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Transition of youth living with HIV from pediatric to adult-oriented healthcare: a review of the literature

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Abstract

Due to advances in antiretroviral therapy, most HIV-infected children and youth now survive into adulthood. Many experts and professional societies have expressed concern about potential disruptions to care when youth living with HIV transition from pediatric to adult-oriented medical care. However, original research focused on this transition process is rare. The existing literature can be organized into the following categories: pre-transition assessments of anticipated barriers and concerns; studies describing provider practices during the transition period; and post-transition retrospective analyses after transition to adult care. Most studies had small sample sizes and focused on vertically infected youth. Further work is needed to document clinical outcomes after transition and to evaluate transition protocols that are in place at some institutions.

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Keywords

adolescent; HIV/AIDS; pediatric; transition; youth

The prevalence of HIV infection among adolescents and young adults has increased steadily in the USA; over 77,000 individuals between the ages of 13 and 24 years were estimated to be living with HIV in 2009 [1]. Youth living with HIV (YLHIV) consist of two distinct populations: those who acquired HIV infection vertically (perinatally) from their mothers; and those infected horizontally through behaviors including unprotected sexual contact or intravenous drug use, typically during adolescence. As of 2010, there were an estimated 10,797 vertically HIV-infected individuals in the USA and dependent areas, and 76% of those affected were 13 years of age at the time of the analysis [2]. Recent surveillance data from 2009 and 2010 reveal that horizontally infected youth account for 26% of all new HIV cases in the USA. Nearly 75% of the 12,200 new HIV infections in youth were attributable to males having sex with males [1].

As a consequence of these epidemiologic trends, growing numbers of YLHIV will transfer their healthcare from pediatric/adolescent to adult-oriented clinical providers in the coming years. The transition of youth with special healthcare needs to adult-oriented healthcare has been studied in a range of chronic pediatric illnesses, and can be defined as the “purposeful, planned movement of adolescents and young adults with chronic physical and medical conditions from child-centered to adult-oriented health care systems” [3]. The widely acknowledged importance of effective healthcare transition for youth with special healthcare needs is reflected in the plurality of guidelines, consensus statements and expert panel recommendations from national medical organizations such as the American Academy of Pediatrics [4,5]. These guidelines consistently reiterate the need for continuous, coordinated, culturally appropriate, compassionate and family-centered transition programs [6,7].

A well-planned transition allows youth to optimize their health, to independently manage their disease and to assume adult roles and functioning [4,5]. On the other hand, poor transition planning may result in disengagement from care, which in the context of HIV can lead to the development of multidrug-resistant viral strains, declining immune status, increased morbidity and mortality and increased likelihood of secondary HIV transmission to other individuals [8]. Ensuring effective transition from pediatric/adolescent to adult care is a national priority for optimizing the health of YLHIV, and also critical for prevention of HIV transmission to wider communities.

In spite of the critical importance of this topic, there are relatively few empirical studies that systematically analyze healthcare transition for YLHIV. We sought to review the existing peer-reviewed literature and to highlight strengths and gaps in order to make recommendations about directions for future research.

Methods

We searched the PubMed, Google Scholar and PSYCInfo databases with various combinations of the terms ‘adolescent’, ‘youth’, ‘HIV’ and ‘transition’. Given the relative

scarcity of research on this topic, we searched all available articles in these databases without limiting our search to specific years. We excluded studies that were published in languages other than English. We reviewed abstracts and included studies with a primary focus on the transition process; articles about HIV in adolescents that mentioned transition in passing, for example, were not included. Although we found several review articles and opinion pieces on the topic of transition in HIV, we focused this review on original research articles in peer-reviewed journals.

