

# Ten Sites, 10 Years, 10 Lessons: Scale-up of Routine HIV Testing at Community Health Centers in the Bronx, New York

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## ABSTRACT

**Objective.** In response to the current CDC recommendations for routine HIV testing in clinical settings, the Adolescent AIDS Program at Montefiore Medical Center in the Bronx, New York, developed the Advise, Consent, Test, Support routine HIV testing model (ACTS) in 2003. ACTS was piloted in 10 community health centers operated by Montefiore because they serve populations most at risk for HIV/AIDS.

**Methods.** ACTS streamlined and codified the counseling and testing process, provided a routine HIV testing practice change plan, and provided training and communication materials that promoted routine HIV testing. To determine program success, we measured the number of patients seen at the clinics, the number of HIV test-eligible patients (those aged 13–64 years and not pregnant), the number and percent of patients receiving HIV testing, HIV test results, and the number of patients linked to care.

**Results.** HIV testing in the 10 sites increased nearly threefold during the pilot period (2003–2007), from 3,944 of 49,125 eligible patients (8%) tested in 2003 to 11,212 of 55,629 eligible patients (20%) tested in 2007. With little ongoing support, the sites continued or maintained improvements: 13,226 of 56,686 eligible patients (23%) were tested in 2008, 15,965 of 57,025 eligible patients (28%) were tested in 2011, 17,483 of 60,514 eligible patients (29%) were tested in 2012, and 17,971 of 63,172 eligible patients (28%) were tested in 2013. Sites identified 433 HIV-positive patients from 2006 to 2013 (0.2%–0.6% annual seropositivity), and 96% of them were linked to care within 90 days of HIV diagnoses (range: 92% to 98% annually).

**Conclusion.** ACTS demonstrated that substantial and sustained increases in routine HIV testing can be achieved in health-care settings, not by adding personnel or financial resources, but by using the model's practice change plan and streamlined HIV testing approach.

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Human immunodeficiency virus (HIV) testing is the gateway to HIV treatment and supportive prevention services. Since the availability of highly active antiretroviral therapy in the mid-1990s, facilitating greater uptake of HIV testing has been a linchpin of public health strategies to improve health outcomes and curb the HIV/acquired immunodeficiency syndrome (AIDS) epidemic. However, improvements in HIV testing rates have been modest.<sup>1</sup> By the end of 2003, the Centers for Disease Control and Prevention (CDC) estimated that one-quarter of those living with HIV were unaware of their infection, and this group was most likely responsible for a significant number of new HIV infections.<sup>2,3</sup>

Prior to 2005, most HIV testing strategies focused on sub-populations, such as men who have sex with men and intravenous drug users, considered at higher risk than the general population, but this approach failed to identify many HIV-positive people. In 2003 and 2006, CDC issued new HIV testing recommendations for health-care settings that called for routine HIV testing of all patients aged 13–64 years and eliminating pretest prevention counseling and separate consent.<sup>4,5</sup>

In response to the shift toward routine HIV testing, we developed the Advise, Consent, Test, Support routine HIV testing model (ACTS) in 2003. We designed ACTS to overcome three common challenges that we found in our formative research prevented many health-care providers from implementing routine HIV testing: (1) they did not have enough time to deliver conventional HIV counseling, (2) they did not feel familiar enough with the elements of counseling to adequately deliver service, and (3) they did not fully appreciate the degree of HIV risk their patients faced (Unpublished report. Futterman D, Michaels M, Stafford S, Carlson B, Wolfson S. Not enough time, not enough experience, not aware of risk: why healthcare providers don't routinely test youth for HIV. 2002). In response to these and other barriers, ACTS streamlined and codified the counseling and testing process so that providers had the time and confidence to integrate routine HIV testing into care. ACTS also provided a clinical practice change plan specific to routine HIV testing that could be implemented using the clinical capacity of existing staff members and monitored using existing data resources.

We piloted ACTS within a network of community health centers (CHCs) operated by Montefiore Medical Center in the Bronx, New York, for several reasons. First, these centers serve populations most at risk for HIV/AIDS. The Bronx is home to 1.3 million predominantly black or Latino people, and with HIV infection rates of 1.6% in 2003 and 2.0% in 2012 (some neigh-

borhoods are as high as 2.5%–2.7%), the borough is considered a U.S. HIV epicenter.<sup>6,7</sup> Second, in terms of HIV testing practices, in 2008 it was estimated that 33% of Bronx residents had ever been tested for HIV.<sup>8</sup> Montefiore's network of 23 CHCs—many of which are federally qualified health centers—provides primary care and specialty services (including HIV/AIDS) delivered by mission-driven health-care professionals. Organized as the Montefiore Medical Group, this clinic network annually serves approximately 280,000 low-income, underserved patients, of whom 95% are minorities and 40%–70% are on Medicaid (Unpublished data, Montefiore Medical Group, 2015). Finally, we chose CHCs as the venue for this program because millions of Americans receive health care at these centers, yet routine HIV testing has not been universally scaled up in this setting. In 2006, CDC found that only 5% of CHC patients had received HIV testing that year, despite 21% of all new HIV infections being diagnosed in CHCs.<sup>9</sup> A review of the literature revealed few studies documenting the impact of routine HIV testing programs in CHCs during an extended time, and the effects those programs have on annual and long-term testing saturation.

