

Review article

A review of transition experiences in perinatally and behaviourally acquired HIV-1 infection; same, same but different?

Phung Khanh Lam¹, Sarah Fidler² and Caroline Foster^{2§}

[§]Corresponding author: Caroline Foster, The Family and 900 Clinics, Imperial College Healthcare NHS Trust, London, W2 1NY. (Caroline.Foster@imperial.nhs.uk)

Abstract

Introduction: Despite sharing common psychosocial and developmental experiences, adolescents living with perinatally and behaviourally acquired HIV-1 infection are different in terms of timing of HIV infection and developmental stage at infection. Therefore, it is of interest to identify similarities and differences between these two groups of adolescents living with HIV in their experiences, facilitators and barriers during the transition process.

Methods: A detailed literature search of peer-reviewed published papers was conducted on PubMed to identify relevant original research or viewpoints published up to September 2016. Conference abstracts and other unpublished data sources were not included.

Results: Existing published literature, mainly using qualitative methods, explores the transition from paediatric to adult healthcare provision, as experienced by these two groups of young people. Reports highlight the variation and similarities in their experiences and challenges of transition. Findings from the USA and Europe predominate, while experience from Africa and Asia is lacking, despite the importance of these regions in the global epidemic.

Conclusions: Published transition data remain limited, and there are few studies focusing on behaviourally infected adolescents and key population groups (e.g. adolescents who use drugs, lesbian/gay/transgender individuals). Robust definitions of the transition process and standardized outcome measures are required to facilitate cross-study and geographic comparisons.

Keywords: Transition experience; HIV; adolescents; young people; modes of infection

Received 13 September 2016; Accepted 15 February 2017; Published 16 May 2017

Copyright: © 2017 Lam PK et al; licensee International AIDS Society. This is an Open Access article distributed under the terms of the Creative Commons Attribution 3.0 Unported (CC BY 3.0) License (<http://creativecommons.org/licenses/by/3.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction

Recent estimates [1,2] suggest that there were 1.8 million adolescents living with HIV in 2015, with 250,000 new infections in this group. The ratio between perinatal and behavioural infections is generally unknown [3]. However, a UNAIDS estimate in 2013 suggested that among adolescents living with HIV in the 25 countries contributing the majority of AIDS-related deaths among this age group, around half were infected through mother-to-child transmission, and half through sexual and unsafe injection transmission [4].

In higher-resourced settings, adolescents with perinatally acquired HIV are usually seen by paediatric healthcare providers, and by the time of transition of care to adult services are more likely, when compared to their behaviourally infected peers, to have advanced disease, physical and neurocognitive deficits, HIV-1-associated drug resistance, and drug side effects [5–11]. Global guidelines recommend commencing ART in all age groups [12,13] and hence many perinatally infected children are highly treatment experienced as they enter adolescence. There has been increasing

recognition of the emergence of resistance mutations to first-line therapy in resourced-limited settings where access to viral load monitoring and to second-line regimens remains challenging [14,15].

In contrast, adolescents with behaviourally acquired HIV may be seen from diagnosis in adult services, particularly where adolescent services are poorly developed and paediatric care ceases, depending on the setting, between 12 and 18 years of age. As such, they will not experience transition of healthcare provision from paediatric to adult services; yet, they too will be experiencing multiple transitions from childhood to adulthood during this time. Exposure groups at greater risk of HIV acquisition during adolescence include young heterosexual women, men who have sex with men (MSM), transgender adolescents, and those who sell sex and use drugs [16–19]. Risk factors for HIV acquisition in adolescents include: increased number of sexual partners, younger age of sexual debut, previous STIs, mental health diagnosis, poverty, homelessness, and drug and alcohol use [16–19]. As they enter adult care, behaviourally infected adolescents are more likely to be in early

stages of disease, the majority with normal prior physical and cognitive development, requiring simpler first-line treatment regimens. However, they may continue to engage in high-risk behaviours and may have difficulties in accepting their diagnosis and treatment [5–7].

