

Acceptability of Fingerprint Scanning for Personal Identification Among Patients Seeking HIV/STI-Related Services, Los Angeles, 2011

To the Editors:

With the goals of increasing patients' linkage-to-care, care utilization, and treatment adherence, the Joint United Nations Programme on HIV/AIDS set out to address the global need for improved quality and coordination of HIV services.¹ They advocated for longitudinal individualized client records while ensuring improved effectiveness, efficiency, equity, and acceptability of these individual-level data collection methods.¹ Using easily collected and reliable unique digital identifiers may greatly aid in both patients' care and clinical trial investigation. Through the use of simple biometric identifiers, clinic staff can better prevent misidentification, double-counting, abuse of incentivization systems, and track patients' visits for HIV care and treatment more efficiently. Furthermore, unique digital identifiers could be linked to a secure reward system that could be used to reinforce desired health care-seeking behavior.

One method of capturing unique biometric measures of personal identification is through fingerprint scans. Fingerprint scans are simple, noninvasive, and inexpensive. In the United States, this technology is used in banking, airport security, health club access, and even in school lunch programs, however, not yet in health care settings.² These systems create unique digital identifiers that cannot be linked to other digitized fingerprints used

by immigration or criminal justice systems secondary to their lower resolution.

Fingerprint scan identification technology has been used outside the United States in research studies and large-scale HIV testing initiatives.^{3,4} Although the technology has been met with >98% acceptability among South Africans seeking HIV testing, the acceptance of such technology in the United States is unknown.⁴ Thus, we set out to gauge the acceptability of fingerprint scans in a large urban sexually transmitted disease (STD) and HIV clinic in Los Angeles by surveying individuals seeking HIV care and STD testing about their perceived willingness to use the fingerprint scanner as a means of personal identification.

This was a cross-sectional study designed to determine individuals' acceptance of fingerprint scanning to be used as a unique patient identifier at the Jeffrey Goodman Special Care Medical Clinic and the sexual health program. These clinic offers low-cost health, mental health, HIV/AIDS medical care, and HIV/STD testing and prevention counseling. These nonprofit clinics had over 10,000 patient visits in 2011. The population seeking STD and HIV care at the clinic is mainly composed of gay men and other men who have sex with men (MSM) (88% of total clinic population in 2011).

In November 2011, we administered a 10-question self-completed survey to a convenience sample of consecutive patients seeking sexually transmitted disease care as well as HIV care. These questions contained basic demographic information, including age, highest grade of school completed, employed 5 or more days a week, race/ethnicity, sex, sexual orientation, and gender of sex partner. The survey also asked the participants how likely or unlikely they might be to agree to provide a fingerprint scan for personal identification. This question was measured on 4-point scale: "very unlikely," "unlikely," "likely," and "very likely" and included a fifth "don't know" option. Acceptance to fingerprint scanning was defined by a response of "very likely" or "likely." Acceptability was defined as total acceptance divided by the sum of those who answered "very unlikely" and "unlikely."

We entered the survey data into Microsoft Excel (Version 14.1.4; Micro-

soft, Redmond, WA) and used STATA12 (Version 12.0; StataCorp, College Station, TX) for statistical analyses. Overall acceptability, acceptability among subgroups, and prevalence ratios (PRs) were calculated. Differences in point estimates or PRs associated with a 2-sided *P* value of <0.05 were considered statistically significant. We calculated 95% confidence intervals (CIs) using the binomial distribution for the percent data and assumed a normal distribution for the count data.

Of the 192 surveys collected, 41 surveys included "don't know" responses and 4 were incomplete. Except for the proportion of female respondents (4.1% vs. 2%, *P* < 0.05), characteristics of the participants who replied "very likely," "likely," "unlikely," or "very unlikely" (*n* = 147) were similar to those who replied "don't know" or were incomplete (*n* = 45). Among those 147 participants, 96% (*n* = 141) were men and 94% (*n* = 132) were MSM. The overall acceptability of fingerprint scan for identification was 72% (95% CI: 63% to 80%). Within the population of MSM, the acceptability was 76% among white MSM (*n* = 42/55) followed by 70% among Hispanic MSM (*n* = 32/46). Acceptability was 70% among MSM of reported mixed race/ethnicity (*n* = 7/10) and 67% among African American MSM (*n* = 8/12) (Fig. 1). African American and Hispanic MSM were not less likely to report acceptability compared with white MSM (PR 0.9, 95% CI: 0.6 to 1.3; PR 0.9, 95% CI: 0.7 to 1.1, respectively). Acceptability among women (*n* = 3) or transgender (*n* = 3) persons was 67% and among heterosexual men (*n* = 8) was 63%.

