Correspondence

HIV, Stigma, and Rates of Infection: More Complicated than Reidpath and Chan Suggest

Sam Singer

In their essay in October's *PLoS Medicine*, Daniel Reidpath and Kit Yee Chan challenge the widely cited link between HIV-related stigma and the spread of the epidemic [1]. This is an important question, given the heavy emphasis on stigma in policies of the World Health Organization, the Joint United Programme on HIV/AIDS, and other public health institutions, but in making their argument Reidpath and Chan misrepresent the connections that other authors have made between stigma and viral transmission, ignore evidence that does suggest an association, and propose a model of their own for which they offer no evidence.

HIV infection establishes itself first in certain high-risk groups—men who have sex with men, intravenous drug users, sex workers, mobile populations—and only later moves into the general population. In the early stages of the epidemic, stigma facilitates transmission within high-risk groups, because these already marginalized groups receive little attention from policy makers and the health-care community and are further discriminated against when they are identified with HIV and AIDS [2]. Stigma also prevents or makes it more difficult for members of high-risk groups to access preventive services, including HIV antibody testing [3]. Reidpath and Chan distort this dynamic by describing a model in which stigma leads to fear which leads to unsafe behavior. We know of no one who suggests that stigma causes sex between men or intravenous drug use. Instead, there is evidence that HIV-related stigma makes it difficult for people to take actions to reduce their risks; for example, by accessing HIV education [4], exchanging needles [5], and negotiating condom use [6]. Stigma may even lead women who know they are HIV positive to breast-feed their infants rather than arouse suspicion of their serostatus through formula feeding [7]. This undoubtedly increases the risk of vertical viral transmission.

Reidpath and Chan go on to propose that stigma may actually "slow the spread of infection from those [high-risk] groups to the general population." Although there is a plausible logic to this suggestion, there is no evidence for it. Even if stigma does reduce the opportunities that marginalized groups have to transmit HIV to the broader population, this would have little effect on the dynamics of a generalized epidemic.

While they recognize that stigma presents a barrier to the treatment and care of people living with HIV, Reidpath and Chan fail to recognize the association this may have with increased transmission. HIV-related stigma discourages people from disclosing their status, entering care, and adhering to antiretroviral regimens, all of which represent missed opportunities for prevention.

Around the world HIV capitalizes on and reinforces social stigma and discrimination, especially the low status of women. Defeating the epidemic requires an honest examination of all these phenomena and interventions that target both the virus itself and its widespread social impacts. ■

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References

1. Reidpath DD, Chan KY (2006) HIV, stigma, and rates of infection: A rumour without evidence. PLoS Med 3: e435. doi:10.1371/journal.pmed.0030435
2. Herek GM, Capitanio JP (1999) AIDS stigma and sexual prejudice. Am Behav Sci 42: 1126–1143.
3. Nyblade L, Pande R, Mathur S, MacQuarrie K, Kidd R, et al. (2003) Disentangling HIV and AIDS stigma in Ethiopia, Tanzania and Zambia. Washington (D. C.): International Center for Research on Women. 53 p. Available: http://www.icrw.org/docs/stigmareport093003.pdf. Accessed 27 December 2006.
4. (2002) AIDS stigma forms an insidious barrier to prevention/care. HIV experts describe problem in India. AIDS Alert 17: 111–113.
5. Ford K, Wirawan DN, Sumantera GM, Sawitri AA, Stahre M (2004) Voluntary HIV testing, disclosure, and stigma among injection drug users in Bali, Indonesia. AIDS Educ Prev 16: 487–498.
6. Roth J, Krishnan SP, Bunch E (2001) Barriers to condom use: Results from a study in Mumbai (Bombay), India. AIDS Educ Prev 13: 65–77.
7. Doherty T, Chopra M, Nkonki L, Jackson D, Greiner T (2006) Effect of the HIV epidemic on infant feeding in South Africa: "When they see me coming with the tins they laugh at me." Bull World Health Organ 84: 90–96.

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HIV, Stigma, and Rates of Infection: A Human Rights and Public Health Imperative

Susan Timberlake, Jason Sigurdson

In their essay "HIV, Stigma, and Rates of Infection: A Rumour without Evidence", Daniel Reidpath and Kit Yee Chan rightly underscore the insufficient body of research on the relationship between stigma and discrimination and HIV transmission [1]. Increased scientific attention and effective programming against stigma and discrimination are both sorely needed. But the Joint United Nations Programme on HIV/AIDS (UNAIDS) does not accept a number of points made in the essay.

