Initiation of Antiretroviral Therapy in Youth with HIV: A U.S.-Based Provider Survey

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Abstract

In 2009, the Department of Health and Human Services (DHHS) recommended initiating antiretroviral therapy (ART) for youth with HIV at higher CD4 counts (≤ 500 cells/mm³) than previously recommended (≤ 350 cells/mm³). Barriers experienced by providers regarding ART initiation in this population have not been assessed. From 12/2011–01/2012, we asked providers from the HIV Medicine Association listserv who prescribed ART to youth (ages 13–25 years) with behaviorally-acquired HIV to complete a web-based survey. We presented a clinical vignette to explore potential barriers for initiating ART. Overall, 274/290 (94%) respondents completed the survey. Most felt confident that evidence supported initiating ART at higher CD4 counts (94%), and that benefits outweighed the risks of long-term toxicity (98%) or developing resistance (88%). Most (96%) initiated ART in the patient vignette (age 19 years, CD4 count ~ 400). Patient characteristics (e.g., unstable housing or drug use) were perceived as large barriers to ART initiation. Low response rate (13%) was a limitation. Respondents were knowledgeable about relevant DHHS guidelines, believed sufficient evidence supported ART initiation at higher CD4 counts, and would provide treatment to those with CD4 counts ≤ 500 cells/mm³. Understanding and overcoming barriers to initiation of ART perceived by providers is important to ensure implementation of ART treatment guidelines.

Introduction

IN 2009, THE PANEL ON ANTIRETROVIRAL GUIDELINES for Adults and Adolescents of the Department of Health and Human Services (DHHS) recommended initiation of antiretroviral treatment (ART) at CD4 cell counts of 500 cells/mm³ and below rather than at 350 cells/mm³ and below.¹ We hypothesized that practitioners caring for youth with HIV were knowledgeable about the revised DHHS guidelines for initiation of ART for patients with CD4 cell counts ≤ 500 cells/mm³, but that adherence to the guidelines would be hindered by attitude and practice barriers. Thus, we surveyed the knowledge, attitudes, and practices (KAP) of healthcare professionals (HCPs) caring for youth with behaviorally-acquired HIV regarding initiation of ART.

Methods

Study design and eligible participants

We developed an anonymous survey to administer to physicians (MD and DO), nurse practitioners, and physician assistants caring for youth with behaviorally-acquired HIV. The survey items were developed in conjunction with a clinical biostatistician from the Columbia University Mailman

School of Public Health. The survey was piloted for clarity with experienced HIV clinicians prior to administration to the study population, and internal consistency measures were built into the survey. Potential participants were members of the listserv of the HIV Medicine Association (HIVMA) and recruited by e-mail. Eligible participants were those providers who prescribed ART to youth (defined as 13–25 years of age) with behaviorally-acquired HIV in the United States. The survey was administered using SurveyMonkey.com² and respondents who completed the survey were sent an electronic \$10 Starbucks gift card. To claim the gift card, respondents were directed to another website unlinked to their anonymous responses. From December 2011 to January 2012, six requests to complete the survey were sent to members of the listserv. The Institutional Review Board of Columbia University Medical Center approved this study with a waiver of informed consent.

Survey content

We developed a 21 item survey to assess potential knowledge, attitude, and practice barriers associated with initiation of ART using a clinical vignette and questions with forced choice format and Likert scales.

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Case vignette. Respondents were provided with the following clinical vignette: "A 19-year-old man is referred to your clinic. He believes he acquired HIV through insertive or receptive anal intercourse. HIV infection was confirmed via Western blot and initial CD4 count was 421 cells/mm³ and viral load 66,000 HIV RNA copies/mL. He has no HIV-associated co-morbid conditions. His family does not know his HIV status, but he feels he has a good support system and his current partner and friends are aware of his status. You see him in follow-up twice over the next few months and discuss antiretroviral therapy. Today is his third follow-up visit and 3 weeks ago his CD4 count was 399 cells/mm³."

Respondents were asked several questions (yes/ no responses) about the vignette. (1) Would they prescribe ART for the patient in the vignette? (2) Would they have prescribed ART for the same patient 5 years ago? (3) Were they confident that sufficient medical evidence existed in favor of starting ART for the patient described? (4) Did they agree the benefits of starting ART outweighed the risks of long-term toxicity and/or the risk of developing HIV resistance?

Provider and practice characteristics. To assess if the characteristics of respondents were associated with responses, we collected respondents' sex, age, primary specialty, and the number of years caring for youth with HIV. We also assessed if the characteristics of the healthcare setting (i.e., type of clinical practice, number of patients served, availability of ancillary staff, and location of practice site) were associated with responses.

