

Guidelines on De-worming Children and Pregnant Women against Soil Transmitted Helminths in Community Setting

2019 - 2022

Background:

Infection with the Soil Transmitted Helminths (STH), (roundworm, hookworm and whipworm) has been identified as an important cause of morbidity and a contributory factor to mortality among children and pregnant women around the world. The main clinical manifestations of STH arise from malabsorption of nutrients, reduction of food intake due to poor appetite, complications due to intestinal and biliary obstruction due to roundworms (Ascariasis), dysentery, rectal prolapse due to whipworm (Trichuriasis), and iron-deficiency anaemia following hookworm infections. Long term health impacts with heavy STH infections are impairment of physical growth and cognitive development of children and reduced productivity of the work force. It is also a cause of iron-deficiency anaemia that leads to poor school performance and absenteeism in children and reduced work productivity in adults (WHO, 2010).

The strategies that should be adapted by countries to control STH infections depend on epidemiological information. The indicator recommended by the WHO for policy guidance for de-worming of populations is the prevalence of STH among school age children (WHO 2002).

It must be noted here that this strategy is for the control of STH only and will not be effective for pin worm (*Enterobius vermicularis*) infection.

Prevalence of STH infection in Sri Lanka:

As decided at the development of the previous de-worming strategy 2013 – 2016, an island wide survey was conducted in 2017 to re-assess the epidemiological situation of STH infection. A randomized cluster survey was conducted among children attending Grades 1 and 2 in state schools during the period February – April 2017. The sampling frame was stratified to include all nine provinces, as well as high-risk communities in the plantation sector and in urban slums.

A total of 128 schools were surveyed and 5,946 children were recruited to the study. Faecal samples from 4,276 children and peri-anal swabs from 4,136 children were examined. The national prevalence of STH infection was found to be 0.97% (95% CI: 0.63 – 1.48%). Prevalence in the high-risk communities surveyed was higher: 2.73% (95% CI: 0.75 – 6.87%) in urban slum communities; and 9.02% (4.29 – 18.0%) in the plantation sector communities. Prevalence of hookworm infection was only 1.18% (95% CI 0.44 – 3.11) even in the estate sector, which is the most high risk community at present in Sri Lanka because of poor sanitation. Hookworm was not detected at all in urban slums which comprise the other high risk community. In the non-risk populations in the rest of the country, the prevalence of hookworm was 0.29% (95% CI 0.16 – 0.52).

Further analysis was conducted using data from National Census of Population and Housing 2012, conducted by the Dept. of Census & Statistics, to develop a mathematical model that captures several variables that predict risk of STH infection at MOH level, in order to decide on the areas where de-worming should be continued as a targeted intervention.

Based on the above model, the country was divided into low (<1% combined prevalence of any STH), intermediate (1 – 10% combined prevalence) and high (10 - 20% combined prevalence) prevalent MOH areas. Accordingly, if a district has even one MOH area with a high prevalence it was decided to categorize that district as high risk and if a district had even one MOH area with intermediate prevalence to categorize that district as intermediate risk and adopt the relevant strategies given below.

Accordingly, districts are categorised as follows for the revised strategy:-

High risk: Nuwara Eliya and Colombo.

Intermediate risk: Kandy, Matale, Gampaha, Kalutara, Polonnaruwa, Puttalam, Trincomalee, Ampara, Kalmunai, Jaffna, Vavuniya, Kilinochchi, Mannar, Mullaitivu, Badulla, Monaragala, Galle, Matara, Hambantota, Kegalle, Rathnapura

Low risk: Anuradhapura, Kurunegala, Batticaloa

Revised recommendations on de-worming children and pregnant women in Sri Lanka:

Taking the above mentioned facts into consideration, the following measures are recommended for the control of STH in Sri Lanka from 2019 to 2022.

The recommendations for pregnant women;

Routine de-worming of pregnant mothers is **not required** in any of the districts.

If a pregnant mother (especially from a community with poor sanitation such as the estate sector) is found to be severely anaemic, she should be first screened for hookworm infection. If hookworm infection is confirmed by faecal examination, the consultant obstetrician should review the risks vs benefits and decide on the treatment regime (after 1st trimester). Albendazole 400mg stat has greater efficacy against hook worm infection than mebendazole.

The recommendations for children;

Routine deworming of children will be carried out only for children aged 18 months to 10 years. No routine de-worming is required for children in grade 6 and above.

- I. **High risk districts:** the de-worming programme will be carried out in the districts of Colombo and Nuwara Eliya for a period of four years (from beginning of 2019 to end of 2022) and then reassessed.
- II. **Intermediate risk districts:** in all 21 districts categorised as of intermediate risk the de-worming programme will be carried out for a period of two years only (from beginning of 2019 to end of 2020) and then reassessed.
- III. **Low risk districts:** routine de-worming of children is not required in the low-risk districts of Anuradhapura, Kurunegala and Batticaloa. Individual treatment is recommended when required.