Discrimination based on health status, including HIV, is a human rights violation, and stigma is the social form of this violation. HIV stigma and discrimination are wrong in and of themselves, and should be stopped for that reason alone. Reidpath and Chan suggest, as "an alternative hypothesis to the UNAIDS position", that stigma against certain groups, including people living with HIV, may have a public health value because it "could reduce opportunities for contact between high- and low-risk groups". UNAIDS cannot endorse a hypothesis that bases a public health goal on a human rights violation; nor do we believe it is either right, or necessary, to pit the public health against human rights.

The right to health—and human value, dignity, and autonomy, the bases of human rights—requires that people

have the information, services, and support they need to protect their health and avoid causing harm to others. So does the public health. In this context, people living with HIV should not and need not be social pariahs to achieve public health goals; neither should HIV-negative people be put in a position of "protecting themselves" through stigma against others.

UNAIDS stands by the view that stigma and discrimination increase vulnerability to both infection and the impact of HIV. People, including those living with HIV, repeatedly make clear that their fear, or real experience, of stigma and discrimination affects whether, when, and how they take up HIV prevention and treatment goods and services. Thus, efforts to get people to protect themselves from getting infected, or if infected, to find out about their status, prevent the onward transmission of HIV, and access treatment, are hindered by stigma and discrimination.

UNAIDS encourages both governments and researchers to focus on what Reidpath and Chan consider "the more-difficult issues relating to the manner in which HIV spreads in populations, the social vulnerabilities it exploits, and the ways in which individuals…interact with each other". But the complexities the authors cite undermine their argument that stigma between groups may result in a reduction of HIV transmission. In dealing with HIV, it has become very clear that people's behaviour transcends population groups over time and space. The belief that risk rests in "the other" creates a false perception of safety and may in fact increase vulnerability.

Stigma and discrimination by governments against particular groups, such as women, the poor, sex workers, ethnic minorities, people who use drugs, migrants, men who have sex with men, and prisoners, often means that those most affected by HIV receive the least attention in the response. This makes the national HIV response less effective and compounds human rights violations against these people.

Contrary to the authors' assertion that the link between stigma and the epidemic has "become the basis for considerable policy and program development", very little in fact is being done about stigma and discrimination in national programmatic responses. This is cause for great concern, given that stigma and discrimination have been identified as major barriers to achieving universal access to prevention, treatment, care, and support in all the consultations on the subject. Will governments finally implement programmatic responses to overcome stigma and discrimination? We believe it is essential that they do so.

As the number of infections increase and millions still need treatment, UNAIDS welcomes the growing body of research on HIV stigma and discrimination. Among other things, we are supporting people living with HIV to develop an index on stigma and discrimination. We hope that data from this tool will both provoke and assist governments to overcome stigma and discrimination in their national responses to HIV. People and governments confronting HIV should do so not out of fear or stigma, but out of the knowledge that we all share the same rights and protecting these rights protects us all from HIV and AIDS. ■

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References

1. Reidpath DD, Chan KY (2006) HIV, stigma, and rates of infection: A rumour without evidence. PLoS Med 3: e435. doi:10.1371/journal.pmed.0030435

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HIV, Stigma, and Rates of Infection: But Is AIDS-Related Stigma Understood?

Arachu Castro

Although its title attracted me to read this paper [1], I was quickly disappointed. First, it advances a Malthusian approach that applauds the "potential benefits" of AIDS-related stigma. Second, it reflects a poor understanding of some of the existing literature on AIDS-related stigma cited in the article. The authors claim that the idea that stigma and discrimination thwart efforts to control the epidemic and constitute barriers for prevention and treatment is said over and over, with no evidence, "like a shibboleth," and cite eleven references that are meant as examples of this uncritical repetition. Surprisingly though, at least one of the articles cited already argues that "confusion surrounds debate over stigma as a barrier to introducing antiretrovirals to poor countries or to making voluntary HIV tests accessible" and that "to assess AIDS-related stigma and declare it a cause rather than both cause and consequence of inequality will probably weaken efforts to address AIDS among those with heightened risk of HIV because of poverty, racism, and gender inequality" [2]. Finally, the authors show limited understanding of social and sexual dynamics. Their distinction between "subpopulations" and "the general population" seems to imply that the former, such as the subpopulation of sex workers, lives in isolation of the latter and that it takes a certain amount of time for HIV to go from one to the other; it implies, for example, that sex workers first transmit HIV amongst themselves and then at some later point they transmit it to "the general population." I am afraid that the authors are actually conceptualizing HIV transmission within the similar linear frameworks that they are trying, unsuccessfully, to criticize. ■

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References

1. Reidpath DD, Chan KY (2006) HIV, stigma, and rates of infection: A rumour without evidence. PLoS Med 3: e435. doi:10.1371/journal.pmed.0030435
2. Castro A, Farmer P (2005) Understanding and addressing AIDS-related stigma: From anthropological theory to clinical practice in Haiti. Am J Public Health 95: 53–59.

