality. Pneumonias in particular are typically one of the leading causes of death among infants and children younger than 5 years[9]. Risk factors for Acute Respiratory Infections (ARI) are poverty, crowding, lack of parental education, malnutrition, low birth weight, lack of breastfeeding.

In the areas surrounding and including Greytown, we saw that 9 out of 1181 (1%) suffered from a clinically evident pneumonia. Depending on their medical history and previous treatment, they were treated with amoxicilline, another type of antibiotics (amoxicillin/clavulanic acid) or referred for a chest X-ray under the suspicion of tuberculosis. A total of 41 children (3%) suffered from upper respiratory infections (otitis media, otitis externa or tonsillitis). Three children showed dyspnea because of asthma and were treated with nebulisation of salbutamol. The amount of respiratory problems was surprisingly low.

KwaZula-Natal has the highest TB burden in the country. A number of 9691 cases of TB in children under five years were reported in 2011. TB CARE II South Africa was launched in October 2014 to support the South Africa National Department of Health (NDOH) TB prevention and control efforts, working closely with national and provincial partners to close gaps in areas identified and to further develop sustainable systems which can carry forward long-term improvements in TB and drug-resistant (DR) TB diagnosis, care, and treatment services.

**5. Cardiac problems**

Congenital heart disease is #8 leading cause of under-five child mortality in South-Africa[10], with the ventricular septal defect as the most prevalent type. In South-Africa, rheumatic heart disease is the leading acquired heart disease among children. It affects over 15 million people around the world and kills hundreds of thousands every year. Africa has the largest number of children with rheumatic heart disease. Acute Rheumatic Fever is caused by an untreated sore 'strep' throat, which may lead to repeated attacks affecting the joints (arthritis), skin (rash) and heart (carditis). After attacks of untreated ARF, chronic heart valve damage (RHD) may develop. In the instance of RHD, open-heart surgery is necessary to repair or replace heart valves[11].

The medical carrousel included a cardiac examination. We suspected twelve children (1%) of having a pathological heart murmur. They all were referred to the pediatric cardiologist for an ultrasound of the heart. One child had adding symptoms fitting the diagnosis of acute rheumatic fever and was

[9] Graham, 1990 - Merson, Global Health Disease Programs, Systems and Policies, page 191.
[10] http://www.unicef.org/southafrica/SAF_publications_mrc.pdf
[11] http://www.pcssa.org/faq/

treated with antibiotics. Five children (0%) were suspected of a physiological heart murmur and were not referred for an ultrasound.

**6. HIV/AIDS**

HIV is one of the biggest healthcare problems in South Africa. According to UNAIDS, 240 000 children aged 0-17 years in South-Africa are HIV infected[12]. 2 100 000 children are made orphans due to AIDS. HIV prevalence in KwaZulu-Natal is among the highest in the world; 38.7% of the population is infected. Despite this significant progress, the number of children becoming newly infected with HIV remains unacceptably high. About 150 000 children became infected with HIV in 2015, down from 490 000 in 2000[13].

We saw 15 children children who were already diagnosed HIV positive. This might underestimate the real number as the question wether the Child was on treatment was not structurally included in the history taking.

**7.Skin disease**

An outbreak of scabies and other related skin diseases have attacked hundreds of children in the rural area s in the Greytown District.