I. Guidelines for de-worming of children in high risk districts

Children under five years

During the four-year period from the beginning of 2019 to the end of 2022, all children under five years should be de-wormed at 18 months, 2, 3, 4, and 5 years of age.

Mebendazole 500mg single dose chewable rapidly disintegrating tablet is to be given to all children in the above age groups at child welfare clinics (when the child presents for vaccination and other services) or field weighing posts, with the vitamin A mega dose. The tablet should be given to the caregiver, to be given to the child at home. For children aged 18 months to four years, caregivers should be instructed to give the **tablet crushed between two spoons and dissolved in water**.

School children

During the four-year period from the beginning of 2019 to the end of 2022, all school children from grade 1-5 should be de-wormed once a year.

All children in grades 1-5 of the school to be given mebendazole 500 mg single dose chewable rapidly disintegrating tablet at the commencement of the Weekly Iron Folate Supplementation (WIFS) programme (iron folate, vitamin C weekly supplementation regime for 24 weeks). However children in Grade 1 should be given mebendazole only if they had not received it during the past 12 months (with DT vaccine and vitamin A mega dose at CWC on completion of the fifth year).

II. Guideline for de-worming children in intermediate risk districts

Children under five years

During the two-year period from the beginning of 2019 to the end of 2020, all children under five years should be de-wormed at 18 months, 2, 3, 4 and 5 years of age.

Mebendazole 500mg single dose chewable rapidly disintegrating tablet is to be given to all children in the above age groups at child welfare clinics (when the child presents for vaccination and other services) or field weighing posts, with the vitamin A mega dose. The tablet has to be given to caregiver, to be given to the child at home. For children aged 18 months to four years, caregivers should be instructed to give the **tablet crushed between two spoons and dissolved in water**.

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However, within districts categorized as intermediate or low risk, if there are schools/communities considered to be at risk of high transmission of STH infection because of poor sanitation etc in such instances the Medical Officer of Health can decide in consultation with and RDHS, CCP/MO.MCH, to execute the above mentioned strategies for “high/intermediate risk areas” as applicable for children under five years and school children.

Cautions:

Children who are suffering from an acute illness or in case of any doubt of an illness on treatment day should not receive the mebendazole tablet, but it could be given later, on recovery. This is not because of any danger of adverse effects, but to prevent the potential misperception that de-worming caused the illness (WHO, 2002) and also because of the risk of migration of Ascaris with mebendazole especially when children are sick with fever / starving.

Contraindications:

Mebendazole is contraindicated in persons who have shown hypersensitivity to the drug and children who have vomited or passed round worms.

Possible side effects:

Mild abdominal pain, nausea, vomiting, diarrhoea or fatigue are the most frequently reported adverse events, and normally do not require medical treatment. However, it is important to address adverse events by communicating clearly with the community since rumors about the lack of safety of the drug may result in a large number of children complaining of non-specific symptoms and in a high number of referrals to the health units (WHO, 2011). Rarely, worm migration may occur after treatment of children with heavy roundworm infection. Teachers and parents should be warned to take the child to the nearest medical facility in such an event.

Additional measures to control STH transmission:

In conjunction with the above drug treatment, it is imperative that the following activities are ensured in the community (in all areas irrespective of the degree of prevalence);

- The disposal of all human faeces (including that of infants and young children) in water-sealed latrines in order to minimize environmental contamination—Provincial authorities to take action to initiate the latrine construction programme especially in high risk areas
- Use of foot wear to prevent hookworm infections
- Food and water sanitation
- Personal hygiene and hand washing
- Environmental sanitation
- Health education, especially to school children and mothers in high transmission areas
- Symptomatic individuals to seek immediate medical advice

This revised guideline was prepared based on the island wide survey conducted in 2017. At the end of the four year period during which the above strategy would be implemented, a re-assessment of STH prevalence should be conducted in 2022, with new risk maps to assess the STH situation.

It must be noted that for pinworm infection, the treatment regime differs from above. Mebendazole 100mg stat followed by a repeat dose 1-2 weeks later should be adopted and close contacts also should be treated simultaneously. In addition control measures such as improving personal hygiene with washing of bed linen, night wear and drying under bright sunlight/ironing are important to prevent re-infections.

Calculation of annual requirement for the MCH programme considering a 100% coverage

Children aged 18 months to five years:-

$$\begin{aligned}\text{No. of tablets required for the year} &= (\text{annual births} \times 5) + 10\% \text{ buffer} \\ &= \text{annual births} \times 5 \times 1.1 \\ &= \text{annual births} \times 5.5 \\ &= X\end{aligned}$$

School children from Grades 1-5:-

$$\begin{aligned}\text{No. of tablets required for the year} &= (50\% \text{ of Grade 1 children} + \text{total number of} \\ &\quad \text{children in Grades 2-5}) + 10\% \text{ buffer} \\ &= (50\% \text{ of Grade 1 children} + \text{total number of} \\ &\quad \text{children in Grades 2-5}) \times 1.1 \\ &= Y\end{aligned}$$

Total no. of tablets required for the area = X + Y

References:

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