In addition to the shared challenges due to the psychosocial and developmental changes of adolescence and the stigma associated with HIV infection, adolescents in both groups frequently lack adequate emotional support, including from family members. This stems in part from difficulty in disclosing their HIV status to relatives or friends, and in the perinatally infected group because many have lost one or both parents to HIV [5–7,20]. Furthermore, adolescents in key populations may have to confront the additional stigma and discrimination related to their drug use or sexual orientation not only among individual healthcare providers, but also within healthcare systems and policy levels [1,21].

This narrative literature review describes key differences and similarities in transition experiences between populations of HIV-positive youth by mode of infection, what is known about their outcomes in adult care, and future research priorities.

Methods

We searched PubMed for published English language literature on adolescent transition up to September 2016 using the following search terms: “Adolescent” AND “HIV” AND “Transition”. Of 270 citations retrieved, we focused on any study exploring facilitators and barriers of the transition process among adolescents or young adults living with HIV, and among healthcare workers. We paid particular attention to findings reported by mode of transmission, and we excluded papers which provided only quantitative outcomes in one risk group.

Results

We identified 25 relevant articles describing the transition experience of adolescents/young adults living with HIV [5,22–45]. While covering different global settings, almost all were from well-resourced regions, where early access to antiretroviral therapy (ART) has resulted in establishment of dedicated transition programmes as adolescents move from paediatric to adult services (Table 1). There were five articles from resource-limited countries (one from Brazil, two from Thailand and two from Africa [28,34–36,44], with most of the remainder from USA and Europe. Data on transition experiences were difficult to compare between settings and even within individual countries, due to the wide variation both in transition services and age at transition, ranging from 12 to 24 years. The majority of the articles described findings from qualitative studies (19/25, 76%), where expectations and experiences of adolescents [22–26,28–35,37], guardians [22,25,26,35], service providers [22,29,34,35,41–45], and policy-makers [35] were assessed. Of the 20 studies assessing transition

expectations and experiences of adolescents, 8 focused on adolescents with perinatal infection [22–26,28,29,46], two focused on adolescents with behavioural infection [30,31], and 10 recruited a mixture of adolescents with different types of HIV exposures [5,32–40]. Two common models of transitional care described in these studies were [1] integrating transition services into paediatric or adult clinics [27,32,36], and [2] designing and utilizing a special adolescent clinic that can facilitate transition from paediatric to adult healthcare provider [24,28,38,40]. None of the studies directly compared these models. Few studies evaluated quantitative outcomes post-transition across different HIV exposure groups, and all had very small sample sizes, limiting further interpretation [38–40].

Multiple barriers and facilitators to successful transition were identified in the research studies. Amongst identified barriers, the strong attachment between adolescents and the paediatric provider was the most commonly identified factor [22,25,28,30,32,34,35,37,44], which applied to both perinatally and behaviourally infected adolescents. This was reported by adolescents themselves who expressed not wanting to leave their paediatric team, and by the healthcare professionals who cited concerns regarding the adolescents’ ability to self-manage within the healthcare environment of adult services [20,21,23–25,32,33]. This attachment has been explained by the positive long-term relationship between adolescents and providers, the protective care of paediatric providers [26], and the lack of preparation for transition within the healthcare system (e.g. requiring provider time) and for the patient (e.g. knowledge and skills to live independently) [25,26,28,30,33,37,43]. When transition occurred despite sufficient preparation, this attachment led to feelings of loss [25], with some adolescents finding it more difficult to build good relationships with the adult provider.

However, a comprehensive transition programme that was centred around the adolescent and included a formal written policy, time for education and skill development (especially around disease knowledge, scheduling of appointments and medication adherence), and a readiness assessment, was reported to be a facilitator of the transition process [5,24,25,27,30,33,34,41,43,44]. Transition programmes that focussed on helping adolescents build their competence and independence further seemed to improve transition outcomes [23–25,30,32,41,42]. A common theme was for adolescents to have some control over the transition process, and for it to be geared to the adolescent’s individual readiness to transition.

