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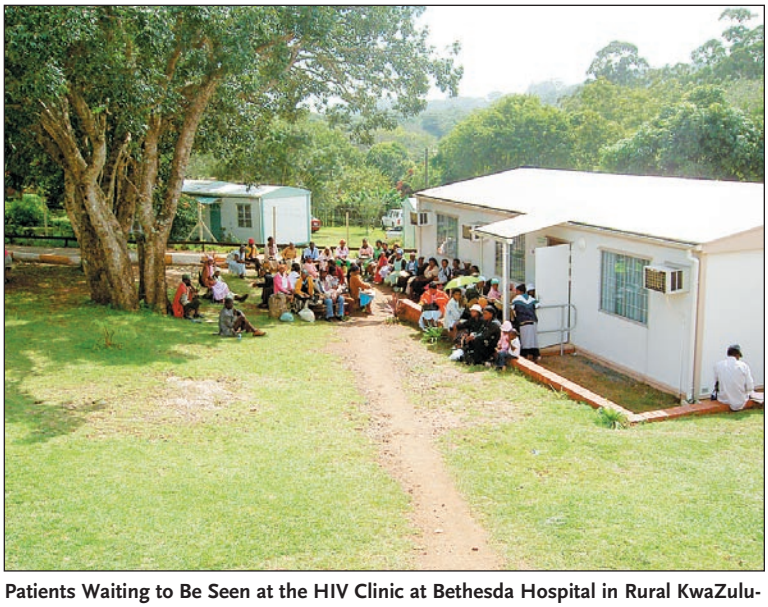
Providing the Providers — Remedying Africa's Shortage of Health Care Workers

Pooja Kumar, M.D.

Dr. Cyril Nkabinde, an intern at Prince Mshiyeni Memorial Hospital in Durban, South Africa, grew up dreaming of becoming a doctor — an ambition he inherited from his mother, whose own dream had been thwarted by apartheid. Nkabinde's goal of working as a family physician in rural KwaZulu-Natal has kept him on track, even as he's watched medical school classmates depart for business careers and superiors quit medicine because of a chronic lack of health care resources. Now, as he prepares to marry a fellow physician, Nkabinde realizes that his dream may not be achievable. "The hope is to go into a rural or public setting," he says, "but if we have kids, it definitely won't be a long-term thing. Obviously, we would have to provide for them — schooling and so on — and the best case is for us to be in the city."

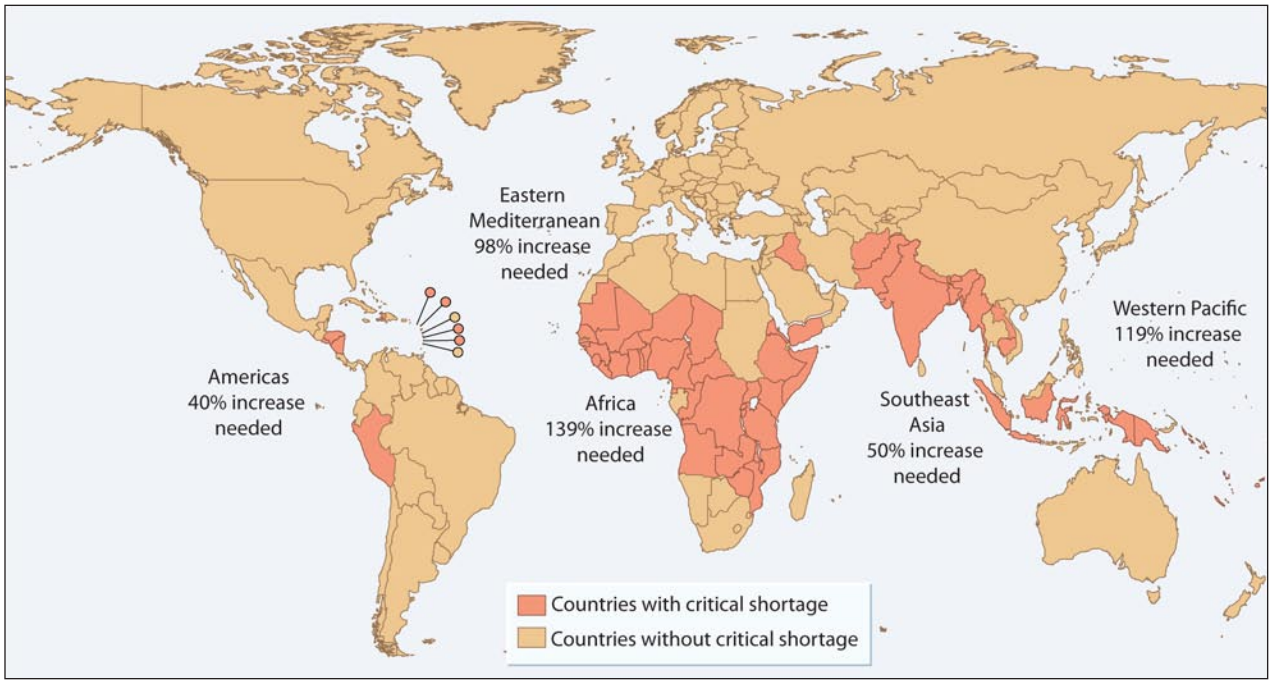
Dr. Gloria Mfeka, Nkabinde's fiancée, recently completed her mandated year of community service in rural Bethesda Hospital. She notes that though rural work can be rewarding, its difficulties can also be overwhelming for a young physician. "If we got the bare necessities in outlying hospitals, like an ECG machine . . . that would make a world of a difference. In the outlying hospitals, to get CD4-count results there's a 6-week waiting list. . . . It's just crazy."