Location of practice sites

The zip codes of the practice sites of respondents were ascribed to their associated geographic DHHS regions.³ We used ArcGIS version 9.3 to map the geographic distribution of these sites. To determine if practice sites were located in areas with a high prevalence of HIV, we compared the distribution of these sites with those included in the Health Resources and Services Administration (HRSA) Ryan White Program's eligible metropolitan areas (EMA), and transitional grant areas (TGA).⁴

Statistical analysis

To assess the potential association of the characteristics of respondents or their practice sites with adherence to current DHHS guidelines for initiating ART, Pearson's chi-square, Kruskal-Willis, and Student *t*-tests were used. To assess the potential association of these characteristics with perceived barriers to initiating ART, similar analyses were performed. Chi-square was used to determine if perceiving selected provider or patient characteristics as a large barrier to initiating ART was associated with lack of relevant staff and/or services. Associations were considered significant if $p \leq 0.05$. Statistical analyses were performed using SAS (version 9.1 for Windows, SAS Institute, Inc, Cary, NC).

Results

Respondents and practice site characteristics

Of the 2211 HCPs on the HIVMA listserv, 290 (13%) responded and were eligible to complete the survey. Overall, 274/290 (94%) completed the survey. The characteristics of respondents are shown (Table 1). The majority (34%) practiced in a hospital-based clinic affiliated with an academic

institution. Most respondents practiced in areas with high HIV prevalence with 65% practicing in a Ryan White EMA or TGA. At the practice sites of respondents, the mean and median number of youth with HIV was 60 and 30 patients, respectively (range, 1–600 patients). Most respondents reported that interdisciplinary care team members were readily available (Table 2).

Initiation of ART

The vast majority (96%) of respondents reported they would initiate ART for the patient described in the vignette. However, only 23% would have done so 5 years ago. Ninety-four percent of respondents felt confident that sufficient medical evidence exists to start ART in the patient described. Furthermore, 98% felt the benefits of starting ART outweighed the risks of long-term toxicity, and 88% felt the benefits of starting ART outweighed the risk of developing resistance.

Potential barriers to ART initiation

Neither respondent characteristics (e.g., age or years caring for youth with HIV) nor practice site characteristics (e.g., geographic location or number of patients at practice site) were predictors of initiation of ART for the patient in the vignette. Respondents identified potential barriers to initiation of ART (Table 3). Patient factors were more frequently identified as "large barriers" than practice factors. Respondents without a substance abuse counselor available at

TABLE 1. PROVIDER AND PRACTICE CHARACTERISTICS

	n (%)
Gender ^a	
Male	116 (41%)
Female	166 (59%)
Type of healthcare provider ^b	
MD	170 (59%)
DO	21 (7%)
NP	71 (25%)
PA	25 (9%)
Mean age (range)	47 (27–79)
Mean years caring for youth with HIV (range)	13 (1–30)
Mean HIV patients at primary clinical practice site (range)	60 (1–600)
Primary clinical practice site ^c	
Community based clinic—affiliated with academic institution	39 (13.8%)
Community based clinic—not affiliated with academic institution	72 (25.5%)
Hospital based clinic—affiliated with academic institution	96 (34.0%)
Hospital based clinic—not affiliated with academic institution	10 (3.5%)
Managed care organization/health maintenance organization	2 (0.7%)
Private practice	38 (13.5%)
Corrections facility	6 (2.1%)
Other	19 (6.7%)

^a97% ($n=282$), ^b99% ($n=287$), and ^c99% ($n=286$) HCPs responded to survey question.

TABLE 2. READILY AVAILABLE STAFF AND SERVICES AT RESPONDENTS' PRACTICE SITES

Care team member	Readily available ^a	Service	Readily available ^a
Case manager	236 (85%)	Phlebotomy	272 (98%)
Social worker	217 (78%)	Routine immunizations	271 (98%)
Psychiatrist	194 (70%)	Laboratory services	269 (97%)
Adherence nurse/counselor	186 (67%)	Mental health services	237 (85%)
Nutritionist	183 (66%)	Obstetrics/gynecology	226 (81%)
Pharmacist	174 (63%)	Family planning	197 (71%)
Outreach worker	165 (60%)	Support or group sessions	187 (67%)
Psychologist	166 (60%)	Transportation vouchers	186 (67%)
Substance abuse counselor	158 (57%)	HIV clinical trials/research unit	162 (59%)
Peer counselor	122 (44%)	Food vouchers	122 (44%)
Physical therapist	105 (38%)		
Occupational therapist	80 (29%)		

^a96% ($n=278$) or respondents answered these survey questions.

their practice site were not more likely to identify patients' recreational drug use as a larger barrier to initiation of ART ($p=0.98$). Providers without an ART adherence nurse or counselor were not more likely to identify lack of time and/or staff to counsel patients about starting ART as a large barrier ($p=0.54$).

