Improved school-based deworming coverage through intersectoral coordination: The Kenya experience

World Health Organization
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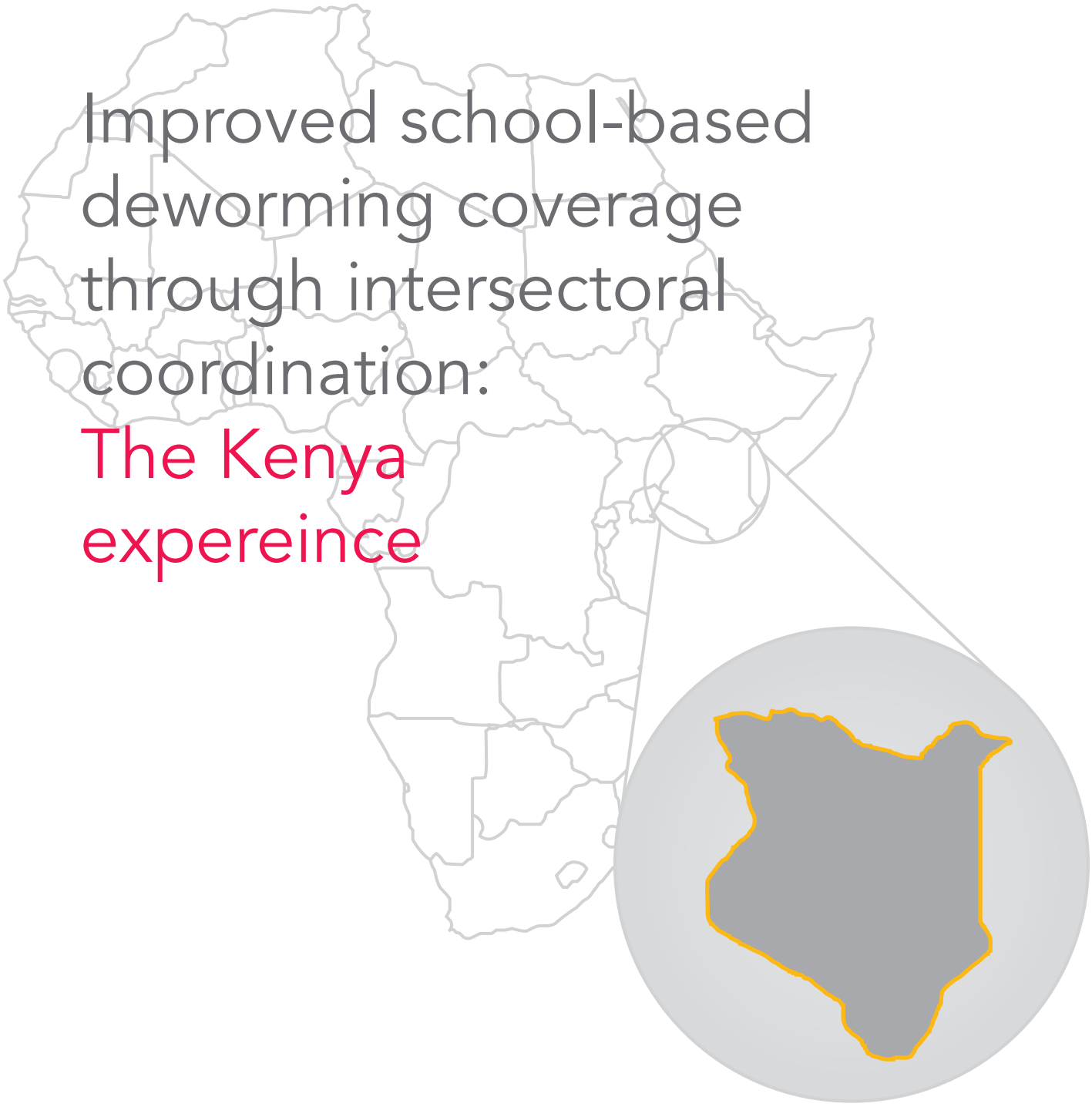

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Disclaimer:
This report contains the collective views of the drafting team and does not necessarily represent the decisions or the stated policy of the World Health Organization.