By some estimates, it can take an average of 17 years for clinical practice change to become embedded as a standard of care.<sup>10</sup> We examined the impact of ACTS on routine HIV testing at 10 CHCs in 10 years, characterized by three periods: ACTS pilot, new routine HIV testing policy and practice, and building routine HIV testing sustainability (Table 1). The implementation of ACTS began an era of routine HIV testing practice change at Montefiore that eventually expanded to include all sectors, including the outpatient, inpatient, and emergency departments, as laws and policies changed.

## METHODS

ACTS included two components: a routine HIV testing practice change plan and a streamlined counseling approach (Figure 1). When they were designed, these components were innovative because the early calls from public health leaders for routine HIV testing in health-care settings included little or no practical guidance on how to implement this service. Informed by established clinical practice change models,<sup>11</sup> ACTS provided a routine HIV testing blueprint for clinics comprising four steps: buy-in, implementation planning, training and mentoring, and monitoring and evaluation. Another benefit of ACTS was its use of existing resources to drive routine HIV testing practice change, most notably task-shifting among veteran clinic

**Table 1. Summary of practice change efforts to routinize HIV testing in 10 community health centers in the Bronx, New York, 2003–2013**

Periods	Activities
ACTS pilot initial-start group 2003–2005	<p>Buy-in</p> <ul style="list-style-type: none"> <li>• Two presentations were made to CICERO (HIV management group within Montefiore's CHC leadership) to describe the ACTS methodology and obtain approval for the pilot.</li> <li>• One meeting with each site's medical director and administrator was conducted to explain the motivation for routine HIV testing, describe the ACTS methodology, and obtain consensus for the way forward.</li> <li>• ACTS pilot sites were randomly separated into initial-start and delayed-start groups.<sup>a</sup></li> </ul> <p>Implementation planning (only with initial-start group)</p> <ul style="list-style-type: none"> <li>• One workshop with each site's medical director, HIV clinician(s), and administrator was conducted to develop a site-specific routine HIV testing implementation plan using ACTS practice change materials.</li> <li>• At least three proactive technical assistance follow-up calls and e-mails were provided to all sites during the implementation planning process until all sites' plans were finalized.</li> </ul> <p>Training (only with initial-start group)</p> <ul style="list-style-type: none"> <li>• At least two academic detailing sessions on ACTS were delivered onsite to each clinic's entire staff. Repeat sessions were delivered to ensure ACTS reached all new staff members and those who needed refresher training.</li> <li>• One ACTS manual and toolkit were provided to each site as a general program reference (available at <a href="http://adolescentaids.org/healthcare/acts.html">http://adolescentaids.org/healthcare/acts.html</a>).</li> </ul> <p>Monitoring and evaluation (feedback only given to initial-start group)</p> <ul style="list-style-type: none"> <li>• Monthly data reports tracking all indicators were automatically generated and shared with each site's medical director and administrator. These data were used to identify sites requiring additional technical assistance.</li> <li>• At least two site visits were made to each clinic during the pilot phase to observe and respond to routine HIV testing practice change challenges and cross-pollinate successful approaches.</li> <li>• Two newsletters featuring a report on their improvements in HIV testing rates, short articles supporting the practice of routine testing, and how-to tips for implementing routine testing in clinical encounters were distributed to all five clinics.</li> </ul>
ACTS pilot delayed-start group 2006–2007	<p>Buy-in</p> <ul style="list-style-type: none"> <li>• One meeting with each site's medical director and administrator was conducted to explain the motivation for routine HIV testing, describe the ACTS methodology, and obtain consensus for the way forward.</li> </ul> <p>Implementation planning</p> <ul style="list-style-type: none"> <li>• One workshop was conducted with each site's medical director, HIV clinician(s), and administrator to develop a site-specific routine HIV testing implementation plan using ACTS practice change materials.</li> <li>• One technical assistance follow-up call was provided to all sites during their implementation planning process.</li> </ul> <p>Training</p> <ul style="list-style-type: none"> <li>• One academic detailing session on ACTS was delivered onsite to each clinic's entire staff.</li> <li>• One ACTS manual and toolkit was provided to each site as a general program reference.</li> </ul> <p>Monitoring and evaluation</p> <ul style="list-style-type: none"> <li>• Monthly data reports tracking all indicators were automatically generated and shared with each site's medical director and administrator.</li> <li>• Site visits were made as requested to observe and respond to routine HIV testing practice change challenges and cross-pollinate successful approaches.</li> </ul>
New routine HIV testing policy and practice 2008–2011	<ul style="list-style-type: none"> <li>• From 2008 to 2011, we responded to several of the 10 pilot sites' requests for ACTS materials and trainings, but did not proactively support them as in the previous periods.</li> <li>• In 2008, we and the New York City Department of Health and Mental Hygiene launched "The Bronx Knows" campaign to promote routine HIV testing at medical and community sites throughout the Bronx.</li> <li>• AAP and the leadership of Montefiore's 23 CHCs wrote a new HIV testing policy that endorsed the ACTS provider-delivered HIV testing approach and called for annual testing.</li> <li>• We actively lobbied the New York State Legislature to revise the state's testing law to facilitate routine HIV testing, resulting in a 2010 law easing consent requirements and mandating the offer of testing to patients aged 13–64 years in medical settings.</li> <li>• In 2011, we worked with Montefiore's legal affairs office to write the first institution-wide routine HIV testing policy.</li> <li>• Montefiore received support from Gilead's HIV on the Frontlines of Communities in the United States program to support routine testing efforts.</li> </ul>
Building routine HIV testing sustainability 2012–2013	<ul style="list-style-type: none"> <li>• AAP advocated for, and Montefiore convened, a routine HIV testing task force led by the institution's chief medical director and comprising AAP and other stakeholders.</li> <li>• AAP began monthly monitoring of routine HIV testing in emergency, inpatient, and outpatient departments.</li> <li>• Revisions were made to electronic medical records in outpatient and emergency departments to facilitate routine HIV testing.</li> <li>• New durable consent for HIV testing was integrated into general medical consent.</li> <li>• AAP redelivered onsite routine HIV testing trainings to all 23 CHCs, plus several other outpatient sites and staff members at the hospital's largest emergency room.</li> <li>• Market research was conducted among providers and patients to identify knowledge, attitudes, and beliefs regarding routine HIV testing. Findings informed a communications campaign with "Say Yes to the Test" materials distributed across the institution.</li> </ul>