Our search of the literature revealed 14 articles meeting criteria for inclusion in this review (Table 1). The majority of articles utilized qualitative methodologies and focused on youth with vertically acquired infection. Studies were relatively balanced in terms of representing the viewpoints of providers, patients and caregivers. In terms of the thematic content of the articles, they can be roughly divided into: pre-transition assessments of anticipated barriers and concerns; studies describing and analyzing provider practices during the transition period; and post-transition retrospective analyses after transition to adult care.

Pre-transition assessments of anticipated barriers & benefits

The first subset of studies can be described as pre-transition assessments of anticipated barriers or in a few cases, anticipated benefits of going through the transition process. These included several qualitative interview studies as well as one survey studies, which focused on exploring anticipated barriers and benefits of transition from the points of view of providers, patients and/or family members.

Wiener *et al.* studied a unique situation in which a pediatric HIV research clinic in the USA, which also served as the main medical care site for patient participants, was closed [10]. All of this program's participants had acquired HIV either vertically or through blood transfusion. This program closure forced the transition of enrolled youth to community-based clinics, the majority of which were adult clinics. In anticipation of this change in care, the authors developed and applied a transition readiness scale that was then administered to both caregivers (n = 39) and youth (n = 12) at two pre-transition time points approximately 7 months apart; the median age at the first time point was 15.8 years. The scale involved concrete items assessing whether or not specific transition barriers had been addressed: for example, whether or not a local healthcare provider had been identified. The authors found that the practice of using the initial questionnaire answers to identify and target anticipated transition barriers decreased anxiety and improved transition readiness over time; this change was statistically significant. Disease severity, as measured by CD4 T-cell count and HIV-1 RNA level, did not correlate with transition readiness at either time point. Additionally, when the individual transition barriers were compared across time points, those showing significant change were, in need for a physician in the community; in need for a social worker in the community; and lacking knowledge of disease and medications.

Vijayan *et al.* conducted open-ended interviews with vertically infected YLHIV (n = 18), parent/guardians (n = 15) and pediatric health-care providers (n = 9) with the aim of exploring current challenges in care as well as potential barriers to transitioning to adult-based medical care [11]. The study was based in a single pediatric center in the USA. For patients and guardians, the stigma associated with HIV made them cautious about meeting

new providers. Pediatric providers feared that adult providers might expect more independence than their adolescent patients actually had, and all three groups expressed anxiety about terminating their current relationships with one another.

In a London-based study, Campbell *et al.* interviewed vertically infected YLHIV aged 13–15 years (n = 6) attending transition preparation events as a part of the Looking Forward Project, a clinic-based program that provided a structured and holistic approach to transition including discussions of medication adherence, sexual relationships and coping strategies [12]. The program organized regular events every 4 months to provide YLHIV with skills and information in these areas. This study was designed to assess the experiences of youth in these programs. YLHIV found that participation in the program helped them to maintain a positive attitude about their medication and gave them hope for the future in general. Although the authors described the program as a transition preparedness program, participants did not specifically report changing attitudes toward transition, based on the quoted interviews.

Fair *et al.* also conducted semistructured interviews with vertically infected adolescents (n = 40) in a single pediatric clinic [20]. In contrast to other work that focused specifically on barriers or concerns, this study sought to more broadly examine the expectations of YLHIV and their guardians. Many YLHIV exhibited a general lack of awareness about transition. Guardians were more fluent on the topic but often held a passive view and were waiting for their children or the providers to broach the topic of transition. Some guardians thought transition would be beneficial to help their children achieve more responsibility and maturity in their lives overall. Most adolescents did not describe fear or anxiety about transitioning, however a few YLHIV and guardians were concerned about losing relationships with pediatric staff. YLHIV were concerned that adult clinics were more serious and less personal in relating to their patients.