Human scabies is a parasitic infestation caused by *Sarcoptes scabiei var hominis.*[14] During our checks we encountered an extreme high number of children with scabies, different locations showing numbers ranging from 13 tot 26 % !! Scabies is a serious problem and a significant source of morbidity in high risk groups like very young or elderly people and especially immuncompromised patients and has a highly contagious nature. Scabies manifests as papules, pustules, burrows, nodules, and occasionally urticarial papules and plaques. Scabies infestation is frequently complicated by bacterial infection, leading to development of skin sores, with serious consequences as septicaemia, heart disease or chronic kidney disease.[14] Most of the patients with scabies experienced severe pruritus. A subset of patients had crusted or Norwegian scabies. These patients, who are usually debilitated or immunocompromised, do not experience the urge to scratch. Clinical diagnosis of scabies was based on patient history and physical examination. Scabies was often complicatied by severe impetigo. Scabies was treated with topical or oral therapies on the spot. Topical treatments included benzyl benzoate lotion, permetrin soap and oral Ivermectin. Ivermectin, although expensive, is especially useful in treating patients with Norwegian or crusted scabies, or who are debilitated. Ivermectin has no serious reported adverse effects. Model treatment plans to stop scabies epidemics have been developed around the World.[14]

During our stay Letcee and the Department of Health launched plans for an urgent campain and approach to control the scabies epidemic. Failure to coordinate notification, education, treatment, and disinfection can lead to failure to control scabies epidemics. The emergent focus needs to be adressed to hightening the awareness of the scabies outbreak within the community, treatment

[12] http://www.unaids.org/en/regionscountries/countries/southafrica
[13] Children and HIV: fact sheet, UNAIDS, 2016
[14] http://www.who.int/lymphatic_filariasis/epidemiology/scabies/en/

effects and logistics.[14] Treatment with kaliumpermanganate in rinsing water was considered first choice and is of low risk, but cumbersome because many individuals need be reached and treated. Prolonged surveillance is required for the eradication of outbreaks of scabies. Blanckets and clothing do not appear to be important in transmission, and there is no conclusive evidence to suggest that washing of clothing and blankets is necessary for the prevention of spread.

In respect to other skin diseases we saw 110 (9%) of children with variable presentations of dermatomycoses, mainly tinea capitis. Tinea capitis in African countries is highly prevalent and besides overcrowding often spread through the use ofinfected objects like dirty razor blades when shaving the heads of the children. The presenting signs include scaling of the scalp with or without alopecia, or kerion. Kerion is the result of the host s response to a fungal ringworm infection of the hair follicles of the scalp that can be accompanied by secondary bacterial infection(s). Follicles may be seen discharging pus. The ringworm of the scalp was sometimes associated with skin involvement on other areas of the body. Antifungal cream and selsun shampoo was given for dermatomycosis. Hydrocortisone crème was given for different forms of dermatitis.

We encountered a high and broad range of different kind of wounds and skin disorders, mainly impetigo. Impetigo is a contagious superficial bacterial infection manifesting on the face and extremities with lesions that progress from papules to vesicles, pustules, and crusts. The cases were treated by antibacterial creams, and in combination with oral antibiotics. Seventy-two children had impetigo and one boy was clinically septic with widespread painful furunculosis, resulting in acute referral to the hospital after his first dose of ciproflaxacin and painkillers. Several underlying factors in the enviroment of the children such as lack of running water, overcrowding, poor personal hygiene, minor skin trauma or eczema are the main predisposing factors for these bacterial skin infections. A large percentage of the high number of impetigo was secondary to the underlying scabies outbreak. Impetigo may be followed by poststreptococcal glomerulonephritis or rheumatic fever. During our medical mission week we did not screen on protein in the urine of the affected cases of long lasting impetigo.

Handwashing is important for reducing spread among children, and other preventive measures employed in reducing the spread of staphylococci/streptococci may also be helpful. A practical way to reduce recurrence rates of staphylococcal furunculosis is treatment with Betadine solution in water, however the iodine needs to be rinsed off completelt to not affect the thyroid function with elevated TSH levels. Children who are iron deficient have higher percentages of boils, vitamin C has also been advocated to improve deficient neutrofiel function in prevention of boils.