<sup>a</sup>During the ACTS pilot, the initial-start group of community health clinics received the ACTS intervention first in 2004, followed by implementation of ACTS among the delayed-start group in 2006.

HIV = human immunodeficiency virus

ACTS = Advise, Consent, Test, Support

CHC = community health center

AAP = Adolescent AIDS Program at Montefiore Medical Center

AIDS = acquired immunodeficiency syndrome

**Figure 1. Provider pocket card outlining the streamlined counseling steps for the Advise, Consent, Test, Support routine HIV testing model pilot program at Montefiore Medical Center in the Bronx, New York, 2003–2013**

**ACTS**™ ADVISE  
CONSENT  
TEST  
SUPPORT

**Streamlined HIV Counseling and Testing**

**ADVISE** *We recommend that all of our patients get tested for HIV as part of today's visit.*

- ▷ HIV is the virus that causes AIDS, only an HIV test can tell if you are infected
- ▷ HIV can be transmitted sexually, via needle-sharing or from mothers to babies
- ▷ Learning whether you are HIV- or HIV+ can improve your health
- ▷ Do you have any questions? Can we do the test today?

**CONSENT** *HIV testing is your choice, we can only do the test if you give your consent.*

- ▷ Your test result will be kept confidential in the medical record
- ▷ HIV+ results are confidentially reported to the NYS DOH, who can also help you anonymously notify sex/drug partners of possible exposure
- ▷ Do you have any questions? Can we do the test now?

Document oral consent (rapid testing) or have consent form signed (blood test)

**TEST** *We use an oral HIV test that's ready in about half an hour.*

OBTAIN ORAL SPECIMEN IN EXAM ROOM.  
ADDRESS PATIENT'S OTHER HEALTH NEEDS WHILE WAITING.

**SUPPORT** *Your HIV test result is negative, which means we found no sign of HIV infection today.*  
**FOR HIV NEGATIVE**

- ▷ However, if you were recently exposed to HIV, you might need additional tests IF PATIENT HAS FEVER, RASH, SWOLLEN NODES AND/OR SORE THROAT AND EXPOSURE HISTORY (ACUTE INFECTION), OBTAIN HIV VIRAL LOAD
- ▷ We recommend your partner(s) test and that you retest every year or sooner if new risk: pregnancy, unsafe sex, STD, new partner, IV drug use or acutely ill
- ▷ Do you understand what to do to stay HIV negative? Any other questions?

