A Healthy Child in a Healthy School Environment

A Look at the

C H A N G E S

Program in Zambia

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A Healthy Child in a Healthy School Environment

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CREATIVE ASSOCIATES INTERNATIONAL

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Office of Education

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CREATIVE ASSOCIATES INTERNATIONAL
2004
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Zambian school girl
Photo by Wendy Robison

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Sixth grade was not going well for Chiluvya. Abdominal pain made her feel ill most of the time, and she missed many days of school. When she did attend, she could not concentrate. She never asked questions and seldom answered when called on. She did poorly in sports and dropped out of extracurricular activities. By the end of the first term, she wondered if she would make it to seventh grade.

But Chiluvya was lucky. Her middle school, located in Eastern Province, Zambia, was chosen as a pilot facility for a USAID-funded School Health and Nutrition (SHN) Program. Implemented since 2001 by the Zambian government and Creative Associates International Inc., the SHN program administers deworming medicines and vitamins to students in provincial schools.

After receiving [the medicines] albendazole for hookworms and praziquantel for bilharzia, Chiluvya no longer suffered abdominal pain. She started attending school diligently, and her performance improved so much that she tested at the head of her class. She is often the first to raise her hand in class, she runs faster than before, and she has joined both the Chongololo [nature and wildlife club] and the Anti-AIDS Club. Teachers and community members have favourably remarked on her turnaround.1

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This publication would not have been possible without the support of all the individuals involved in the development and implementation of the CHANGES program. Specifically, thanks go to Jim Hoxeng of USAID for his overall support of BEPS and the CHANGES program. Furthermore, the authors would like to thank the following people: Dr. Kent Noel, Ms. Winne Chilala, and Mr. Rick Henning of USAID/Zambia for their input on this publication and their dedication to the CHANGES program; Dr. Brad Strickland of USAID/Africa Bureau/Office of Sustainable Development for his ongoing dedication to the program and continued support in its development and expansion; Mrs. Catherine Phiri of the Zambian Ministry of Education (MOE)/Headquarters whose vision, dynamism, and support helped initiate the SHN component in Zambia and kept it going over the years; and the MOE team in Lusaka and Eastern Province—Ms. Irene Malambo, Ms. Hilda Chishala, Mr. Michael Chilala, Ms. Catherine Chirwa, Mr. J.B. Chilaka, and many other district and provincial MOE and Ministry of Health representatives—for their involvement in CHANGES’s activities.

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Finally, SHN’s success, reaching 40,000 pupils in Eastern Province, is due to the commitment of the teachers, health workers, head teachers, parents, students, and community members who advocate for and implement the elements of the SHN component daily.
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired immunodeficiency syndrome</td>
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<tr>
<td>BEPS</td>
<td>Basic Education and Policy Support</td>
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<td>BESSIP</td>
<td>Basic Education Sub-sector Investment Programme</td>
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<td>CARE</td>
<td>Co-operative for Relief Assistance Everywhere</td>
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<td>CBO</td>
<td>Community-based organization</td>
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<td>CBoH</td>
<td>Central Board of Health</td>
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<td>CHANGES</td>
<td>Communities Supporting Health, HIV/AIDS, Nutrition, Gender, and Equity Education in Schools</td>
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<td>CSMC</td>
<td>Community Sensitization and Mobilization Campaign</td>
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<td>DEO</td>
<td>District Education Officers</td>
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<td>DHMT</td>
<td>District Health Management Team</td>
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<td>EFA</td>
<td>Education for All</td>
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<td>EMIS</td>
<td>Education Management Information System</td>
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<td>FRESH</td>
<td>Focusing Resources on Effective School Health</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
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<td>HIV</td>
<td>Human immunodeficiency virus</td>
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<td>IDA</td>
<td>Iron deficiency anemia</td>
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<td>IEC</td>
<td>Information Education and Communication</td>
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<td>JICA</td>
<td>Japan International Cooperation Agency</td>
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<td>MCDSS</td>
<td>Ministry of Community Development and Social Services</td>
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<td>MOE</td>
<td>Ministry of Education</td>
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<td>MOH</td>
<td>Ministry of Health</td>
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<td>NGO</td>
<td>Non-governmental organization</td>
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<td>NHC</td>
<td>Neighborhood Health Committee</td>
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<td>PCD</td>
<td>Partnership for Child Development</td>
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<td>PEO</td>
<td>Provincial Education Officer</td>
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<td>PTA</td>
<td>Parent Teacher Association</td>
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<td>SACMEQ</td>
<td>Southern Africa Consortium for the Measurement of Educational Quality</td>
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<td>SHN</td>
<td>School health and nutrition</td>
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<td>SI</td>
<td>Successful Intelligence</td>
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<td>SIAPAC</td>
<td>Social Impact Assessment and Policy Analysis Corporation</td>
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<td>TDRC</td>
<td>Tropical Diseases Research Center</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNAIDS</td>
<td>Joint United Nations Programme on HIV/AIDS</td>
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<td>United Nations Educational, Scientific and Cultural Organization</td>
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<td>United Nations Children's Fund</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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<td>UNZA</td>
<td>University of Zambia</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>UTH</td>
<td>University Teaching Hospital</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>Z-CAI</td>
<td>Zambian Cognitive Assessment Instrument</td>
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The School Health and Nutrition component of the CHANGES program has made a huge difference in the lives of the students of Dzoole Basic School and the surrounding community. Before the School Health and Nutrition component came to our community, poor attendance, high bilharzia infection rates, and malnutrition plagued the school. Additionally, many parents did not see the value in sending their kids to school for education. Since Dzoole joined the SHN component, student enrollment has increased, bilharzia rates have decreased, and we have constructed vegetable gardens and orchards to supplement the students’ diets through a small grant from the CHANGES program. Now the students and community are proud of their school, and the parents and tribal headmen support the school and SHN component activities.

—Mr. Adams Sakala, Head Teacher, Dzoole Basic School
Chipata, Zambia
T
there is no doubt that health affects learning. However, the health of school-age children has long been neg-
lected, and as a result school children in many coun-
tries suffer from the combined effects of malaria, parasitic worm infections, and nutritional deficiencies. These health problems result in high absentee rates and poor educational performance in school.

Education and health professionals increasingly recognize that education and health are strongly interrelated, and that a concerted effort to address poor health and its affect on cognitive development is needed. Continuing to neglect school health will result in a larger population of individuals with impaired immune systems and other health-related problems caused by nutritional deprivation.

In Zambia, school-aged children suffer from malnutrition, malaria, micronutrient deficiencies, and heavy worm infestation. Moreover, the devastating effects of chronic famine, high levels of poverty, and HIV/AIDS exacerbate the situation. The Ministry of Education (MOE) recognized the severity of the problem and identified child health and nutrition as a national priority. Responding to this need, the United States Agency for International Development funded the Communities Supporting Health, HIV/AIDS, Nutrition, Gender, and Equity Education in Schools (CHANGES) program—a multi-sectoral education program designed and implemented by Creative Associates International, Inc., through the Basic Education and Policy Support (BEPS) Activity. CHANGES worked with the Zambian Ministries of Education, Health (MOH), and Community Development and Social Services (MCDSS) to develop the School Health and Nutrition (SHN) component, a first step in the development of a national school health and nutrition policy and the integration of health interventions and education in Zambian schools. “A Healthy Child in a Healthy School Environment” was selected as the guiding theme.