A commonly cited barrier was the negative perceptions among both groups of adolescents and their guardians about adult healthcare providers [22,26,28,30,33,37]. These arose from differences between adult and paediatric services in terms of patient load, expectation of patient autonomy, length and frequency of appointments, clinic setting and patient population [26,30,32,33,41–43,45]. Developing good relationships with adult providers to facilitate transition has been achieved in some settings by integrating adult healthcare professionals into the

Table 1. Summary of published studies describing the transition experience of adolescents living with HIV.

Study, year, country	Method	Participants	Reported facilitators		Reported barriers	
			Quantitative outcomes	or	Quantitative outcomes	comparing risk groups
Perinatal infection Vijayan 2009 [22] USA	Qualitative	18 PHIV, 15 guardians, 9 paediatric providers			Negative perceptions of stigma Lack of autonomy Strong attachment with paediatric provider Negative perceptions of adult provider Disclosure	
Campbell 2010 [23] UK	Qualitative	6 PHIV	Sense of independence Incentives Activities Peer support Educational support, especially on medication			
Bundock 2011 [24] UK, Australia	Quantitative Qualitative	21 UK PHIV, 39 AUS young adult with diabetes	Adult provider who is open-minded, receptive and respectful Age-appropriate environment Non-stigmatizing environment Communication between providers and young people Positive relationship with staff Transitioning when ready Well-prepared transition process Sense of independence and self-control Well-prepared transition process Sense of independence and self-control		Lack of understanding of adolescent's needs	
Fair 2012 [25] USA	Qualitative	40 PHIV, 18 guardians			Strong attachment with paediatric provider Discontinuity of care Lack of preparation for transition Difference between paediatric and adult providers Lack of financial support in adult care Lack of preparation for transition Privacy/Disclosure Negative perceptions of adult provider Paediatric providers too protectively	
Sharma 2014 [26] USA	Qualitative	15 PHIV, 8 guardians	Personal responsibility Comprehensive care model			

Table 1. (Continued)

Study, year, country	Method	Participants	Reported facilitators		Reported barriers	
			Quantitative outcomes comparing risk groups	or	Quantitative outcomes comparing risk groups	Reported barriers
Righetti 2015 [27] Italy	Quantitative	45 PHIV	84% were retained in care 10 years from the beginning of the transition process. 96% required personalized psychotherapeutic programs, mostly related to HIV diagnosis disclosure. After transition, 98% had personalized antiretroviral therapy, 98% were involved in health education activities and 73% were involved in sexual education activities			
Machado 2016 [28] Brazil	Qualitative	16 PHIV	Pre-connection with the adult team	Lack of preparation for transition Strong attachment with paediatric provider Psychosocial issues Negative perceptions of adult provider		
Newman 2016 [29] Australia	Qualitative	12 PHIV and 12 clinicians	Focusing on what young people can gain from becoming independent rather on what they will lose Clinician's skills to engage young people whilst accepting they are responsible for managing their own wellbeing			
Behavioural infection Valenzuela 2011 [30] USA	Qualitative	10 BHIV	Well-prepared transition process Options and control in the process Assistance with coordination and linking of services HIV and additional services in the same place Sense of independence and self-control Positive relationship with adult providers	Strong attachment with paediatric provider Lack of preparation for transition Negative perceptions of adult provider Differences between paediatric and adult providers Lack of financial support Privacy/Disclosure Lack of additional services		
Hussen 2015 [31] USA	Qualitative	20 BHIV	Individual's resilience Strong support network Comprehensive support including mental health and education	Level of physical illness at the time of HIV diagnosis Age and developmental stage at HIV diagnosis		
Both modes or unspecified Miles 2004 [32] UK	Qualitative	3 BHIV and 4 PHIV	Adult care-provider integration Visit to adult services Sense of independence and self-control	Strong attachment with paediatric provider Differences between paediatric and adult providers		
Maturo 2011 [5] USA	Viewpoint	BHIV and PHIV	Well-prepared transition process Multidisciplinary team	Lack of support from adult provider Psychosocial issues Lack of financial support in adult care		

Table 1. (Continued)