REFER CLIENT TO COUNSELLOR IF MORE SUPPORT IS NEEDED

HIV = human immunodeficiency virus

staff members vs. a counselor-based approach, and use of established data systems for monitoring and evaluation (ACTS toolkit available upon request).

ACTS also included a radically streamlined HIV counseling and testing approach that made HIV testing feasible as part of routine care. At the time, social workers or dedicated HIV testing staff members most often delivered HIV counseling and testing services because the lengthy process included general HIV information, risk assessment, and risk-reduction counseling—skilled discussions that could take 45 minutes to complete. The ACTS counseling approach drew on providers' existing clinical experience and was delivered in as few

as 1–2 minutes because it greatly minimized education and prevention discussions, services that have not been proved effective in changing patients' risk behaviors or reducing new HIV transmissions.<sup>12</sup> Finally, ACTS provided information, education, and communication materials that encouraged providers to offer routine HIV testing; answered patients' frequently asked questions about HIV/AIDS; and motivated them to consent to or ask for HIV testing during their clinical visit.

#### ACTS pilot (2003–2007)

Ten Montefiore CHCs agreed to participate in a program evaluation of this new model (ACTS) to implementing routine HIV counseling and testing. The clinics were chosen in part because of their preexisting data systems that tracked key indicators and because of their availability and experience in providing HIV care to at-risk populations. To reduce bias, we assigned the 10 clinics by coin toss to two groups: initial start and delayed start. We then assessed the two groups at baseline by frequency of HIV testing, number of patients treated, and provider mix, and found that the random assignment process resulted in well-matched initial-start and delayed-start groups.

The program's evaluation criterion was percentage of patients in the clinics tested. Prior to implementation of ACTS, both the initial-start and delayed-start groups were performing a similar percentage of HIV tests: 9% in the initial-start group and 7% in the delayed-start group (Table 2). The five initial-start CHCs received the ACTS intervention beginning in 2004, while the delayed-start sites continued practice as usual through 2005. In 2006, the delayed-start group received the ACTS intervention, but with less follow-up support than the initial-start group received (Table 1).

#### New routine HIV testing policy and practice (2008–2011)

The success of the ACTS pilot led the Montefiore Medical Group to adopt ACTS as a best practice for all 23 CHCs in the network, which was formalized in 2008 by a revision to the network's HIV testing policy. The old policy had called for risk-based HIV testing accompanied by lengthy prevention counseling and primarily tasked dedicated testing staff members with providing HIV testing. The new policy called for providers to annually offer and deliver the ACTS model of streamlined HIV testing to all patients aged 13–64 years. During this same period, we actively participated in two significant public health and policy initiatives that advanced routine HIV testing: conceptualization and implementation of The Bronx Knows, a borough-wide routine HIV testing campaign launched in 2008

**Table 2. HIV testing data collected during the Advise, Consent, Test, Support routine HIV testing model pilot program at Montefiore Medical Center in the Bronx, New York, 2003–2007**

Site	Provider type	2003 (baseline)		2004		2005		2006		2007	
		Number of eligible patients	Number of ELISA tests (percent of eligible patients tested for HIV)	Number of eligible patients	Number of ELISA tests (percent of eligible patients tested for HIV)	Number of eligible patients	Number of ELISA tests (percent of eligible patients tested for HIV)	Number of eligible patients	Number of ELISA tests (percent of eligible patients tested for HIV)	Number of eligible patients	Number of ELISA tests (percent of eligible patients tested for HIV)
Initial start <sup>a</sup>	A	8,995	694 (8)	9,626	928 (10)	8,642	1,308 (15)	9,921	1,755 (18)	9,702	2,119 (22)
	B	3,792	177 (5)	3,418	522 (15)	3,547	1,007 (28)	3,668	1,209 (33)	3,504	1,081 (31)
	C	3,298	386 (12)	3,365	542 (16)	3,399	823 (24)	3,531	739 (21)	3,734	826 (22)
	D	5,122	534 (10)	4,609	545 (12)	5,055	1,005 (20)	5,239	1,073 (20)	5,174	1,132 (22)
	E	2,959	503 (17)	3,100	545 (18)	2,775	904 (33)	3,152	932 (30)	3,147	1,066 (34)
Subtotal	24,166	2,294 (9)	24,118	3,082 (13)	23,418	5,047 (22)	25,511	5,708 (22)	25,261	6,224 (25)	
Delayed start <sup>b</sup>	F	6,820	492 (7)	6,894	607 (9)	8,501	467 (5)	10,232	661 (6)	9,040	1,130 (13)
	G	8,741	93 (1)	9,904	223 (2)	10,863	281 (3)	10,332	840 (8)	10,473	974 (9)
	H	3,924	330 (8)	3,673	521 (14)	3,985	881 (22)	4,283	1,546 (36)	4,576	1,391 (30)
	I	2,776	482 (17)	2,788	256 (9)	2,702	269 (10)	2,951	497 (17)	2,846	700 (25)
	J	2,698	253 (9)	2,982	451 (15)	3,217	453 (14)	3,428	482 (14)	3,433	793 (23)
Subtotal	24,959	1,650 (7)	26,241	2,058 (8)	29,268	2,351 (8)	31,226	4,026 (13)	30,368	4,988 (16)	
Total	49,125	3,944 (8)	50,359	5,140 (10)	52,686	7,398 (14)	56,737	9,734 (17)	55,629	11,212 (20)	