**8. Dental health**

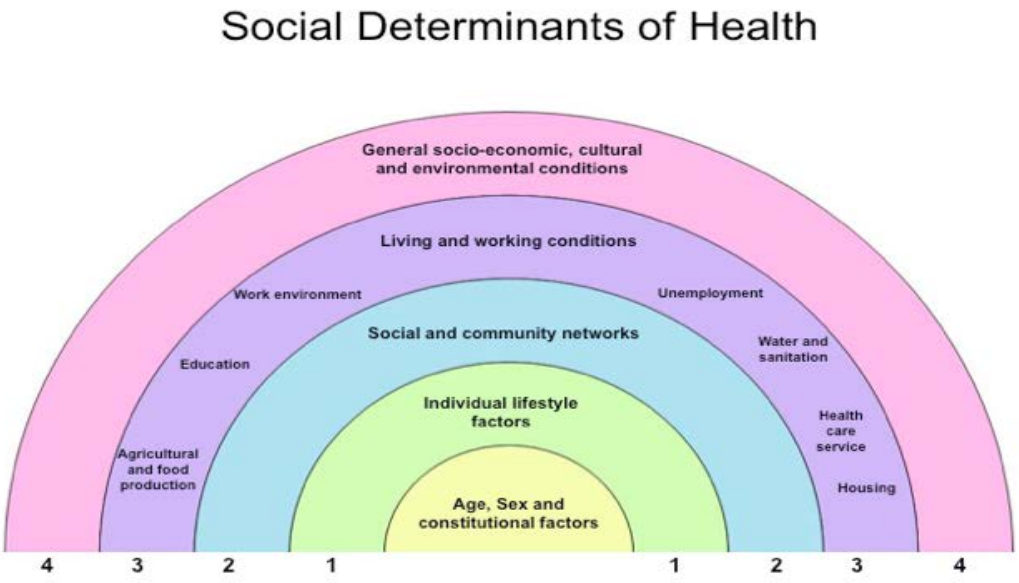
Dental caries is still a major public health problem. Dental caries is influenced by multiple factors such as diet, socio-economic status and the availability of oral health services. Of the 1181 children that were checked, this widespread condition affected 271 children (23 %), 101 children were suffering pain from their caries. Only the children with inevitable dental pain and discomfort were referred to the dental mobiel clinic, wich sadly and logistically was not part of our medical checks week this year.

*Suggestions:*

- MCC encourages the dental mobile clinic to regularly diagnose and treat children for dental healthcare.
- Gradual Shift from a more curative to a more preventative approach for an improvement in dental service delivery
- Upscaling health promotion concerning dental health in all schools and daycare centers
- Awareness in the community between the link of severe caries with high sugary sweets, incorrect diet, source of water and fluoride content
- Affordability of toothbrushes and fluoridated toothpaste

**9. Social health**

The social determinants of health (SDH) are the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life. A healthy child is a child with not only a healthy body, but also a healthy and safe environment where it is loved, nourished and encouraged to grow.




Dahlgren & Whitehead 1991 Policies and strategies to promote social equity in health. Stockholm: Institute of Future Studies.

The etiology, characteristics and presentation of child abuse are the product of a complex interaction of social, cultural and interpersonal factors. In the areas in and surrounding Greytown, thepercentage of alcohol misuse is 24%[14]. Child rape peaks in summer month and is lowest during winter. Around a quarter of all the girls till the age of 18 have experience sexual abuse.

| | |
|---|---|
| Any Physical Maltreatment | 32% |
| Disciplined with stick, belt, etc. | 31% |
| Slapped, punched, hit | 13% |
| Any Verbal Maltreatment | 25% |
| Threatened by being called names, such as dumb or lazy | 22% |
| Threatened to be kicked out of home | 9% |
| Any Maltreatment | 43% |

## Guardianship of vulnerable children

A number of 824 (70%) of the children did not have a caretaker present at the day of the medical check and was up to 64% percent in location Nseleni with extreme poverty cases. Medication needed was not handed over to children below the age of 12 years without caregiver and stored in a seperate box, later to be distribuated by the regional fieldworker to the specific families. In other locations, a high number of grandparents or extended family memebers were more commonly involved in the care of young children bringing them to the medical checks. In South Africa, where high HIV prevalence among younger-to-middle aged adults has led to a heavy burden on grandparents, especially grandmothers, to care for their grandchildren.