During the initial component design, various health and education stakeholders identified intestinal parasites, bilharzia, micronutrient deficiencies (vitamin A and iron), and HIV/AIDS as the primary health issues. The resulting SHN component was designed to address these health and nutrition issues through school-based, cost-effective health interventions in which teachers would be trained to assess students’ conditions and administer drugs and micronutrients.

These activities would be combined with other community-based aspects of the CHANGES program such as the implementation of a broad media campaign, sensitization efforts throughout Zambian society, and systems strengthening and capacity building of individual communities to address the wide range of health issues plaguing the country.

At its own initiative, the MOE collaborated with the CHANGES program and the MOH to develop policies, systems, and tools to pilot the SHN component in three districts of Zambia’s Eastern Province beginning in 2001. (Eastern Province was selected because both health and education indicators were poor.) During the initial stages of project implementation, the Partnership for Child Development (PCD) collected baseline data to document the prevalence of bilharzia, worms, and micronutrient deficiencies. Designated teachers and health workers attended training, received the tools, assessed the students, and administered drugs during the school year. At the end of year one, PCD again collected data to document the results of the interventions. This was complemented by testing of participating students’ cognitive ability, which was conducted by Successful Intelligence (SI).

The biomedical and cognitive testing and treatment took place in the first set of 80 pilot schools over a three-year period. Concurrently, the CHANGES program conducted a wide range of additional activities. These included organizing activities to sensitize communities, government officials, teachers, and stakeholders on the SHN testing and treatment; establishing coordination committees; training over 400 teachers and 60 health workers; developing manuals, tools, and monitoring instruments; engaging in HIV/AIDS prevention activities; conducting operations research on counseling methods; developing and strengthening various systems such as the drug delivery system and the Education Management Information System; and implementing a small grants mechanism.

Throughout the pilot phase, the CHANGES program engaged in intensive monitoring of all schools participating in the SHN component by collaborating with district and provincial MOE officials and District Health Management Teams (DHMTs). Media campaigns, through the use of radio programs, brochures, and national television, helped publicize the SHN component’s activities and goals. Presentations at numerous meetings, including non-governmental organi-
zation (NGO) forums and international conferences, helped increase awareness of school health and nutrition issues and garnered additional support.

By the end of the pilot period in 2003, more than 40,000 pupils were receiving deworming drugs and micronutrient supplementation. As evidenced by these numbers, as well as the positive recognition received by government staff, teachers, and community members of the positive benefits and impact the component was having on participating students, the CHANGES program was deemed a success.

This success was reinforced by the encouraging biomedical and cognitive research findings. The first year baseline research indicated a high percentage of bilharzia and worm infestation. By years two and three, there were marked declines in the percentage of children infected with these ailments. The cognitive testing after the second and third years also showed remarkable improvements. After receiving treatment for worms and bilharzias, children scored significantly higher on the cognitive tests, demonstrating improved cognitive receptivity.

Thus the SHN component made a positive impact both in terms of its medical benefits and improved cognitive ability. In addition, the complementary activities of the CHANGES program enhanced existing capacity and strengthened HIV/AIDS prevention programs within Eastern Province.

These encouraging results support the MOE’s vision of a national school health and nutrition program. With the continued expansion of the CHANGES program’s SHN component, this vision can become a reality.
According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the World Health Organization (WHO), nutritional deficiencies, parasitic worm infections, and malaria negatively affect school participation and learning. In addition, they note that unsafe sexual behaviors, due to their inherent risk of HIV infection and the contraction of other sexually transmitted diseases, also negatively affect student and teacher participation in school. The WHO Technical Report “Promoting Health Through Schools: Report of a WHO Expert Committee on Comprehensive School Health Education and Promotion,” states:

[Since] 1950 it has been noted that nutritional deficiencies and poor health in primary-school-age children are among the causes of low school enrollment, high absenteeism, early drop-out, and poor classroom performance. Health is thus a key factor in school entry as well as continued participation and attainment in school. Moreover, education that provides children with basic academic skills and specific knowledge, attitudes, and skills related to health is vital to their physical, psychological, and social well-being. This is true not only in the short term; such education lays the foundation for a child’s healthy development through adolescence and across their entire life span.

Clearly, health and education are strongly interrelated. Good health and nutrition from an early age are essential for preventing chronic disease and enabling lifelong learning. Poor health negatively affects the quality and quantity of education that children receive in primary school, and the lingering effects follow them into adulthood. Children who suffer from poor nutrition and disease grow into adults with weak immune systems, who in turn are at higher risk of contracting chronic and debilitating illnesses such as tuberculosis and HIV. Efforts to make students healthier have led to lower absenteeism and higher retention rates, and improved learning achievement.

The World Conference on Education for All (EFA) held in Jomtien, Thailand in March 1990 helped establish school health and nutrition as a priority in international education development efforts. At the meeting, UNESCO presented a report, “Malnutrition and Infection in the Classroom,” which demonstrated the relationship between the status of children’s nutrition and health and their performance in school. This analysis of nine studies, which examined the relationship between nutritional anthropometric indicators (i.e., height-for-age and weight-for-height) and school indicators (i.e., age at enrollment, absenteeism, achievement test scores, IQ, and performance on specific cognitive tasks),
documented that better nutritional status was consistently linked to higher scores in cognitive tests and better school performance. Since the World Conference on EFA, “a significant amount of research has addressed the effectiveness of school health interventions and the relationships between health, cognition, school participation, and academic achievement.” The conclusion drawn from the research is that the education sector must take a leading role to increase the quality and quantity of school health and nutrition projects.

In addition to the link between good health and superior cognitive performance, education is also noted as a formidable weapon against continued poor health in developing nations. Through education, children learn valuable life skills and behaviors that promote health and prevention of disease, and empower them to make better life decisions. Regular school attendance also enhances cognitive and analytical skills, improves problem-solving abilities, and enables children, and eventually adults, to master skills that can lead to regular employment. The link between health and education clearly shows that without strong school health and nutrition programs, the impact of basic education initiatives in countries battling health issues will be very limited. It also shows that a country’s education system can serve as a primary distribution mechanism for health education and preventative health measures, therefore combating the debilitating effects that sickness and malnutrition have on individuals, families, and communities.

These findings are particularly relevant in the case of Zambia, where poor health is prevalent among school-age children. As noted earlier, many children in Zambia are affected by malnutrition, micronutrient deficiencies (particularly iodine and vitamin A), worms, and, in increasing numbers, the direct and indirect effects of HIV/AIDS. Widespread poverty, famine, food security issues, and poor health care facilities are factors contributing to the complexity of the problem.

II. A RESPONSE: THE CHANGES PROGRAM

At the Jomtien Conference on EFA, UNESCO argued that because nutrition and health play such a pivotal role in determining educational outcomes, both should be included as crucial components in all efforts to improve the quality of education and children’s ability to learn. School-based initiatives that address basic health and nutrition support this premise.\(^8\)

The 1990 World Declaration of Education for All that resulted from the conference also acknowledged the close relationship between education, health, and nutrition policies and programs, and advocated for a multi-sectoral approach. The Declaration states, “Learning does not take place in isolation. Societies must ensure that all learners receive the nutrition, health care, and general physical and emotional support they need in order to participate actively in and benefit from education.” To achieve this, “new and revitalized partnerships at all levels will be necessary between education and social sectors.” Ten years later, in 2000, a group of international donors—including the United Nations Children’s Fund (UNICEF), UNESCO, WHO, and the World Bank—developed the Focusing Resources on Effective School Health (FRESH) Framework.