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HIV, Stigma, and Rates of Infection: Absence of Evidence

Mark Seielstad

Absence of evidence is not evidence of absence. Reidpath and Chan [1] present absolutely no reasons or data that would undermine the hypothesis that stigmatization can increase the risk of HIV spread in populations (nor any in favor of their own contrary hypothesis that stigmatization could halt the spread of HIV). More data to address the question may be needed to establish either hypothesis, but motivations to collect such data should not come from illogical and inflammatory counterhypotheses. In the guidelines for correspondence to *PLoS Medicine*, we are advised that "...letters inciting racial hatred, sexism, or homophobia [will not be published]" [2], but the present authors skirt the commission of such acts very closely. After all, HIV prevalences also differ among races, sexes, and sexual orientations, so the stigmatization of groups with high rates of infection by those with lower rates of infection could be viewed as helpful to the goal of HIV containment. This seems unlikely to be helpful, and would impose a much greater societal cost. This essay is shameful in its intellectual dishonesty and lack of evidence to support its own unappealing counterhypothesis. ■

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References

1. Reidpath DD, Chan KY (2006) HIV, stigma, and rates of infection: A rumour without evidence. PLoS Med 3: e435. doi:10.1371/journal.pmed.0030435
2. *PLoS Medicine* Web Site (2006) Submit a response: Guidelines to authors. Available: http://medicine.plosjournals.org/perlserv/?request=submit-response&doi=10.1371/journal.pmed.0030435. Accessed 27 December 2006.

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HIV, Stigma, and Rates of Infection: A Rumour without Evidence: Authors' Reply

The HIV/AIDS area has always been highly politically and emotionally charged, and we wrote a controversial and provocative piece. Most of the responses to it were unreasoned. The most cogent response came from UNAIDS (the Joint United Nations Programme on HIV/AIDS) [1], and it generally restated an already well articulated position. We disagree with a number of the points for the reasons discussed in our original essay, and applaud one point.

First, a brief restatement of our argument is warranted. There is good evidence that HIV-related stigma adversely affects the lives of people living with HIV/AIDS. There is little or no evidence, however, to support the notion that HIV-related stigma is one of the determinants of the global HIV epidemic. Furthermore, an argument could be made for why stigma might slow or contain the spread of infection in the general population. Given the very different effect the two positions would have on policy and the significance of the HIV epidemic, they deserve investigation. Among epidemiologists, two competing hypotheses, for which there is no strong evidence either way, would constitute a position of equipoise.

The UNAIDS position is that HIV stigma and discrimination is a human rights violation "and should be stopped for that reason alone" [1]. Excellent point! Let's do that and understand why we are doing it. But in the absence of evidence, do not let us conflate the epidemiology of the infection with the human rights position. The letter goes on to say that "UNAIDS cannot endorse a hypothesis that…." Of course, we never wanted a hypothesis endorsed. We want hypotheses tested. The original (UNAIDS) position is treated as fact, and from the UNAIDS response, continues to be treated as a fact, when it was (and is) simply a hypothesis. Before this or any other hypothesis is endorsed, it should be tested.

The role of stigma is complex, carrying with it social benefits and social harms. It is a social process. By treating it as a serious object of health research, its multiple roles, including its role in disease propagation, can be legitimately investigated rather than marginalized as the poster child of advocates. Furthermore, by understanding the nature of stigma, it may be possible to develop health interventions that neither rely on stigma to succeed nor arbitrarily and inappropriately declare it to be a causal agent.

Research and advocacy have important and fundamental roles in population health. They each need to be used appropriately. ■

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References

1. Timberlake S, Sigurdson J (2007) HIV, stigma, and rates of infection: A human rights and public health imperative. PLoS Med 4: e52. doi:10.1371/journal.pmed.0040052

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Noncommunicable Diseases and Injuries: Action Needed in South Asia Too

Ali Khan Khuwaja, Riaz Qureshi, Zafar Fatmi

We read with great interest the essay by Perel et al. [1] on noncommunicable diseases (NCDs) and injuries in Latin

America and the Caribbean (LAC) countries. The authors are to be congratulated for their excellent description of the epidemic of NCDs and injuries in the LAC region. We wish to comment on this growing epidemic of NCDs with reference to South Asian (SA) countries, where the situation is comparable to the LAC region.