In a similar study, Sharma *et al.* also focused on vertically infected youth and conducted semi-structured interviews with adolescent patients (n = 15) and family caregivers (n = 8) to assess attitudes toward transition, as part of a needs assessment in a single pediatric clinic in Miami. Many youth and guardians perceived themselves as being underprepared for transition. They described fear about losing their medical home and the atmosphere and culture of the adult clinic. At the same time, youth recognized the need for developing personal responsibility as they got older. YLHIV and caregivers had ideas for ways the clinic could help prepare them for transition, including starting preparations at a young age (i.e., 13 years old) but delaying the actual transition for as long as possible, having a separate transition clinic, and training in other independent living skills [23].

From this group of studies, we can conclude that several barriers are frequently anticipated by patients, caregivers and providers before transition occurs. The most commonly mentioned barriers across studies included a feeling of loss for the pediatric provider–patient relationship, anxieties about increased autonomy within the healthcare system and logistical challenges related to health insurance and social services. At the same time, it was encouraging to note that despite these frequently cited concerns, YLHIV and caregivers often looked forward to transition and/or viewed it as a developmentally appropriate

milestone that they could successfully achieve. Of note, all of these studies were based in pediatric as opposed to adolescent-specific care settings, and none of these studies included youth who acquired HIV through sexual contact.

Descriptions of provider practices

The next category of studies focused exclusively on provider perspectives and described transition practices in a variety of settings. These studies were all qualitative and/or descriptive in nature, and were all based in the USA.

Fair, Sullivan and Gatto conducted qualitative interviews with 19 healthcare providers, including physicians, nurses and social workers in pediatric, adolescent and adult healthcare settings [13]. All participants had experience with the transition of YLHIV in their clinic. The goal of this analysis was to describe providers' 'best practice' recommendations, which included the importance of patient preparation (including promoting medical independence, familiarization with adult settings and engaging caregivers), communication between pediatric/adolescent and adult providers, and assistance with system-level barriers such as changes in insurance or social services. These investigators published a second analysis from the same parent study, which asked providers to describe indicators of successful transition [15]. Providers identified both biological and behavioral markers of transition success. Biological markers included having an undetectable HIV-1 RNA level and higher CD4 T-cell count, while behavioral indicators included adherence to medications and appointments, as well as demonstrating ownership of medical care. In a third study based on these same qualitative interviews, providers were asked to discuss various care team members within multidisciplinary infectious disease groups, with special attention to the different roles played by representatives of each discipline. The authors concluded that pediatric social workers had an especially critical role in helping adolescents through the transition process [21].

Gilliam *et al.* conducted a multisite qualitative interview study within the Adolescent Trials Network for HIV/AIDS Interventions, in which 'key informant' providers were identified at each of 14 geographically diverse Adolescent Trials Network sites throughout the USA and interviewed about their transition practices [16]. These sites are primarily adolescent medicine clinics that care for both vertically and horizontally infected youth, and the study did not distinguish between the two groups. The authors noted considerable diversity in transition practices, as well as a lack of consensus in defining a successful transition. Six of the 14 clinics reported having a written protocol to guide transition; the authors noted significant differences between the clinics with and without formalized transition. Informants from clinics with formal protocols tended to have a more comprehensive view of transition and to describe much more intricate practices informed by developmental theory, including early initiation of transition discussions, skills building and collaborative transition teams. Both clinics with and without formal protocols identified similar barriers and facilitators, and expressed the desire to improve transition-related practice.

One of the sites that was discussed in the Gilliam *et al.* study above also published a more detailed description of their transition protocol. Investigators from the adolescent HIV clinic at the University of Miami describe the development of their 'Moving Out' protocol [17].

This protocol was developed specifically for horizontally infected youth who acquired HIV during adolescence, and grew out of anecdotal observations that many youth were missing appointments after transition to the adult setting. They subsequently developed a protocol with five phases: beginning discussions about transition when the patient turns 23 years old; meeting the adult physician at the adolescent clinic; full visit with the adult physician at the adolescent clinic; transfer to the adult clinic upon turning 25 years; and follow up with social workers from the adolescent clinic 1 year after transfer. At the time of publication, 57 youths had gone through or were currently undergoing the transition process at this site. Evaluations of this protocol have yet to be published.