Patients Waiting to Be Seen at the HIV Clinic at Bethesda Hospital in Rural KwaZulu-Natal Province.

The pressures on Mfeka and Nkabinde reflect a global problem that is finally receiving attention from donors and international agencies: a critical shortage of health care workers in many parts of the world. Although this shortage is not new, recent international efforts to vaccinate children and to fight human immunodeficiency virus (HIV) infection and AIDS, malaria, tuberculosis, and other diseases have brought it into sharper focus. Donors are increasingly realizing that without enough trained workers to deliver drugs, vaccines, and care, pumping money into projects will not have the desired effects. "Even if you have the medicine, the vaccines, and the bed nets, you need the health workers to deliver the service," says Manuel Dayrit, director of the Department of Human Resources for Health at the World Health Organization (WHO). "With the experience of the last few years, where you have had huge global funds move into an activity to provide resources . . . we've found that the bottleneck is really the delivery."

Africa has been hit the hardest by the crisis: according to



Countries with a Critical Shortage of Health Care Providers.

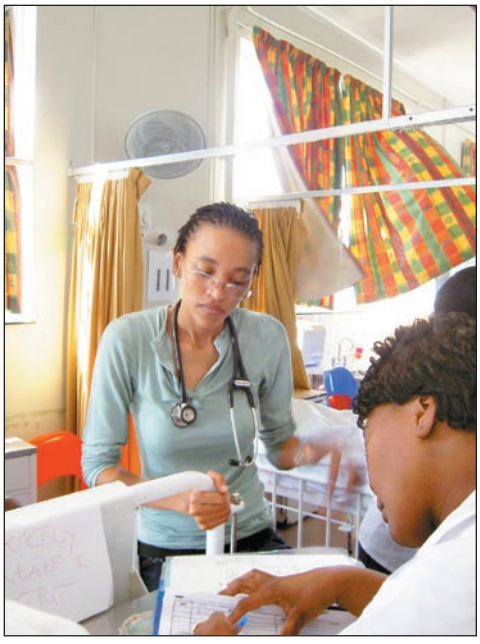
Increases in the number of providers needed are shown according to region. Critical shortage was defined as insufficient numbers of doctors, nurses, and midwives to achieve an 80% coverage rate for deliveries by skilled birth attendants or for measles immunization. Data are from the World Health Organization.