South Asia, which has one quarter of the world's population, is experiencing a rapid epidemiological transition similar to the LAC countries. The rising epidemic of NCDs in the SA region is fuelled by demographic ageing and globalization resulting in changing lifestyle, eating habits, and working patterns with less physical activity.

In 2000, 44% of the burden of disease in this region measured in disability-adjusted life years (DALYs) lost was attributed to NCDs [2], and these figures are expected to rise. Yet this growing epidemic is a neglected health issue in these countries to a greater extent. Cardiovascular diseases are the major contributors to premature mortality and morbidity in the SA region. The prevalence of diabetes has risen more rapidly in South Asia than in any region of the world. By the year 2030, India will have the highest number of persons with diabetes (79.4 million) [3]; similar trends are also projected for other SA countries. Overall, prevalence of hypertension among Pakistani adults (greater than or equal to 15 years) is about 19% [4], and this is likely to be the pattern in other SA countries. In South Asia, one third of the adult population is classified as obese and the trend is also increasing in SA children [5,6]. Large numbers of South Asians use tobacco in various forms: it is estimated that up to 65% of all men use tobacco in some form [7]. Tobacco use is responsible for approximately half of the tumors in males [8]. South Asians have one of the highest rates of oral cancers reported worldwide, and the rates are still increasing [7,8]. Due to the lack of reliable data and under-reporting of injuries, it is difficult to estimate their prevalence and future projections; nevertheless, the burden is substantially high enough to be one of the major health concerns in South Asia. In Sri Lanka alone, a smaller SA country, road traffic injuries result in 2,000 deaths and 14,000 injuries each year [9].

NCDs are expensive diseases to manage, and SA countries, which already have poor health and economic indicators, cannot afford this emerging costly epidemic. South Asians have a tendency to develop cardiovascular diseases at relatively earlier ages compared to other parts of the world, resulting in the highest potential of loss of productive life years. For a low-income Indian family with an adult with diabetes, as much as 25% of family income may be devoted to diabetes care [10].

Like the LAC region [1], SA countries have social and cultural disparities and inequalities. People of higher socioeconomic status and men who are the major economic contributors of their families are usually able to access the best available health-care facilities. As in LAC countries, South Asians of lower socioeconomic levels have the highest prevalence of mental health problems. The SA countries are well-equipped with highly qualified human resources and have common culture and languages, which can enhance more meaningful research, but are often unable to produce significant levels of quality research due to lack of funding and financial resources. With some exceptions, much of the research on NCDs has been descriptive or observation and on a small scale. Hence, the generalizability of existing research for the whole region is questionable and translating this research into practice is also difficult.

Keeping in mind the frightening scenario of NCDs in SA countries, the best option to tackle the epidemic is to take earlier action through comprehensive, multifaceted, and multicultural preventive and interventional strategies. There is also a need for more population-based local research on NCDs, with more collaboration and networking. These all require innovation, funding, political will, and health partnership between individuals, communities, clinicians, public health practitioners, nongovernmental agencies, policy makers and governments of the SA region. ■

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References

1. Perel P, Casas JP, Ortiz Z, Miranda JJ (2006) Noncommunicable disease and injuries in Latin America and the Caribbean: Time for action. PloS Med 3: e344. doi:10.1371/journal.pmed.0030344
2. World Health Organization (2002) Health situation in the South East Asia Region 1998–2000. New Delhi: World Health Organization regional office.
3. Wild S, Roglic G, Green A, Sicree R, King H (2004) Global prevalence of diabetes: Estimates for the year 2000 and projections for 2030. Diabetes Care 27: 1047–1053.
4. Jaffar TH, Levey AS, Jafary FH, White F, Gul A, et al. (2003) Ethnic subgroup difference in hypertension in Pakistan. J Hypertension 21: 905–912.
5. Singh RB, Tomlinson B, Thomas GN, Sharma R (2001) Coronary artery disease and coronary risk factors: The South Asian paradox. J Nutr Environ Med 11: 43–51.
6. World Health Organization, International Obesity Task Force, International Association for the Study of Obesity (2000) The Asia-Pacific perspectives: Redefining obesity and its treatment. Melbourne: Health Communications.
7. Center for Disease Control and Prevention (1997) Tobacco or health: A global status report. Available: http://www.cdc.gov/tobacco/who/. via the Internet. Accessed 28 December 2006.
8. Bhurgri Y, Burgri A, Nishter S, Ahmed A, Usman A, et al. (2006) Pakistan—Country profile of cancer and cancer control 1995–2004. J Pak Med Assoc 56: 124–130.
9. Dharmaratne SD, Ameratunga SN (2004) Road traffic injuries in Sri Lanka: A call to action. J Coll Physician Surg Pak 14: 729–730.
10. World Health Organization (2002) Diabetes: The cost of diabetes. Fact sheet No. 236.