<sup>a</sup>During the ACTS pilot, the initial-start group of community health clinics received the ACTS intervention first in 2004, followed by implementation of ACTS among the delayed-start group in 2006.

HIV = human immunodeficiency virus

ELISA = enzyme-linked immunosorbent assay

IM = internal medicine

Peds = pediatrics

FM = family medicine

with the New York City Department of Health and Mental Hygiene, and intensive lobbying and negotiation resulting in the 2010 New York State revised HIV testing law that mandated all patients aged 13–64 years be offered HIV testing in medical settings.<sup>13</sup>

Following this change in law, the Adolescent AIDS Program collaborated with Montefiore’s legal affairs department on a new institution-wide routine HIV testing policy that incorporated ACTS methodology and changes made in 2010 to New York State’s HIV testing law. We also met with Montefiore’s chief executive officer and top medical leadership to lay the groundwork for an institution-wide routine HIV testing initiative that Gilead’s HIV on the Frontlines of Communities in the United States program allowed us to implement.

#### **Building routine HIV testing sustainability (2012–2013)**

From 2012 to 2013, a routine HIV testing task force led by Montefiore’s chief medical director was established and included representatives from the Adolescent AIDS Program; adult AIDS center; inpatient, outpatient, and emergency departments; and nonclinical departments such as the laboratory, risk management, information technology, and legal affairs. To facilitate routine HIV testing, the task force revised electronic medical record (EMR) systems to prompt providers to offer testing and display patients’ prior testing histories; instituted a new, durable HIV consent form; and delivered a training program to sites throughout the institution. The trainings we provided focused on New York State’s revised HIV testing law, Montefiore’s new testing protocols for outpatient and emergency departments, how to deliver streamlined HIV counseling using ACTS, updated linkage-to-care protocols for HIV-positive patients, and changes made to the EMR to facilitate routine HIV testing. For clinical quality-improvement purposes, we conducted monthly monitoring and reporting of HIV testing and linkage-to-care indicators across Montefiore’s outpatient, inpatient, and emergency departments. Additionally, in 2012, we engaged a communications consultant and market researcher to assess Montefiore’s provider and patient attitudes and beliefs about routine HIV testing, which informed a communications campaign that motivated patients to “Say Yes to the Test.”

#### **Analysis**

To determine the program’s success, we measured several key indicators: (1) number of patients seen at the clinics, (2) number of patients eligible for HIV testing, (3) number and percent of patients receiving HIV testing, (4) HIV test results, and (5) number of

HIV-positive patients linked to care (evidenced by a CD4+ or HIV viral load test within three months of diagnosis). Patients aged 13–64 years and not pregnant were eligible for testing. Pregnant patients were excluded because they were the only cohort that already received routine HIV testing as part of prenatal care, and variances in numbers of pregnant patients by clinic could potentially bias results.

During this time period, a change in Montefiore’s EMR system was made. Data from 2003 to 2007 were collected using Care Cast and Merrit, Montefiore’s EMR system at the time. The statistical analysis used the computer software WINPEPI,<sup>14</sup> which was designed for health practice research. To determine if there was a statistically significant increase in testing over time, results of the Cochrane-Armitage test for linear trend were reported. Data from 2008 to 2013 were collected using Clinical Looking Glass® (an interactive software application developed at Montefiore Medical Center to evaluate health-care quality, effectiveness, and efficiency), and frequencies were reported. Because of the change in data collection methodologies, figures from the ACTS pilot period should not be directly compared with data from the two periods that follow (2008–2013) in terms of absolute values. However, the data do show a similar trend in the 10-year period.

Since 2007 (the earliest date these data were available), about 96% of the patients seen year to year at Montefiore’s CHCs were existing patients (Unpublished data, Montefiore Medical Group, 2015). Because these clinics treat such a stable patient population, it is not necessary to test 100% of eligible patients seen every year. Once tested, a patient who has had no risk of HIV exposure does not need to be retested at visits in subsequent years. To examine the level of testing saturation among patients seen in the 10 ACTS pilot CHCs, we conducted two sample look-backs of HIV testing. All eligible patients seen in 2005 (the earliest year this HIV testing data analysis was available) and 2013 had their EMRs searched for an indication that they had ever received an HIV test at Montefiore.

