

# Impacts in Developing Countries

## Taming the Brain Drain:

### A Challenge for Public Health Systems in Southern Africa

TED SCHRECKER, MA, RONALD LABONTE, PHD

In southern Africa, rapid out-migration of health professionals is compounding the problems of health systems already faced with budget constraints and the impacts of HIV/AIDS. These negative effects are unlikely to be offset by remittances from abroad. The same dynamics that affect the international migration of health professionals operate within nations, for instance as they move from public to private systems. "Push," "pull," and "stick" factors contribute to the migration. Some Canadian provinces have emerged as key destinations. The authors outline a program of research on how Canada and the international community might address the negative impacts of the brain drain. Policy options have been identified, but implementation may be complicated by provisions of GATS, fundamental economic disparities, and domestic political priorities. *Key words:* brain drain; southern Africa; workforce; migration; human resources.

INT J OCCUP ENVIRON HEALTH 2004;10:409-415

In 2003, the catastrophic impacts of HIV/AIDS in southern Africa finally received serious attention from the international community. After long negotiation, the World Trade Organization (WTO) reached agreement on a mechanism that would, under certain circumstances, allow developing countries to circumvent patent protection in order to reduce the cost of essential drugs.<sup>1,2</sup> Although disagreement continues about the real-world effectiveness of the agreement,<sup>2</sup> it nevertheless represents an important step in the process begun at Doha in 2001. Also in 2003, the World Health Organization (WHO) announced its support for the "Three by Five" target: making antiretroviral (ARV) therapy available to three million people in the developing world by the end of 2005.<sup>3</sup>

Received from the Saskatchewan Population Health and Evaluation Research Unit, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Address correspondence and reprint requests to: Ronald Labonte, Institute of Population Health, University of Ottawa, 1 Stewart Street, Ottawa, ON K1N 6NS, Canada; e-mail: <rlabonte@uottawa.ca>.

Availability of infrastructure, crucially including adequate numbers of health service workers with appropriate training, will be indispensable to the success of these and other initiatives.<sup>4,5</sup> Without a foundation of capable healthcare providers, health systems cannot function effectively.<sup>6</sup> Ironically, little attention has been devoted to the effects of the "brain drain" of skilled health personnel from southern Africa on the ability of countries in that region to provide basic health services and infrastructure,<sup>7-13</sup> even before add-on demands of ambitious ARV-rollout campaigns are considered. This is true despite the fact that one recent assessment concludes: "The hemorrhage of health professionals from African countries is easily the single most serious human resource problem facing health ministries today,"<sup>12</sup> and the health sector strategy prepared under the New Partnership for Africa's Development (NEPAD)\* calls for "an international agreement on migration, especially with regard to ethical recruitment of health personnel from Africa, while putting in place mechanisms to improve the value placed on health workers, to address the adverse conditions of service and to improve motivation and retention."<sup>14</sup>

This article introduces the issues that will be examined in the course of a multinational collaboration involving researchers attached to academic institutions and civil society organizations in Canada, the United Kingdom, Australia, and a number of southern African countries. It also offers some observations, based on the political economy of contemporary globalization, about the constraints on policy measures to address inequities in the distribution of human resources for health.

## BACKGROUND

Comprehensive studies of human resource distribution in southern Africa are lacking, but abundant anecdotal

\*NEPAD is an ambitious socioeconomic development framework drafted under the auspices of the Organization for African Union (OAU) and endorsed by the G8 group of countries in their Africa Action Plan (<<http://www.g8.utoronto.ca/summit/2002kananaskis/afraction-e.pdf>>) at the 2002 G8 Summit in Kananaskis, AB, Canada.

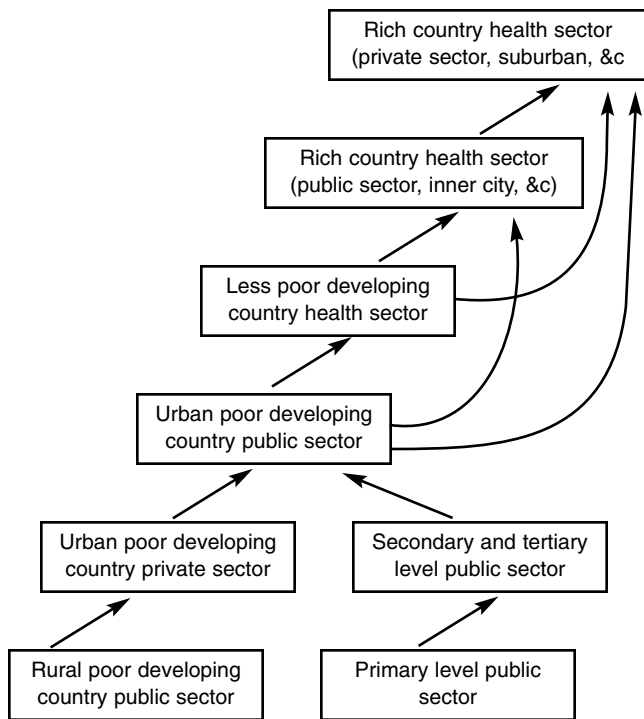


Figure 1—The global health “conveyor belt” (adapted from Padarath et al.<sup>11</sup>; reproduced with permission).