Descriptions of transition practices highlight significant diversity between providers and sites. Although not discussed in all studies, providers mostly agreed on definitions of transition success both in terms of clinical outcomes and behavioral competencies. In terms of how to achieve these goals, formalized protocols had been developed and appeared helpful in many locations, but these have not been compared or formally evaluated to date. Those providers in clinics with formalized protocols also appeared more aware of the intricacies and barriers involved with the transition process, however, the effect of this awareness on the success of the transition process remains unknown.

Post-transition retrospective analyses

Finally, a few studies examined the transition process from a retrospective viewpoint. These studies used a range of methodologies and unlike the other studies reviewed here, there are also several studies in this category from the UK (as opposed to the USA based studies described above). Of note, transition in the UK occurs earlier on average than in the USA (17–18 years vs mid-20s), and adolescent medicine clinics are less common in the UK relative to the USA [24]. Horizontally infected youth are therefore much less likely to be represented in the UK based studies, as they may present directly to adult care. Despite these differences, we still felt that it was warranted to include the UK-based studies in this review, with a caveat about cross-national comparisons given these known differences.

Miles *et al.* conducted a small qualitative interview study in London with seven young adults who had transitioned from a pediatric to an adult HIV-care setting within the last 2 years [9]. Five of the participants acquired HIV vertically, while the other two were infected through transfusion of infected blood. They were transitioned relatively early – between 16 and 20 years of age. In retrospect, participants' assessments of the actual process were mixed. Four of the participants were relatively less attached to the pediatric staff and described their transition processes as smooth and uncomplicated. The other three participants were more attached to the pediatric staff and delayed their transition as a result of anxieties about leaving. Ultimately, all recognized some benefits to transition, including increased independence and control, although some also felt a sense of loss after leaving the pediatric clinic. Participants recommended transition programs to prepare them for the adult clinic, including pre-transition visits to the adult clinic, and they highlighted the importance of having a stable post-transition provider with flexible access and cultural awareness.

Wiener *et al.* conducted a second study involving brief telephone interviews with 59 post-transition youth as a follow-up to their study described above [19]. During the interviews,

researchers asked both open- and closed-ended questions about the patients' experiences with transition of care, which they described as a mixed qualitative–quantitative methods design. Quantitative survey results revealed that 45% of participants found the transition more difficult than they had anticipated. They also compared self-reported CD4 T-cell counts after transition to prior chart-abstracted values and reported a non-statistically significant trend toward declining CD4 T-cell count after transition. The authors appropriately noted that a major limitation of their study involved the use of self-reported CD4 T-cell counts, which may not be reliable. The qualitative portion of the study highlighted youth recommendations for improving transition, including the need to increase continuity, provide logistical assistance, improve communication between providers, acknowledge the developmental level of the patient, provide interdisciplinary services including mental health and case management, have adult providers learn about treating youth, and have pediatric providers encourage transition. Of note, the qualitative results included some patients who had transferred from a pediatric research clinic to a pediatric community clinic, so all the participants did not transition to adult care *per se*.

Another study that assessed youth after a transition of care was also in a somewhat unusual setting. Bundock *et al.* focused on a sample of YLHIV with vertically acquired infection who were attending a transition outpatient service in the UK [14]. This service consists of a multidisciplinary adolescent-focused clinic where patients are followed for 6–8 years in between pediatric and adult-focused care. Services provided included shared pediatric-adult physician care, and training in healthcare management skills. This study assessed youth satisfaction with the transition clinic while they were still participating in the program, and compared these YLHIV (n = 21) to Australian youth with diabetes in a well-established transition program (n = 39). The vast majority of patients in both groups endorsed the statement that transition was an easy process, as well as a statement that transition was beneficial for their health. When given the opportunity to make free comments, participants cited the importance of being treated as an individual, and being encouraged to become independent.