Contents

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An earlier draft of this case study was included in a special collection of global experiences on intersectoral actions which was widely disseminated during the World Conference on Social Determinants of Health held in Rio de Janeiro, Brazil in 2011. At the country level, the review process leading to the finalization of the case study generated multi-stakeholder policy and strategy discussions on implementing intersectoral actions to address social determinants of health.

The final product is a result of collective efforts of many individuals and organizations. However, the drafting team included Dr Steward Kabaka, Ministry of Public Health and Sanitation (Kenya); Dr Christine Kisia, WHO (Kenya); and Dr Eshetu Bekele Worku, University of Cape Town, South Africa.

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Abstract

A national faecal examination of 27 729 schoolchildren from 395 schools carried out in 2008 indicated that intestinal parasitic worms affected an estimated five million (56.8%) children in Kenya. Existing evidence shows that worm infections lead to reduced literacy levels due to impaired growth and physical fitness.

Existing evidence also shows that improved health status leads to increased productivity, educational performance, life expectancy, savings and investments, and decreased debts and expenditure on health care. Studies in the United States have shown that worm infections lower literacy levels by 13% and lower earnings later in life by 43%. Research in western Kenya showed that school-based mass deworming (SBD) reduced school absenteeism by 25%.

The School Health and Nutrition Programme of the Ministry of Education (MOE) and the Ministry of Public Health and Sanitation (MOPHS) launched a nationwide school-based deworming programme targeting all 22 000 public primary schools in the country in 2009. The Kenya Medical Research Institute (KEMRI) undertook extensive mapping surveys, using Geographic Information System (GIS) and established worm prevalence levels in 135 districts with a high population density appropriate for mass treatment. WHO recommends mass deworming in areas where the prevalence of worm infection soil-transmitted helminthes (STH) is above 50%.

This report outlines the coordination and partnership between two key ministries (Education and Public Health) in Kenya, other line ministries, the private sector, NGOs and the community in implementing the first phase of a sub-national school-based deworming exercise. The areas targeted included Coast, Central, Western, Nyanza and parts of Eastern provinces, covering over 45 districts in this first phase. The SBD programme is guided by the National School Health Policy and Guidelines launched in 2009.

Two crucial national committees coordinate the SBD: the School Health Inter-agency Coordinating Committee (SH-ICC) responsible for social and resource mobilization and coordination and the National School Health Technical Committee (NSHTC), which coordinates technical aspects of school health activities. The planning and implementation of SBD at the district level was done through the district multisectoral committees. The committee membership include government line ministries of Education, Public Health and Sanitation, Medical Services, Water and Irrigation, Local Government and Internal Security. Development and UN partners included WHO, the World Bank, DFID, UNICEF, GTZ, JICA, AMREF and USAID among others. The school management committees (SMC) include parents, teachers, pupils and community representatives.

Training for the teachers was done through the National Master Trainers (MT). The teachers were responsible for administering the deworming tablets and providing health education to parents and pupils in their respective schools. Over 1000 districts, division-level personnel and 16 000 teachers were trained on deworming activities at the end of this phase. Most importantly, 3.5 million children from 8000 schools were dewormed. The programme recorded a huge success (70%) in terms of scope and was extremely

cost-effective. The deworming programme had an overall cost of approximately US$ 0.3 per child per year.

This exercise also resulted in the introduction and integration of other school health programmes such as water, sanitation and hygiene, values and life skills and school meals, which were implemented through the same existing structures that complement the deworming programme. This has also ensured sustainability of the deworming programme.

1. Introduction

According to the 2008 national census, the total number of school-age children in Kenya was estimated at 10 624 380 with 9 108 952 (82%) at high risk of intestinal parasitic worms infections. A growing body of research identifies strong links between children's health and social and educational outcomes. Additional evidence also notes the reciprocal benefits of access to quality education on the individual and family health status. Studies in the United States have shown that worm infections lower literacy levels by 13% and lower earnings later in life by 43%. Research in western Kenya showed that school based mass deworming reduces school absenteeism by 25%. A national mass faecal survey carried out in 2008 estimated that five million (56.8%) school going children were actually infected with intestinal parasitic worms and required mass deworming as per WHO guidelines (S. Brooker, 2008).