Study, year, country	Method	Participants	Reported facilitators		Reported barriers	
			Quantitative outcomes	Comparing risk groups	Quantitative outcomes	Comparing risk groups
Wiener 2011 [33] USA	Qualitative Quantitative	10 transfusion, 1 BHIV, 48 PHIV	Maintain continuity of care Same doctor at every visit Assistance with the logistical aspects Inclusion of primary caregivers in decision-making and treatment planning Given more responsibility while still in paediatric care Including YPHIV in transition planning	Lack of preparation for transition Lack of financial support Lack of communication between the paediatric and adult providers Lack of consideration of adolescent's developmental level and competencies Lack of additional support services Negative perceptions of adult provider Differences between paediatric and adult providers Lack of preparation for transition Strong attachment with paediatric provider Lack of financial support Lack of additional support (food)		
Pettitt 2013 [34] Multicountry, sub-Saharan Africa	Qualitative	8 YHIV, 26 programme managers/ service providers				
Tulloch 2014 [35] Thailand	Qualitative	6 YHIV, 20 policy- makers, 29 caregivers, 10 prior caregivers, 3 providers	Peer support Life-skills camp	Strong attachment with paediatric provider Psychosocial issues Lack of capacity in adult services Lack of special provision of targeted services for adolescents		
Hansudewchakul 2015 [36] Thailand	Viewpoint	Providers' viewpoint on YHIV	Transitioning youth in groups Youth attending adult care together Peer support Individual readiness to transition Involvement of paediatric and adult healthcare providers			
Kronshnabel 2016 [37] USA	Qualitative	20 YHIV		Lack of preparation for transition Strong attachment with paediatric provider Negative perceptions of adult provider Lack of responsibility and skill development Privacy/Disclosure Lack of social support		
Maturo 2015 [38] USA	Quantitative	34 BHIV, 4 PHIV	Non-completion of the transition process was not associated with prevalence of adherence issues, substance use, mental health or pregnancy/childrearing			
Ryscavage 2016 [39] USA	Quantitative	31 BHIV, 19 PHIV	Overall 50% were retained in care 12 months post-linkage. BHIV transferred at older age than PHIV. Linkage and retention in adult care did not differ by exposure group. CD4 and viral load did not differ pre- versus post- transition			

Table 1. (Continued)

Study, year, country	Method	Participants	Reported facilitators		Reported barriers	
			Quantitative outcomes	Qualitative outcomes	Quantitative outcomes	Qualitative outcomes
Westling 2016 [40] Sweden Medical providers Fair 2010 [41] USA	Quantitative Qualitative	3 BHIV, 31 PHIV 19 medical providers and social workers	Post-transition, virtually all had VL<50c/ml despite resistance problems and complex social factors. Multidisciplinary approach thought to contribute to good treatment outcomes	Well-prepared transition process Maintain continuity of care Sense of independence and self-control Assessing readiness for transition	Differences between paediatric and adult providers Psychosocial issues Lack of support on housing and transportation Lack of network of social services Lack of financial support Lack of financial support Lack of tracking system Psychosocial issues Stigma	
Gilliam 2011 [42] USA	Qualitative	Staff from ATN clinic sites	Ability and motivation to function independently Strong social support system Financial support Transportation and housing support	Difference between paediatric and adult providers Psychosocial issues Lack of preparation for transition Stigma		
Newman 2014 [43] Australia	Qualitative	12 paediatric and adult clinicians	Well-prepared transition process Maintain continuity of care Adult provider who can have open conversations with young PLHIV about issues around disclosure, risk behaviours, and sexuality Peer support Psychosocial support	Lack of communication between the paediatric and adult providers Lack of financial support Lack of transportation support Difference between paediatric and adult providers Lack of tracking system		
Kung 2016 [44] South Africa	Qualitative Quantitative	07 healthcare providers (interview) 43 healthcare providers (survey)	Peer support Psychosocial support Formal transition process Comprehensive support including sexual health, primary care, dental care, on-site pharmacy services Adult care-provider integration	Lack of a structured healthcare transition Lack of communication between the paediatric and adult providers Differences between paediatric and adult providers Mental health problems Strong attachment with paediatric provider Privacy/Disclosure Negative perceptions of adult provider Stigma		
Tanner 2016 [45] USA	Qualitative	174 interviews with clinic staffs		Differences between paediatric and adult providers Psychosocial issues Lack of financial support		