Valenzuela *et al.* conducted interviews with ten young adults who were slightly older than those interviewed in the other published literature (24–29 years of age), and who had transitioned from a single adolescent HIV clinic into adult-oriented clinics [18]. In contrast to the preponderance of studies reviewed here, all of the interviewed youth were horizontally infected and the majority were heterosexual females. The pretransition clinic utilized a multidisciplinary, formal approach including individualized transition preparation; and participants described strong and often emotional connections with their adolescent care providers. Participants retrospectively described feeling unprepared for transition, which was an anxiety-producing process, and recommended beginning the transition process earlier, as well as providing multiple options for new providers. Once in adult care, youth described difficulties dealing independently with insurance requirements, longer wait times and less time with providers. There was a range of sentiments about adult care providers; some participants were more satisfied than others, and many described adult care as a period when they developed positive skills and increased independence. Of note, family/caregivers

were not discussed by these participants, possibly reflecting a different level of family involvement for horizontally infected youth.

In a very different type of analysis, Fish *et al.* analyzed data from an audit of 14 adult clinics in the UK, in which deaths of vertically infected youth following transition from pediatric care were reported [22]. A total of 11 deaths were reported between September 2003 and March 2011; these cases were then analyzed in further detail. Seven deaths were due to AIDS-related complications, two were suicides, one was due to bronchiectasis and one cause of death was unknown. Only two patients were virally suppressed at the time of transition, and pretransition multiclass antiretroviral resistance was documented in nine of the cases. It is therefore unclear whether or not transition in and of itself had a negative effect on the disease course. However, the relatively high mortality rate compared with the general population or to the population of adults living with HIV points to the need for further research regarding transition and, in particular, protocols with demonstrated success transitioning challenging cases.

The post-transition assessments were relatively rare and differed greatly from one another in terms of methodologies. A wide range of transition experiences, with some youth being more satisfied with their adult care than others. Based on their findings, both Wiener *et al.* and Fish *et al.* suggested that there might be a decline in health status after transition; however, the methodological and sample size limitations of their studies prevent us from definitively drawing this conclusion.

Discussion

The existing literature on healthcare transition among YLHIV has been attentive to describing perspectives from the various stakeholders, including patients, caregivers and providers. All of the studies that we reviewed here utilized a cross-sectional study design, with the majority of studies focusing on the pediatric or adolescent perspective on the transition process. In terms of methodologies, most of this research was qualitative, with several exceptions that included quantitative survey data.

Our review of the literature revealed several key gaps that remain for future research. As has been observed in a previous review [7], there is a need for more research focusing on horizontally infected youth. Given the effectiveness of prevention of vertical transmission, the number of vertical transmission cases in the USA, UK and other developed countries has declined significantly; meanwhile, horizontally infected adolescents represent a rapidly growing population of YLHIV. Socio-behavioral circumstances may differ between the two groups; in particular, the role of family and guardians is likely quite different between the two, as horizontally infected youth may not disclose their HIV status to parents or guardians [6]. In addition, due to the limitations of the study designs and recruitment strategies, only those youth who successfully entered adult care were interviewed for their retrospective analysis of the process, whereas many youth may be lost to follow-up during their transition and may offer a unique perspectives on the challenges associated with the transition process. Prospective, longitudinal studies are notably absent from this body of literature, but are urgently needed to improve our understanding of the transition process.

Conclusion

The majority of the studies were qualitative or case-based studies with small sample sizes, which yield important descriptions of individuals' experiences but are not broadly generalizable. There remains a critical need for quantitative research to fill several gaps; to document the extent of the problem and measure outcomes after transition to adult care; to assess which of the anticipated barriers and concerns directly impact clinical outcomes; and to evaluate the efficacy of the transition protocols that many centers already have in place. Specifically, in terms of outcomes, it is critical that future studies include biological measurements such as CD4 cell counts, resistance testing and HIV viral load levels, in addition to the more subjective outcomes that have been assessed in prior work. Without such studies, it will be nearly impossible to know which transition-related practices are truly effective and should be disseminated more widely. Given the relatively small numbers of YLHIV, this may require multisite collaborations to address such questions in the future.