Evidence has shown that improved health status leads to increased productivity, educational performance, life expectancy, savings and investments, and decreased debts and expenditure on health care. In addition, the overall improvement of the student's class attendance is expected to positively affect health outcomes, specifically in areas of child and maternal health. Studies conducted in the country have shown a strong relationship between the education level of girls and subsequent child and maternal mortality reduction; with higher (primary level) education levels being directly linked to better outcomes in child and maternal health.

In order to address these two key determinants of health, the Ministry of Education (MOE), in partnership with the Ministry of Public Health and Sanitation (MOPHS), launched a nationwide School-Based Deworming Programme implemented in three phases, targeting 22 000 public primary schools.

Figure 1: Summary of key statistics, Kenya

Related Data	
Total population	40,863,000
Primary School (age) population	10,624,380
School going children	8,661,333
Children out of school	1,963,047
Population at risk of STH	9,108,952
No. of Public primary schools	22,000

2. Background

The Kenya Government has developed various policies and programmes for social and economic development. Many of these policies and programmes have been implemented which have achieved good results and made an impact, while some have ended up at the policy level with limited implementation. Implementation of policies requires intersectoral collaboration, both at national and international levels, on the agreed health goals, including the Millennium Development Goals (MDGs). There is an urgent need

for the Kenya Government and its development partners to renew their commitment to these goals by reinvigorating efforts and by strengthening the strong interrelationship among health determinants and social and economic development such as governance, education, gender and culture, food security and nutrition, environment, peace and security.

Kenya has a young population, with the youth making up about 48% of the total population (national census 2008). The levels of poverty in the country are quite high; the UNDP Human Development Report *(2004)* estimated that 54% of the total population was living in absolute poverty. Literacy rates, education levels and policy actions are still related to the geographical missionary and colonial settlements, which favoured the more fertile highlands and districts compared to other parts of the country. The national literacy rate stands at 80%; however, the levels of education are varied across the country with some areas having lower rates due to limited access to educational facilities. Only 40% of the rural population has access to piped water. More than 50% of the population does not have access to modern health facilities and 40% has no access to safe drinking water and sanitation.

The health gaps within the country have widened due to inequitable distribution of resources and lack of provision of new technology to address the new and re-emerging health problems *(Von-Shrinking, 2002)*. Kenya's health systems are weak and inappropriate, they are replicas of what was inherited from the colonial era and are therefore unevenly weighted towards privileged elites and urban centres. Health facilities, services and an overwhelming majority of health workers are concentrated in urban areas.

The average annual expenditure on the health sector is 7% of the GDP. Health care financing depends heavily *(52%)* on out-of-pocket payments for services or financial assistance from bilateral and multilateral donors. The Coast province, parts of Central and Eastern provinces and the Lake basin (Western and Nyanza) provinces have the lowest socioeconomic status, which exposes the population to high soil-transmitted helminthes (STH) infections. The Kenyan health system also faces human resource scarcity. All categories, particularly doctors and nurses, are in short supply compared to the standards of population. Human resource crisis in the health sector, caused by inadequate production in the country, inability to hire others, brain drain, poor motivation, conflict of interest, corruption and misuse of resources, has undermined the implementation of decentralized public health services.

Kenya faces numerous challenges in preventing and controlling communicable and parasitic health conditions which are mostly water-borne, resulting from poor sanitary and hygienic conditions. STH infections occur almost in all impoverished communities of humid tropics and are found commonly in school-age children *(Stephenson, 1994)*. The global disease burden of these infections quantified by index, disability-adjusted live years (DALYs), ranked first in 5-14 years age group for both males and females *(World Bank, 1993)*. Consequences associated with these infections include impaired growth and physical fitness, impaired information processing, reduced retrieval of long memory and immediate recall and low overall cognitive ability *(Nokes et al., 1993, Bovin et al., 1993)*. The majority of the Kenyan population (90%) is distributed in rural areas, primarily in three clusters: the Lake Victoria basin, part of Central and Eastern Provinces,

and along the Indian Ocean on the Coastal belt. The Coastal belt of Kenya and the Lake Victoria basin have high humidity moistures suitable for STH survival and growth.