The CHANGES program recognizes and addresses the relationship between education, health, and nutrition that is highlighted in the World Declaration on EFA, the FRESH Framework, and the responses of numerous international agencies. Therefore, the CHANGES program, as part of the MOE’s strategic plan for a national school health and nutrition program, has been focusing on the basic nutrition and health status of primary school-aged Zambian children to improve their school performance.

The SHN component of the CHANGES program is where this focus lies. It emphasizes multi-sectoral, school-based, cost-effective health interventions that address three of the main health issues in Zambia: parasitic infections, malnutrition, and HIV/AIDS. Specifically, the SHN component treats intestinal parasites like bilharzia and hookworm, administers micronutrients such as iron and vitamin A to treat anemia and to strengthen the immune system, and raises community awareness about the importance of health, nutrition, and HIV/AIDS prevention through a community sensitization campaign and curriculum development. Having laid a solid foundation of policy and program implementation capacity, the CHANGES program is assisting the MOE with its strategic objective to take school health and nutrition toward national coverage.

\(^8\) United Nations Educational, Scientific and Cultural Organization, 2000
\(^9\) Ibid.
Zambian children anticipating the school day.

Photo by Dr. Cesar Chelala

III. THE CONTEXT: ZAMBIA

Zambia, formerly the territory of Northern Rhodesia, was controlled by the South Africa Company from 1891 until it was taken over by the United Kingdom in 1923. The name was changed to Zambia upon independence in 1964. Zambia is a landlocked country in Southern Africa and shares borders with seven countries: Angola, Democratic Republic of the Congo, Malawi, Mozambique, Namibia, Tanzania, and Zimbabwe. Zambia’s land mass is slightly larger than Texas, and it has a population of approximately 10 million. English is the official language, and Bemba, Kaonde, Lozi, Lunda, Luvale, Nyanja, and Tonga are the major language groups. There are approximately 70 recognized indigenous languages spoken throughout the country. The country is organized into nine provinces: Central, Copperbelt, Eastern, Luapula, Lusaka, Northern, Northwestern, Southern, and Western.

Economic Situation

Since independence in 1964, Zambia has relied heavily on copper mining to fuel its economy. Within ten years of independence, however, the world market for copper collapsed, leading to economic stagnation, increased poverty, and malnutrition. According to the 2003 United Nations Development Programme’s (UNDP) Human Development Report for Zambia, in 2001 the gross domestic product (GDP) per capita was $354, and approximately 64 percent of the population was living below $1 USD a day. Today, almost 73 percent of the Zambian population lives below the national poverty line.

Several factors, including the long-term depressed national economy, high unemployment rate, and lack of government support for the human services sector, have significantly reduced access to and the quality of the national health and education systems. As a result, the health and education levels of the Zambian population have declined.

Health

According to the UNDP, in 2001 both the infant and under-five mortality rates were worse than they were in 1970, and perhaps most staggering, the life expectancy at birth in Zambia has declined dramatically, from approximately 50 years to approximately 32 years for those born since 2000. Deterioration of these basic health indicators demonstrates

12 Despite the institution in 2001 of free primary education by the Zambian government, there is still a paucity of funds available to support the national education and health systems.
13 In 1970, the under-five mortality rate per 1,000 live births was 181 and the infant mortality rate per 1,000 live births was 109. In 2001, the under-five mortality rate per 1,000 live births was 202 and the infant mortality rate per 1,000 live births was 112.
the poor state of health care in Zambia. Furthermore, HIV/AIDS infection rates are increasing throughout the country, with 500 new infections occurring every day according to the Zambian Ministry of Health.

Parasitic worm infections and malnutrition are of particular concern for school-aged children. Since numbers of parasites build up over time, many of the health problems caused by them tend to be chronic and long-lasting. Parasites can affect the absorption of micronutrients such as iron and vitamin A. These factors, combined with recent drought and famine, contribute to the severe level of malnutrition rampant throughout the country. For example, in 1998-2000, 50 percent of the Zambian population were undernourished. Underweight and stunting are additional common signs of malnutrition in young children. From 1995 to 2000, 25 percent of children under five were underweight for their age, and 59 percent of children under five were under height for their age.

Bilharzia, or schistosomiasis, is a parasitic infection caused by a fluke that primarily affects people living in rural communities involved in agriculture or fishing. The disease affects the physical and mental development of children and, as a result, has bearing on school attendance and performance. Bilharzia is a significant problem in Zambia, specifically in areas with large amounts of fresh water. Because bilharzia infection, like intestinal worms, is so common, the CHANGES program identifies it as a target to be addressed by the SHN component.

Iron deficiency anemia (IDA) is probably one of the most common nutritional disorders in the world, and severely affects both pregnant women and children in Zambia. IDA is aggravated by bilharzia. In addition, vitamin A deficiency is a public health problem in Zambia as in many developing countries. The CHANGES program targets iron and vitamin A deficiency through the SHN component because they are two of the main causes of malnutrition and poor physical and mental development of school-aged children in Zambia. Layered on top of bilharzia infection and iron and vitamin A deficiencies are the high rates of HIV/AIDS transmission and infection. Since the first documented case of AIDS in 1985, no part of Zambia has remained untouched by the epidemic. According to the UNDP, as of 2001 over 20 percent of Zambians age 15 to 49 are living with HIV/AIDS.

HIV/AIDS has severely impacted the education system, affecting both teachers and students. In 1998, the AIDS death rate among teachers was 70 percent higher than that of 15-49 year olds in the general population. In Zambia, two teachers die for each graduate from teacher training school. Students are also severely affected by HIV/AIDS, not only when they are personally infected, but also when they must care for sick and dying family members. As stated in the United Nations Programme on HIV/AIDS (UNAIDS)/USAID joint report, Children on the Brink 2002: A Joint Report on Orphan Estimates and Program Strategies, Zambia ranks as one of the countries with the highest number of orphaned children—more than 600,000 in 2003.

AIDS orphans are likely to be malnourished and unschooled, creating an atmosphere that puts them at greater risk of becoming HIV-infected than other children. Furthermore, they are more likely to engage in risky sexual behavior, which can begin a vicious cycle of physical and emotional abuse and exploitation. It is estimated that seven percent of Zambia’s 1.9 million households are headed by a boy or girl aged 14 or younger. These young people need to work to support their younger siblings and provide for their families, and they are responsible for caring for sick family members. According to a World Bank report, as an AIDS orphan their opportunity to receive an education is severely reduced, which is further limited if they are members of an economically poor family.

In Zambia, lack of money and support for the health care system, coupled with high rates of bilharzia infection, malnutrition, and HIV/AIDS, has strained the capacity of the system and left Zambians with poor quality health care service.

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16 Ibid.
17 Ibid.
18 Ibid.
20 Simple diagnostic tools, many of which are available from WHO, were used to identify the presence of infection.
23 Please see the SIAPAC report, entitled “Impact Assessment of HIV/AIDS on the Zambian Education Sector,” for more information about the impact of the pandemic on the Zambian education system. This report was commissioned by the MOE and supported by USAID and the CHANGES Program.
26 The definition of “AIDS orphan” used by USAID is a child who has lost one or both parents due to HIV/AIDS.
Access to health care is also affected by these factors as ailing individuals are unable to physically travel to facilities or wait for services for their own needs or those of children. As education and health are closely linked, all of these factors have also contributed to the drastic decline of education levels of the Zambian population.