BHIV, behaviourally infected; PHIV, perinatally infected; YHIV, young people living with HIV.

paediatric clinic, arranging for adolescents to visit the adult provider before transfer, and seeing the same adult clinician each visit [24,28–30,32,33,43,44]. Education for adult healthcare providers around the needs of adolescents, including communication styles and awareness of the potential neurocognitive impact of perinatally acquired HIV and the impact on autonomy, self-care and information processing, further supported the transition process [24,28–30,32,33,43,44].

Another important issue were the psychosocial challenges faced by all adolescents that are further complicated by living with HIV. Hence, papers highlighted how adolescents needed a comprehensive integrated package of support from healthcare providers encompassing mental health [5,27,31,35], sexual and reproductive health [43], substance abuse services and social support integrated within their HIV care [30,33,37]. Whilst paediatric services were typically multidisciplinary in structure, adult services were sometimes “fragmented”, with limited resources, skills and experience in dealing with the complex and varied psychosocial needs of adolescents living with HIV [24,33]. Multidisciplinary support in adult care, especially for mental health, may improve continuity of care and therefore could facilitate the transition process [27,33,41,43]. In young men who have sex with men, an individual’s resilience or coping ability was affected by the strength of their immediate surrounding support network, and important factors influencing successful transition included the level of physical illness, age and developmental stage at the time of their HIV [31].

Confidentiality and fears concerning onward disclosure were highlighted as important barriers to the transition process. Due to their negative perception and/or experience of HIV-associated stigma, adolescents expressed concern about privacy in adult services [26,30,37,42–44]. Adolescents with behavioural infection were particularly concerned about onward disclosure of their HIV status to their families [30], which could lead to poor family support around the transition period. In contrast, perinatally infected adolescents frequently had to negotiate transition alone due to being orphans, creating a very difficult setting for transition compared to other chronic diseases of childhood where the parents have been shown to be key facilitators in the process [47]. In addition, for many perinatally infected adolescents, adult services were often offered within a sexual health setting, before they had become sexually active, which created discomfort and was a regular reminder that they were living with a sexually transmissible infection. System-level issues including lack of social support for housing, transportation and financial resources also negatively affected the transition process and were cited as common barriers to remaining in care [30,33,34,41–43,45].

Discussion and conclusions

This narrative review of published studies highlights the commonalities in transition experiences for adolescents with perinatally and behaviourally acquired HIV, and the multitude of factors which may be associated with

positive and negative transition outcomes in these groups. Common barriers to transition included strong attachments between adolescents and paediatric providers, and negative perceptions of adult healthcare providers. Positive facilitators included having clear policies around transition, education and skills development for providers and patients, assessment of readiness to transition, shared appointments between paediatric and adult providers, and specific training for adult providers on communicating with adolescents. Psychosocial challenges, including stigma, levels of family support, and mental health, were varied and differed by population group, as did the need for different aspects of multidisciplinary care packages.

The studies reviewed highlight the paucity of published data on HIV-specific transition, and particularly studies focusing on behaviourally infected adolescents. Additionally, the lack of standard definitions/endpoints for assessing successful transition complicates interpretation of existing data. This applies to both quantitative (retention, CD4 count, viral load, HIV-1 associated resistance mutations, AIDS and non-AIDS mortality, morbidity) and qualitative (patient and healthcare provider experience, autonomy and self-care) studies. Tracking transition outcomes is further complicated by the lack of robust systems that monitor patients after transfer to adult care [42,43].

Most published findings were from higher resourced settings (mainly the USA and Europe), while data from Africa and Asia are lacking and of particular importance, as these regions have the largest burden of HIV disease with limited resources. Furthermore, there is a need to investigate the impact of cultural differences and the experiences of key population groups on transition outcomes. Understanding the expectations and experiences of adolescents and young adults as they go through transitional care will provide important knowledge to improve current practice.