An extensive mapping survey carried out by the Kenya Medical Research Institute (KEMRI) using the Geographic Information System (GIS) to establish worm prevalence levels in the country was used to identify districts appropriate for mass deworming. The areas mapped included the Coast and parts of Eastern, Central, Western and Nyanza Provinces. 135 districts with a high population density and prevalence of worm infections (above 50%) that were identified for mass deworming treatment.

There is a clear evidence that suggests that low levels of general education and health education are directly proportional to the degree of STH infection, so is low socioeconomic status of families of these children *(Kan, 1992)*. Consequently, mass deworming was selected as an important cost-effective and cost-benefit activity because intestinal worms damage children's health, discriminate the levels of school performance, lower academic achievement, hinder access to education and reduce social competence and regular school attendance.

3. Hypothesis

According to the national mass faecal examination survey (2008), intestinal parasitic worms affect an estimated five million (56.8%) children in Kenya. School-going children aged 13-14 years exhibited the highest prevalence of STH infection (70%).Through the help of the GIS, 135 geographical targets that could benefit from mass deworming were identified. According to WHO guidelines, mass deworming should be undertaken in areas where the prevalence of worm infection is above 50%. Given the magnitude of the problem in Kenya and the need to control the burden of STH infection, a decision to deworm schoolchildren was agreed upon as the best possible solution.

The school-based deworming (SBD) programme was expected to contribute to the overall goal of the comprehensive school health programme which aims to achieve healthy children in a conducive environment for teaching and learning. There are several reasons for the selection of the mass deworming exercise through the school health programme. First, school-age children suffer the highest intensity of worm infections; this was based on the results of the situation analysis and GIS mapping. Secondly, easy access to the target population as schools are natural places to access a large number of children. Thirdly, the programme is cost-effective as it would use existing infrastructure, especially teachers trained to administer deworming tablets to their pupils.

Since 2003, the country has taken deliberate steps to improve the education standards in the country. This is due to the recognition of education as one of the driving forces of a country's economy and social progress and also as one of the major determinants of health. The introduction of free primary education in 2008 in the country provided a good entry point for the school health programme. There was a supportive political goodwill environment from the government and a conducive environment for collaboration among various government sectors and partners, hence the acceptance of the national school health (NSH) programme by many stakeholders. The development of the national school health policy and guideline documents has also been instrumental in guiding all

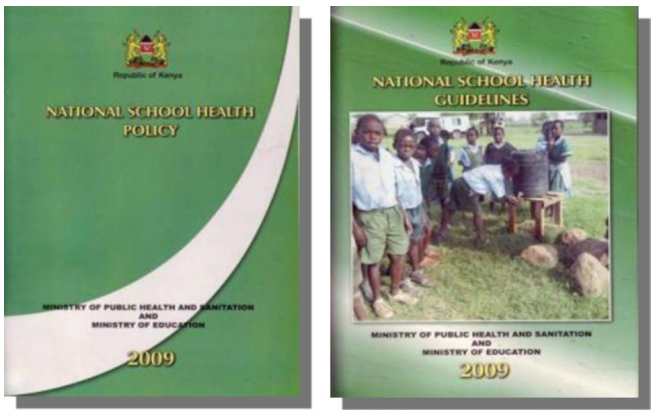
stakeholders implementing the school health programme. Finally, the existing political will at that time was supportive to have the programme implemented and use deworming as an entry point to other school health programmes, e.g. water, sanitation and hygiene.

The overall impact of the SBD programme on education, including improvement of literacy rates, reduction of school abseentism and drop out, will be analysed in due course. This is due to the long-term nature of the expected impact indicators.