**Education**

Despite the implementation of free primary education in Zambia in 2001, retention and literacy rates are still low. A significant majority of students do not continue from primary to secondary schools. The literacy rate of Zambians 15 years and above in 2001 was 79 percent.\(^{27}\) Many Zambian children enter primary school when they are between seven and ten years old. Their late entry places them below grade level in academic performance and behind those peers who enter on time. In addition, in 1998, only 8.4 percent of three-to-six-year-old children in Zambia attended some form of preschool education, with huge disparities between urban and rural children.\(^{28}\) This low preschool enrollment puts an additional strain on their ability to advance from one grade to the next.

These combined factors strain children’s abilities to achieve and advance. A Southern Africa Consortium for the Measurement of Educational Quality (SACMEQ) study of grade six students undertaken in 1995 showed that only 2.3 percent of students attained the desired level of reading skill for their age group. Preliminary results of a national assessment of grade five students conducted in 1999 also demonstrated a low level of performance by students across provinces, gender, and subjects.\(^{29}\) These results are exacerbated by low funding levels—$17 is spent per primary school student per year as compared with $36 per student in 1985. The end result is that basic education in Zambia, as elsewhere in Southern Africa, is typified by poor quality, dilapidated and overcrowded classrooms, limited availability of educational materials, and a belief among parents that formal basic education provides little value to their children.\(^{30}\)

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\(^{27}\) United Nations Development Programme. 2003


\(^{29}\) Ibid.

\(^{30}\) Ibid.
One of the more notable accomplishments of the CHANGES program is the design and creation of a variety of complex and integrated activities, systems, and tools that have resulted in the successful implementation of the SHN component and HIV/AIDS activities in Eastern Province.

—Dr. Edward Graybill, Chief of Party
CHANGES Program
Lusaka, Zambia
In the face of sharply falling health and education indicators, the Zambian MOE commissioned USAID to conduct an assessment of the national education system. The resulting assessment produced in 1997, urged the creation of a new strategic objective in support of the MOE’s plan for basic education. The strategic objective was entitled Basic Education Sub-sector Investment Programme (BESSIP).

USAID’s activities in the Zambian education system were designed to address the key issues prioritized by the MOE in BESSIP. The comparative advantages of USAID working individually, as well as collaboratively with international donors, were considered in the design process. Specifically, the MOE and the World Bank tasked USAID to fund and develop the school health and nutrition component of BESSIP. USAID enlisted the help of leading experts on school health and nutrition projects and on the cognitive benefits of simple, cost-effective health interventions for school-aged children to develop the component design currently implemented as part of the CHANGES program.\(^{31,32}\)

Working with existing MOE and MOH structures, the CHANGES staff developed and piloted the SHN component. The complex nature of school health and nutrition prompted the CHANGES program to adopt a multi-sectoral approach and concentrate on systems development and capacity building at all levels. For example, the SHN component emphasizes school-based interventions to treat intestinal parasites and bilharzias, administer iron and vitamin A, and educate students on HIV/AIDS. This emphasis requires both the education and health sectors to work together. MOE and UNICEF activities to improve water quality and sanitation have also been coordinated to complement elements of the SHN component.

The SHN component’s community mobilization campaign generates community support for and involvement in the component’s activities. This community campaign is coupled with the MOE’s national SHN Information Education and Communication campaign (IEC),\(^{33}\) which educates communities on multiple health issues. Therefore, this combination enables health and nutrition education to reach all levels of society.

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\(^{31}\) CHANGES is composed of two main components: the School Health and Nutrition (SHN) component and Community Sensitization and Mobilization Campaign (CSMC) in addition, CHANGES includes two cross-cutting themes: HIV/AIDS activities and a small grants mechanism, which are integrated into both components. A focus on increasing girls’ education is integrated throughout.


\(^{33}\) Ibid.
The link between health, nutrition, and cognitive ability was an important consideration in the design and implementation of the program. The SHN pilot was designed both to improve the health and nutrition of school children and to enhance their academic achievement and acquisition of life skills. As a result, extensive research support has been an integral component of the SHN pilot. PCD, a partner with CAII, worked with a Zambian institution, the Tropical Diseases Research Center (TDRC), to document the benefits of the medical interventions on the health of the students. Successful Intelligence (SI), another partner organization based at Yale University, worked with the University of Zambia (UNZA) and the MOE Examinations Council to document the cognitive benefits for students from the interventions.34

Establishing a clear link between bilharzia infections, micronutrient deficiencies, and cognitive development in school-age children was difficult, yet the studies documented the association between moderate to severe parasitic infection and lower test scores and educational achievement.35

Thus, the Zambian government, USAID, and CHANGES staff decided to design interventions aimed at improving students’ health and learning by addressing bilharzia, micronutrient deficiencies, and HIV/AIDS. The design is based on four research-supported theories:36

- Training teachers, school administrators, and health workers together to treat students is an effective and economical way to improve the health of the student population.
- Training teachers, school administrators, and health workers together to treat students should lead to measurable improvements in students’ health.
- Training teachers, school administrators, and health workers together to treat students should lead to measurable improvements in pupil attendance and performance.
- Providing health interventions through schools will promote and encourage healthy behaviors. The teaching of life skills within the curriculum is particularly relevant in combating the transmission of HIV/AIDS.

Initially, 80 schools in two districts in Eastern Province were selected to participate in the SHN component. Eastern Province was the pilot district because both health and education indicators were poor. Participating schools performed biomedical and cognitive testing and additional interventions over a three-year period.

As the component progressed, additional schools were added. As part of the SHN component design, schools that initially act as control schools become intervention schools the following year. This design facilitates the achievement of the government’s long-term goal of eventually engaging all schools in school health and nutrition. Currently, the SHN component covers five Eastern Province districts and 120 schools.

34 Ibid.
35 The studies on the impact of micronutrient supplements and deworming medications on cognitive development conducted by the CHANGES program subcontractors PCD and SI confirmed this association. These studies are discussed in greater detail in the Impact and Results section of this publication.
A Healthy Child in a Healthy School Environment

A Look at the CHANGES Program in Zambia

Photo by Wendy Robison
There are a couple of key messages PCD would like to communicate through their research on the SHN component of the CHANGES program...[one] is that teachers, under the supervision of local health staff, are highly effective in delivering safe and simple interventions to the children in their care....and another is that school health and nutrition improves children’s learning ability.

—Dr. Michael Beasley,
Partnership for Child Development Impact Assessment Dissemination Meeting
Lusaka, Zambia
September 2003
V. IMPLEMENTATION: THE SHN COMPONENT STRATEGY

To tackle the multiple health problems affecting Zambia’s school-aged children, the CHANGES team designed a system that would allow easy, efficient, and cost-effective delivery and monitoring of various health and nutrition interventions. This system comprises a number of integrated elements—Health-promoting Schools, primary schools as the delivery site, teacher and health worker training, learning materials, student treatment process, drug distribution system, Education Management Information System (EMIS), HIV/AIDS outreach, and coordination.

