

for HIV infection and TB may be illustrative as progress is made in establishing the means to deliver heart-failure therapies.

Some of the lessons learned from the chronic infections discussed above are, of course, relevant to cardiovascular disease, especially those classified as NCDs but caused by infectious pathogens. Integration of prevention and care remains as important today as in 1960 when Paul Dudley White and his colleagues found little evidence of myocardial infarction in the region near the Albert Schweitzer Hospital in Lambaréné, Gabon, but reported that “the high prevalence of mitral stenosis is astonishing.... We believe strongly that it is a duty to help bring to these sufferers the benefits of better penicillin prophylaxis and of cardiac surgery when indicated. The same responsibility exists for those with correctable congenital cardiovascular defects.”

RHD affects more than 15 million people worldwide, with more than 470,000 new cases each year. Among the 2.4 million annual cases of pediatric RHD, an estimated 42% occur in sub-Saharan Africa. This disease, which may cause endocarditis or stroke, leads to more than 345,000 deaths per year—almost all occurring in developing countries. Researchers in Ethiopia have reported annual death rates as high as 12.5% in rural areas. In part because the prevention of RHD has not advanced since the disease’s disappearance in wealthy countries, no part of sub-Saharan Africa has eradicated RHD despite examples of success in Costa Rica, Cuba, and some Caribbean nations. A survey of acute heart failure among adults in sub-Saharan Africa showed that ~14.3% of these cases were due to RHD.

Strategies to eliminate rheumatic heart disease may depend on active case-finding, with confirmation by echocardiography, among high-risk groups as well as on efforts to expand access to surgical interventions among children with advanced valvular damage. Partnerships between established surgical programs and areas with limited or non-existent facilities may help expand the capacity to provide life-saving interventions to patients who otherwise would die early and painfully. A long-term goal is the establishment of regional centers of excellence equipped to provide consistent, accessible, high-quality services.

Clinicians from tertiary care centers in sub-Saharan Africa and elsewhere have continued to call for prevention and treatment of the cardiovascular conditions of the poor. The reconstruction of health services in response to pandemic infectious disease offers an opportunity to identify and treat patients with organ damage and to undertake the prevention of cardiovascular and other chronic conditions of poverty.

CANCER Cancers account for ~5% of the global burden of disease. Low- and middle-income countries accounted for more than two-thirds of

the 12.6 million cases and 7.6 million deaths due to cancer in 2008. By 2030, annual mortality from cancer will increase by 4 million—with developing countries experiencing a sharper increase than developed nations. “Western” lifestyle changes will be responsible for the increased incidence of cancers of the breast, colon, and prostate among populations in low- and middle-income countries, but historic realities, sociocultural and behavioral factors, genetics, and poverty itself also will have a profound impact on cancer-related mortality and morbidity rates. At least 2 million cancer cases per year—18% of the global cancer burden—are attributable to infectious causes, which are responsible for <10% of cancers in developed countries but account for up to 20% of all malignancies in low- and middle-income countries. Infectious causes of cancer such as human papillomavirus, hepatitis B virus, and *Helicobacter pylori* will continue to have a much larger impact in developing countries. Environmental and dietary factors, such as indoor air pollution and high-salt diets, also contribute to increased rates of certain cancers (e.g., lung and gastric cancers). Tobacco use (both smoking and chewing) is the most important source of increased mortality rates from lung and oral cancers. In contrast to decreasing tobacco use in many developed countries, the number of smokers is growing in developing countries, especially among women and young persons.

For many reasons, outcomes of malignancies are far worse in developing countries than in developed nations. As currently funded, overstretched health systems in poor countries are not capable of early detection; the majority of patients already have incurable malignancies at diagnosis. Treatment of cancers is available for only a very small number of mostly wealthy citizens in the majority of poor countries, and, even when treatment is available, the range and quality of services are often substandard. Yet this need not be the future. Only a decade ago, MDR-TB and HIV infection were considered untreatable in settings of great poverty. The feasibility of creating innovative programs that reduce technical and financial barriers to the provision of care for treatable malignancies among the world’s poorest populations is now clear (Fig. 2-4). Several middle-income countries, including Mexico, have expanded publicly funded cancer care to reach poorer populations. This commitment of resources has dramatically improved outcomes for cancers, from childhood leukemia to cervical cancer.

Prevention of Noncommunicable Diseases False debates, including those pitting prevention against care, continue in global health and reflect, in part, outmoded paradigms or a partial understanding of disease burden and etiology as well as the dramatic variations in risk within a single nation. Moreover, debates are sometimes politicized as a



FIGURE 2-4 An 11-year-old Rwandan patient with embryonal rhabdomyosarcoma before (left) and after (right) 48 weeks of chemotherapy plus surgery. Five years later, she is healthy with no evidence of disease.