## **RESULTS**

### **ACTS pilot (2003–2007)**

Using a Cochrane-Armitage test for linear trend, the initial-start sites showed a statistically significant overall improvement in HIV testing from 2003 to 2007 ( $p < 0.001$ ). Each year, the percentage of eligible patients tested for HIV increased substantially from baseline, increasing from 2,294 (9%) eligible patients tested in 2003 to 6,224 (25%) eligible patients tested in 2007 (Table 2). Although Clinic C increased testing

over baseline, it did not demonstrate a significant difference in the pairwise comparison by year.

In 2006, the delayed-start sites received the ACTS intervention and, subsequently, the number and percentage of their patients tested increased from 1,650 (7%) in 2003 to 4,026 (13%) in 2006 and 4,988 (16%) in 2007. As expected, statistical analysis reported no significant increase in testing during the non-intervention year from 2003–2004. Delayed-start sites showed an overall statistically significant difference in patients tested from 2003 to 2007 ( $p < 0.001$ ).

Overall, HIV testing in the 10 sites increased nearly threefold during the ACTS pilot period, from 3,944 tests (8%) in 2003 to 11,212 tests (20%) in 2007.

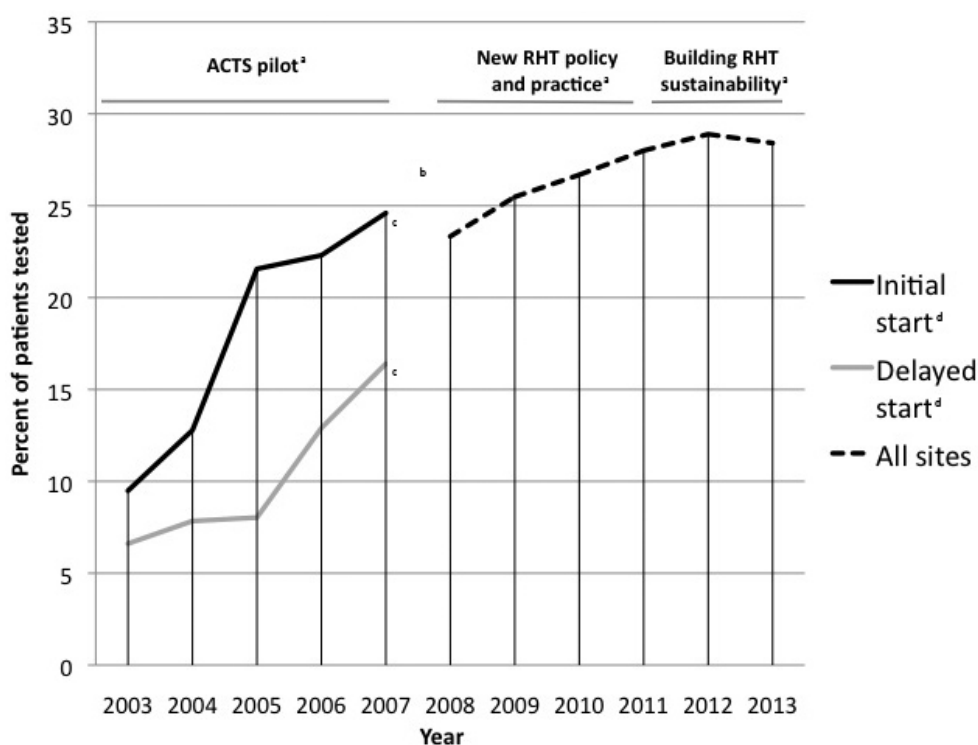
#### New routine HIV testing policy and practice (2008–2011) and sustainability (2012–2013)

Although technical assistance and follow-up with the 10 sites decreased dramatically from 2008 to 2011, the number of HIV tests performed at these sites increased, from 23% in 2008 to 28% in 2011. Rates of HIV testing at the 10 sites plateaued thereafter, with 29% of eligible patients tested in 2012 and 28% of eligible patients tested in 2013 (Figure 2).

#### HIV testing saturation

It might appear that the 10 ACTS pilot sites' sustained annual testing of about 28% of eligible patients because 2011 fell far short of true routine testing, but those

**Figure 2. Percentage of patients tested for HIV during the Advise, Consent, Test, Support routine HIV testing model pilot program at Montefiore Medical Center in the Bronx, New York, 2003–2013**



<sup>a</sup>The 10 years of HIV testing were characterized by three distinct periods: the ACTS pilot period (2003–2007), the new RHT policy and practice period (2008–2011), and the building RHT sustainability period (2012–2013).