Four other strategies were implemented to support the delivery and monitoring system. These strategies strengthen the system and ultimately assist in its long-term sustainability. Following the description of the various elements that make up the delivery and monitoring system, these four supporting strategies are introduced.

Taken together, the system and its supporting strategies create an integrated package of complementary nutrition, health, and educational inputs leading to improved school attendance and academic achievement.

A Delivery and Monitoring System That Works

Without an efficient, cost effective, and easy-to-administer delivery system, there would be no need for the remaining strategies, and no mechanisms for delivering school health and nutrition services, drugs, and training. Additionally, the monitoring portion of the system enables the CHANGES SHN staff to reflect on the different approaches and mechanisms currently utilized by the system and to revise them when necessary.

The nine elements of the CHANGES SHN delivery and monitoring system are described below. Each is designed to involve multiple levels of stakeholders and focus on prevention, treatment, and capacity-building efforts.

Health-promoting Schools

The SHN component incorporates the Health-promoting Schools concept advocated by WHO. As mentioned earlier, according to WHO, a Health-promoting School is constantly strengthening its capacity as a healthy setting for living, learning, and working. More specifically, Health-promoting Schools do the following:
 Improve the health of students and their families, school personnel, and community members,

Foster health and learning through a wide range of activities,

Provide a healthy environment, education, and services in the school as well as through community outreach activities, and

Implement policies and practices that respect and strengthen students’ self-esteem and provide opportunities for success and personal development.  

Focal point officers within each participating school are introduced to the basic principles of Health-promoting Schools during training sessions (discussed later in this chapter). During the training, focal point teachers and health workers at each school are encouraged to conduct activities such as:

- Sponsor drama groups and SHN and Anti-AIDS clubs to share the concept with the wider community and seek the support of local leaders,
- Host community meetings about the importance of school health and nutrition,
- Conduct a small media campaign in the area using posters and drama performances,
- Host an “open house” at the school for parents and community members to visit the school and explore the various health and nutrition activities offered,
- Ask parents to feed their children breakfast before sending them to school,
- Ask parents to provide children with a mid-day snack,
- Sponsor competitions for the best Health-promoting School,
- Establish SHN committees with broad representation from the community, clinic, and school,
- Work with Parent Teacher Associations (PTAs) and regularly involve the chairperson in school discussions and decisions, and
- Initiate other activities that engage parents in the SHN component.

These Health-promoting Schools help create environments where health and nutrition interventions can succeed.

Primary Schools As the Delivery Site

Why are schools selected as the site to administer drugs to the students rather than health clinics? There are several advantages to placing health and nutrition interventions within the school. First, there are more schools than health clinics in Zambia, especially in the rural areas, and the schools are more widely dispersed throughout the country. Often it is difficult for families and children living in rural areas to travel to the nearest health clinic. Additionally, the Zambian network of schools is more accessible. This accessibility enables the government to reach deeper into the neediest, most disadvantaged regions. Because children tend to attend school more regularly than they visit health clinics, teachers see them more often and more consistently than do health workers. As a result, it is logical that teachers, serving as the students’ primary personal contact other than their parents, should receive basic training in health services so they can screen students for health problems and refer students to the nearest health center for appropriate treatment when necessary.

Teacher and Health Worker Training

Teacher and health worker training is the most extensive type of training required in the SHN pilot, for it is in these sessions that the people responsible for administering the SHN component are trained. When the SHN component starts in a new district, 20 schools are initially selected to participate. Two teachers from each school, usually the head teacher and one other, serve as SHN focal points. These teachers are trained together with one health care worker from the respective school catchment area. Additionally, selected community health workers and community development assistants are trained. The SHN component’s training course is conducted in three days.

In the SHN component, teachers are trained alongside health workers to properly administer the deworming medications and micronutrient supplements. Training focuses on teaching participants technical skills and building the capacity of the MOE to continue to provide the training for teachers and health workers, so in the future the SHN component can be entrenched as part of the national education system. The training is not complicated, but it requires specialized trainers to teach the teachers and health workers to administer interventions and to establish a collaborative working relationship between them.  

From the inception of the SHN component, one of the core innovations has involved training teachers to recognize basic ailments and infections and then administer the drugs and supplements to treat these conditions. Participants are trained to administer drugs, such as praziquantel and albendazole, to treat bilharzia and other worm infestations, and to dispense vitamin A and iron tablets to prevent and treat micronutrient deficiencies. The participants also receive training about the causes and prevention of bilharzia and malaria. Additionally, they are trained on how to screen for health problems, so they can refer pupils to the nearest health center when necessary.

Although the teachers and health care workers attend the same training, some aspects of the curriculum address teachers’ roles, while others focus more on the health workers’ roles within the SHN component. For example, the health workers learn how they can ensure the smooth delivery of drugs to the schools, strengthen the relationship between the health centers and schools, and collaborate with the MOE District and Provincial Officers. Additionally, they are taught the importance of being present at the schools on drug administration days, so they are able to supervise and deal with any side effects.

The SHN focal point teachers, on the other hand, are trained how to use basic diagnostic tools. Teachers are introduced to the bilharzia questionnaire, which is used to determine the proper dose of drug to be administered to the students and to the height pole which is used to calculate praziquantel dosage per student. Teachers are also taught protocols for administering drugs and micronutrients, recording information on treatments, and completing school health cards (similar to a report card used for grades).

SHN focal point teachers are taught to record the results of their basic pupil screening and the identified health problems on the school health cards. They then refer students to a health clinic. In turn, with each school visit, health workers add information to the cards about follow-up treatments or immunizations administered to the students. Teachers maintain the cards on all students from grades one to seven. The card has proven to be effective in building a closer partnership between teachers and health care workers.

Additionally, the teachers are trained on HIV/AIDS counseling services, life skills, water and sanitation education, public health and disease prevention, the development and promotion of school health policies, the establishment of health committees, and the development of action plans. They are encouraged to include health workers in all SHN efforts, even those beyond the immediate responsibility of the health workers, and they are also coached on techniques for training the remaining teachers in each of their home schools.

After the training, the two teachers return to their schools and are responsible for educating the other teachers on the training content and material. Once every teacher has completed one cycle of drug administration and tracking, they should be competent in administering the interventions and using the accompanying educational materials.

The group training among teachers and health workers builds a cooperative spirit between health and educational personnel working in the community—a partnership that is vital to the success of the SHN component. Teachers must be willing and able to refer students to health centers when ill. Health workers must be ready and willing to see students and respond to informed observations from teachers and parents. Experience has shown that the goodwill and trust among health center staff, parents, and students must be cultivated and maintained to build sustained links between the community’s health and education systems. Additionally, since there are many complicated tasks associated with the project and the roles assigned to the teachers and health workers, technical competence among both groups is important. It facilitates smoother working relationships and defines each party’s responsibilities more clearly.

To facilitate the acquisition of technical competence, various training material has been developed—to either be incorporated in the teacher and health worker training course or to complement the training curriculum. Training manuals, which were designed by the CHANGES program and the MOE, include suggestions on how to incorporate SHN educational materials in the classroom and use them to initiate discussion. IEC materials for training teachers and health workers on the administration of various drugs, and a resource manual for managerial and administrative staff also have been developed.