The priority medical and psychosocial outcomes following any transitional care model are to ensure retention in HIV care, facilitate long-term self-care, and to provide ongoing holistic support to promote health and wellbeing. Young people living with HIV need systems they can trust that offer them open access and understand the need for dialogue around the specific challenges they face. If we are to achieve the UNAIDS global targets of zero AIDS deaths and zero new infections, adolescents and young adults must be respectfully and appropriately engaged in care that is tailored to their complex needs. Patterns of healthcare and health-seeking behaviours established in adolescence can form a framework for lifelong service utilization, and should be nurtured and guided as we seek to help them transition to adult life.

Authors’ affiliations

¹Department of Infectious Diseases, Oxford University Clinical Research Unit, Ho Chi Minh City, Vietnam; ²900 Clinic, Department of HIV and GU Medicine, Imperial College Healthcare NHS Trust, London, UK

Competing interests

The authors have no competing interests to declare.

Authors' contributions

PKL performed the literature search and wrote the draft document subsequently edited and augmented by SF and CF. All authors have read and approved the final version.

References

- UNAIDS. Global AIDS update 2016. Geneva: UNAIDS; 2016.
- UNAIDS. AIDSinfo [Internet]. 2015. [cited 2016 Aug 20]. Available from: <http://aidsinfo.unaids.org/>
- Idele P, Gillespie A, Porth T, Suzuki C, Mahy M, Kasedde S, et al. Epidemiology of HIV and AIDS among adolescents: current status, inequities, and data gaps. *J Acquir Immune Defic Syndr*. 2014;66(Suppl. 2):S144–53.
- UNICEF. 2014 Annual results report - HIV and AIDS. New York: UNICEF; 2015.
- Maturo D, Powell A, Major-Wilson H, Sanchez K, De Santis JP, Friedman LB. Development of a protocol for transitioning adolescents with HIV infection to adult care. *J Pediatr Heal Care*. 2011;25(1):16–23.
- Fish R, Judd A, Jungmann E, O'Leary C, Foster C. Mortality in perinatally HIV-infected young people in England following transition to adult care: an HIV young persons network (HYPNet) audit. *HIV Med*. 2014;15(4):239–44.
- MacDonell K, Naar-King S, Huszti H, Belzer M. Barriers to medication adherence in behaviorally and perinatally infected youth living with HIV. *AIDS Behav*. 2013;17(1):86–93.
- Lowenthal ED, Bakeera-Kitaka S, Marukutira T, Chapman J, Goldrath K, Ferrand RA. Perinatally acquired HIV infection in adolescents from sub-Saharan Africa: A review of emerging challenges. *Lancet Infect Dis*. 2014;14(7):627–39.
- Wynberg E, Walters S, Popoola T, Foster C. Efavirenz toxicity in paediatrics: a single centre cohort. In: 21st Annual Conference of the British HIV Association (BHIVA). Brighton, UK; 2015.
- Sudjaritruk T, Bunupuradah T, Aupibul L, Kosalaraksa P, Kurniati N, Prasitsuebsai W, et al. Adverse bone health and abnormal bone turnover among perinatally HIV-infected Asian adolescents with virological suppression. *HIV Med*. 2017 Apr;18(4):235–44.
- Mouton JP, Cohen K, Maartens G. Key toxicity issues with the WHO-recommended first-line antiretroviral therapy regimen. *Expert Rev Clin Pharmacol*. 2016;9(11):1493–503.
- Foster C, Bamford A, Turkova A, Welch S, Klein N. Paediatric European network for treatment of AIDS treatment guideline 2016 update: antiretroviral therapy recommended for all children living with HIV. *HIV Med*. 2017;18:133–4.
- WHO. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Recommendations for a public health approach. 2nd ed. Geneva: WHO; 2016.
- Salou M, Dagnra AY, Butel C, Vidal N, Serrano L, Takassi E, et al. High rates of virological failure and drug resistance in perinatally HIV-1-infected children and adolescents receiving lifelong antiretroviral therapy in routine clinics in Togo. *J Int AIDS Soc*. 2016;19(1):20683.
- Judd A, Lodwick R, Noguera-Julian A, Gibb D, Butler K, Costagliola D, et al. Higher rates of triple-class virological failure in perinatally HIV-infected teenagers compared with heterosexually infected young adults in Europe. *HIV Med*. 2016;18:171–80.
- Halkitis P, Kapadia F, Ompad D. Incidence of HIV zther YMSM: the P18 cohort study. *J Acquir Immune Defic Syndr*. 2015;69(4):466–73.
- Naicker N, Kharsany ABM, Werner L, Van Loggerenberg F, Mlisana K, Garrett N, et al. Risk factors for HIV acquisition in high risk women in a generalised epidemic setting. *AIDS Behav*. 2015;19(7):1305–16.