<sup>b</sup>2008 marked a change in data collection method from the Care Cast and Merritt electronic medical record systems to Montefiore's proprietary medical data analysis software, Clinical Looking Glass.

<sup>c</sup>The  $p$ -values ( $p < 0.001$ ) for the initial- and delayed-start sites represent the entire period and were calculated using the Cochran-Armitage test for linear trend. No significant increase in testing was found during the non-intervention years.

<sup>d</sup>During the ACTS pilot, the initial-start group of community health clinics received the ACTS intervention first in 2004, followed by implementation of ACTS among the delayed-start group in 2006.

HIV = human immunodeficiency virus

ACTS = Advise, Consent, Test, Support routine HIV testing model

RHT = routine HIV testing

clinics' stable patient populations called for an analysis of testing saturation over time. The 2013 look-back found that 57% of patients seen that year had ever been tested for HIV at Montefiore. As a comparator, the same look-back conducted of patients seen at the five delayed-start clinics in 2005 found that only 28% had ever been tested for HIV at Montefiore, almost a 200% increase in testing saturation in eight years.

#### Identification of HIV-positive patients

Routine HIV testing in the 10 ACTS pilot sites identified 433 HIV-positive patients from 2006 to 2013 (reliable data on the number of newly identified HIV-positive patients were available starting in 2006). Case finding increased in the beginning of the program, peaked in 2010, and then declined through 2013 (Figure 3). Of the 433 HIV-positive patients identified, 419 (97%) were newly diagnosed. The percentage of HIV-positive patients among those tested from 2006 to 2013 ranged from 0.2% to 0.6%. This trend closely followed the number of newly identified HIV-positive patients per year.

#### Linkage to care

During this period of observation (2006–2013), 96% of the newly diagnosed HIV-positive patients at the

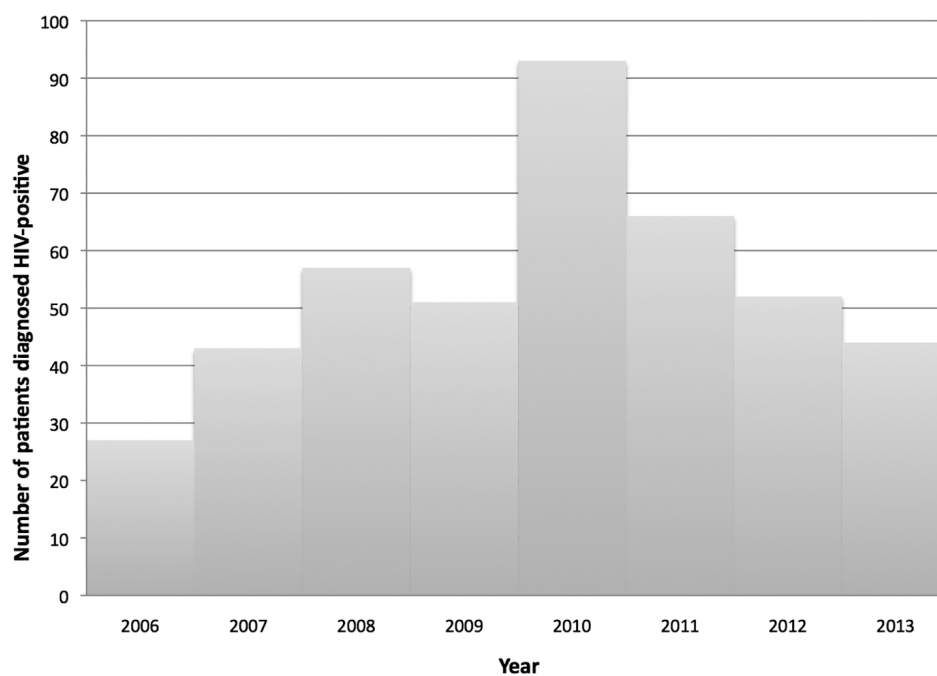
10 ACTS pilot sites were linked to care within 90 days of HIV diagnosis, with an annual range of 92% to 98%, which was higher than a sample study of Bronx linkage-to-care rates from 2007 (59%) to 2011 (69%) and the National HIV/AIDS Strategy goal of 85% for 2015.<sup>15,16</sup> This success underscores the value of conducting provider-delivered routine HIV testing in settings where HIV care is available. Unfortunately, we were unable to obtain comparison linkage-to-care data for the period before this program started.