Discussion

To our knowledge, this is the first study to assess providers' knowledge, attitudes, and practices regarding earlier initiation of ART in youth with behaviorally-acquired HIV in response to the DHHS guidelines. These changes reflect evidence that earlier initiation of ART is associated with reduced HIV-associated morbidity and mortality, decreased resistance,⁵⁻¹² and reduced HIV transmission.¹³

We found that the majority of respondents agreed that the DHHS recommendations were evidence-based and would initiate ART for youth with HIV with CD4 counts ≤ 500 cells/mm³. In contrast, only 23% would have initiated ART for this scenario 5 years ago, suggesting widespread acceptance and uptake of new guidelines by respondents. Notably, most respondents were practicing in areas with high HIV prevalence; 65% were practicing in zip codes in Ryan White EMAs and TGAs. Respondents felt that the benefits of starting ART outweighed the risks of drug toxicity and development of resistance. These findings contrast with a recent study in which providers were

concerned about the development of HIV resistance if ART was used to prevent HIV transmission.¹⁴

Survey methodology has been used to assess provider knowledge, attitudes, and practices regarding prevention of perinatal HIV transmission,¹⁵ as well as the use of ART to prevent HIV transmission.^{14,16} In the current study, we used the KAP paradigm described by Cabana and colleagues.¹⁷⁻¹⁹ In this paradigm, knowledge barriers include general lack of awareness of the guidelines or lack of familiarity with specific guidelines.²⁰ Attitude barriers include lack of agreement with guidelines; inertia of previous practices; and lack of belief that the guidelines will improve patient outcomes. Practice barriers to guideline implementation include patient-specific circumstances and healthcare factors such as lack of provider time, resources, or organizational constraints. We found that respondents more commonly identified patient factors than practice factors as large barriers to initiating ART. Many providers indicated a high level of staff and services, which could facilitate initiation of ART. Providers can play a role in addressing barriers by focusing efforts on specific issues identified for each individual patient. For example, providing substance abuse counseling to those with concerning use of recreational drugs, or utilizing ART counselors to identify lifestyle issues not conducive to taking medications, and create individualized plans to overcome these barriers.

Psychosocial stressors and cognitive developmental factors unique to adolescents complicate HIV engagement and retention in care, and ART initiation. Recent studies in younger intravenous substance abusers²¹ and young women experiencing stigma²² demonstrated reduced medication adherence, and other issues such as risk-taking behaviors, homelessness, prostitution, lack of insurance, lack of familiarity with healthcare systems, among others also complicate ART initiation in the younger HIV-infected population.¹ Preparing adolescents for the eventual transition to adult care also needs to be considered.

Although ART is widely available in the U.S., and providers are willing to start treatment, as further supported by the current study, a significant number of patients are not receiving ART.²³⁻²⁵ Studies assessing barriers to testing, care, and treatment for HIV highlight that healthcare professionals underestimate the impact of patients' emotional rather than circumstantial barriers.²⁶ While healthcare professionals were

TABLE 3. PRACTICE BARRIERS TO ART INITIATION

	Large barrier N (%)	Small barrier N (%)
Provider characteristic		
Inadequate time/ancillary staff to counsel patient	48 (17%)	228 (83%)
Patient characteristics		
Nondisclosure of HIV status to family/friends	86 (31%)	190 (69%)
Unstable housing	153 (55%)	123 (45%)
Concerning use of recreational drugs	183 (66%)	93 (34%)
Lifestyle not conducive to daily medications	244 (88%)	32 (12%)

more likely to view circumstantial factors (e.g., finances, transportation, family care) and substance abuse as important barriers to seeking care, HIV-infected patients were more likely to report emotional factors (e.g., fear of ART side effects, fear of people knowing their HIV status, and the stigma of HIV infection) as barriers.²⁶

Providers should continually assess issues that patients perceive as barriers throughout engagement in care.

This study had several limitations. The response rate was low and therefore the responses could be potentially biased. Our survey was limited to those providers on the HIVMA listserv. We were not able to assess what proportion of the entire listserv cared for patients in this younger age group or identified as pediatric or adolescent providers, which may introduce bias. Furthermore, respondents practiced at highly resourced practice sites which could limit generalizability. We administered this survey prior to the most recent guideline updates. Finally, we did not measure actual initiation of ART.

In conclusion, this study highlights that HIV providers were knowledgeable about the 2009 DHHS guidelines and believed there is sufficient evidence for the recommendation to start ART at higher CD4 counts. Understanding and overcoming specific barriers to initiation of ART perceived by providers is important to ensure implementation of ART treatment guidelines.

Acknowledgments

We would like to thank Martina Pavlicova and Jimmy Duong from the Department of Biostatistics at Columbia University for their assistance in development of the survey questions. We would also like to thank Dr. Gagliardo's fellowship research Scholarly Oversight Committee which includes Marc Foca, M.D., Jeffrey Birnbaum, M.D., Elaine Abrams, M.D., Jessica Justman, M.D., and Theo Sandfort, M.D., Ph.D.

Author Disclosure Statement

Dr. Gagliardo received a study grant through the Immunoscience, Virology and Oncology MD Fellows Research Program at Bristol-Myers Squibb. The funders had no role in study design, data collection and analysis, or decision to publish. This publication was supported by the National Center for Advancing Translational Sciences, National Institutes of Health, through Grant Number UL1 TR000040, formerly the National Center for Research Resources, Grant Number UL1 RR024156. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH. Dr. Gagliardo is also supported by the Columbia University T32 post-doctoral Pediatric Infectious Disease Fellowship.

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