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Eight Americas: Differences in Asian Communities Are Important

Linda Silka, Robin Toof, Dorcas Grigg-Saito

The article "Eight Americas: Investigating Mortality Disparities across Races, Counties, and Race-Counties in the United States" [1] reports on what the authors describe as racial differences in mortality. The authors analyze what they label the "eight Americas" (i.e., Asian; Northland low-income rural white; Middle America; low-income whites in Appalachia and the Mississippi Valley; Western Native American; Black

Middle America; Southern low-income rural black; high-risk urban black). In contrast to other races, "Asian" is treated as a single homogenous category. Income and geographical differences are not considered. The authors point out that they have likely collapsed across differences with the "Asian" category, but they go on to report their results as if such differences are inconsequential. They are not. With regard to health disparities, such differences are particularly important.

Consider recent findings that speak to health differences within the nominal category of "Asian." As a part of the Center for Disease Control and Prevention's Racial and Ethnic Approaches to Community Health (REACH) 2010 program [2], a survey was conducted in 2001–2002 with a sample of Vietnamese in several counties in California and Cambodians in Lowell, Massachusetts (the second largest Cambodian community in the US). Comparing the results to the national 2002 Behavior Risk Factor Surveillance System survey that aggregates all Asian responses, the Koch-Weser et al. data indicate that the educational level and income of Cambodians and Vietnamese were substantially lower than all Asians, and that Cambodians and Vietnamese were three times more likely than other Asians to not have visited a doctor in the past year due to financial reasons. In addition, in comparison to all Asians or the general population, higher proportions of Cambodian and Vietnamese men reported smoking (50.4% and 30.4% respectively compared to 14.7% of aggregated Asians), and Cambodian and Vietnamese of both genders reported eating fewer vegetables (16.4% and 11.1%). And in the case of important chronic health problems such as diabetes, only 47.7% of Cambodians surveyed reported having their cholesterol checked and 41.9% reported having a hemoglobin A1c test conducted if they had diabetes.

A 2002 representative survey of Cambodian adults over age 25 in Lowell, Massachusetts [3] found that Cambodians were more likely to report poor health than other Massachusetts residents (9% compared to 2%). Cambodian women and elders were much more likely to have experienced days of poor physical health (6.5 days on average for women and 8 days those over 50). A quarter of the Cambodian elders were symptomatic for depression, with the rate rising to 43% among women 50 and over. Although only 6% reported being uninsured, 23% wanted to see a doctor in the last year but could not, and 44% did not because of transportation problems.

In short, existing findings indicate how diverse the health data can be within the overall category of "Asian." The authors are to be applauded for their recognition of how misleading it can be to treat the categories of "blackness" or "whiteness" in undifferentiated ways. Unfortunately they have failed to extend that same understanding to the analysis they select for the category of Asians. As researchers and policy makers use the "Eight Americas" study to guide their efforts, the result could well be misleading interpretations that do a disservice to those very groups within the "Asian" category who face daily struggles with significant health problems and poor access to health care. ■

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References

1. Murray CJL, Kulkarni SC, Michaud C, Tomijima N, Bulzacchelli MT, et al. (2006) Eight Americas: Investigating mortality disparities across races, counties, and race-counties in the United States. PLoS Med 3: e260. doi:10.1371/journal.pmed.0030260
2. Grigg-Saito DC, Liang S, Koch-Weser S, Toof R, Pot M, et al. (2002) Cambodian Community Health 2010: Community behavior risk factor survey results. Lowell (MA): Lowell Community Health Center.
3. Koch-Weser S, Grigg-Saito D, Toof R, Kreth NN, Pot M, et al. (2004). Health status of Cambodians and Vietnamese: Selected communities, United States, 2001–2002. MMWR Morb Mortal Wkly Rep 53: 760–765.