evidence indicates the scope of the issues. In contrast to the World Health Organization’s recommended standard of one doctor per 5,000 people, ten African countries have one doctor per 30,000 or more people. In 1998, vacancy rates for doctors in the public health service were estimated at 26% in Namibia, 36.3% in Malawi, and 42.6% in Ghana; for nurses, vacancy rates were just 2.9% in Namibia and Malawi, but 25.5% in Ghana<sup>15</sup>; more recent Ghanaian figures show that vacancy rates for both doctors and nurses have increased since then.<sup>16</sup> The Kenyan government in 2001 advertised 100 doctor vacancies; only eight candidates applied.<sup>9</sup>

Out-migration is far from the only factor involved, but it undoubtedly compounds the problems facing governments already struggling with budgetary constraints. Between 1986 and 1995, 61% of the graduates of one Ghanaian medical school had left the country.<sup>17</sup> “Requests for confirmation” from nurses in Ghana—an indicator of migration intentions, since these usually occur because credentials need to be verified by a destination country—more than doubled between 1997 and the first nine months of 2000,<sup>18</sup> although the numbers of requests declined in subsequent years.<sup>16</sup> Of over 600 medical graduates trained between 1977 and 2000 in Lusaka, Zambia, only 50 were still working in the Zambian public-sector health service in 2000.<sup>7</sup> Barely a quarter of Zimbabwe’s physicians trained in the 1990s still practice domestically; while South Africa loses more domestically trained physicians than it recruits from

abroad, mainly from Cuba.<sup>9</sup> Active foreign recruitment for allied health professionals (e.g., x-ray technicians and radiographers) is ongoing in most southern countries through local papers, professionals, and job fairs.<sup>9</sup>

This pattern of emigration not only compromises efforts to build health systems; it also has dramatic economic consequences. Direct financial losses for countries such as Zimbabwe and Nigeria from training doctors who rapidly emigrate exceed tens of millions of dollars per year,<sup>10,19</sup> losses that these economies, and their health systems, can ill afford to absorb. A single recruiting effort by the Canadian province of Alberta led to the emigration of doctors whose training cost South Africa an estimated \$12.6 million.<sup>20</sup> The Deputy Director-General of the International Organization for Migration pointed out in 2002 that: “[A]t a cost of \$60,000 to train a medical doctor in the South and \$12,000 for a paramedical, it may be said that the developing countries are ‘subsidising’ the OECD countries to the tune of some \$500 million per year, and what is more, largely financed by . . . development aid.”<sup>21</sup>

Remittances from émigrés are sometimes identified as an important benefit of migration to richer countries: a recent World Bank study pointed out that the value of such remittances (\$72.3 billion) in 2001 was considerably higher than the value of official development assistance,<sup>22</sup> and that remittances represent a relatively stable source of foreign exchange. Whatever the general merits of this argument, its relevance to the brain drain of health professionals from southern Africa (probably from most developing regions) is seriously limited. Of the top 20 recipient countries ranked by remittances as a percentage of GDP, only two (Lesotho and Uganda) were in southern Africa.<sup>22</sup> The long period of training means that remittances from health professionals may flow disproportionately to relatively well-off households, thus paradoxically increasing inequality in the country of origin. In addition, the costs of health professionals’ emigration are far greater than just the direct costs of their training; they also include the reduced ability of health systems in the country of origin to deliver services and reductions in training and research capacity,<sup>23</sup> both of which undermine long-term domestic economic and social development. We are unaware of any empirical studies that have taken these broader and longer-term outcomes into consideration, but it is highly unlikely that remittances will be sufficient to offset their costs.

## THE “GLOBAL CONVEYOR BELT”

A key document<sup>11</sup> prepared for a network of civil society organizations (Equinet) provides detailed information on shortages and unequal distribution of health personnel in southern Africa. It also situates these trends in the context of “a global conveyor belt of health personnel moving from the bottom to the top” of the global hier-

archy of wealth (Figure 1). As Spiegel et al. note elsewhere in this issue, economic inequalities have grown deeper over the past 20 years of global market integration and neo-liberal macroeconomic policies. The diagram focuses attention on two further important issues related to the migration of health professionals.