4. Methodology

The school-based dewormimg programme was implemented under the umbrella of the National Comprehensive School Health (NCSH) programme. The National School Health Policy and Guidelines were successfully launched nationally in 2009. The policy document was to provide clear directions on the implementation of the eight thematic areas, which are: values and life skills; gender issues; child rights, child protection and responsibilits; water sanitation and hygiene; nutrition; disease prevention and control; special needs, disability and rehabilitation; and school infrastructure and environmental safety. The organizational structure for implementation is clearly spelt out in these guideline documents.

Figure 2: National school health policy and guidelines documents, Kenya



The Ministries of Education and Public Health and Sanitation, through two national intersectoral committees, jointly coordinated the programme. These are the National School Health Inter-Agency Coordinating Committee (SHN-ICC) responsible for the coordination, resource mobilization and advocacy of the comprehensive school health programme. The other committee is the National School Health Technical Committee (SHN-TC) responsible for providing technical advice to the SHN-ICC.

Various government sectors and development partners, through the two national committees, contributed most of the resources for the success of the programme. The Ministries of Education and Public Health and Sanitation played the role of coordinator.

The Ministries of Water and Irrigation and Local Government provided safe drinking water and logistical support to the schools. Internal Security and Administration provided security, especially in some of the hard-to-reach and insecure areas. The Medical Services ministry provided the deworming drugs, while the Ministry of Public Health and Sanitation

provided the health staff for training resource persons. The Kenya Medical Research Institute (KEMRI) provided evidence-based information through research to support the programme. They also provided crucial information by monitoring the trends of worm infections in the country.

The community gave the consent for the children to be dewormed, provided safe water for administering the drugs and supported the children physically by accompanying them to school. With the support of IPA and other community-based NGOs, the community formed groups to inform and educate other members on the health messages they were receiving. The messages emphasized the importance of deworming and were passed on through various channels including mass media, print media, parents-teachers association forums and local radio stations.

WHO provided technical support, especially in the planning, monitoring and evaluation of the programme; the World Bank, DFID and UNICEF provided financial support, which was very essential for the success of the activity. The 'Deworm the World' provided technical assistance, funding support and secured and managed the donation of deworming pills from the Feed the Children. The KEMRI-Welcome Trust provided crucial scientific information and support. The Partnership for Child Development (PCD) supported the development of training materials and the master training sessions. The Innovations for Poverty Action provided logistical support for the roll-out and for the analysis of programme data.

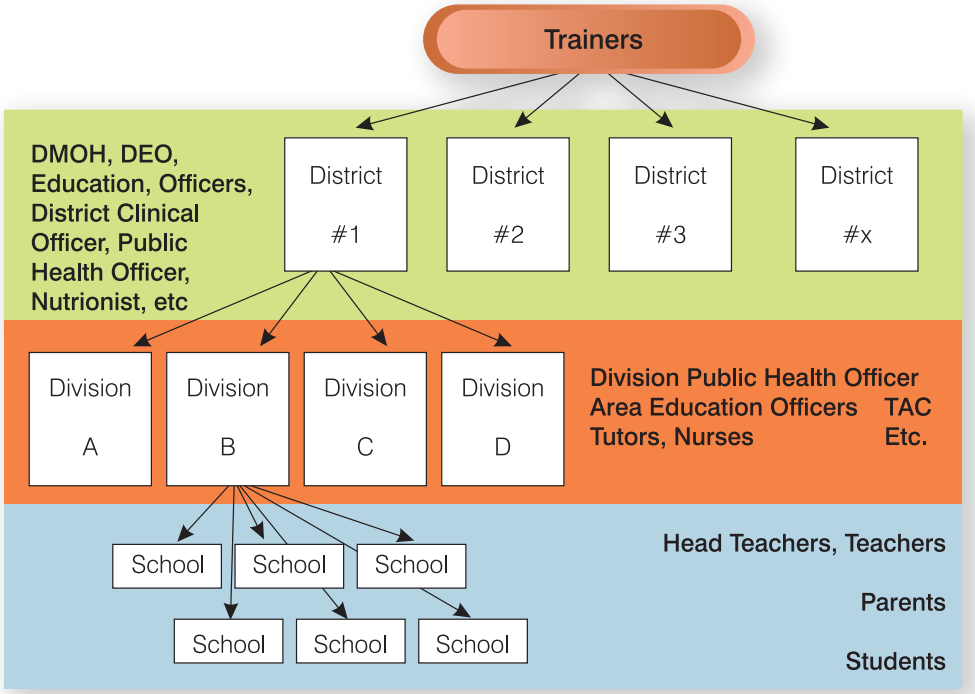
The Japan International Cooperation Agency (JICA) has been a long-term partner of school health in Kenya and has supported deworming efforts for many years. This programme is truly an example of successful cooperation and partnership among a wide range of government and nongovernmental stakeholders.

