

The Impact of 4th Generation HIV Testing in Tennessee: Identification and Linkage to Care of Individuals with Acute HIV Infection

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Objectives

Accurate and early diagnosis of HIV infection allow infected persons to know their status, access care, and reduce transmission. The Tennessee Department of Health (TDH) laboratories implemented the CDC and APHL recommended 3-step algorithm to accelerate early diagnosis, referred to as 4th Generation HIV Testing. We report the results from TDH's first 21 months of 4th generation HIV testing, including the follow-up of individuals diagnosed as acutely infected.

Methods

In April 2013, TDH laboratories implemented 4th Generation HIV Testing.

Methods (cont'd)

Step 1 utilizes an antigen/antibody immunoassay to detect HIV-1/2. If positive, **Step 2** is conducted using an HIV-1/2 antibody differentiation assay. If Step Two is negative or indeterminate, **Step 3** is conducted using HIV-1 RNA NAT which, if positive, identifies acute HIV-1 infection.

Steps 1 and 2 were conducted by TDH laboratories. Specimens requiring Step 3 were originally conducted by a contracted lab and brought in-house beginning September, 2015. For all individuals diagnosed with acute HIV-1 infection, subsequent HIV-1 RNA results (qualitative and quantitative) were obtained from the statewide Enhanced HIV/AIDS Reporting System (EHARS).

Results

Between April 6, 2013 and December 31, 2015, 140,245 individuals underwent 4th Generation HIV Testing.

- 1,516 (1.1%) were positive for Step 1, of which
 - 1,375 (90.6%) were positive for Step 2
 - 1,373 for HIV-1, and
 - 2 for HIV-2.
 - 141 specimens (9.3%) required Step 3, of which
 - 16 (11.3%) had detectable HIV-1 RNA, indicating acute HIV-1 infection.
 - ✓ 14 of 16 (87.5%) have been linked to medical care, of whom
 - 2 (14.3%) were subsequently determined to be HIV negative.

Conclusions

4th Generation HIV Testing can accelerate HIV diagnosis and earlier access to care. Individuals identified as acutely HIV infected using this algorithm should be aggressively linked to care, both to confirm acute infection and ensure early access to care. Quantitative HIV-1 RNA testing may have utility as a 4th step in the algorithm to confirm suspected acute HIV infection.



TDH Mission: Protect, promote and improve the health and prosperity of people in Tennessee

TDH Vision: A recognized and trusted leader, partnering and engaging to accelerate Tennessee to one of the nation's 10 healthiest states