### Abuse/ Domestic Violence

Six children were referred to a social worker for referral to a special school or in the case of suspicion of domestic violence, sexual abuse and/or neglect. During last years medical check the most concerning location in which social problems and medical problems as consequence of surroundings, was the Coloured Village. The Coloured Village are shacks or informal housing where children where children are often affected by burns and paraffin poisoning. Because the children in the Coloured Village is a known cohort included in last years medical check, we could monitor the amazing progress. This year we encountered a striking and very positive change in physical and emotional health in the former often homely maltreated or abused children.

Uptill now, more than 125 children of the Coloured Village had found shelter, food as in free breakfast and lunch, a safe heaven, a caring, loving adult or buddy and a place to play and learn within the wonderful programs of Letcee.

[14] Thurman, T and Kidman, R (2011). *Child Maltreatment at Home: Prevalence among Orphans and Vulnerable Children in KwaZulu-Natal, South Africa.* New Orleans, Louisiana.: Tulane University School of Public Health and Tropical Medicine

Seeing these children being happy and more healthy was a great joy to our volunteers, examplyfing the difference made by all the tremendous efforts by the professionals from letcee in just 12 month.

## Children with physical and intelectual disabilities

The overall confirmed prevalence rate for children with disabilities under 10 years in South africa is 6%. The most prevalent disabilities we saw were mild perceptual or learning disabilities, followed by cerebral palsy, hearing loss, moderate to severe perceptual disability and seizure disorders.
Far more disabled children, up to 1% (14 children), were presented to us during this years checks and reflects the ongoing dedication of the Letcee fieldworkers for this vulnerable population. The encountered cases with developmental delays were listed for further follow- up and monitoring of their special needs. The affected children showed a wide spectrum of problems and included also children with Down syndrome, cerebral palsy, autism and fetal alcohol syndrome.

In South-Africa, the nearly 2.1 million children (11.2 percent of the total child population) is classified as disabeld. The prevalence is unusually high for young children, namely 28% children aged 0-4, and 10% in the age group 5-9 years. Disabilities related to sight and hearing are the most commen, while approximately one in 10 children with disabilities have multiple disabilities. The prevalence of disabilities is slightly higher in boys. Orphans and childrens living in institutions or on the streets appear to be at a higher risk of a disability. This might reflex the general development or porverty level of an area, access to nutritious food, exposure to environmental or infectiuous agents, or social or other risk factors for disability. Early detection is crurial to ensure that children receive effective treatment and rehabilitation. Efforts are being made, and should be continued to improve early detection of ddisability in children.[15]

Foetal Alcohol Syndrome is thaught to be the third highest cause of congenital mental retardation. This syndrome is associated with cranio-facial malformations, growth retardation, abnormalities in the nervous system and organ malformation. Foetal Alcohol effects are preventable simply by women refraiming from alcohol during pregnancy. FAS is permanent and irreversible and impairs a child s lifetime ability to function mentally, physically and socially.[16]

[15]https://www.unicef.org/southafrica/SAF_resources_sitandisability.pdf
[16] http://www.fasfacts.org.za/

MCC complements the great efforts of LETCEE and local healthcare workers towards ongoing support and treatment of maltreated and (sexually) abused children by continous awareness and the enlargment of the staff with an additional social worker .

*Suggestions:*

- Strengthening efforts in collaboration with local NGO's and national initiatives adressing physical,emotional and sexual abuse .
- Improve data-gathering and screening that would help children with disabilities to go to neighbourhood schools and receive support in inclusive settings from an early age

- Srenghten Partnerships between government and NGOs for better chances for children with diabilities and special needs
- https://www.unicef.org/southafrica/SAF_resources_sitandisability.pdf as a practical guide

**10. Referrals**

During MCC's visit to the rural areas around Greytown a list was set up of children needing referral for further diagnosis and/or treatment for suspected pathologies. There was a total of 50 (4%) children were referred by MCC for follow-up.