First, the brain drain involves not only migration to rich countries, but also migration from poorer to less poor countries within regions such as southern Africa: "Health workers from poorer African countries, such as Ghana, Kenya, Malawi, and Zimbabwe, have moved to more affluent countries on the continent, notably South Africa and Botswana. A recent study found that only one quarter of rural doctors in South Africa are natives of that country, the remainder mainly coming from other African states."<sup>9</sup> Intra-regional migration occurs in the industrialized world, as well. The departure of Canadian physicians in search of higher incomes available in the United States has repeatedly been identified as a problem,<sup>24-27</sup> although the policy attention it receives may be partly a reflection of strategic behavior by physicians seeking to improve their bargaining positions with respect to provincial insurance systems.

Second, the same dynamics that affect the migration of health professionals across national borders operate intra-nationally, as health professionals move from public to private health systems,<sup>28,29</sup> or from less to more desirable work situations or regions. Concentration of health professionals in urban areas is common in rich and poor countries alike: Nairobi has one doctor per 500 people, while Kenya's remote Turkana province has one doctor per 160,000 people.<sup>9</sup> Other dimensions of inequality, such as spatial segregation by class and race, are similarly important. In perhaps the most obvious example, South African health expenditure has reflected the legacy of apartheid in its heavy concentration in the private sector and in historically white areas.<sup>30,31</sup> Patterns of this kind are not unique to poor countries. They can be observed, for example, in the closure of public hospitals in the United States that serve primarily inner-city residents (most of whom are African-American or Hispanic) and sometimes provide their only access to care,<sup>32-39</sup> while well-funded private suburban facilities that serve primarily white populations continue to expand.

At one level, the reason for the "conveyor belt" is breathtaking in its simplicity. Richer countries and health systems pay better salaries. The average salary level for junior doctors in Lesotho, Namibia, and South Africa in 1999 was five times or more the level in Zambia or Ghana, and 20 times the level in Sierra Leone.<sup>18</sup> Few professionals reading this article would turn down the chance of a fivefold increase in their incomes. A nurse in the United States can expect to earn \$3,000-\$4,000 per month, as compared with \$300-800 per month for a doctor in the Philippines,<sup>40</sup> which, even adjusting for differences in purchasing power, represents a dramatic difference.<sup>†</sup> Low salaries in public health systems may also

be an important factor in internal "migration" to private health systems.<sup>28,47,47</sup> But the reasons for migration choices by health professionals (or anyone else) are somewhat more complicated than income considerations alone, and are often described in terms of "push," "pull," and "stick" factors.<sup>10,11,48,49</sup> Within each category, some factors are endogenous to health systems, while others (such as quality of life, crime, and educational opportunities for children) are exogenous, outside the control of health system planners and, indeed, sometimes outside the control of governments as a whole. For example, a 1999 study of Zimbabwe identified deterioration in health professionals' living and working conditions associated with structural adjustment conditionalities demanded by the IMF and World Bank as a significant reason for emigration,<sup>50</sup> a finding that would probably replicated in many southern African countries.

Of special concern to the authors, as Canadians, is the fact that Canada has emerged as a key destination for physicians emigrating from southern Africa,<sup>8,51,52</sup> in particular from South Africa.<sup>20,24</sup> In Saskatchewan, the Canadian province most heavily reliant on foreign medical graduates,<sup>53</sup> "almost 1 in 5 of the province's 1530 doctors" as of 2001 "earned their first medical degree in South Africa. These 260 physicians represent the equivalent of 5 years' output from the University of Saskatchewan's medical school."<sup>8</sup> Starting in 1997, the province of Alberta actively recruited in that country, and in 2001 the South African government asked Canadian governments to discontinue the practice.<sup>8</sup> While only 6.9% of Canada's registered nurses are foreign graduates,<sup>54</sup> pressures to recruit internationally can be expected to increase, as a response to major anticipated shortfalls in the supply of nurses as a result of aging and retirement.<sup>55</sup> Among many other activities, our research program will survey the government actors that are the key players in health human resources—provincial and territorial governments and, in many cases, sub-provincial regional health authorities—concerning policies and intentions with respect to developing country recruitment. One key research