The school-based deworming programme was managed through various interrelated sub-committees, namely:

- Training and material development
- Drug distribution
- Monitoring and evaluation
- Advocacy and IEC material development.

At the district level, the District Medical Officer of Health, District Clinical Officer, District Public Health Officer, District Nutrition Officer, District Education Officer and two quality assurance Education Officers received the training. The district-trained teams cascaded the training to the divisional teams which included divisional public health officers, clinical officers in charge of health facilities, nurses in charge of dispensaries, area education officers and TAC tutors. The trained divisional teams finally trained the head teachers, school health teachers, parents, pupils and community in a cascaded pattern. Also involved in the planning and implementation of the programme were parents, pupils and the community through existing parents-teachers association and community structures. The training of teachers went a long way in demystifying any misconceptions or rumoured myths in the communities resulting in very high acceptance rates. Community leaders played a pivotal role of advocating for the deworming activity at all levels of society.

Figure 3: A depiction of the training cascade



We will now talk briefly about the planning and logistics behind the deworming roll-out. First, the training action plan was designed and scheduled with timelines. The training materials had been previously designed and adopted by the Ministries of Public Health and Sanitation and Education and partners. Organizing the materials and sorting by district was quite a tedious process, but proper advance planning ensured that the roll-out went smoothly and each district received enough materials for the training programme. The pictures below show some of the training materials used in the programme.

Figure 4: Training materials produced for the school-based deworming programme in Kenya

Training materials

The preparatory activities involved the training of the master trainers, the core team that rolled out the programme. Thirty master trainers were selected, one third each from the Ministry of Education, the Ministry of Public Health and Sanitation, and from KEMRI. The training of 30 national-level master trainers on deworming was done in May 2009. The Ministry of Public Health and Sanitation, KEMRI with support from the Deworm the World Initiative and PCD coordinated the training session. Training of the district and divisional teams and the school community followed thereafter. Community mobilization activities to inform and educate the community were carried out in various social functions and gatherings such as churches, mosques, chiefs' meetings, etc.). A national deworming training manual had initially been developed by the Ministry of Public Health and Sanitation. This was ratified and adapted by the National School Health Technical Committee to guide the entire process.

All training materials were organized into pre-sorted boxes with appropriate quantities for each district. The number of trainees from each district determined the quantity of training materials required for each district. On the other hand, the estimated number of children targeted for deworming from each district determined the number of doses of dewormers for every district. Finally, all logistics relating to personnel, transport and trainings were planned according to the size of the district and the distance from Nairobi, the central coordinating point. Other preparations included the prepositioning of the drug supplies (mebendazole and albendazole) and establishment of transportation and communication logistics mechanisms in each district. 116 million doses of mebendazole 500 mg were used during this first phase.

The drug distribution protocol for the national school health deworming programme involved five major steps:

Step One: National level to provinces

The drugs were transported from the national storage depot of the Kenya Medical Supplies Agency (KEMSA) to the regional medical depots in Nyanza (Kisumu), Rift Valley (Eldoret), Western (Kaka mega) and Coast (Mombasa) provinces.

