The Mainstreaming of U.S. HIV Testing?: Evidence from the U.S. National Health Interview Survey, 1987-2010

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Since the late 1980s, medical treatment options and public health prescriptions for controlling the spread of HIV/AIDS have undergone massive changes (including reductions in mortality rates for those infected with the virus due to HAART [highly active antiretroviral therapy], public education campaigns, development of home testing kits, and evolving CDC recommendations about HIV screening in health care settings). Public perceptions of the risks and urgency of combatting HIV have also undergone a sea change across the past two decades. For example, when unveiling the (first) *National HIV/AIDS Strategy for the United States* in July 2010, the Office of National AIDS Policy noted, "the public's sense of urgency associated with the epidemic appears to be declining. In 1995, 44 percent of the general public indicated that HIV/AIDS was the most urgent health problem facing the nation, compared to only 6 percent in March 2009."[i]

To what extent have changes in public perceptions, public health prescriptions, and medical options altered the prevalence, predictors, locus, and motivation for HIV testing? This is the question we address using 23 years of data from the "AIDS knowledge and attitudes" segment of the U.S. National Health Interview Survey (NHIS), which will soon be publicly available online through the Integrated Health Interview Series (IHIS, at www.ihis.us).

Previous research based on the NHIS AIDS supplements has generally focused on a single year or a small subset of years, and thus has failed to fully capitalize on this extensive time series.[ii] By drawing upon more than two decades of comparable, nationally-representative survey data and by focusing on persons *recently* tested for HIV, rather than on persons *ever* tested for HIV, we analyze HIV testing as a dynamic, evolving process at the population level.[iii]

An overarching question in our research is whether HIV testing has indeed become a routine or "mainstream" medical practice. The Center for Disease Control (CDC)'s increasingly broad recommendations for HIV testing in health care settings, including the 2006 revised recommendations that "advocate routine voluntary HIV screening as a normal part of medical practice"[iv], indicate that such mainstreaming/routinizing of HIV testing is a recognized public health goal in the United States. We draw upon NHIS/IHIS data on HIV testing to evaluate whether and when this goal of routinizing testing has been met.

More specifically, we rely on both descriptive statistics and multivariate analysis to answer the following questions:

1) How have the characteristics of persons being tested for HIV in the United States changed over time?[v]

The NHIS/IHIS data allow us to draw up a descriptive profile of individuals who were recently (e.g., within the past year or within a particular span of years) tested for HIV, and to track changes in that profile over time. For example, we are able to track the correlation between individuals' perceptions of being at risk for HIV/AIDS and their actual engagement in risky behavior to see if that correlation has changed over time. An increasing correlation suggests that the public has become more educated over time about the ways HIV is transmitted.

2) What are significant predictors of having recently been tested for HIV, and how have those predictors changed over time?

The broad scope of the NHIS/IHIS data allows us to consider not only standard demographic variables (such as age, sex, and race/ethnicity) but also many additional factors, including: (1) access to medical care (e.g., whether has usual source of medical care, whether has health insurance); (2) overall health (e.g., self-rated health status); (3) probable exposure to compulsory testing (e.g., employment in the health care sector, recent immigration); (4) self-assessed likelihood of HIV infection; (5) positive response to questions about five HIV risk factors.[vi] If, as we hypothesize, HIV testing has increasingly become routine preventive care, then access to medical care should become an increasingly important predictor of recent HIV testing (and other variables, such as risk factors, should become less important).

We use logistic regression to estimate the likelihood of being tested for HIV antibodies. To assess whether and how predictors of testing change over time, we employ dummy variables for a series of "policy regimes." These policy regimes are periods of time within which CDC recommendations regarding HIV testing were largely unchanged, but more substantial changes to CDC recommendations occur between regimes.

The first such period is 1987-1992, when the CDC declared that priority for HIV testing "should be based upon providing ready access to persons who are most likely to be infected or who practice high risk-bahaviors...."[vii]

The second policy regime is 1993-2005. During this period, the CDC extended HIV testing guidelines to include "hospitalized patients and persons obtaining health care as outpatients in acute-care settings".[viii]

The third policy regime is 2006 to the present when, as described above, the CDC began to recommend routine HIV testing.

3) What are the changes in the location and rationale for HIV testing over time?

While question wording has changed somewhat over time, we have constructed largely consistent indicators of (a) the *location* of HIV testing and (b) the *motivation* for HIV testing for 1990 through 2010.

To evaluate shifts in the location of HIV testing, we note whether venues for routine medical care (e.g., doctor/HMO or Hospital/outpatient/ER) constitute an increasingly large share of reported locations for HIV testing, while settings for involuntary testing (e.g., immigration site, jail or prison, military induction or service) and/or "AIDS-specific" care (e.g., AIDS clinic/counseling/testing site) diminish in importance.

