School-based Deworming Interventions: An Overview

Description of the tool:
Because helminth (worm) infections can undermine the benefits of school feeding, the WFP encourages deworming interventions and improvements to the school's water and sanitation facilities in all its projects. This tool summarizes why and how schools might go about providing deworming interventions.

The information in this tool was adapted by UNESCO from the following publication:


Description of the document:
Describes the work of The World Food Programme (WFP) in helping countries throughout the world establish and maintain school feeding programmes.

This information supports Core Component #4 of the FRESH framework for effective school health: *school health services*. It will have a greater impact if it is reinforced by activities in the other three components of the framework.
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1. HELMINTH INFECTION, HEALTH AND EDUCATION OUTCOMES

A high prevalence of intestinal parasitic infections is closely correlated with poverty and poor environmental hygiene, namely: a) lack of safe water supply, b) contamination of the environment by human excreta, c) lack of shoes, and d) poor environmental or personal hygiene. In the long run, worm infections increase susceptibility to other infections and diminish learning ability and growth in children.

Intestinal parasitic infections negatively affect the health status of a high proportion of school-age children in developing countries, giving rise to general discomfort and acute symptoms such as abdominal pain, nausea and coughing. These symptoms are closely correlated with the “intensity of intestinal parasitic infections” (commonly called “worm burden”): the greater the worm burden, the more severe are the symptoms. In addition, hookworm infections give rise to blood loss, as the worms suck blood from the intestinal wall. This may cause iron deficiency anaemia and a decrease in work capacity and fitness.

School-age children harbour the most intense infections with roundworm (Ascaris lumbricoides), hookworm (Ancylostoma duodenale and Necator americanus) and whipworm (Trichuris trichiuria). Therefore, treatment of this age group - which is easily accessible through the school system - achieves optimal improvements in health status and educational performance.

**Improved health and nutritional status:**

- In Zanzibar, heavily infected school children living in high transmission areas were treated with mebendazole three times a year. The study found that a quarter of a litre of blood can be saved per child per year for as little as 1 S US cents per child per year (i.e. 5 US cents per treatment including the cost of the tablet of about 3 US cents, and drug delivery, which amounts to about 2 US cents).

- Deworming of children can result in remarkable growth spurts. In one trial in Kenya, treated school-age children gained one centimetre more in height in the four months following treatment than did children who received a placebo.

**Improved educational performance:**

Recent studies suggest that intestinal parasitic infections negatively affect school children's cognitive functions. A study in Jamaica showed significant improvements in the auditory short-term memory of heavily infected children after nine weeks of treatment.

2. SCHOOL-BASED DEWORMING PROGRAMMES

The World Health Organization (WHO) recommends chemotherapy for roundworm, whipworm and hookworm infections targeted at school-age children as a feasible and cost-effective control strategy.
Periodic deworming treatment is a feasible and effective short-term measure for the control of morbidity due to intestinal parasites.

Single oral dose treatment with mebendazole (500 mg) or albendazole (400 mg) is very effective, safe and inexpensive. The direct benefit of chemotherapy is that the worm burden is removed, which immediately alleviates symptoms and may reduce the rate of transmission. Furthermore, WHO recommends improved sanitation and safe water supply as well as health education on the prevention of intestinal parasitic infections as important control strategies.

Treatment without prior screening, which offers significant logistic and economic advantages, is recommended where surveys indicate a presence of intestinal parasites among school-age children of over 50%.

The interval of community treatment should be determined after consideration of epidemiological, pharmacological and socio-economic factors. From the epidemiological standpoint, the key elements to be considered include frequency and seasonal variation of reinfection. Ideally, community treatment should be applied soon after an identified transmission season is over. The work undertaken by the Asian Parasite Control Organization (APCO) indicates that the appropriate intervals for the application of chemotherapy should be twice annually for prevalence rates below 50% and three times annually for prevalence rates exceeding 50%. It must be stressed that the decision about intervals between treatments must be taken after the local circumstances are considered.

The frequency of chemotherapy should be three times annually for prevalence rates exceeding 50%, or less after consideration of local circumstances.

3. INTEGRATING A SCHOOL-BASED DEWORMING PROGRAMME INTO SFPS

3.1 Strategy

If a high prevalence of intestinal parasitic infections among school-age children is confirmed, the following factors should be determined prior to developing a school-based deworming programme:

- What is the Government policy as regards school-based deworming and the involvement of teachers in drug delivery?
• Is there an operational National Intestinal Parasite Control Programme? If so, what are its objectives, strategy (treatment interval, drug used, channel - health centre-based and/or school-based?) and geographic coverage?

• What is the national institutional capacity for parasitological diagnosis? Are there trained laboratory technicians and are basic diagnostic tools available?

**When should a school-based deworming intervention be undertaken?**
When the prevalence of intestinal parasites among school-age children is above 50%.

Minimal capacity for parasitological diagnosis is required even if the prevalence of intestinal parasites is above 50% and individual screening prior to treatment is not necessary. Changes in the intensity and prevalence of intestinal parasitic infections should be documented through periodic small-scale parasitological surveys in order to determine: a) whether the deworming intervention should continue, and b) whether the frequency of treatment should be modified (i.e. from twice to three times a year, or vice versa).

### 3.2 Objectives of a School-based Deworming Programme

By reducing the intensity and prevalence of intestinal parasitic infections in children, deworming aims at strengthening the educational and nutritional benefits school feeding.

### 3.3 Training Requirements

One-day training seminars should be conducted for selected staff from the Ministries of Health and Education. These training seminars should cover the following subjects: a) the negative effects of intestinal parasites on health and educational outcomes; b) justification for a school-based deworming programme; c) characteristics of the drug and treatment schedule; and d) prevention of intestinal parasitic infections through improvements in water and sanitation facilities as well as hygiene practices.

Staff could include: one teacher from each school (preferably the teacher in charge of health education), and one person from the health sector at the peripheral level. The health staff would serve as supervisors of the distribution. The teachers trained in drug delivery would be responsible for holding health education sessions on treatment days.

### 3.4 Mechanism for Drug Delivery

The recommended deworming treatment intervals are two to three times a year with a single dose of a deworming drug; 400 mg albendazole, 500 mg mebendazole, pyrantel (250 mg chewable tablet, dosage 10 mg/kg single administration) or levamisole (40 mg chewable tablet, dosage 2.5 mg/kg single administration). Albendazole is the most effective against hookworm, which is an important contributing factor to anaemia. The deworming drugs can be stored and delivered through the WFP-assisted SFP. The drugs should be collected by the schools together with the food. The teachers would deliver the drugs to the children on specific treatment days. Other children who are present in the school on the day of delivery could also receive treatment.
3.5 Monitoring and Evaluation

Data on coverage of the deworming programme should be gathered. Changes in the prevalence and intensity of intestinal parasitic infections and other parameters (e.g. nutritional status) can be monitored by the Ministry of Health, with reports being sent for information to WFP for information purpose.

The reporting system should be management-oriented, allowing those involved to identify problems and initiate corrective measures. In each school covered by the programme, a record should be kept by the trained schoolteacher responsible for delivering the drugs to children.

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