#### DISCUSSION

The ACTS program demonstrated that significant increases in routine HIV testing can be achieved in health-care settings by using the model's practice change plan and streamlined HIV testing approach integrated into clinical care. During the 2003–2007 ACTS pilot period, we succeeded in almost tripling the number of HIV tests conducted in the 10 pilot sites. After the pilot period, increases in HIV testing continued to improve without ongoing intervention, and the rate of HIV testing had improved more than threefold by 2013.

Despite a tripling of HIV testing, we did not identify a similarly significant increase in the numbers of HIV-

**Figure 3. HIV-positive patients identified in 10 Montefiore community health centers where the Advise, Consent, Test, Support routine HIV testing model pilot program was implemented, 2006–2013**



HIV = human immunodeficiency virus



positive patients. The case-finding trend among these sites during the 10-year period tracked New York City and national case-finding trends for the same period. The seropositivity rate (0.2%–0.6%) met the U.S. cost-effectiveness standard for HIV testing of >0.1%.<sup>17</sup> In focus groups conducted after the ACTS pilot, providers and administrators discussed several possible reasons for the low case-finding rates, including the theory that testing was concentrated on patients scheduled for routine annual physicals, as opposed to sick-visit patients; therefore, these patients might represent a lower risk group for HIV. Additionally, patients who receive their care at CHCs may be preselected for lower risk behaviors than other Bronx residents who receive episodic care in emergency departments. Nevertheless, providers reported that routine screening resulted in the identification of HIV-positive patients to whom they would not normally have offered HIV testing, including older women and young people.

Finally, the elements of ACTS are highly adaptable and can be used in a number of health-care settings. Following the success of the program's pilot at Montefiore, ACTS has also been successfully used in other clinical and community settings across the United States and has been officially integrated into more than 500 public health clinics across South Africa. In the spirit of sharing program successes and challenges with other health-care settings considering or already implementing routine HIV testing, we present the following 10 key lessons learned:

1. Using the ACTS model, a paradigm shift from counselor-delivered to provider-delivered HIV testing can be achieved in a variety of health-care settings.
2. Begin by removing common barriers to routine HIV testing (i.e., drastically streamline the HIV counseling and testing process to match other provider-delivered screening processes) and minimizing the operational impact of any consent requirements.
3. Successful routine HIV testing practice change is dependent on a thorough implementation plan and intense start-up support, but, once embedded, it can be sustained as a new best practice.
4. Monitoring and evaluation are critical elements of routine HIV testing practice change. Two particularly innovative indicators are (1) denominator data to track the percentage of patients tested and (2) monitoring of testing saturation over time in settings with stable patient populations.
5. Making the change in health-care settings from risk-based to routine HIV testing requires the buy-in of medical and administrative leadership and may require philosophical shifts among some providers.
6. Many providers are resistant to routine HIV testing because they believe patients do not want HIV testing when, in fact, the vast majority of patients will accept testing if a provider recommends it.
7. Diffusion of innovation theory predicts early adopters or champions—those providers, managers, clinics, and departments that can model routine HIV testing and drive others to accept change.
8. When designing a routine HIV testing program, be prepared for it to take two or more years in a clinic and at least 10 years at an institution to significantly change outdated, yet entrenched, approaches to HIV testing.
9. Decision support via EMR systems can improve the HIV testing offer and contribute to a robust monitoring and evaluation approach, but it is not a panacea for routine HIV testing.
10. Government and institutional policies can facilitate or hamper routine HIV testing but should not be viewed as an absolute barrier, as routine HIV testing can be implemented even in an environment where it is not fully supported, such as New York, where onerous separate consent requirements remain a barrier.

### Limitations

This study was subject to several limitations. For one, the ACTS program began as a training initiative and expanded into a clinical quality-improvement program; however, it was never funded as a prospective research study. The lack of research funding imposed important barriers on implementation: The initial-start sites received a more thorough intervention than delayed-start sites, Montefiore's existing data systems had many limitations, and resources were not always available for a full and timely evaluation. Additionally, significant administrative and policy barriers to HIV testing, such as required written consent in the early years and the voluntary nature of this intervention, limited what we were able to accomplish. Importantly, other health systems seeking to scale up routine HIV testing are likely to face many, if not all, of these constraints.

## CONCLUSION

Despite some early systems and philosophical barriers to routine HIV testing at Montefiore CHCs, the ACTS program was able to shift from a counselor-delivered to a more sustainable and effective provider-delivered HIV testing service. This practice change achieved a significant improvement in the rate of HIV testing at these sites that has since been sustained. The basic tenets of ACTS include obtaining buy-in for routine HIV testing from key stakeholders; creating site- or sector-specific routine testing implementation plans; training site staff members on how to implement their routine testing plan; and continually monitoring, evaluating, and giving feedback to implementers. The ACTS program is highly replicable and offers a model for other large medical institutions interested in scaling up routine HIV testing.

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