To evaluate shifts in the motivation for HIV testing, we scrutinize results from questions about: (1) the reason for the most recent HIV test; (2) the reason for not being tested; (3) the reason why the respondent expects to be tested in the next 12 months; and (4) the person initiating the most recent HIV test. As another means of testing our hypothesis that HIV testing has become more "medically mainstream," we look for broad changes across time in whether testing is done (a) non-electively (as a precondition to other roles, such as military service); (b) electively, as initiated by the individual or their sexual partner; or (c) at the instigation of medical personnel.

The broad topical and temporal scope of data in NHIS/IHIS can provide much insight into the dynamic nature of HIV testing at the population level across more than two decades of remarkable change in public perception and public health practice regarding HIV/AIDS in the United States.

ENDNOTES

[i] Office of National AIDS Policy, "National HIV/AIDS Strategy for the United States: Executive Summary," July 13, 2010. Available at http://www.thebody.com/content/art57450.html

[ii] The following publications focus on 1 or 2 years of data:

Hardy, A.M., and D.A. Dawson. 1990. "HIV Antibody Testing Among Adults in the United States: Data from 1988 NHIS." *American Journal of Public Health*, 80(5): 586-9.

Centers for Disease Control and Prevention. 1996. "HIV Testing Among Women Aged 18-44 Years--United States, 1991 and 1993." *Morbidity and Mortality Weekly Report*, 45(37):804.

Tao, G, et al. 1999. "Rates of Receiving HIV Test Results: Data from the U.S. National Health Interview Survey for 1994 and 1995." *Journal of Acquired Immune Deficiency Syndrome,* 22(4):395-400.

Rodgers-Farmer, A.Y. 1999. "HIV Risk Factors, HIV Antibody Testing, and AIDS Knowledge Among African Americans Age 55 Years and Older." *Social Work in Health Care*, 29(3):1-17.

Centers for Disease Control and Prevention. 2008. "Persons Tested for HIV--United States, 2006." *Morbidity and Mortality Weekly Report*, 57(31):845-9.

The following publications focus on a longer time series, but fail to bridge the pre-1997/1997 forward divide:

Anderson, J.E., J.W. Carey, and S. Taveras. 2000. "HIV Testing Among the General U.S. Population and Persons at Increased Risk: Information from National Surveys, 1987-1996." *American Journal of Public Health*, 90(7):1089-1095.

Centers for Disease Control and Prevention. 2010. "Vital Signs: HIV Testing and Diagnosis Among Adults--United States, 2001-2009." *Morbidity and Mortality Weekly Report*, 59(47):1550-5.

[iii] Previous publications drawing upon the "AIDS knowledge and attitudes" segment of the National Health Interview Survey and focusing on AIDS testing have generally analyzed correlates of a variable on "Ever tested for HIV (not including blood donations)." Because this survey question is framed retrospectively (looking backward as far as the time of the first HIV test, the ELISA test licensed in 1985), it confounds current and past predictors of HIV

testing. We will instead analyze HIV testing within the past year or within the past 3 years (with the latter calculable by comparing the reported year of last HIV test to the survey year).

[iv] Bernard M. Branson et al., 2006. "Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings." *Morbidity and Mortality Weekly Report* , 55: 1-17. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5514a1.htm?s_cid=

[v] Note that our interest here lies in changing characteristics of people who ***undergo HIV testing***, not in the characteristics of persons who have tested positive for HIV/AIDS. Information about the latter group is provided by the CDC's HIV surveillance system, which compiles statistics on the age and race/ethnicity, the mode of transmission, and the state of residence for persons diagnosed with HIV infection or AIDS and the same information for persons newly diagnosed with HIV. See http://www.cdc.gov/hiv/topics/surveillance/index.htm

[vi] The question about risk factors addresses whether the person says yes to any of the following: hemophilia and reception of clotting factor concentration, being a man who has had sex with another man, use of street drugs with a needle, ever traded sex for drugs or money, or ever tested positive for HIV (or have had sex with someone who met any of these criteria).

[vii] Centers for Disease Control and Prevention. 1987. "Perspectives in Disease Prevention and Health Promotion: Public Health Service Guidelines for Counseling and Antibody Testing to Prevent HIV Infection and AIDS." *Morbidity and Mortality Weekly Report*, 36(31): 509-515. Available at http://www.cdc.gov/mmwr/preview/mmwrhtml/00015088.htm

[viii] Burrage, Joe W. et al. 2008. "The CDC Revised Recommendations for HIV Testing: Reactions of Women Attending Community Health Clinics." *Journal of the Association of Nurses in AIDS Care*, no. 19(1): 66-74.