---

<sup>†</sup>The Philippines is one of the few countries in the world with a deliberate policy of training "surplus" health professionals, particularly nurses, with the explicit intent of exporting them to rich countries in order to gain foreign currency remittances. India and Cuba are two others. India's export of physicians, however, is not matched by its ability to supply a sufficient number for its own citizens; it has a domestic deficit in the number of physicians, ranking 119 of 184 countries for which there are data.<sup>41</sup> The Philippines reportedly is now experiencing domestic shortages in nurses.<sup>42</sup> Cuba has more physicians per 100,000 population than the United States, and two thirds as many nurses. However, its health care system has deteriorated because of the loss of Soviet-era subsidies and a tightened U.S. embargo,<sup>43-45</sup> and a separate commercialized health sector now caters to "medical tourists" with hard currency.<sup>46</sup> In addition, Cuba's high degree of centralized planning, which keeps salaries in the public sector relatively low, makes it difficult to generalize from the Cuban example with respect to human resource planning issues.

question about the Canadian situation involves the relative importance of active recruiting and the simple awareness of opportunities that comes from routine interaction with professional colleagues, in a world where information is often just a mouse-click away.

Curiously, few data are available on the number and origin of physicians from developing countries practicing in the United Kingdom, although one Zimbabwean surgeon has been quoted as describing London as “Harare north.”<sup>56</sup> Increased reliance by the U.K. National Health System (NHS) on recruitment from outside the industrialized world is well documented in the nursing profession. Overseas nurses now account for 40% of all new registrations, with about half of these involving registrants from outside the European Union; “the main non-EU source countries in 2001–02 were the Philippines (7,235), South Africa (2,114) and Australia (1,342), but admissions from other countries such as India and Zimbabwe have also increased significantly over the past three years.”<sup>57</sup> This trend has occurred despite a commitment in 2000 that the NHS would not recruit actively from developing countries with nursing shortages,<sup>58</sup> and overseas recruitment continues to be a major element of the NHS’ nursing human resource strategy.<sup>57</sup>

## POLICY ANALYSIS AND OPTIONS

For the industrialized countries, recruiting foreign professionals of any kind is both faster and less expensive than investing in improved domestic training capacity. This is especially true in the health sector, where training a nurse normally requires a minimum of three years and that of a physician more than twice as long. Because of their high earning potential the trainers must, themselves, be well compensated. Foreign recruitment is especially attractive when domestic shortages limit the possibility of political resistance to job losses to “foreigners.” A leading expert on migration has described Canada’s skills policy as “replacement recruiting, either through active state or private sector recruitment campaigns or careful selection in the refugee camps of the world.”<sup>20</sup> This formulation suggests that active recruitment may not be necessary; pull factors such as higher incomes, professional opportunities, lower crime rates, or better schools may be enough to generate powerful incentives for relocation. On the other hand, our research on the Canadian situation will need to examine the policy dynamics that see a physician shortage coexisting with “brain waste” as physicians whose specializations are not in high demand or whose credentials are not recognized face formidable barriers to licensing,<sup>59</sup> and see scarce residencies allocated to foreign students rather than to immigrant physicians already in the country.<sup>60</sup>

Against this background, numerous generic policy options have been proposed to address the brain drain and its consequences. These include:

- increasing the number of training spaces available for health professionals in the industrialized countries;
- additional development assistance specifically targeted at improving the ability of developing countries to train and retain health professionals, for example by improving incomes and working conditions;
- codes of practice for the recruitment of health professionals in developing countries<sup>61,62</sup>;
- policies that acknowledge “an ethical obligation to facilitate the return of health professionals to developing countries”<sup>63</sup>; and
- direct financial compensation for the losses to countries of origin associated with the emigration of health professionals, in the form of a “brain drain tax” or increased generic bilateral aid flows.<sup>11</sup>

With the exception of codes of practice, so far distinguished by their lack of impact, these generally remain at the level of proposals. Although most are administratively feasible, their political feasibility is arguably limited because their cost in tax dollars would probably be considerably higher than the extra price of Fair Trade coffee, at a time when politically effective pluralities of electorates in the Anglo-American countries, in particular, appear 1) committed, with varying degrees of intensity, to tax revolt while simultaneously 2) genuinely concerned about issues of quality and access in their domestic health systems. Against this background, it is hard to envision the conditions under which necessary political support could be mobilized for substantial investments in training more doctors and nurses—still less for policies such as expanded development assistance for health, which offers even fewer apparent domestic benefits.

