

Abstract

OBJECTIVE: Identify previously undiagnosed HIV-infected patients among emergency department (ED) patients pending admission to medicine services, with the goals of redirecting them to the inpatient HIV service and improving linkage with ambulatory HIV care.

METHODS: Two health educators (HEs) staffed this urban public hospital ED weekdays from 8:30am-8pm, offering point-of-care rapid testing (RT) to patients aged 18 – 64 who were being admitted to medicine services. HEs offered testing, obtained consent and finger-stick blood, performed the test (Trinity Biotech, Uni-Gold Recombigen HIV-1), provided results to patients, and recorded results in the electronic medical record. Patients testing positive received counseling and the HE obtained a serum specimen for confirmatory testing. Prior to hospital discharge, patients received appointments at the nearby, affiliated CORE Center HIV clinic.

RESULTS: Between March 1 and Sept 30th of 2008, a total of 2521 patients awaiting admission routinely received RT in the ED. Of these, 22 (0.9%) were confirmed HIV-positive. Patients with positive RT results were redirected to the inpatient HIV service. During the two preceding years, confirmed HIV-positive patients had a mean of 2.6 prior ED visits without receiving HIV testing. The mean age was 37 years (range: 19-50); 14/22 (64%) were African American, 7/22 Latino (32%) and 1/22 (5%) White – similar to our general demographics. The mean viral load was 5.3 log (range: 2.9 – 5.9); 17/20 (85%) had CD4 counts < 200 cells/mm³ (mean 108). Pneumocystis pneumonia was the most common discharge diagnosis (8/22; 36%). One patient died during hospitalization; the remaining 21 were scheduled for follow up at the CORE Center. Of those, 18/21 (86%) have reported for care (median time: 14 days from RT), 3/21 (14%) are being followed by a retention specialist, and one appointment is pending. Of 17 patients in care, 3/15 (20%) with baseline HIV genotyping demonstrated resistance. 5/10 (50%) of patients on anti-retroviral therapy have had > 1 log drop in their viral load.

CONCLUSION: Patients diagnosed with HIV infection in our ED prior to admission are extremely ill, with all but three having an AIDS diagnosis. Routine RT in this population provided a reliable link to both inpatient and outpatient HIV care. Acceptance of HIV testing by our ED staff in this large, public safety-net hospital was bolstered by the use of HEs, who handled every aspect of the HIV testing and notification process (numbers updated).

Background

The fact that, in 2006, an estimated 232,000 people with HIV are not aware of their diagnosis¹ has increased interest in improving access to HIV testing.

Rapid, point-of-care (POC) HIV testing has improved notification rates at out-patient screening centers and enhanced diagnosis in pregnant women.^{2, 3, 4}

CDC HIV testing guidelines recommend routine HIV testing for all patients, regardless of symptoms or risk factor, who come in contact with the health care system, with an emphasis on testing patients visiting EDs⁵.

Previous research demonstrated the feasibility of using health educators to perform rapid HIV testing on patients visiting our busy, inner city ED⁶. These data also suggested that rapid testing patients in the ED may have improved their quality of care⁷.

Methods

We instituted an ED-based routine, rapid HIV testing program – focused on testing admissions to the medicine service

- ▶ **Testing period:** March 1st, 2008 to Sept. 30th, 2008 (7 month period)
- ▶ **Setting:** John H. Stroger, Jr. Hospital (JSH) of Cook County Adult ED – an urban level 1 trauma center with approximately 130,000 visits per year
- ▶ **Testing methods:** tests performed by two health educators, using Uni-Gold Recombigen rapid HIV test kits (Trinity Biotech, Bray, Ireland) on whole blood obtained via finger-stick

All patients with reactive rapid HIV results had confirmatory testing and were referred for follow-up at the CORE Center, Cook County's ambulatory HIV clinic

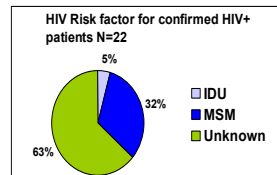
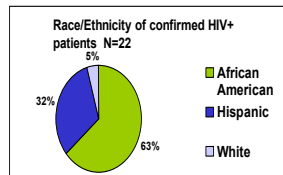
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Descriptive statistics, patient disposition and cost analysis reported below