the WHO's *World Health Report 2006*,[1] the continent bears 24% of the global burden of disease but has only 3% of the health care workforce and 1% of the world's financial resources. The report identified 57 countries that cannot meet a widely accepted basic standard for health care coverage by physicians, nurses, and midwives; 36 of these "critical countries" are in sub-Saharan Africa (see map). The WHO estimates that it will take an additional 2.4 million physicians, nurses, and midwives to meet the needs, along with an additional 1.9 million pharmacists, health aides, technicians, and other auxiliary personnel. And the WHO projects that if all training were to be completed by 2015, it would cost an average of $136 million per country per year, necessitating an average increase in health care expenditures of $2.80 per person per year (range, $0.40 to $11.00). But these estimates focus only on numbers of doctors, nurses, and midwives; they don't take emigration into account; and they exclude the payment of salaries, which would cost at least $311 million per country per year.

The worker shortage derives from a combination of underproduction, internal maldistribution, and emigration of trained workers ("brain drain"). Fortunately, many African countries have begun attacking the problem by implementing innovative programs that may serve as models for other countries.

In an effort to stem brain drain, for example, Swaziland provides HIV–AIDS services for health care workers who, practicing in high-prevalence areas with minimal resources for safety measures, are at increased risk for occupational exposure. In view of the stigma attached to HIV–AIDS, health care workers who seek care are also concerned about confidentiality. To address this concern and show that health care workers are highly valued, local and international nursing organizations have collaborated with the Stephen Lewis Foundation and Becton Dickinson to open a health center in the capital city especially for health care workers; it provides counseling, testing, and treatment for HIV infection and tuberculosis, as well as other services, including stress management, professional development, and care for health workers' families.

Other efforts to retain workers focus on the health care system more broadly, building on the belief that providing workers with needed resources for care motivates them to stay and work in their home countries. Health workers in Ondo State, Nigeria, for ex-



Dr. Gloria Mfeka, Medical Officer, Leading Rounds on the Male Medical Ward at McCord Hospital, Durban, South Africa.

ample, reported severe shortages of medicines, supplies, and equipment. After the state government increased funding for these resources, the percentage of nurses in the state working in rural areas increased from 28% to 66% over a 3-year period — though other infrastructure projects, such as improvement of roads and therefore access, may have contributed to this increase. In rural Haiti, the international public health organization Partners in Health provides care and essential medicines for patients free of charge. Jim Yong Kim, cofounder of Partners in Health, says that health workers who have left Haiti tell him, "I love my country and I love my people; I just got sick of being a morgue attendant. All I was doing was presiding over more and more deaths of my countrypeople." Partners in Health has been successful in retaining health care workers in Haiti, notes Kim, in part because "we are giving Haitian physicians the tools to care for fellow Haitians in a decent and competent and effective manner."

One obvious key to retention is improved wages: salary support can help motivate health care workers to remain in their countries, even if it means working with fewer resources. Not all efforts at providing such support have been successful, however. In Ghana, an "additional duty hours allowance," implemented in 1998 to compensate doctors for overtime work, initially doubled salaries in several geographic areas. But once all physicians began to expect the additional allowance, the program rapidly became too costly to sustain and was restructured. It also caused resentment among nurses, who received lower allowances than doctors and were therefore increasingly inspired to emigrate.

Other types of inducements have been offered to health workers. In Uganda, a lunch allowance was included in workers' benefit packages; Ghana has tested the offering of car loans and affordable housing.

To address internal inequities, some countries have begun to recruit trainees from rural areas. In South Africa's Mosvold District, for example, some local students receive scholarships for health care training on the condition that they agree to return to the district to practice. According to Eric Friedman, senior global health policy advisor at Physicians for Human Rights, a study of the program found that trainees from rural areas were three to eight times as likely as those from urban areas to practice in rural regions after graduation.

Zambia provides incentives for physicians who agree to serve for 3 years in a rural area. These benefits include a hardship allowance, an education allowance for children, housing, and some funding for postgraduate training. In Kenya, unemployed nurses are being hired under contracts that include a requirement to stay in rural areas. The program, with international funding, has supported salaries for 2500 nurses to date.

