

## Addressing Childhood Cancer in Low-Resource Countries: Current Challenges, Strategies, and Recommendations

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Children and adolescents represent a small, but critically important, number of patients with cancer worldwide (14.1 million newly diagnosed adults versus 160,000 children annually) (Ferlay et al., 2012; Rodriguez-Galindo et al., 2015). The life years saved when a child is cured of cancer are about 71 compared to 15 years for an adult in most high-income countries (HICs) (St. Baldrick's Foundation, 2016). In HICs, about 80% of children survive cancer. Unfortunately, in low- and middle-income countries (LMICs), the survival rates are generally 50% or less (Erdmann et al., 2014; Israels, Challinor, Howard, & Arora, 2015). In these resource-limited settings, only 15%–37% of children and adolescents have access to cancer treatment (Ribeiro et al., 2008), and most are diagnosed with advanced-stage disease, making cure impossible (Awadelkarim, Mariani-Costantini, & Elwali, 2012; Sullivan et al., 2014). The World Health Organization, the United Nations, and other international groups have called for cancer treatment as a human right and have begun to direct attention to cancer as a growing noncommunicable disease that threatens public health across LMICs (NCD Alliance, 2016). This article outlines challenges and offers strategies and solutions related to childhood cancers in

LMICs. Examples of relevant global initiatives are summarized in Figure 1.

### Strengthen Community Health Worker Engagement and Increase Early Diagnosis

Early diagnosis is critical to ensure that children and adolescents with cancer have the chance to be cured; in fact, successful treatment of several childhood cancers in LMICs has demonstrated this to be true (Howard et al., 2004; Pan American Health Organization, 2014). Two examples include Burkitt's lymphoma and Wilms tumor, which can be cured when diagnosed early and treated with adapted treatment protocols that consider local comorbidities and resource realities of LMICs (Israels, Ribeiro, & Molyneux, 2010).

Community health workers (CHWs) in most LMICs represent the frontlines of the health delivery system, and their connections to the community can be leveraged to improve prompt diagnosis and referral. However, CHWs often receive short-term (a few days, weeks, or months) training that does not include childhood cancer signs and symptoms (Maternal and Child Health Integrated Program, 2013). A child with an enlarged belly in LMICs is more likely to have parasites than a Wilms