Future perspective

Currently, HIV transition practices are extremely variable across institutions. The relatively small number of youth transitioning in an individual center at any given time make it difficult to develop and test protocols in a rigorous, scientific manner. However, given recent attention to this problem from various experts and professional societies, we expect that pediatric/adolescent and adult HIV care centers will collaborate to form multicenter studies that develop and test evidence-based protocols to improve outcomes of youth transitioning to adult care.

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Papers of special note have been highlighted as: • of interest; •• of considerable interest

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EXECUTIVE SUMMARY

Background

- Incidence and prevalence of HIV is increasing among adolescents and young adults. Youth living with HIV include both vertically and horizontally infected populations, who may have very different clinical and psychosocial experiences from one another.
- Transition from pediatric to adult-oriented healthcare is an important process for youth living with HIV; we sought to review the original research on healthcare transition in this population.

Anticipated barriers to transition

- The largest subset of studies described anticipated barriers to transition from the viewpoints of patients, parents and/or providers.
- Commonly mentioned barriers included fear of leaving pediatric/adolescent providers and meeting new adult providers, as well as logistical obstacles such as navigating health insurance and social services.

Description of practices

- Other studies described transition practices in different pediatric/adolescent clinics, primarily in the USA.
- These descriptive studies highlighted significant variability in the degree of standardization of transition protocols.

Retrospective descriptions of transition

- A third group of studies consisted of retrospective descriptions of transition experiences.
- None of these studies included objective clinical outcome data.

Conclusion

- Most studies utilized qualitative methods and had small sample sizes.
- Horizontally infected youth are under-represented in the transition literature.
- Further work is needed to document and measure clinical outcomes after transition, as well as to evaluate existing transition protocols.

Table 1
 Characteristics of original research articles on healthcare transition for youth living with HIV.

Study (year)	Country of study	Methodology	Inclusion of vertically or horizontally infected youth		Mean age of youth (years)	Study participants			Ref.
			Horizontal	Vertical		Providers	Patients	Caregivers	
Miles <i>et al.</i> (2004)	UK	X	X	X	17.4 (at transition); 18.7 (at study)	X	X		[9]
Wiener <i>et al.</i> (2007)	USA		X		15.8 (at study)				[10]
Vijayan <i>et al.</i> (2009)	USA	X	X	X	16 (at study)	X	X	X	[11]
Campbell <i>et al.</i> (2010)	UK	X	X	X	13.8 (at study)	X	X		[12]
Fair <i>et al.</i> (2010)	USA	X	X	X	NA	X	X		[13]
Bundock <i>et al.</i> (2011)	UK and Australia		X		19 (at study)				[14]
Fair <i>et al.</i> (2011)	USA	X	X	X	NA	X	X		[15]
Gilliam <i>et al.</i> (2011)	USA	X	X	X	NA	X	X		[16]
Matturo <i>et al.</i> (2011)	USA	X			NA				[17]
Valenzuela <i>et al.</i> (2011)	USA	X	X	X	25.2 (at transition); 26.7 (at study)	X	X		[18]
Wiener <i>et al.</i> (2011)	USA	X	X	X	22 (at study); age at transition not reported	X	X		[19]
Fair <i>et al.</i> (2012)	USA	X	X	X	17.3 (at study)	X	X	X	[20]
Fair <i>et al.</i> (2012b)	USA	X	X	X	NA	X	X		[21]
Fish <i>et al.</i> (2014)	UK	X		X	17 (at transition); 21 (at study/death)	X			[22]
Sharma <i>et al.</i> (2014)	USA	X	X	X	18 (at study)	X	X	X	[23]

NA: Not available.