Referal compliance: Caregiver compliance with referrals for child health services is essential to child health outcomes and there is a lack of data of referral compliance in the regions in KwaZulu Natal.
In one 2014 South African study in KwaZulu Natal the overall compliance rate for children with suspected non-acute conditions was less than 50 percent. Of 303 children referred, only 45% completed referrals. Referral compliance was especially low for suspected disorders of vision, hearing and development. Referral compliance was significantly lower for children with younger caregivers, those living in households with low educational attainment and for those with unstable caregiving. (ref: Compliance with referrals for non-acute child health conditions: evidence from the longitudinal ASENZE study in KwaZulu Natal, South Africa and BMC Health Serv Res. 2014; 14: 242)

Additional studies are in progress to identify other possible contributory factors including: caregiver knowledge and attitudes about referrals, environmental factors (e.g. financial and geographical accessibility) and health system factors (e.g. service availability, health worker availability and health system responsiveness).

*Suggestions:*

- Active co-operation of the Department of Health and Letcee is essential in developing interventions to strengthen referral processes as a means to improve the quality of life for disadvantaged and vulnerable children.

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | nseleni | | sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Dentist | 109 | 9% | 5 | 4% | 42 | 16% | 25 | 7% | 27 | 12% | 5 | 6% | 5 | 4% |
| Specialist in hospital | 50 | 4% | 4 | 3% | 12 | 5% | 7 | 2% | 15 | 7% | 9 | 11% | 3 | 2% |
| Revisit | 6 | 1% | 1 | 1% | 2 | 1% | 3 | 1% | 0 | 0% | 0 | 0% | 0 | 0% |
| X-thorax | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Bloodtest after 3 months | 30 | 3% | 0 | 0% | 7 | 3% | 11 | 3% | 1 | 0% | 10 | 12% | 1 | 1% |
| International organisation | 1 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Other | 21 | 2% | 2 | 2% | 5 | 2% | 4 | 1% | 2 | 1% | 6 | 7% | 2 | 2% |