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Eight Americas: A New Definition for "Americas"?

Howard Junca

The use of the term "Americas" in the context of this article [1] could confuse or mislead readers from a global audience. The authors used this term to refer to an artificial classification of United States (American) populations based on sociological aspects in order to group and analyse epidemiological information, but, Americas (plural and generally with the definite article) does not mean such division inside America (the United States of America in this case), but refers to the lands and regions of the Western hemisphere (North America, Central (or Middle) America, and South America, including their associated islands and regions). While it is clear that the usage of this term in the article is not the one strictly established, e.g., for legal issues, but instead is a part of a conceptual framework, I respectfully consider that the usage of the term "Americas" in the title of this article, as in other essential parts of the publication, is imprecise and contradictory. ■

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References

1. Murray CJL, Kulkarni SC, Michaud C, Tomijima N, Bulzacchelli MT, et al. (2006) Eight Americas: Investigating mortality disparities across races, counties, and race-counties in the United States. PLoS Med 3: e260. doi:10.1371/journal.pmed.0030260

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HIV and Cardiovascular Disease: Contribution of HIV-Infected Macrophages to Development of Atherosclerosis

Michael Bukrinsky, Dmitri Sviridov

In their Perspective published in *PLoS Medicine* [1], Carr and Ory provide a fair review of our recent paper in *PLoS Biology* [2]. However, we believe their commentary puts too much emphasis on the role of low high-density lipoprotein (HDL) cholesterol levels as a cause of atherosclerosis in HIV-infected patients. While HDL cholesterol levels are reduced in untreated HIV infection [3], and defects in reverse cholesterol transport (RCT) that we reported may well be a contributing factor to this abnormality, initiation of antiretroviral therapy restores HDL levels [4]. Although the development of dyslipidemia with prolonged use of anti-HIV drugs again lowers HDL cholesterol and in addition raises very low-density lipoprotein and low-density lipoprotein levels [5], it is unlikely that HIV infection contributes significantly to these effects. Indeed, most HDL comes from the liver and intestine, which are responsible for maintaining plasma HDL levels [6], but neither hepatocytes nor enterocytes are infected by HIV. Also, the number of HIV-infected cells in treated patients is relatively low to account for any general changes in concentration of plasma lipoproteins.

We suggest a different model that provides a simple connection between HIV-induced impairment of the cellular step of RCT and pathogenesis of atherosclerosis. We propose that RCT-defective HIV-infected macrophages contribute to development of atherosclerosis in HIV patients by converting into foam cells and initiating plaque formation in the vessel wall. Indeed, specific inactivation of *ABCA1* in macrophages has been shown to induce atherosclerosis in a mouse model independently from plasma HDL level [7]. Plaque formation through this mechanism can begin even on the background of normal HDL but would be greatly accelerated by dyslipidemia, a condition observed in HIV patients treated with antiretroviral therapy. Given that even fully suppressive HAART (highly active antiretroviral therapy) does not eliminate long-lived productive reservoirs of the virus and that macrophages are a likely potential component of these reservoirs [8], long-lived HIV-infected macrophages may contribute to atherosclerotic plaque formation long after initiation of HAART. Consistent with this hypothesis, it was found that the majority of cardiovascular events in HIV-infected patients are "one plaque" events [9].

Therefore, several lines of evidence indirectly implicate HIV-infected macrophages in the pathogenesis of atherosclerosis in HIV patients. Future studies will determine the role of HIV-induced RCT impairment in this process and are expected to provide an understanding of the connection between HIV infection and atherosclerosis and to identify novel treatment targets for both diseases. ■