The policy context is likely to be further complicated by negotiations now under way on the General Agreement on Trade in Services (GATS).<sup>10,23,64</sup> Commitments to liberalized trade in services under GATS can involve one or more of four Modes (Table 1). Mode 2 under GATS, which includes provision of training in a foreign country, contributes significantly to migration, because graduates often do not return to their countries of origin.<sup>10</sup> Mode 4 deals with (presumably) short-term inflows of foreign service (including health) providers. Several developing countries are seeking liberalization commitments from developed countries in Mode 4,<sup>65</sup> but benefits to the exporting country (remittances, acquired technical competencies) may not offset losses, and “temporary” providers admitted to importing countries under Mode 4 may eventually become permanent residents—that is, émigrés. Perhaps the greatest concern attaches to Mode 2, which extends coverage (private or public) to persons treated abroad, and Mode 3, which involves the establishment of commercial presence. Mode 2 “health tourism” and Mode 3 private investment could both initiate or magnify the internal brain drain in health services, within countries or regions, by drawing

**Table 1 The GATS Modes of Service Provision**

	Health-related Examples
Mode 1. Cross-border provision of services	Telemedicine Outsourcing of medical insurance data entry to low-income countries
Mode 2. Cross-border movement of consumers	'Medical tourism'
Mode 3. 'Commercial presence' of service providers	Provision of health services training to foreign students Foreign establishment or purchase of health insurance firms
Mode 4. Cross-border movement of providers	Migration of health professionals

health care providers to private systems for tourists or for a wealthy minority of the domestic population—thus further limiting access to the public health services on which a majority of the population must rely.<sup>23</sup>

## CONCLUSION

In economic terms, the health sector is distinctive because most health services must be provided in close physical proximity to the person receiving the service. Exceptions, such as telemedicine and the management of medical records, do not at the moment represent substantial elements of the sector. On the other hand, in most goods-producing industries and many other kinds of services, capital now routinely and frictionlessly moves across national borders in order to take advantage of lower labor costs.<sup>66,67</sup> Both patterns reflect a key aspect of contemporary globalization: the emergence of a genuinely global labor market<sup>68</sup> in which the gap between winners and losers is growing. One element of the global labor market is the highly selective expansion of opportunities for cross-border movement of people, as distinct from capital. The "skilled" can move across borders with relative ease, their mobility often facilitated by national immigration policies and measures such as the intra-company labor mobility provisions of the North American Free Trade Agreement. The "unskilled," on the other hand, are confronted by such measures as the militarization of the U.S.–Mexican border, or else (again as in the case of Mexican immigrants to the United States) have to give up even basic legal rights as the tacit price of admission.

Both ends of the continuum are manifest in the case of the HIV/AIDS pandemic in southern Africa. Health professionals leave. Impoverished Africans, whose poverty itself partly results from globalization processes, are confined to urban slums, refugee camps, or an often-fatal attempt to cross the Mediterranean for a future that may be only slightly less precarious. In the absence of coordinated policy attention to the migration of health professionals and its consequences, efforts to deal with HIV/AIDS and other health crises in southern Africa may repeat an emerging pattern in which the benefits of initiatives in one area of development policy (e.g., development assistance) are effec-

tively cancelled out by policy in another area (e.g., debt relief or market access).<sup>69,70</sup>

The analysis presented here suggests that policy initiatives are constrained both by the fundamental economic disparities that create powerful pull factors and by domestic political priorities related to taxation, budgetary expenditures, and health system performance. Caution is therefore in order with respect to the prospect that national or sub-national governments (such as the provincial governments that dominate health human resource planning in Canada) will unilaterally carve out policies in their own health sectors as an exception to the general tendency of globalization to magnify inequalities. Reaching a multilateral agreement on recruiting health professionals and investing in domestic training capacity, of the kind called for under NEPAD, is likely to present an even more formidable challenge.

This article reflects an ongoing collaboration with several colleagues in the Canadian academic world (Jonathan Crush, Arminée Kazanjian, Tom McIntosh, and David Zakus) and in civil society organizations: Rene Loewenson and Antoinette Ntuli (Equinet), David McCoy (Medact and Equinet), and Mike Rowson and Matt Gordon (Medact).

## References

1. Implementation of paragraph 6 of the Doha Declaration on the TRIPS Agreement and public health, Decision of the General Council of 30 August 2003. Geneva, Switzerland: World Trade Organization, September 1, 2003; <[http://www.wto.org/english/tratop\\_e/trips\\_e/implem\\_para6\\_e.htm](http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm)>.
2. Pollock A, Price D. New deal from the World Trade Organisation. *BMJ*. 2003;327:571-2.
3. World Health Organization. The 3 by 5 Initiative, Fact Sheet 274. Geneva, Switzerland: WHO, December 2003; <<http://www.who.int/mediacentre/factsheets/2003/fs274/en/>>.
4. Mukherjee J, Farmer P, Niyizonkiza D, et al. Tackling HIV in resource poor countries. *BMJ*. 2003;327:1104-6.
5. Dugger C. Botswana's brain drain cripples war on AIDS. *New York Times*, November 13, 2003.
6. World Health Organization. Human resources for health: developing policy options for change (draft discussion paper). Geneva, Switzerland: WHO, 2002; <[http://www.who.int/entity/hrh/documents/en/Developing\\_policy\\_options.pdf](http://www.who.int/entity/hrh/documents/en/Developing_policy_options.pdf)>.
7. Bundred P, Levitt C. Medical migration: who are the real losers? *Lancet*. 2000;356:245-6.
8. Ehman A, Sullivan P. South Africa appeals to Canada to stop recruiting its MDs. *Can Med Assoc J*. 2001;164:387-8.
9. Huddart J, Picazo O. The Health Sector Human Resource Crisis in Africa. Washington, DC: Bureau for Africa, Office of Sustainable Development, United States Agency for International Development, 2003; <[www.dec.org/pdf\\_docs/PNACS527.pdf](http://www.dec.org/pdf_docs/PNACS527.pdf)>.