Step Two: Movement of drugs from provinces to targeted districts

The next phase of distribution involved the distribution of drugs from the provincial headquarters to the districts. The drug quantity estimates for each district were done by the government (Ministry of Health and Ministry of Education) and by the Innovation for Poverty Action (IPA), an NGO, which is actively involved in the deworming programme.

Step Three: District to division (teacher training sessions)

The peripheral health facilities in-charges would order the drugs from the district headquarter in accordance with the number of targeted children to be dewormed in their specified catchment areas. The facility in-charges/divisional public health officers would oversee the redistribution of the drugs to their specified schools. The teacher training sessions happened concurrently with the drug distribution to schools.

Step Four: Division to schools (teacher training sessions)

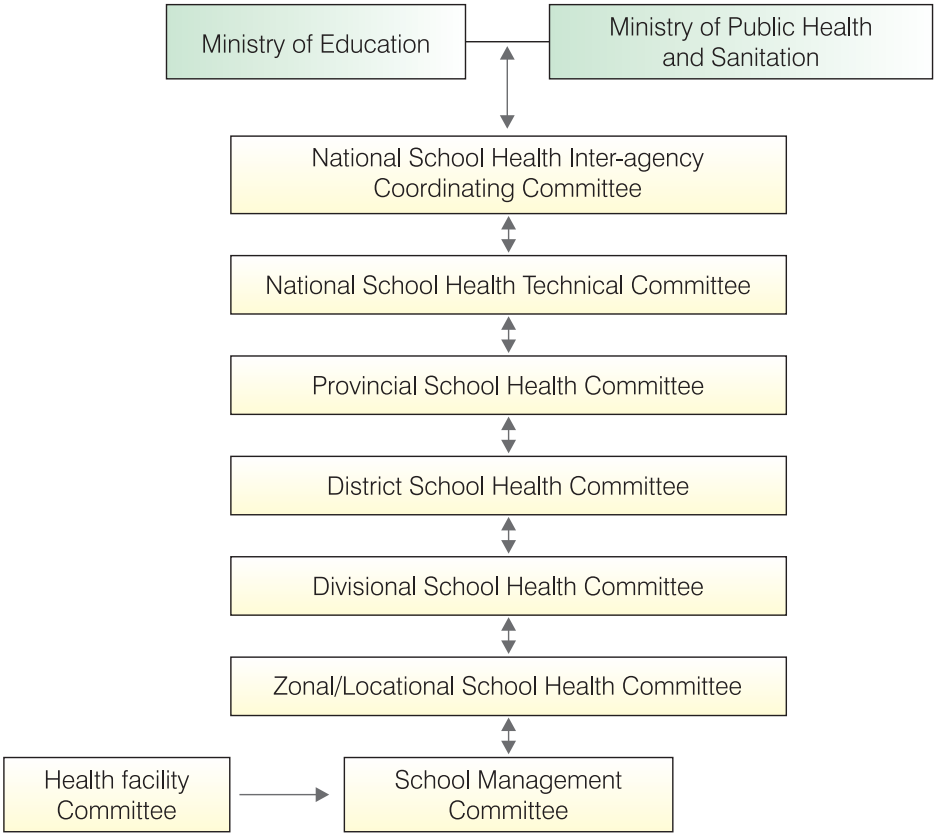
The divisional public health officers (Divisional PHOs) oversee the onward distribution of

drugs to the school health teachers/head teachers. The school head teacher oversees the actual deworming process and the necessary documentation for its monitoring and evaluation.

Step Five: Reverse cascade - schools back to division to district

Any unused drugs are brought back through the reverse cascade. The school head teacher/health teacher/area education officer ensured submission of the unused drugs together with the monitoring forms back to the divisional PHOs/facility in-charges. The government of Kenya and the Innovation for Poverty Action (IPA) jointly supported the whole cascade programme of the drug distribution. Before the actual implementation of activities, the recording, reporting and monitoring tools were also developed.

Figure 5: School health coordination structure, school-based deworming programme, Kenya



5. Implementation

The National Deworming Programme was launched on April 22, 2009 at a colourful event presided over by both Minister of Education and Minister of Public Health and Sanitation and attended by Honourable Ministers, Assistant Ministers and Permanent Secretaries of both ministries. The participants made speeches demonstrating their strong and firm support of the deworming programme.