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References

1. Carr A, Ory D (2006) Does HIV cause cardiovascular disease? PLoS Med 3: e496. doi:10.1371/journal.pmed.0030496
2. Mujawar Z, Rose H, Morrow MP, Pushkarsky T, Dubrovsky L, et al. (2006) Human immunodeficiency virus impairs reverse cholesterol transport from macrophages. PLoS Biol 4: e365. doi:10.1371/journal.pbio.0040365
3. Grunfeld C, Pang M, Doerrler W, Shigenaga JK, Jensen P, et al. (1992) Lipids, lipoproteins, triglyceride clearance, and cytokines in human immunodeficiency virus infection and the acquired immunodeficiency syndrome. J Clin Endocrinol Metab 74: 1045–1052.
4. van der Valk M, Kastelein JJ, Murphy RL, van Leth F, Katlama C, et al. (2001) Nevirapine-containing antiretroviral therapy in HIV-1 infected patients results in an anti-atherogenic lipid profile. AIDS 15: 2407–2414.
5. Crook MA, Mir N (1999) Abnormal lipids and the acquired immunodeficiency syndrome: Is there a problem and what should we do about it? Int J STD AIDS 10: 353–356.
6. Singaraja RR, van Eck M, Bissada N, Zimetti F, Collins HL, et al. (2006) Both hepatic and extrahepatic ABCA1 have discrete and essential functions in the maintenance of plasma high-density lipoprotein cholesterol levels in vivo. Circulation 114: 1301–1309.
7. Aiello RJ, Brees D, Bourassa PA, Royer L, Lindsey S, et al. (2002) Increased atherosclerosis in hyperlipidemic mice with inactivation of ABCA1 in macrophages. Arterioscler Thromb Vasc Biol 22: 630–637.
8. Pomerantz RJ (2003) Reservoirs, sanctuaries, and residual disease: The hiding spots of HIV-1. HIV Clin Trials 4: 137–143.
9. Stewart S, Wilkinson D, Becker A, Askew D, Ntyintyane L, et al. (2006) Mapping the emergence of heart disease in a black, urban population in Africa: The Heart of Soweto Study. Int J Cardiol 108: 101–108.

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Mental Health in the Millennium Development Goals: Not Ignored

Sonia Ehrlich Sachs, Jeffrey D. Sachs

In a *PloS Medicine* article of September 2005, J. Jaime Miranda and Vikram Patel ask: "Achieving the Millennium Development Goals [MDGs]: Does Mental Health Play a Role?" [1]. We agree with their concern that "there is no health without mental health." However, we do not feel mental health is ignored in the health agenda, nor do we share their pessimism about the potential to reach the MDGs in general.

Skepticism about the success of the MDGs is based on the poor track record of past international goals such as the Universal Declaration of Human Rights or the Declaration of Alma-Ata. Indeed, the MDGs were adopted with these pitfalls in mind. Emphasis was given to setting bold but realistic goals, with quantifiable, time-bound targets. For example, the aim to "reduce by two-thirds, between 1990 and 2015, the under-five mortality rate," calls for a practical plan with concrete, monitorable guideposts.

Many assessments have shown how these health goals can be achieved over the next ten years. The fact that progress on under-5 mortality and disease control has been too slow and that previous goals have not been met is why the world needs the MDGs. Without these targets that hold poor and rich countries accountable, poor countries will miss the benchmarks laid out in the Millennium Declaration, even though the objectives are attainable.

The reason that the MDGs do not explicitly address noncommunicable diseases such as cardiovascular or

psychiatric diseases is that the MDGs focus on the gap in health status between rich and poor countries, a gap mainly accounted for by infectious diseases, malnutrition, and unsafe childbirth. The goals were crafted to address these large gaps rather than to solve all pressing health problems.

We agree that "mental illness is closely associated with social determinants, notably poverty and gender disadvantage, and with poor physical health, including having HIV/AIDS and poor maternal and child health." About 2.6% of disability-adjusted life years in sub-Saharan Africa are attributable to psychiatric conditions, which is about the same proportion attributable to nutritional deficiencies, or tuberculosis, or maternal complications from childbirth [2]. There are many areas in which governments are using MDG-based strategies to tackle problems that are not explicitly mentioned by the MDGs, such as electrification, road construction, increased agricultural yields, and more.

The author's contention that "the MDGs do not address strengthening of health systems" is not correct, as readers of the UN Millennium Project recommendations (http://www.unmillenniumproject.org) can see. There is no chance to achieve any health MDGs without strengthening the health systems. Low-income countries are placing a important emphasis on strengthening health systems in their MDG-based planning. This will provide an important foundation for expanded access to critical mental health programs.

The authors question "national ownership" of MDGs and therefore question their legitimacy. The MDGs are strongly supported throughout the low-income countries, both by civil society as well as by governments, many of whom are developing MDG-based policies. National ownership was vividly displayed in September 2005, when government leaders throughout the developing world protested vociferously and successfully a short-lived attempt of US negotiators to remove the term "Millennium Development Goals" from the UN 2005 World Summit agreement.