*Table 8: Follow-up of all children per geographical location*

## 5. Treatment

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | nseleni | | sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| ferro | 13 | 1% | 0 | 0% | 5 | 2% | 2 | 1% | 5 | 2% | 1 | 1% | 0 | 0% |
| mother iron | 20 | 2% | 3 | 2% | 6 | 2% | 2 | 1% | 4 | 2% | 1 | 1% | 4 | 3% |
| multivitamins | 671 | 57% | 79 | 62% | 173 | 66% | 176 | 50% | 89 | 39% | 52 | 64% | 102 | 77% |
| anti-worm | 880 | 75% | 87 | 69% | 184 | 70% | 283 | 81% | 173 | 76% | 68 | 84% | 85 | 64% |
| acute worm | 38 | 3% | 4 | 3% | 15 | 6% | 11 | 3% | 2 | 1% | 1 | 1% | 5 | 4% |
| anti-lice | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |
| anti-scabies | 27 | 2% | 0 | 0% | 2 | 1% | 0 | 0% | 24 | 11% | 0 | 0% | 1 | 1% |
| niclosamide | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| amoxicillin | 43 | 4% | 2 | 2% | 12 | 5% | 9 | 3% | 8 | 4% | 1 | 1% | 11 | 8% |
| augmentin | 18 | 2% | 1 | 1% | 2 | 1% | 0 | 0% | 9 | 4% | 4 | 5% | 2 | 2% |
| 2e lijns antibiotica | 16 | 1% | 0 | 0% | 10 | 4% | 2 | 1% | 3 | 1% | 0 | 0% | 1 | 1% |
| metranidazol | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| co-trimoxazol | 2 | 0% | 1 | 1% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| ceftriaxon | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| AB urine infection | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| paracetamol | 7 | 1% | 1 | 1% | 2 | 1% | 1 | 0% | 1 | 0% | 0 | 0% | 2 | 2% |
| ORS | 8 | 1% | 1 | 1% | 2 | 1% | 1 | 0% | 1 | 0% | 2 | 2% | 1 | 1% |
| eardrops | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| nystatine | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| mupirocine=Bactroban | 2 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |
| hydrocortisone cream | 133 | 11% | 15 | 12% | 16 | 6% | 28 | 8% | 22 | 10% | 26 | 32% | 26 | 20% |
| dactarin cream | 82 | 7% | 15 | 12% | 14 | 5% | 26 | 7% | 7 | 3% | 5 | 6% | 15 | 11% |
| dactacort cream | 2 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 1% |
| fusidin cream | 46 | 4% | 2 | 2% | 8 | 3% | 18 | 5% | 10 | 4% | 2 | 2% | 6 | 5% |
| sudo cream | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| neutral cream | 16 | 1% | 1 | 1% | 4 | 2% | 2 | 1% | 4 | 2% | 2 | 2% | 3 | 2% |
| iodine | 11 | 1% | 0 | 0% | 6 | 2% | 2 | 1% | 2 | 1% | 1 | 1% | 0 | 0% |
| griseofulvin | 22 | 2% | 1 | 1% | 6 | 2% | 7 | 2% | 2 | 1% | 3 | 4% | 3 | 2% |
| eyedrops | 8 | 1% | 0 | 0% | 1 | 0% | 4 | 1% | 0 | 0% | 0 | 0% | 3 | 2% |
| folic acid | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| hydrogen peroxide drops | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| itraconazole | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| nasal drops | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |

*Table 9: Treatment among all children per geographical location*

## 6. Summary of suggestions

**Regional campain and treatment programs in the recent outbreak of scabies**

- MCC advises to control transmission. This is particulary important for mothers of infected infants.
- MCC advises community control
- Factors in successful control include community involvement and motivation, education, close follow-up, regular re-screening and prompt treatment of new cases.

**Growth abnormalities and malnutrition:**

- MCC advises to execute the strategy to ensure appropriate nutrition during the first 1000 days of a child's life.
- MCC advises that children drink at least 4 cups of water each day. We advise LETCEE to play a counseling role for parents and children herein.
- Strenghten awareness for the paradox of double burden of malnutrition in rural South Africa

**Anemia:**

- MCC advises a diet rich in fruits and vegetables, greater diversity, and less added sugars
- MCC supports the general guidelines: mothers known to be HIV infected should exclusively breastfeed their infants for the first 6 months of life, introducing appropriate complementary foods thereafter and continue breastfeeding for the first 12 months of life. Breastfeeding should continue until the age of 2 years and should be supported by ART adherence strategies.

**De-worming:**

- MCC advices to roll out a *community delivery strategy* of anti-worm medication delivered by trained teachers and other school personnel, twice a year one tablet of mebendazol 500 mg.

**Dental health:**

- MCC encourages the dental mobile clinic to regularly diagnose and treat children for dental healthcare.
- Gradual Shift from a more curative to a more preventative approach for an improvement in dental service delivery
- Upscaling health promotion concerning dental health in all schools and daycare centers
- Awareness in the community between the link of severe caries with high sugary sweets, incorrect diet, source of water and fluoride content
- Affordability of toothbrushes and fluoridated toothpaste

**Social health:**

- Strengthening efforts in collaboration with local NGO's and national initiatives adressing physical,emotional and sexual abuse .
- Improve data-gathering and screening that would help children with disabilities to go to neighbourhood schools and receive support in inclusive settings from an early age
- Srenghten Partnerships between government and NGOs for better chances for children with diabilities and special needs
- https://www.unicef.org/southafrica/SAF_resources_sitandisability.pdf as a practical guide
- Active co-operation of the Department of Health and Letcee is essential in developing interventions to strengthen referral processes as a means to improve the quality of life for disadvantaged and vulnerable children.