The MOH has developed a system using its Neighborhood Health Committees (NHCs) under its health reforms. The CHANGES program encourages teachers to become active
participants in these committees. The NHC represents the community in relation to the SHN component and is a mechanism for community members to organize themselves around the project’s activities.41

The DEO and Provincial Education Officer (PEO) focal points for the SHN component also serve a critical role. They identify new intervention schools where training activities can begin, and they work with health clinic workers to provide accurate enrollment data for the National SHN Unit in Lusaka to procure drugs for the districts.

Experience from the past three years with the CHANGES SHN component has shown that teachers can correctly administer drugs using the tools provided in the training curriculum. They have been very cooperative and willing to carry out these new tasks, especially since they see immediate improvements in their students’ health. Soon after treatment for bilharzia, pupils walk without pain and no longer urinate blood. Teachers also see more alert, responsive children in class and at play. As noted by the teachers and the MOE, without their efforts and cooperation, the increase in enrollments and the decrease in absenteeism in SHN schools over the past two years would not have resulted.

**Learning Materials**

The CHANGES SHN component utilizes a variety of education materials developed cooperatively by CHANGES and the MOE that provide basic information about health and nutrition, the importance of good nutrition to child development, and other life skills. Different subjects are covered, including critical thinking, self-esteem, decision making (especially related to health care), sexually-transmitted diseases, early pregnancy, violence, and substance abuse. The bilharzia flipchart used within the classroom and clinic is a specific example of the type of materials developed. The flip chart explains how bilharzia and other parasites are contracted, what the typical symptoms are, and how the infection can be treated.

This chart and other newly-developed education materials are used by teachers in the classroom. Their use triggers classroom discussions about negotiating peer pressure, dealing with sexual advances from people in positions of authority, abstaining from sex or having safe sex, and transmitting HIV/AIDS.

**Student Treatment Process**

CHANGES provides a rapid, innovative, and inexpensive method to determine the prevalence of worm infection in school children and to treat infections and vitamin deficiencies with safe, inexpensive, and effective medication. The process begins with a quick and inexpensive assessment of bilharzia infestation that is used to determine the proper dose of drug to be administered to the students. The CHANGES program trains teachers to use the simple bilharzia questionnaire described earlier, which allows them to diagnose infestation levels with great accuracy. The questionnaire is easy to use and requires the sampling of only 70 pupils (10 from each class grades one to seven) to determine prevalence. Once a school is identified as having significant infection—over 50 percent of students—the entire student body is treated.

Accurate dosage is another critical issue. Again, the CHANGES program uses innovative methods that are quick and inexpensive. Using the height pole, trained teachers determine the quantity of medication to give to each child. Based on the pupils’ height, teachers can accurately determine the dosage of the treatment drug, praziquantel.

**Drug Distribution System**

Another successful element of the SHN component is the procurement and distribution of deworming drugs and micronutrient supplements. The drugs and supplements are ordered by the MOE, shipped to Zambia, quality checked, and transferred to district pharmacies to be distributed to health centers near the school catchment areas. The CHANGES program has worked with USAID, MOE, and MOH to design and implement the drug procurement and distribution system.

SHN drugs are ordered by the MOE’s procurement office based on the figures given by the National SHN Unit. Drugs are then, received, stored, and subjected to quality testing by a local medical storage facility.

CHANGES uses existing distribution systems to ship drugs to the provinces. The local medical storage facility includes the drugs in scheduled shipments to the District Health Management Team (DHMT). The SHN component provides the DHMT with lists of participating schools. Drugs are ordered by head teachers using a drug request form based
on established protocols and their enrollments. Copies of the drug request form are forwarded to the health center, school, and district and provincial offices. Distribution of drugs, storage under proper conditions, and maintenance of any surplus are the responsibilities of the health center staff.42

**Education Management Information System (EMIS)**

An EMIS is an important tool to provide quality educational data, such as enrollment, retention, and performance rates, to decision makers at various levels in the education system. Its purpose is to ensure that managers and stakeholders have easy access to the information needed to improve results and make better management decisions. Stated more succinctly, the main purpose of EMIS is to provide the right information, to the right people, in a timely manner, and in the correct way.

Currently, the CHANGES program is working with a consultant from the University of Natal and the MOE to design a SHN management form that can be used as part of the EMIS to track basic health issues in the student population and determine how these issues impact enrollment, attrition, and retention rates as well as performance. This simple SHN management form is being pilot-tested, as an addition to the standard EMIS system, in eight schools in Chipata and Chadiza districts (to be expanded to 50 schools in 2004). Upon successful completion of the pilot, the form will be included in the national EMIS system used by the MOE.

The CHANGES program is also training staff to input the required EMIS data, and to use the data for analysis and policy. To ensure use of the forms and the system, CHANGES developed a training manual for head teachers and District Education Officers (DEOs), which defines the roles and responsibilities of all involved in creating the SHN EMIS. A draft version of the database was also distributed. Among the next steps are to finalize the database, to further train all those involved in the SHN component on EMIS, and to further develop the manual. When all its elements are operating, the new EMIS will be more comprehensive and be able to provide additional education and health data to support MOE planning activities.

**HIV/AIDS Outreach**

Given the rapid spread of HIV/AIDS in Zambia, awareness and prevention efforts are a major component of the SHN component activities. CHANGES supports the provincial HIV/AIDS strategy, including the sensitization of teachers and patrons of Anti-AIDS clubs and the development of locally designed materials for pupils and teachers. Additionally, the CHANGES program encourages the SHN focal point teachers to establish Anti-AIDS clubs and student drama groups to perform in the school and surrounding communities to increase awareness about HIV/AIDS and prevention strategies. Teachers are encouraged to include life skills and use educational materials about HIV/AIDS awareness and prevention in their classroom curriculum. Each of the small grants awarded through CARE International, CHANGES subcontractor (see the Small Grants Mechanism section later in this publication), must include an HIV/AIDS component, and a number of schools have rehabilitated classrooms and other buildings to serve as resource centers. By 2003, 12 schools had established either new or larger resource centers. All SHN schools are encouraged to set up a corner, wherever they can find space, to serve as a school health and nutrition and HIV/AIDS information station that can be accessed by pupils and community members.

With the support of CHANGES, the MOE also provides some teachers with training on HIV/AIDS counseling, especially for students and community members who are HIV-positive. Building on CHANGES-supported research by school counselors on the use of local language versus English for HIV/AIDS counseling, CHANGES plans to use local languages when counseling on this sensitive topic. Additionally, teachers are sometimes trained to conduct research on the prevalence of HIV/AIDS in their school’s community and the impact that counseling has on the lives of HIV/AIDS victims.

Furthermore, NGOs in Eastern Province that focus on HIV/AIDS have partnered with CHANGES to further program efforts in HIV/AIDS awareness and prevention. Radio Maria and Radio Breeze, two popular radio channels in Eastern Province, regularly broadcast programs on HIV/AIDS. Thirty-six programs on these issues were broadcast on Radio Breeze in English and in local languages since the SHN component started.

**Coordination**

One of the lessons learned during the initial stages of the component’s implementation was the need for effective coordination. To respond to this need, the program has trained key managers and planners at the district and provincial levels in school health and nutrition issues and has

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42 Ibid.
developed a manual that includes information on these issues, the roles and responsibilities of managers, and the formation of coordinating SHN committees.