The actual deworming commenced in June 2009 while the data analysis was done at the national level and dissemination of the report to various stakeholders was accomplished in August 2009.

Minister for Education, Hon. Professor Sam Ongeris, and the Minister for Public Health and Sanitation, Hon. Beth Mugo, launching the school health documents in 2009.

6. Results

The national programme in Phase One targeted 45 districts and 8000 schools that were all successfully reached. A total of 16 000 teachers and 1000 district- and division-level personnel were successfully trained on the deworming process. The teachers supported the deworming process in the 8000 schools. Most importantly, 3.5 million children directly benefited from the programme and were dewormed. This meant 70% success rate out of the five million children targeted for phased deworming.

A school teacher delivering the deworming tablets to the children during the first phase of the programme in Kenya.

Not only was the programme a huge success in terms of scope, it was also extremely cost-effective. The cost to the Government of Kenya was approximately US$ 0.24 per

child per year. This was supplemented by approximately US$ 0.06 per child per year from development partners. Therefore, the deworming programme had an overall cost of approximately US$ 0.3 per child per year. This includes all programme costs: social mobilization, training, logistics, deworming drugs, monitoring, printed materials, etc.

The school-based deworming cascading programme has established coordination mechanisms that have enhanced coordination structures for implementation of other comprehensive school health packages in the initially targeted regions (Coast, Nyanza, Western and Rift Valley Provinces). The programme also raised awareness and government commitment in supporting it in other initially non-targeted regions, e.g. Nairobi. The increased advocacy has also led to the funding of the second phase of the programme for a period of five years up to US$ 14 million.

Schoolchildren receiving deworming tablets during the first phase of the programme in Kenya.

7. Analysis

The use of the existing government structures that include the national coordinating committees and the school infrastructures greatly helped and led to the success of the programme and greater involvement of other partners. The joint leadership and coordination of the programme by the two ministries (Health and Education) promoted involvement of other line ministries, development partners, UN agencies, NGOs and the entire community.

The response to the programme through the community sensitization initiatives using various channels was good in the first phase. This was evidenced by the commendable success achieved by reaching 70% of the targeted children and creating increased awareness on the benefits of deworming of schoolchildren.

The implementation process was successful in achieving the intended targets, including the training of all targeted teachers and government personnel, cascading of information and supplies from the national level to the schools, and increased partner involvement and participation in the programme.

School children utilize water tanks and facilities established for deworming for hand washing

According to existing evidence, school-based deworming programmes in other countries cost an average of US$ 0.4 per child per year, while the overall cost in Kenya for the first phase of the programme was US$ 0.3 per child per year. The low cost could be attributed to the intensive partnerships in sharing various roles and responsibilities, use of existing coordination structures and infrastructures as well as strong community involvement and ownership.

8. Conclusion

A total of 3.5 million school-going children (70% of the target) were successfully dewormed in the 45 districts targeted for the first phase of the deworming programme. This was made possible through effective leadership and coordination of the roles of various government agencies and stakeholders, use of existing structures and infrastructures and active involvement of school teachers and community, supported by an intensive social mobilization initiative.

The establishment of clear coordination mechanisms by both Ministries of Education and Public Health and Sanitation enabled the harmonization of activities of other sectors, including other government line ministries, donors, private organizations, community, teachers and students. This intersectoral action was not only successful in reaching its target population but it proved to be quite efficient, costing less than the average cost of deworming a child. The programme also provided for the introduction and integration of other components of the school health programme through established mechanisms.

One of the strong recommendations from the first phase is the need for monitoring and evaluation of the programme's outcome indicators. These include reduced school absenteeism and drop-out rates, increased intelligence and academic performance, increased wage earnings and decreased health care expenditure. A randomized control trial experimental research to compare the impact in the 45 districts that received the intervention vis-à-vis the districts that did not receive it in the first phase is recommended.

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