10. Meeus W. "Pull" Factors in International Migration of Health Professionals: An analysis of developed countries' policies influencing migration of health professionals [dissertation]. Cape Town, South Africa: University of the Western Cape, 2003.
11. Padarath A, Chamberlain C, McCoy D, Ntuli A, Rowson M, Loewenson R. Health Personnel in Southern Africa: Confronting maldistribution and brain drain. Harare, South Africa: Equinet, 2003; <[http://www.equinet africa.org/Resources/downloads/HRH\\_Review.pdf](http://www.equinet africa.org/Resources/downloads/HRH_Review.pdf)>.
12. Sanders D, Dovlo D, Meeus W, Lehmann U. Public health in Africa. In: Beaglehole R (ed). *Global Public Health: A New Era*. Oxford, England: Oxford University Press, 2003: 135-55.
13. Wharry S. Pressure mounting to curb MD poaching by rich nations. *Can Med Assoc J*. 2002;166:1707.
14. New Partnership for Africa's Development (NEPAD): Health Strategy. Pretoria, South Africa: NEPAD Secretariat, 2002.
15. World Health Organization. Placing Health Workers at the Heart of Health Services Delivery in Africa. Brazzaville, South Africa: WHO Regional Office for Africa, 2002; <[http://www.afro.who.int/hrd/hrd\\_pamphlet.pdf](http://www.afro.who.int/hrd/hrd_pamphlet.pdf)>.
16. Dovlo D. The Brain Drain and Retention of Health Professionals in Africa, prepared for Regional Training Conference on Improving Tertiary Education in Sub-Saharan Africa: Things That Work, Accra, September 2003. Washington, DC: World Bank; <[http://www.worldbank.org/af/teia/conf\\_0903/dela\\_dovlo.pdf](http://www.worldbank.org/af/teia/conf_0903/dela_dovlo.pdf)>.
17. Dovlo D, Nyomator F. Migration by graduates of the University of Ghana Medical School: a preliminary rapid appraisal. *Health Resources for Human Development Journal*. 1999;3(1):40-51.
18. Martineau T, Decker K, Bundred P. Briefing note on international migration of health professionals: levelling the playing field for developing country health systems. Liverpool, England: Liverpool School of Tropical Medicine, 2002.
19. Meeus W, Sanders D. Pull Factors in International Migration of Health Professionals, presented to Public Health 2003 Conference, Cape Town, South Africa: Health Systems Trust, 2003; <[www.hst.org.za/conf03/presentations/L0080.ppt](http://www.hst.org.za/conf03/presentations/L0080.ppt)>.
20. Crush J. The global raiders: nationalism, globalization and the South African Brain Drain. *J Int Affairs*. 2002;56(1):147-72.
21. Ndiaye N. Address to 52nd Session of the WHO Committee for Africa, Harare, 8-12 October. Geneva, Switzerland: International Organization for Migration, 2003; <[http://www.iom.int/en/archive/DDG\\_WHO\\_081002\\_eng.shtml](http://www.iom.int/en/archive/DDG_WHO_081002_eng.shtml)>.
22. Ratha D. Workers' remittances: an important and stable source of external development finance. In: *Global Development Finance 2003: Striving for Stability in Development Finance*. Washington, DC: World Bank, 2003: 157-75.
23. Woodward D. Trading Health for Profit: the Implications of the GATS and Trade in Health Services for Health in Developing Countries. London, England: Partnership for Global Health, 2003; <[http://www.ukglobalhealth.org/content/Text/GATS\\_Woodward.pdf](http://www.ukglobalhealth.org/content/Text/GATS_Woodward.pdf)>.
24. Canadian Institute for Health Information. *Canada's Health Care Providers*. Ottawa, ON, Canada: CIHI, 2001.
25. Korcok M. The lost generation: flood doors open as large numbers of Canadian FPs head south. *Can Med Assoc J*. 1996;154:893-6.
26. McKendry R, Wells G, Dale P, et al. Factors influencing the emigration of physicians from Canada to the United States. *Can Med Assoc J*. 1996;154:171-81.
27. Ryten E, Thurber D, Buske L. The class of 1989 and physician supply in Canada. *Can Med Assoc J*. 1998;158:723-8.
28. Lönnroth K, Thuong LM, Linh PD, Diwan V. Risks and benefits of private health care: exploring physicians' views on private health care in Ho Chi Minh City, Vietnam. *Health Policy*. 1998; 45:81-97.
29. Barraclough S. Constraints on the retreat from a welfare-orientated approach to public health care in Malaysia. *Health Policy*. 1999;47:53-67.
30. Wade H, Gilson L, Thiede M, Okorafor O, McIntyre D. Health care inequity in South Africa and the public/private mix. Geneva, Switzerland: University of Geneva (UNIGE), 2003; <[www.unige.ch/iued/new/recherche/ruig-dsd/docs/SAN-SA-01.pdf](http://www.unige.ch/iued/new/recherche/ruig-dsd/docs/SAN-SA-01.pdf)>.