We completed an acceptability survey of fingerprint scanning for personal identification in a large urban STD and HIV clinic in Los Angeles, CA. Our study supports the acceptability of fingerprint scans and is consistent with data from other countries about acceptability of such technology in an HIV testing setting.⁴ We did not see differences in acceptability between racial/ethnic subgroups of MSM. Fingerprint scanning might be an easy and innovative way to identify and monitor patients in HIV and STD clinic settings.

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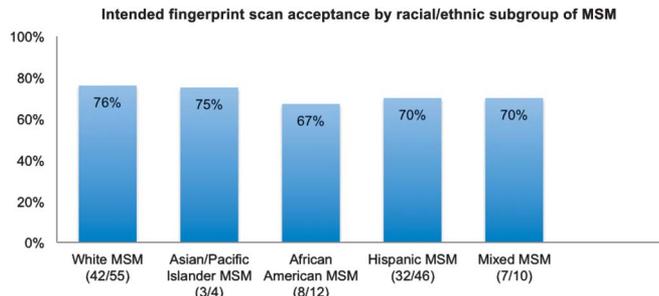


FIGURE 1. Fingerprint scan acceptance by study participant characteristics, the Jeffery Goodman Clinic, Los Angeles, CA, November 2011.

The major limitation of our study was that we measured acceptability and not actual use. A person's intents may or may not be predictive of their future actions; however, there is a growing body of evidence based on the theory of planned behavior that intentions are reliable predictors of eventual decisions.^{5,6} The theory of planned behavior as put forth by Ajzen posits that individuals' behaviors are extensions of their beliefs and are best predicted by ascertaining attitudes, subjective norms, and perceived behavioral control.⁵ A large meta-analysis of the theory of planned behavior showed that intentions and behavior are strongly correlated, thus indicating that ascertaining intention may be a relatively reliable proxy for actual behavior.⁷ In addition, because the sample size in our study was modest, it was difficult to draw conclusions about subgroups, including women, transgender, and MSM of different racial/ethnic groups, in our sample population. Regardless of those limitations, the level of acceptance among those surveyed was high.

Data from this study indicate that fingerprint scanning might be an inexpensive, easy, and acceptable mode of personal biometric identification for use in urban HIV and STD testing and treatment centers. Fingerprint scans are a reliable personal identifiers, and because of the lower resolution of the data collected, this information cannot be used to cross-reference individuals in criminal or immigration databases. It will be important to educate clinic staff and patients regarding the benefits and lack of risks associated with such scanning technology. Further research is needed to determine the actual use and acceptability of this technology for women and transgender individuals. Additional research into the impact of

biometric identification systems on linkage into care would also be of value.

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Drug-Resistant Virus Has Reduced Ability to Induce Immune Activation

To the Editors:

There is increasing suspicion that HIV-induced immune activation contributes to accelerated cellular turnover, CD4+ T-cell losses, and increased morbidity and mortality of HIV-infected individuals, even for those on antiretroviral treatment.^{1–4} For example, Kuller et al⁵ found that higher levels of interleukin-6 (IL-6) were significantly associated with an increased risk of all-cause mortality; similar associations with mortality were seen for higher levels of *d*-dimer and high-sensitivity C-Reactive Protein. Deeks et al⁶ have hypothesized that the preserved immunologic function in many treated patients with drug-resistant viremia is the result of a reduction in T-cell activation. Hunt et al⁷ reported that antiretroviral-treated patients with drug-resistant viremia have lower T-cell activation than untreated patients, controlling for plasma HIV-1 RNA level. Kitchen et al⁸ reported an oscillatory relationship between T-cell activation, CD4 T-cell counts, and HIV-1 RNA levels over time in a group of subjects with highly resistant HIV infection followed longitudinally.

To test the hypothesis that drug-resistant virus has reduced ability to induce immune activation, we analyzed the relationship between drug resistance and both soluble markers of inflammation (IL-6, tumor necrosis factor [TNF]- α , TNF-rII) and cellular activation markers (CD38/HLA-DR expression on CD4 and CD8 T-cells) before and after short-term treatment interruption, using data from 16 of the 21 subjects randomized to the structured treatment interruption (STI) arm of the Adult Clinical Trials Group (ACTG) 5086 study. The subjects were excluded from analysis due to the unavailability of activation (4 subjects) or resistance data (1 subject).

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