The committees are established in every school, with broad representation including teachers, health workers, and community members. Meetings are held to discuss issues and report on progress and challenges related to school health and nutrition. In addition to these activities, CHANGES is also an active member of the Eastern Province NGO Forum as well as a sub-forum on HIV/AIDS.

**Summary**
An efficient and effective process for diagnosing and treating students is an important first step in the CHANGES SHN component. Training health and education workers to implement the program, together with a conducive school environment, efficient and reliable systems for distributing the drugs, monitoring progress, and building community support for the program, results in a system that is able to bring about the health changes needed so that children can learn.

**Supporting the Delivery and Monitoring System**
Given the complexity of the delivery and monitoring system, a number of supporting strategies have been put in place. Like the elements within the system, these strategies involve numerous individuals, as well as varying levels of the MOE, MOH, and MCDSS. Although termed “supporting strategies” in this publication, their roles should not be overlooked or considered less important. These strategies help the system to operate more effectively and provide the support necessary to expand the SHN pilot component into a national school health and nutrition program. A description of each of the four supporting strategies follows.

**Multi-sectoral Collaboration**
Multi-sectoral collaboration is a key supporting strategy of the CHANGES program. Collaboration is seen from the national to the local level, primarily between the Ministries of Education and Health, provincial officials, community leaders, schools, teachers, and health workers. At the national level, USAID and the CHANGES program helped the Zambian government draft a *National School Health and Nutrition Policy*¹ and a Letter of Understanding between the MOE and MOH. At the provincial and local levels, the first phase of implementation included conducting baseline surveys to determine the parasitic infection, micronutrient deficiency rates, and cognitive scores. This was followed by the development of partnerships with local organizations and NGOs, which helped with training MOE and MOH provincial officials, teachers, school administrators, and health workers, raising community awareness (found later in this chapter in greater detail), and “spreading the word” regarding the importance of school health and nutrition through a broad-based media campaign.

At the local level, the SHN pilot has required the close partnership and commitment of communities, teachers, school administrators, and health workers. Because interventions—the administering of deworming medications and iron and vitamin A supplements—are health related yet delivered by specially-trained classroom teachers, the close collaboration between teachers and health workers has been crucial to the success of the project. If teachers notice a child is sick, they refer him or her to the local health clinic worker, who is familiar with the SHN component and plays a supportive role. In addition, teachers and school administrators have been the conduits through which a great deal of the community sensitization activities have taken place. For example, a school teacher typically serves as the patron for the anti-AIDS drama groups that perform in the surrounding communities to inform parents and community leaders about HIV/AIDS. The head teacher, or principal, is responsible for informing parents and the community about the SHN component and activities.

**Ongoing Research Supporting the Link Between Health and Learning**
Part of the success of this program is the use of quantitative data to confirm the effectiveness of the various interventions. The CHANGES program is currently documenting the benefits of the medical interventions on student health in 120 schools.¹⁴ Through testing by PCD and the TDRC of

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¹ A policy has been drafted and will be revised and submitted to the Zambian Government for approval.
students’ blood, urine, and stool samples, the CHANGES program anticipates being able to clearly understand the impact of the medicines and supplements on student health. In addition to the biomedical testing, SI, the University of Zambia, and the MOE Examinations Council are testing for and documenting the cognitive benefits of the interventions on students. To do this, SI and UNZA developed the Zambian Cognitive Assessment Instrument (Z-CAI), a tool that is capable of measuring improvements in cognitive receptivity and ability.

The biomedical and cognitive testing components are understandably a sensitive issue for both parents and students, and initially many parents and community members were concerned about the research requirements of the SHN component. The CHANGES staff, working with government officials, teachers, and health workers, supported media campaigns and community sensitization activities to inform parents and communities about the biomedical testing activities and their significance to the SHN pilot and, ultimately, their children’s health. (See section on Community Mobilization and Sensitization.) This, combined with the positive impact of the deworming medications and micronutrient supplements on student health, has contributed to parents’ support for the SHN component.

**Small Grants Mechanism**

Under the CHANGES program, CARE International is implementing a small grants mechanism to assist schools, communities, and local NGOs to improve their activities focusing on school health and nutrition and HIV/AIDS awareness and prevention. Grants are given to PTAs, NGOs, community-based organizations (CBOs), schools, religious groups, and other organizations. Successful grant proposals typically do one or more of the following:

- Support innovative school health and nutrition activities to improve learning, health, and nutritional status among children,
- Increase participation and learning of girls and other vulnerable groups of children,
- Integrate HIV/AIDS awareness and prevention messages to promote life skills and appropriate behaviors in the school and the community, and
- Provide technical assistance, build capacity, and support training initiatives to grantees, so they are equipped with organizational and technical skills to run programs more effectively.

CHANGES monitors the grant recipients and ensures grant funds are used appropriately. As part of the technical assistance provided, CARE trains PTA members, teachers, and CBOs in proposal writing and basic financial and management skills. Grants have been awarded for a variety of activities, including the construction of HIV/AIDS resource centers at numerous schools, rehabilitation of school classrooms, construction of fish farms, development of CBO school feeding programs, and the creation of food production units so children can supplement their diets with fresh vegetables and fruits at school.

**Community Mobilization and Sensitization**

The final strategy of the SHN component, mentioned previously as related to other elements and strategies, incorporates several interrelated activities devoted to sensitizing parents and the communities. These outreach efforts are critical to the success of the component, as demonstrated by their reference throughout this document, and are focused on sen-
sitting parents on the need for collecting biometric data. The component is dependent on this outreach to ensure the commitment and trust of participating communities.

To achieve this level of commitment and trust, the project makes use of a number of outreach materials, which were developed cooperatively by the MOE, MOH, and National SHN Unit. Materials are used for both the national IEC campaign and general community outreach. The IEC materials, which promote the importance of school health and nutrition, target parents, community members, students, and teachers throughout Zambia. Other community outreach materials, including brochures, booklets, newsletters, newspaper advertisements, comic books, and TV and radio programs, introduce the SHN component and its efforts to improve health and nutrition and prevent the spread of HIV/AIDS. They also describe the various activities and explain the need for participation, especially in regards to the various data collection activities. The SHN staff worked with teachers and health clinic workers to distribute the written materials in the communities.

The other form of outreach used to sensitize the community is popular drama. Popular drama is a culturally appropriate and effective outreach strategy. In CHANGES, drama troupes work for seven to ten days in each of the selected school catchment areas, developing and later performing dramas to illustrate school health and nutrition messages, including the target interventions of bilharzia and micronutrient deficiency and HIV/AIDS awareness and prevention. Students, teachers, and community members are selected to play roles in the drama performances. At the end of each performance, a forum is held to give community members an opportunity to comment. During these discussions, community members offer suggestions on how to better address the issues introduced in the play. Additionally, after the performances, the drama troupes work with the schools and communities to form committees that are responsible for SHN policies and action plans.

The CHANGES program staff, SHN focal point persons, head teachers, DEOs, PEOs, and health workers also meet with parents and traditional and religious leaders in the community to talk about the need for the SHN component in Zambia and in their communities. While parents are sometimes suspicious of the fact that teachers would be administering drugs, their concerns are quickly overcome as the project progresses and parents see improvements in their children’s health and academic performance. Teachers’ confidence levels also increase as they successfully perform their new roles of administering drugs and observe for themselves the benefits.