## 7.Concluding comments and last words

We feel grateful for the amazing support from all the professionals, outreach volunteers, the highly qualified retired nurses and staff from LETCEE in the triangle with the the Department of Health. The MCC team felt more than welcome at our second medical camp in KwaZulu-Natal in South Africa. Mutual targets were hit, and personal connections were strengthened in a harmonious partnership climate. More than 500 children ontop of the estimated 800 children were medicaly checked, an amazing mutual result. All three parties (Kinderfonds MAMAS, LETCEE and MCC) have agreed to continue joined forces in the 2018 medical mission to further improve local child's health in KwaZulu-Natal. We are excited to continue our close collaboration with all the stakeholders and will monitor the referrals in the coming months. Additionally, we aspire to empower local current and future healthcare workers in future ventures.

We are grateful to all caretakers and the communities for bringing the children to location and helping to conduct the program. We are happy we got the opportunity to work with and to learn from all volunteers, translators and others who have helped directly or indirectly, despite their own obligations. And last but not least, we would like to thank the children and their caretakers who came to the checks for their inspiring presence.

We will be back in September 2018!

MCC South Africa KwaZulu-Natal
September - October 2017

On behalf of the MCC LETCEE team 2017:

# 8. Appendix

**Disease prevalence among all children per geographical location**

| | Total | | Coloured village | | Matimatolo | | Mbuba | | Njengabantu | | Nseleni | | Sgedlane | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1181 | | Total= 127 | | Total= 263 | | Total= 349 | | Total= 228 | | Total= 81 | | Total= 133 | |
| | N | % | n | % | n | % | n | % | n | % | n | % | n | % |
| Underweight | 45 | 4% | 5 | 4% | 7 | 3% | 18 | 5% | 7 | 3% | 4 | 5% | 4 | 3% |
| Stunting | 199 | 17% | 14 | 11% | 52 | 20% | 55 | 16% | 28 | 12% | 13 | 16% | 37 | 28% |
| Wasting | 12 | 1% | 0 | 0% | 3 | 1% | 6 | 2% | 3 | 1% | 0 | 0% | 0 | 0% |
| Anaemia | 286 | 24% | 14 | 11% | 110 | 42% | 57 | 16% | 45 | 20% | 25 | 31% | 35 | 26% |
| HIV pos. | 14 | 1% | 2 | 2% | 3 | 1% | 1 | 0% | 8 | 4% | 0 | 0% | 0 | 0% |
| AIDS | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| Malaria (suspected) | 2 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 1% |
| vitamin deficit (clinical signs) | 135 | 11% | 18 | 14% | 30 | 11% | 38 | 11% | 17 | 7% | 9 | 11% | 23 | 17% |
| Bilharzia | 1 | 0% | 1 | 1% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| syndrome n.o.s. | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| pneumonia (clinical) | 9 | 1% | 1 | 1% | 2 | 1% | 2 | 1% | 2 | 1% | 0 | 0% | 2 | 2% |
| bronchitis | 6 | 1% | 0 | 0% | 1 | 0% | 1 | 0% | 4 | 2% | 0 | 0% | 0 | 0% |
| BHR/asthma | 8 | 1% | 0 | 0% | 1 | 0% | 1 | 0% | 4 | 2% | 2 | 2% | 0 | 0% |
| gardia (suspected) | 1 | 0% | 1 | 1% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| dehydration : acute diarrhoea | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |
| dehydration : chronic diarrhoea | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |
| diarrhoea without dehydration | 10 | 1% | 1 | 1% | 1 | 0% | 1 | 0% | 3 | 1% | 3 | 4% | 1 | 1% |
| constipation | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| active worm infection | 17 | 1% | 0 | 0% | 12 | 5% | 2 | 1% | 2 | 1% | 0 | 0% | 1 | 1% |
| otitis media acuta | 12 | 1% | 0 | 0% | 2 | 1% | 3 | 1% | 4 | 2% | 0 | 0% | 3 | 2% |
| otitis media with effusion | 27 | 2% | 1 | 1% | 10 | 4% | 9 | 3% | 4 | 2% | 0 | 0% | 3 | 2% |
| otitis externa | 2 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 1% | 0 | 0% |
| (adeno)tonsillitis | 2 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |
| sinusitis | 2 | 0% | 1 | 1% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| hearing impairment | 3 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 2 | 1% | 0 | 0% | 0 | 0% |
| other | 54 | 5% | 2 | 2% | 24 | 9% | 12 | 3% | 4 | 2% | 8 | 10% | 4 | 3% |
| cariës n.o.s. | 170 | 14% | 19 | 15% | 34 | 13% | 57 | 16% | 27 | 12% | 15 | 19% | 18 | 14% |
| pain n.o.s | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |
| caries with pain | 101 | 9% | 11 | 9% | 36 | 14% | 28 | 8% | 16 | 7% | 5 | 6% | 5 | 4% |
| wounds n.o.s. | 11 | 1% | 1 | 1% | 2 | 1% | 2 | 1% | 4 | 2% | 1 | 1% | 1 | 1% |
| eczema n.o.s. | 30 | 3% | 2 | 2% | 10 | 4% | 7 | 2% | 7 | 3% | 1 | 1% | 3 | 2% |
| dermatomycosis | 110 | 9% | 15 | 12% | 25 | 10% | 31 | 9% | 14 | 6% | 7 | 9% | 18 | 14% |
| Impetigo/furunculosis | 72 | 6% | 2 | 2% | 22 | 8% | 22 | 6% | 13 | 6% | 4 | 5% | 9 | 7% |
| lice | 3 | 0% | 1 | 1% | 1 | 0% | 0 | 0% | 0 | 0% | 1 | 1% | 0 | 0% |
| scabies | 189 | 16% | 15 | 12% | 41 | 16% | 47 | 13% | 25 | 11% | 30 | 37% | 31 | 23% |
| wounds infected, | 13 | 1% | 0 | 0% | 1 | 0% | 4 | 1% | 5 | 2% | 3 | 4% | 0 | 0% |
| insect bite | 2 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |
| other (psoriasis etc) | 5 | 0% | 0 | 0% | 1 | 0% | 1 | 0% | 1 | 0% | 0 | 0% | 2 | 2% |
| psychomotoric retardation | 14 | 1% | 2 | 2% | 1 | 0% | 2 | 1% | 6 | 3% | 2 | 2% | 1 | 1% |
| epilepsy | 3 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 2 | 1% | 0 | 0% | 0 | 0% |
| spina bifida | 1 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| migraine/headache | 5 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 2 | 1% | 0 | 0% | 2 | 2% |
| physiological murmer | 5 | 0% | 1 | 1% | 0 | 0% | 2 | 1% | 1 | 0% | 1 | 1% | 0 | 0% |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| pathological murmur (suspected) | 12 | 1% | 2 | 2% | 0 | 0% | 6 | 2% | 2 | 1% | 1 | 1% | 1 | 1% |
| refractory problem | 5 | 0% | 0 | 0% | 0 | 0% | 3 | 1% | 1 | 0% | 1 | 1% | 0 | 0% |
| strabismus | 2 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 1% |
| keratoconjunctivitis | 3 | 0% | 0 | 0% | 1 | 0% | 2 | 1% | 0 | 0% | 0 | 0% | 0 | 0% |
| thyroid dysfunction (suspected) | 2 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 1 | 1% | 0 | 0% |
| diabetes | 1 | 0% | 1 | 1% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| urinary infection | 1 | 0% | 0 | 0% | 0 | 0% | 0 | 0% | 1 | 0% | 0 | 0% | 0 | 0% |

*Table 10: Disease prevalence among all children per geographical location*