Results

Characteristics of newly identified HIV+ ED patients

Tested	2521
HIV positive	22 (0.9%)
Mean Age	37
Sex (Male)	19/22 (86%)
Mean CD4 (cells/ml ³)	109
Median CD4	24
CD4<200	17/20 (85%)
Mean VL	5.3 log
Length of stay (days, mean)	6
HIV-related d/c diagnosis	17/22 (77%)
Followed-up at CORE Center	18/21 (86%)
Median # of days between RT and CORE f/u	14
Baseline Genotype	15/18 (83%)
Baseline Resistance	3/15 (20%)
On Tx CD4<350 cells/mm ³	10/18 (56%)
1log drop in VL	5/10 (50%)
OnTx UD VL	3/10 (30%)
Mean # visits to county sites w/ no HIV test in last 2 years	3

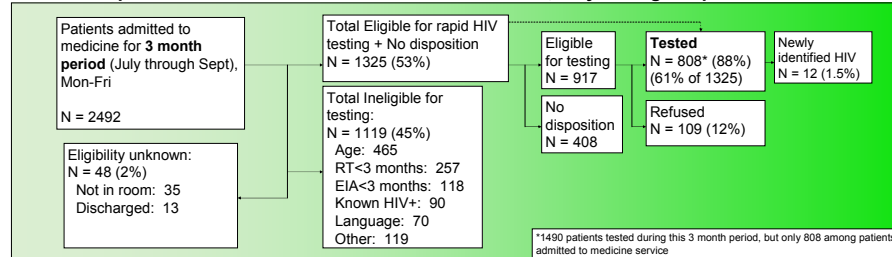


Results Continued

Cost Analysis: 1 month of implementation/training + 6 months of testing

Time Horizon & Test Performance	Cost Analysis			Summary Costs					
	One-time cost Implementation \$26,362	Time-dependent cost Monthly operating \$12,759	Time dependent cost Consumables/Test \$8.57	Per Test	Total Program	Per Positive			
Current 6 months	2389	21		\$11.03	\$32.04	\$8.57	\$51.65	\$123,388	\$5,876
Current 1 year (projected)	4778	42		\$5.52	\$32.04	\$8.57	\$46.13	\$220,415	\$5,248
Worst 1 year (projected)	3588	31		\$7.35	\$42.67	\$8.57	\$58.59	\$210,216	\$6,781
Best 1 year (projected)	5964	52		\$4.42	\$25.67	\$8.57	\$38.66	\$230,579	\$4,434
Component Cost Per Test									

Patient Disposition: Admits to the medicine service via ED, July through September



Conclusions

Acceptance of this routine, rapid HIV testing program, situated in a busy, urban ED, was bolstered by the use of health educators who handled every aspect of the HIV testing and result notification process

The patients identified this routine testing program have been identified late in the course of their HIV disease, with most having CD4 counts below 200 cells/ml³.

A significant proportion of eligible patients admitted to an inpatient medicine service via the ED may be tested for HIV using a rapid, POC assay performed by health educators.

While testing has been preformed in a cost-effective manner, given our largely un-insured/self-pay population, it is doubtful that third party reimbursement for routine, ED HIV testing could sustain our program.

References

- Centers for Disease Control and Prevention. New estimates of U.S. HIV Prevalence, 2006. CDC HIV/AIDS Facts, Oct. 2008. Accessed at www.cdc.gov/hiv on Oct 21st, 2008.
- Centers for Disease Control and Prevention. Rapid, point-of-care testing for HIV-1 during labor and delivery – Chicago, Illinois, 2002. MMWR 2003;52(36): 866-868.
- Bultman M, Jameson DJ, O'Sullivan MJ, Cohen MH, Maugin R, Nesheim S, Webber MP, Van Dyke R, Wiener J, Branson BM. Rapid HIV-1 testing during labor: a multi-center study. JAMA 2004; 292: 219-223.
- Kassler WJ, Dillon BA, Haley C, Jones WK, Goldman A. On-site, rapid HIV testing with same-day results and counseling. AIDS 1997; 11: 1045-1051.
- Centers for Disease Control and Prevention. Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings. MMWR 2006;55(No. RR-14)
- Lyss SB, Branson BM, Kroc KA, et al. Detecting unsuspected HIV infection with a rapid whole-blood HIV test in an urban Emergency Department. J Acquir Immune Defic Syndr 2007; 44: 435-442.
- Lubelchek R, Kroc KA, Hota B, et al. The role of rapid vs. conventional HIV testing for inpatients. Arch Intern Med 2005; 165: 1956-1960.