MRC POLICY BRIEF

WORMS IN SA'S CHILDREN

Dr John Fincham and Dr Ali Dhansay

Nutritional Intervention Research Unit of the
South African Medical Research Council

Worm infection is imposing an unnecessary burden on many South African children and on the overall cost of health care.

Disadvantaged children carry most of the load, especially those who live in densely populated and under-serviced urban informal settlements, as well as in some rural areas. The facts that follow summarise the health impact and cost of the problem.

- For more than fifty years intestinal and biliary duct obstructions by worms (*Ascaris*) have been a frequent cause of acute abdominal emergencies in children admitted to hospitals in Cape Town and Durban. Obstructions in adults also occur, and surgery is necessary in some cases – in both children and adults.
- In 2005, tests detected the presence of tapeworm cysts in 10% of 400 volunteers from the Oliver Tambo and Alfred Nzo districts in the Eastern Cape. The cysts are often in the brain and are a major cause of epilepsy and other serious complications. The problem is not restricted to the Eastern Cape.
- More than 90% of the children attending 12 primary schools serving two large informal settlements in Cape Town were found to be infected with worms in 1999.
- A study of worm infection in children aged 2–10 years living in ten areas described as 'slums' in Durban was completed in 2001. The prevalence of *Ascaris* and *Trichuris* (whipworm) was 89.2% and 71.6% respectively, which indicates that most of the children were infected with both worms.
- In Limpopo in 2005, 80% of school children in a study had bilharzia. Girls (71%) and boys (63%) were often infected with both the urinary and intestinal forms of the disease. Many complications can occur, including liver and/or kidney failure. Also, people who are infected with bilharzia have an increased risk of becoming infected with HIV. This is due to the sharp and irritant worm eggs which, when passed through the urogenital tract, cause lesions that bleed and are inflamed – in areas of the body that come into contact with possibly infected semen and vaginal fluids. Bilharzia and HIV/AIDS are co-endemic in parts of five provinces: Eastern Cape, KwaZulu-Natal, Limpopo, Mpumalanga and North West. ▶

GUY STUBBS©

This piece of intestine, blocked by worms, was surgically removed from a 3-year-old boy at Red Cross Children's Hospital. The child survived, but no child should be subjected to such an easily preventable condition. Photo: Allen Jefthas

- In the Free State, results reported in 2003 showed that pinworm, a cause of peri-anal irritation, sleep disturbance and stress for the whole family, can be present in up to 45% of children.
- Vaccination against several diseases (cholera, tuberculosis, tetanus and probably others) is known to be more effective in children who are not infected with worms. When most children in an area are infected with worms, prevention of major epidemic diseases by means of immunisation will therefore be less effective, and overall health costs will increase.
- Worm-related anaemia can be a serious impediment to health, especially in younger children. Regular deworming is a highly effective means of preventing and treating of this condition.

It has been shown clearly in other countries that regular deworming improves school attendance and learning. Accordingly, the National Department of Education (NDOE), the South African Democratic Teachers' Union, the Principals' Association and the Association of School Governing Bodies have jointly asked the National Department of Health (NDOH) to ensure service delivery in terms of regular school-based deworming as a contractual responsibility, utilising funding provided by the NDOE.

However, it may be problematic for the NDOH to fulfil such a contract on its own, because of its many competing priorities and limited capacity. It has been well established in several countries that participatory health care by non-health personnel (e.g. teachers, community health workers, NGOs and volunteering parents) is the most effective way to implement regular, sustainable deworming at schools.

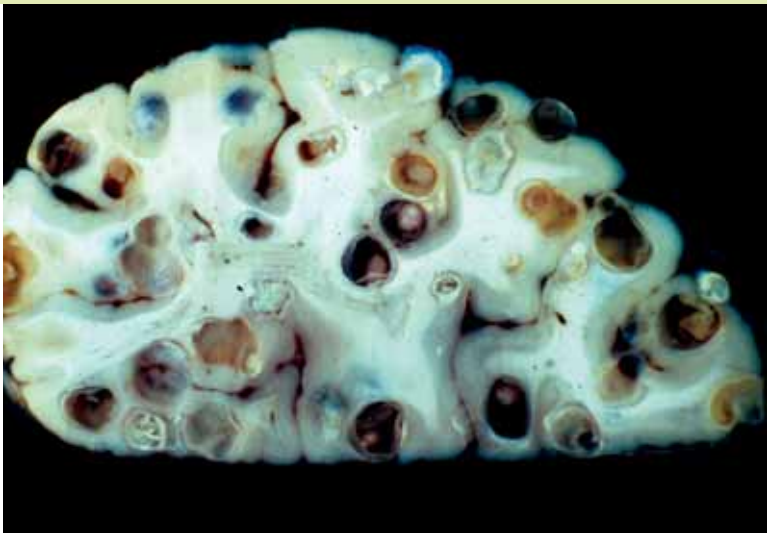
Market research has shown that importation of deworming tablets could cut costs – even the tender price to Government – by more than 80% compared to registered tablets marketed commercially in South Africa. There is provision in medical and pharmaceutical law to exempt from registration imported medicines that need to be used to minimise the cost of school deworming. In this regard the following should be noted:

1. All the ingredients of tablets at present on the market are imported, i.e. there is no local manufacturing of medicinal components.
2. Pharmaceutical quality can be monitored in South Africa.

In order to prevent development of worms that are resistant to treatment, as well as to treat against the various types of worms that occur in South Africa, all the deworming medicines that are on the essential drugs list of the World Health Organisation need to be made available in South Africa. However, several are not yet registered for human use in our country, while others need to be de-scheduled to allow for use in schools. Hard international evidence shows that all these medicines are very safe for children from an early age, and are usually safe even during pregnancy (after the first trimester).

RECOMMENDATIONS

1. Disadvantaged South African children would benefit, in terms of health and education, from prevention and control of infection by worms. Regular, synchronised deworming is the quickest way to help these children and to eventually reduce the overall cost of health care. Operational research conducted at numerous schools has shown that a national deworming programme would be entirely feasible. There is strong demand for deworming from both children and parents.
2. There is a need for an official NDOH policy on school-based deworming. Guidelines on prevention and control of infection by worms have been prepared for the NDOH by researchers at the MRC, the Universities of Pretoria and KwaZulu-Natal and the HSRC. The guidelines are presently circulating within NDOH, and it is recommended that they become official policy and be put into practice.
3. Regular deworming at schools would be more cost-effective and sustainable if importation of less expensive tablets is allowed, subject to quality control, and if participatory health care methods are used.
4. Funding is needed for the implementation of sentinel surveys to monitor worm infection at known problem sites at suitable intervals, both in South Africa and in other SADC/NEPAD countries.
5. Funding is needed for clinical trials of the efficacy and safety of new anthelmintics under South African conditions, and market research should be undertaken to establish the least costly methods of procurement of effective deworming medicines.
6. Research to define probable interactions during co-infection by worms and major epidemic diseases (especially HIV/AIDS) in South Africa needs to be a high priority and must be funded. When worm infection is highly endemic, it is possible that immunisation could be less effective. This implies that the risk of infection with HIV/AIDS, tuberculosis and malaria could increase and that the progression of these diseases may be faster.



The portion of a human brain shown here contains numerous cysts of the pork tapeworm *Taenia solium*, and demonstrates one of the most serious consequences of worm infection. The cysts are a major cause of epileptic fits and impair a child's ability to learn at school and to function normally at home. Photo: Dr T. Nash