- Smit J, Myer L, Middelkoop K, Seedat S, Wood R, Bekker L-G, et al. Mental health and sexual risk behaviours in a South African township: A community-based cross-sectional study. *Public Health*. 2006;120(6):534–42.
- Shuper PA, Neuman M, Kanteres F, Baliunas D, Joharchi N, Rehm J. Causal considerations on alcohol and HIV/AIDS — A systematic review. *Alcohol Alcohol*. 2010;45(2):159–66.
- Mutumba M, Bauermeister JA, Musiime V, Byaruhanga J, Francis K, Snow RC, et al. Psychosocial challenges and strategies for coping with HIV among adolescents in Uganda: a qualitative study. *AIDS Patient Care STDS*. 2015;29(2):86–94.
- Delany-Moretlwe S, Cowan FM, Busza J, Bolton-Moore C, Kelley K, Fairlie L. Providing comprehensive health services for young key populations: needs, barriers and gaps. *J Int AIDS Soc*. 2015;18(2(Suppl 1)):29–40.
- Vijayan T, Benin AL, Wagner K, Romano S, Andiman WA. We never thought this would happen: transitioning care of adolescents with perinatally acquired HIV infection from pediatrics to internal medicine. *AIDS Care*. 2009;21(10):1222–9.
- Campbell T, Beer H, Wilkins R, Sherlock E, Merrett A, Griffiths J. "I look forward. I feel insecure but I am ok with it". The experience of young HIV+ people attending transition preparation events: a qualitative investigation. *AIDS Care*. 2010;22(2):263–9.
- Bundock H, Fidler S, Clarke S, Holmes-Walker DJ, Farrell K, McDonald S, et al. Crossing the divide: transition care services for young people with HIV — their views. *AIDS Patient Care STDS*. 2011;25(8):465–73.
- Fair CD, Sullivan K, Dizney R, Stackpole A. "It's like losing a part of my family": transition expectations of adolescents living with perinatally acquired HIV and their guardians. *AIDS Patient Care STDS*. 2012;26(7):423–9.
- Sharma N, Willen E, Garcia A, Sharma TS. Attitudes toward transitioning in youth with perinatally acquired HIV and their family caregivers. *J Assoc Nurses AIDS Care*. 2014;25(2):168–75.
- Righetti A, Prinapori R, Nulvesu L, Fornoni L, Viscoli C, Di Biagio A. Transitioning HIV-infected children and adolescents into adult care: an Italian real-life experience. *J Assoc Nurses AIDS Care*. 2015;26(5):652–9.
- Machado DM, Galano E, De Menezes Succi RC, Vieira CM, Turato ER. Adolescents growing with HIV/AIDS: experiences of the transition from pediatrics to adult care. *Braz J Infect Dis*. 2016;20(3):229–34.
- Newman CE, Persson A, Miller A, Brown RJ. "Just take your medicine and everything will be fine": responsabilisation narratives in accounts of transitioning young people with HIV into adult care services in Australia. *AIDS Care*. 2016;28(1):131–6.
- Valenzuela JM, Buchanan CL, Radcliffe J, Ambrose C, Hawkins LA, Tanney M, et al. Transition to adult services among behaviorally infected adolescents with HIV - A qualitative study. *J Pediatr Psychol*. 2011;36(2):134–40.
- Hussen SA, Andes K, Gilliard D, Chakraborty R, Del Rio C, Malebranche DJ. Transition to adulthood and antiretroviral adherence among HIV-positive young black men who have sex with men. *Am J Public Health*. 2015;105(4):725–31.
- Miles K, Edwards S, Clapson M. Transition from pediatric to adult services: experiences of HIV-positive adolescents. *AIDS Care*. 2004;16:305–14.
- Wiener LS, Kohrt BA, Battles HB, Pao M. The HIV experience: youth identified barriers for transitioning from pediatric to adult care. *J Pediatr Psychol*. 2011;36(2):141–54.
- Pettitt ED, Greifinger RC, Phelps BR, Bowsky SJ. Improving health services for adolescents living with HIV in sub-Saharan Africa: a multi-country assessment. *African J Reprod Health*. 2013;17(4):17–31.
- Tulloch O, Theobald S, Ananworanich J, Chasombat S, Kosalaraksa P, Jirawattanapaisal T, et al. From transmission to transition: lessons learnt from the Thai paediatric antiretroviral programme. *Plos One*. 2014;9(6):e99061.
- Hansudewechakul R, Pongprapass S, Kongphonoi A, Denjanta S, Watanaporn S, Sohn AH. Transition of Thai HIV-infected adolescents to adult HIV care. *J Int AIDS Soc*. 2015;18(1):20651.
- Kronschabel K, Puga A, Eaton L. Preparing to transition from pediatric to adult HIV-related care: qualitative assessment and model development. *Vulnerable Child Youth Stud*. 2016;11(2):146–59.
- Maturo D, Powell A, Major-Wilson H, Sanchez K, De Santis JP, Friedman LB. Transitioning adolescents and young adults with HIV infection to adult care: pilot testing the "movin' out" transitioning protocol. *J Pediatr Nurs*. 2015;30(5):e29–35.
- Ryscavage P, Macharia T, Patel D, Palmeiro R, Tepper V. Linkage to and retention in care following healthcare transition from pediatric to adult HIV care. *AIDS Care*. 2016;28(1):1–5.