Columbia University is involved in the Millennium Village Project, a proof of concept that the MDGs can be achieved in rural Africa by undertaking a holistic approach of integrated interventions in increasing food production, improving access to health care, water, and education, and improving infrastructure. Although the primary focus of health intervention is prevention and treatment of the major killers such as infectious diseases and malnutrition, we are exploring ways to integrate mental health care within the health systems, and we welcome practical suggestions for successful models that merit replication. The approach focuses on community-led development that takes into account social determinants of mental disease, as well as accessible mental health interventions.

The MDGs are a matter of life and death for millions of adults and children. We must do our utmost to ensure their success. The development and public health communities—including mental health professionals—need to work together and not undermine the only shared global development goals we have. Since their adoption in the year 2000, the MDGs have garnered support around the word. If this broad global movement continues to gain momentum and to apply proven solutions to our most pressing problems, the MDGs can be achieved, and with them, so too a significant improvement in mental health around the world. ■

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References
1. Miranda JJ, Patel V (2006) Achieving the Millennium Development Goals: Does mental health play a role? PLoS Med 2: e291 doi:10.1371/journal.pmed.0020291
2. Lopez AD, Mathers CD, Ezzati M, Jamison, DT, Murray CJL, editors (2006) Global burden of disease and risk factors. New York: Oxford University Press and the World Bank. pp. 216–221.

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Mental Health in the Millennium Development Goals: Authors' Reply

We appreciate the feedback and responses generated since the publication of our paper of September 13, 2005 [1]. It clearly fulfils our aim of initiating a debate around the core issue expressed in our work—mainly how the targets expressed in the Millennium Development Goals (MDGs) may have the unintended consequence of relegating mental health and noncommunicable diseases in general from the vision of policy makers.

Using evidence on mental health in developing countries, we argued in our paper that addressing mental health problems is an integral part of health system interventions aimed at achieving some of the key MDGs, a view supported by the responses to our paper. However, we should clarify that within the MDGs there is not a "millennium mental health development goal" as suggested by Kasi et al [2].

Sachs and Sachs state that "the reason that the MDGs do not explicitly address noncommunicable diseases such as cardiovascular or psychiatric is because the MDGs focus on the gap in health status of rich and poor countries, a gap mainly accounted for by infectious diseases, malnutrition, and unsafe childbirth. The goals were crafted to address these large gaps rather than to solve all pressing health problems" [3]

We think this assertion deserves their reassessment. It is a common view to assume that the developing world suffers mainly from infectious diseases. In fact, noncommunicable diseases kill people at economically and socially productive ages and kill them mostly in the developing world: 80% of chronic disease deaths occur in low- and middle-income countries [4]. Another misconception is that the epidemic of noncommunicable diseases is still to come. That is no longer true: it is here already [5–7]. We need an informed debate about the health interventions needed to tackle the burden of disease in the developing world, and one that goes beyond the MDGs as they are currently configured.

We are delighted to learn that the Sachs are "exploring ways to integrate mental health care within the health

systems," and agree that development and public health communities—including mental health professionals—need to work together to ensure that the MDGs can be achieved. Explicitly tackling these mental health gaps, in parallel with achieving the existing MDGs, would be a major achievement, resulting in significant improvement in mental health around the world. ■

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References

1. Miranda JJ, Patel V (2005) Achieving the Millennium Development Goals: Does mental health play a role? PLoS Med 2: e291. doi:10.1371/journal.pmed.0020291
2. Kasi PM, Naqvi H, Achakzai AM, Gilani AI, Tariq A (2005) Offering a sustainable solution to for achieving the "Millennium Mental Health Development Goal": The psychospiritual model. PloS Medicine Reader Response. Available: http://medicine.plosjournals.org/perlserv/?request=read-response&doi=10.1371/journal.pmed.0020291#r941. Accessed 29 December 2006.
3. Sachs SE, Sachs JD (2007) Mental health in the Millennium Development Goals: Not ignored. PLoS Med 4: e56. doi:10.1371/journal.pmed.0040056
4. World Health Organization (2005) Preventing chronic diseases: A vital investment. Geneva: World Health Organization.
5. Ebrahim S, Smeeth L (2005) Non-communicable diseases in low and middle-income countries: A priority or a distraction? Int J Epidemiol 34: 961–966.
6. Strong K, Mathers C, Epping-Jordan J, Beaglehole R (2006) Preventing chronic disease: A priority for global health. Int J Epidemiol 35: 492–494.
7. Perel P, Casas JP, Ortiz Z, Miranda JJ (2006) Noncommunicable diseases and injuries in Latin America and the Caribbean: Time for action. PLoS Med 3: 344. doi:10.1371/journal.pmed.0030344

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