As a result of this approach, the initial survey of over 1,200 pupils indicated no difficulties in the compliance of pupils or parents. Eventually, parents and communities express happiness and satisfaction about the SHN component because of the almost immediate positive results they witness in their children’s health and academic performance. Children who received the medications and supplements have experienced an increase in energy levels, have attended school more often and consistently, and have learned more. Therefore, the demand for the SHN component has increased tremendously, and many parents and communities are encouraging the government to expand it into more provinces and communities.
Since beginning work in 2001, the CHANGES SHN component has had significant impact on children’s health, nutrition, and ability to learn in Zambia’s Eastern Province. Evaluations and surveys clearly demonstrate that in the participating schools, students’ illness and absence due to bilharzia have declined dramatically, and the cognitive ability of the children has surpassed those in control schools. Teachers and community leaders are now actively engaged in health and educational interventions. Pupils, teachers, and communities are also learning more about HIV/AIDS, including how it is transmitted and how it can be prevented. The next sections will examine the programmatic, biomedical, and cognitive impacts of the CHANGES program’s SHN component.

**Programmatic Impact**

The SHN pilot component has demonstrably improved the health of Zambian school children. It has decreased the instances of bilharzia infections and increased iron and vitamin A intake to strengthen children’s immune systems and combat anemia. These health improvements have led to increased enrollment, attendance, and performance of students receiving the interventions in school.

Teachers have been trained to administer drugs in appropriate dosages with the use of basic diagnostic tools and to maintain accurate records. In addition, by regularly updating school health cards, teachers regularly refer children to the nearest health center when necessary. There are closer links between health workers and schools. Teachers no longer stand back and watch when clinic workers come to their school to conduct health activities. Teachers now are actively involved in monitoring the health of their pupils.

**Biomedical Impact**

In 2001, during the component’s first year, the most significant finding was that more than 50 percent of the schools had children with a high percentage of anemia and bilharzia infection, to which were added other problems such as malaria and malnutrition. These were serious health problems that needed to be addressed. Another important finding was that treating all students in a school for worm infestations (hookworms, roundworms) reduced the overall infection rate in the community by 80 percent. The follow-up surveys conducted in years two and three showed marked declines in students’ worm loads and bilharzia infection.
Figure 1 shows a decline in the prevalence of hookworm and bilharzia after one treatment. Based on the data, one can conclude that mass deworming through schools is highly effective.

As Figure 2 demonstrates, it was also found that although deworming only needs to occur annually, children who received two rounds of treatment were infected less frequently than those who received only one. Based on this data, one can conclude that regular treatment delivers improved health outcomes.

With regard to other measurements, the results were influenced by the fact that 2002 was a year of major famine. As a result, the impact of the micronutrient supplements on the nutrition of the students has not yet been determined.

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47 Hookworm and S.Haem are two parasites, which are the most common in Eastern Province.
Cognitive Impact

When the Zambian Cognitive Assessment Instrument (Z-CAI) was administered in 2001 and 2002, it demonstrated that students in the intervention group performed better than those in the control group (See Figure 3). This result occurred even though the intervention group started out with much lower scores than the control group. Over the course of the intervention year, the group’s performance improved dramatically. Figure 3 is based on baseline and follow-up data collected in 2001 and 2002, including the Z-CAI scores from the control and intervention sample groups as compared with biomedical data collected from the same sample groups from both years.

The cognitive testing after the second and third year also showed remarkable results. After treatment for worms and bilharzia, scores improved markedly, showing a clear connection between students’ improved health and improved cognitive ability. The results are corroborated by teachers’ anecdotal evidence: students in intervention schools attend school more regularly, and when in school are more alert, participate more actively, and perform better on tests.

*Prepared by Successful Intelligence
I have been a nurse in the local health clinic since 1995. The CHANGES program SHN component has impacted not only the health of the pupils attending participating schools, it has also positively impacted the relationship between health clinic workers and teachers. Before the CHANGES program, I rarely interacted with teachers at the schools in my area of service unless I conducted a school visit. Now, teachers are sending sick pupils to the clinic more quickly and more often. As a result, the treatments are more effective because they are started before the illness is too advanced.

—Mr. Moses Tembo, Health Clinic Nurse
Chipata, Zambia
The end of 2003, over 400 teachers and 60 health workers were trained. In addition, over 40,000 pupils received deworming drugs and micronutrient supplements. To implement the SHN component, the CHANGES program developed innovative tools, such as the Health Worker and Teacher Training Curriculum, diagnostic tools (i.e., the height pole and the Bilharzia Survey), and easy-to-use cognitive testing instruments. Community mobilization activities developed include: sensitization campaigns for communities, government officials, teachers, and other stakeholders; media campaigns using radio programs, brochures, and national television; and numerous presentations at NGO meetings and international conferences. A Drug Procurement and Delivery System has been developed, the Education Management Information System has been adapted to support school health and nutrition activities, and the capacity of all implementing agencies has been enhanced. Appropriate policies were developed between the MOE and the MOH to authorize the SHN component and build a solid partnership at district and national levels to sustain these systems.

Operational research to monitor the health status of pupils was combined with cognitive assessments to guide MOE management decisions about the program. Baseline research indicated a high percentage of pupils with bilharzia and worm infection. Post intervention research showed marked declines in the percentage of pupils with these conditions. Scores on the cognitive tests increased significantly, verifying the positive impact of these interventions on learning capacity. Other evaluations and surveys also demonstrated that pupils in the participating schools had lower absenteeism rates due to illness from bilharzia, which probably contributed to improved cognitive test scores.

The component’s implementation in Eastern Province shows how a careful mix of health interventions at the primary school level can significantly improve pupils’ health status and learning ability at the same time. It also demonstrates that health interventions can be safely implemented by teachers. Parents, teachers, and community members now believe in the value of educating their children about good health and nutrition habits. Teachers and community leaders are actively engaged in thinking about how a child’s health status affects the quality of his or her educational experience. Pupils, teachers, and communities are also learning more about HIV/AIDS, including how it is transmitted, how it can be prevented, and how to care for those suffering from AIDS-related illness. The SHN component in its entirety has provided hope and inspiration to children, parents,
teachers, health workers, community leaders, and government officials that there are relatively simple solutions to previously intractable health challenges, and that with appropriate, sustainable support, children in Zambia can have a brighter future.

Guided by these SHN processes and their positive results, and responding to positive affirmation from teachers, health workers, and community members, CHANGES staff, the MOE, and the MOH have drafted the National School Health and Nutrition Policy. With this document demonstrating high political commitment for school health and nutrition, the successful SHN component has a solid foundation on which to expand to the national level, and Zambians now believe that “A Healthy Child in a Healthy School Environment,” can be a reality for every child in Zambia.
ABOUT THE BASIC EDUCATION AND POLICY SUPPORT (BEPS) ACTIVITY

The Basic Education and Policy Support (BEPS) Activity is a multi-year, worldwide, indefinite quantity-type contract from the United States Agency for International Development (USAID), Office of Education/Economic Growth, Agriculture, and Trade Bureau (EGAT). The BEPS Activity is designed to be responsive to USAID’s overall goal of “human capacity built through education and training” by supporting improved and expanded basic education, especially for girls, women, and other under-served populations. For more information on the BEPS Activity, visit the website at www.beps.net.

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If you would like more information about the CHANGES program or SHN component please contact the CHANGES program at caiiadm@zamnet.zm.

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