40. Westling K, Navér L, Vesterbacka J, Belfrage E. Transition of HIV-infected youths from paediatric to adult care, a Swedish single-centre experience. *Infect Dis*. 2016;4235:1–4.
41. Fair CD, Sullivan K, Gatto A. Best practices in transitioning youth with HIV: perspectives of pediatric and adult infectious disease care providers. *Psychol Health Med*. 2010;15(5):515–27.
42. Gilliam PP, Ellen JM, Leonard L, Kinsman S, Jevitt CM, Straub DM. Transition of adolescents with HIV to adult care: characteristics and current practices of the adolescent trials network for HIV/AIDS interventions. *J Assoc Nurses AIDS Care*. 2011;22(4):283–94.
43. Newman C, Persson A, Miller A, Cama E. Bridging worlds, breaking rules: clinician perspectives on transitioning young people with perinatally acquired HIV into adult care in a low prevalence setting. *AIDS Patient Care STDS*. 2014;28(7):381–93.
44. Kung TH, Wallace ML, Snyder KL, Robson VK, Mabud TS, Kalombo CD, et al. South African healthcare provider perspectives on transitioning adolescents into adult HIV care. *South African Med J*. 2016;106(8):804–8.
45. Tanner AE, Philbin MM, DuVal A, Ellen J, Kapogiannis B, Fortenberry JD. Transitioning HIV-positive adolescents to adult care: lessons learned from twelve adolescent medicine clinics. *J Pediatr Nurs*. 2016;31(5):537–43.
46. Nagra A, McGinnity PM, Davis N, Salmon AP, Harris A-L, Maddison J, et al. Implementing transition: ready steady go. *Arch Dis Child Educ Pract Ed*. 2015;100(6):313–20.