In some countries where the underproduction of health care workers is a major problem, initiatives have targeted task-shifting and the assembly of new cadres of workers. In Lusikisiki, South Africa, a system of care has been developed whereby HIV–AIDS cases are triaged to various levels of health workers. Physicians attend only to complex cases, whereas nurses prescribe antiretroviral drugs and manage opportunistic infections. The new positions of "adherence counselor" and "pharmacy assistant" have been created to fill gaps in care, and the role of the community caregiver has been expanded to include duties such as counseling and testing. This coordination and expansion of the system has paved the way for universal coverage in Lusikisiki. Partners in Health's Kim cautions, however, against thinking that new types of workers can be unpaid: "The poorer the people are, the more important salary becomes."

Though additional health workers will be necessary for any solution, simply churning out more members of the workforce will not be enough. Workers will need to be adequately trained and equipped to make a difference to their patients. Increasing numbers of trainees may also overload the existing training programs in

critical countries. Zimbabwe, for example, "has doubled or tripled enrollment in medical schools," according to Friedman, "but they haven't increased the number of professors. This is probably going to lead to lower quality."

Throughout Africa, innovative programs are testing approaches to ameliorating the shortage. Once effective pilot programs have been identified, scaling up will be the next hurdle: programs that are found to work on a small scale or in a particular environment may not be easy to expand or replicate.

Despite the challenges, the world has taken its first steps toward needed changes. In addition to receiving attention from the Group of Eight industrialized countries and the United Nations World Summit, the shortage of health care workers recently inspired the American Public Health Association to pass a policy statement on "Ethical Restrictions on International Recruitment of Health Professionals to the United States." The policy addresses the role of the United States in exacerbating the international crisis, calling on employers to adopt voluntary codes for ethical recruitment and on the government to contract only with employers who have done so. In addition, it advocates the training of greater numbers of U.S. health care professionals and more equitable distribution of those we have.

Though the worker shortage has a long history, "it's only in the past 3 to 5 years that the political advocacy has been loud enough that this issue has been put on the political agenda," says the WHO's Dayrit. He acknowledges that "there are no magic bullets" against brain drain — "eventually, the local economy competes with the global economy, and it [is] futile to try to put up barriers. Over time, people find ways around them." Nevertheless, he says, "I have to be optimistic. What we're doing is trying to increase the dialogue and engagement among countries and identify concrete steps . . . so that you can create a cascade of events that lead to amelioration."

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FOCUS ON RESEARCH

Taking a Bite Out of Vector-Transmitted Infectious Diseases

Mark S. Klempner, M.D., Thomas R. Unnasch, Ph.D., and Linden T. Hu, M.D.

Related article, page 2571

It is hard to overstate the medical importance and burden of vector-transmitted infectious diseases. Whether the metric used is mortality (malaria, for example, kills 1 million to 2 million people annually, most of them children under 5 years of age), morbidity (more than 70 million years of healthy living are lost to malaria, Chagas' disease, leishmaniasis, dengue fever, lymphatic filariasis, and the encephalitis viruses), or something as difficult to quantify as anxiety in a population (activities in outdoor playgrounds and high schools, for example, were moved or suspended along the south shore of Massachusetts this past fall because of concern raised by three cases of eastern equine encephalitis), the burden of these infections is enormous.

The key elements involved in human vectorborne infectious diseases are the infectious microorganism (virus, bacterium, or parasite), the vector (mosquito, tick, or fly), and the reservoir from which the vector obtains the infection (see diagram). Control strategies for these diseases should be informed by an understanding of the complex dynamics of vector–host interactions and the ways in which the environments of both the vector and host intersect to produce human disease. Models, including the Ross–Macdonald model (see diagram),[1] have been developed to permit prediction of the effects of different approaches. For example, when the reservoir is accessible, the elements of the model involving the reservoir host (a and b) can potentially be manipulated in a way that has a substantial influence on organism transmission and therefore disease burden. In contrast, when the reservoir cannot be influenced, approaches to mediating the transmission of vectorborne diseases to humans are almost exclusively dependent on affecting the rela-