31. Gilson L, McIntyre D. South Africa: addressing the legacy of apartheid. In: Whitehead M, Evans T, Diderichsen F, Bhuiya A (eds). *Challenging Inequities in Health: From Ethics to Action*. New York: Oxford University Press, 2002: 191-209.
32. Rice MF. Inner-city hospital closures/relocations: race, income status, and legal issues. *Soc Sci Med*. 1987;24:889-96.
33. Webster SA. \$350m cuts divide health care: urban, suburban disparity widens. *Detroit News and Free Press*, June 25, 2000.
34. Lienert A. Urban patients suffer as disparity grows. *Detroit News and Free Press*, June 25, 2000.
35. Webster SA. Care suffers, more die in wake of health cuts. *Detroit News and Free Press*, June 25, 2000.
36. Cornwell EE, Berne TV, Belzberg H, et al. Health care crisis from a trauma center perspective: the LA story. *JAMA*. 1996; 276(12):940-4.
37. Stern RS, Weissman JS, Epstein AM. The emergency department as a pathway to admission for poor and high-cost patients. *JAMA*. 1991;266:2238-43.
38. Feder J, Hadley J. Cutbacks, recession, and hospitals' care for the urban poor. In: Peterson GE, Sawhill IV (eds). *Reagan and the Cities*. Washington, DC: Urban Institute Press, 1986: 37-61.
39. Feder J, Hadley J, Mullner R. Poor people and poor hospitals: implications for public policy. *J Health Politics, Policy Law*. 1984;9:237-50.
40. Choo V. Philippines losing its nurses, and now maybe its doctors. *Lancet*. 2003;361:1356.
41. World Health Organization, WHO Estimates of Health Personnel: Physicians, Nurses, Midwives, Dentists, and Pharmacists (around 1998). Geneva, Switzerland: WHO, 2002; <[http://www3.who.int/whosis/health\\_personnel/health\\_personnel.cfm](http://www3.who.int/whosis/health_personnel/health_personnel.cfm)>.
42. Parish C. New world disorder: as more and more nurses are lured from developing countries to richer nations, crisis looms for health systems back home. *Nurs Standard*. July 23, 2003.
43. Williams RC. In the shadow of plenty, Cuba copes with a crippled health care system. *Can Med Assoc J*. 1997;157(3):291-3.
44. Kirkpatrick AF. The US attack on Cuba's health. *Can Med Assoc J*. 1997;157:281-4.
45. Barry M. Effect of the U.S. embargo and economic decline on health in Cuba. *Ann Intern Med*. 2000;132:151-4.
46. Charatan F. Foreigners flock to Cuba for medical care. *West J Med*. 2001;175(August):81.
47. Mudyarabikwa O. An examination of Public Sector subsidies to the Private Health Sector: A Zimbabwe Case Study, Equinet Policy Series no. 8. Harare, South Africa: Equinet with University of Zimbabwe Medical School, 2000; <<http://www.equinet africa.org/Resources/downloads/eqser8.pdf>>.
48. Buchan J, Partkin C, Sochalski J. *International Nurse Mobility: Trends and Policy Implications*, WHO/EIP/OSD/2003.3. Geneva, Switzerland: World Health Organization, 2003.
49. Kingma M. Nursing migration: global treasure hunt or disaster-in-the-making? *Nurs Inquiry*. 2001;8:205-12.
50. Gaidzanwa R. Voting with their Feet: Migrant Zimbabwean Nurses and Doctors in the Era of Structural Adjustment, Report 111. Uppsala, Sweden: Nordiska Afrikainstitutet, 1999.
51. Sullivan P. Canada a prime destination as MDs flee South Africa. *Can Med Assoc J*. 1999;160:1615-6.
52. McClelland C. South African brain drain costing \$5 billion—and counting. *Can Med Assoc J*. 2002;167:793.
53. Barer M, Webber W. Immigration and Emigration of Physicians to/from Canada. HRU 99:6. Vancouver, BC, Canada: Centre for Health Services and Policy Research, University of British Columbia, 1999.
54. Canadian Institute of Health Information. *Number and Percentage Distribution of RN Workforces by Place of Graduation and Province/Territory of Registration*, Canada, 2002. Ottawa, ON, Canada: CIHF, 2003; <[http://secure.cihi.ca/cihiweb/dispPage.jsp?cw\\_page=media\\_17sep2003\\_2\\_c#report](http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_17sep2003_2_c#report)>.
55. O'Brien Pallas L, Alksnis C, Wang S. Bringing the Future into Focus: Projecting RN Retirement in Canada. Ottawa, ON, Canada: Canadian Institute for Health Information, 2003.
56. deCastella T. Health workers struggle to provide care in Zimbabwe. *Lancet*. 2003;362:46-7.
57. Buchan J. Nurse recruitment: Going places. *Health Serv J*. 1 August 2002: 22-4.

58. Buchan J. Recruitment: happy landings? *Health Serv J.* 24 August 2000: 24-27.
59. Jimenez M. Why a veteran MD works as an orderly: rules trap eye doctor trained at top clinic. *The Globe and Mail*, December 2, 2003.
60. Jimenez M. For sale: prized positions at Canada's medical schools. *The Globe and Mail*, November 1, 2003.
61. Commonwealth Code of Practice for the International Recruitment of Health Workers, adopted at the Pre-WHA Meeting of Commonwealth Health Ministers 2003, Geneva. London, England: Commonwealth Secretariat, 2003.
62. [UK] Department of Health. Code of Practice for NHS employers involved in the international recruitment of healthcare professionals. London, England: HMSO, 2001.
63. Patel V. Recruiting doctors from poor countries: the great brain robbery? *BMJ.* 2003;327:926-8.
64. Hilary J. The Wrong Model: GATS, trade liberalisation and children's right to health. London, England: Save the Children, 2001; <[http://www.savethechildren.org.uk/temp/scuk/cache/cmsattach/986\\_wrongmodel.pdf](http://www.savethechildren.org.uk/temp/scuk/cache/cmsattach/986_wrongmodel.pdf)>.
65. Adlung R, Carzaniga A. Health services under the General Agreement on Trade in Services. In: Vieira C, Drager N (eds). *Trade in Health Services: Global, Regional and Country Perspectives.* Washington, DC: Pan-American Health Organization, 2002: 13-33.
66. Dicken P. *Global Shift: Reshaping the Global Economic Map in the 21st Century.* 4th ed. New York: Guilford Press, 2003.
67. Stalker P. *Workers without Frontiers: The Impact of Globalization on International Migration.* Boulder, CO: Lynne Rienner, 2000.
68. World Bank. *World Development Report 1995: Workers in an Integrating World.* New York: Oxford University Press, 1995.
69. Pettifor A, Greenhill R. Debt Relief and the Millennium Development Goals, Human Development Report Office Occasional Papers series. New York: United Nations Development Program, 2002.
70. Labonte R, Schrecker T, Sanders D, Meeus W. *Fatal Indifference: The G8, Africa and Global Health.* Cape Town, South Africa: University of Cape Town Press, 2004.



## III Conference on Occupational and Environmental Health in the Americas 2005

**“Integrating the Americas Facing Globalization”**

February 6–9, 2005  
Alajuela, Costa Rica

Organized by the Central American Institute for Studies on Toxic Substances, Universidad Nacional, Heredia, Costa Rica (IRET-UNA), in collaboration with the Department of Work Environment, University of Massachusetts Lowell, the Program on Work and Health in Central America (SALTRA), the Master Program in Occupational Health (UNA-ITCR), and the School of Engineering on Occupational Safety and Environmental Hygiene, Technological Institute of Costa Rica (EILSHA-ITCR).

For information contact: Secretariat of the Conference, Central American Institute for Studies on Toxic Substances—Universidad Nacional IRET-UNA, Campus Omar Dengo, P.O. Box 86-3000, Heredia, Costa Rica; phone: (506) 277-3884; fax: (506) 277-3583; e-mail: [Americas@una.ac.cr](mailto:Americas@una.ac.cr).