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## Factors Related to Youth Living with HIV Delaying Access to Care: The Role of Positive and Negative Social Network Influences on Health Seeking Behaviors

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### Abstract

To explore factors related to youths' delay in seeking care after an HIV diagnosis. Multivariate analyses were performed on 347 participants who were selected from a sample of 351 adolescents participating in a 1994-1996 survey among youth in four U.S. metropolitan cities. Key findings were that participants with prosocial peer behaviors took longer (34 days) to seek care than youth with poorer social engagement and excessive fibbing delayed seeking care (23 days). Potentially important findings suggest being female, older, having close peer networks, conduct problems, and certain housing settings may delay seeking care. Multivariate regression analyses indicate that later entry into medical care was observed among those with close social networks and behavioral characteristics related to delinquency.

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*Keywords: youth living with HIV; delay in seeking medical care; social support networks; negative and positive social network influences on behavior*

### Introduction

Some studies suggest that nearly 40% of adults delayed access to primary care for more than a year after learning their HIV status and nearly 20% delayed accessing care for more than five years (Schietinger, 2001). Delayed time between HIV diagnosis and receiving care is a serious, but common, health risk (Schietinger, 2001; Turner et al., 2000; Samet et al., 1998). These delays may not only create an opportunity for more serious illnesses to develop, but also create undue economic hardship on an already fragile national healthcare system. Those who delay health care for HIV diagnosis are commonly uninsured and very ill, creating a burden on facilities where they are treated. Many studies exploring factors associated with delays in seeking health services are focused on adults

living with HIV. Nevertheless, little research is available to shed light on this issue. There is also very little research on the role social support networks or persons who provide tangible and/or emotional support to someone, play in delayed time to accessing HIV services and there has been little research looking at delayed linkage into care. Moreover, there is little or no research exploring the relationship between service providers' support and youth living with HIV initiating health services in a timely manner.

Early initiation of unprotected among youth was included in risk behaviors associated with HIV acquisition sex in the United States from 2001-2004 (CDC, 2008). The same report states that 62% of those persons diagnosed with HIV/AIDS were males and 38% were females (CDC, 2008). Another CDC study collected data during the

mid-1990s and noted that African American women study participants 16-21 years old were seven times as likely as White women and eight times as likely as Hispanic women to become HIV Positive. The same study noted that HIV prevalence was 50% higher among women than among men (CDC, 2008). Similar to the overall US HIV/AIDS epidemic, African Americans were heavily affected making up 55% of all new HIV infections that were reported among youth 15-22 years of age (CDC, 2008). The purpose of this research was to explore factors related to youth who are diagnosed with HIV/AIDS and delay seeking medical care. Particular attention was paid to the youth's friends and other peers and the way in which some of their peers may influence seeking medical care after learning their HIV status.

### **Adults Delaying Care**

Factors associated with delayed time to seek care among adults living with HIV are: having a history of injection drug use (Knowlton et al., 2005; Samet et al., 2001; Samet et al., 1998) not having a parent or a significant other in their lives (Knowlton et al., 2005; Samet et al., 1998) receiving diagnosis by mail or phone (Schietinger, 2001), and race where Latinos and African Americans were both more likely to delay seeking care as compared to Whites (Turner et al., 2000).

One study demonstrated that care was delayed most among those who were female, had a child in the home, and were living with HIV (Raveis et al., 1998; Keigher et al., 2005). The extent to which they delayed care was pronounced by factors such as being African American, and being in an earlier stage of HIV infection. A study conducted among ambulatory patients measuring time between first HIV antibody test and first medical visit noted that those with limited social support were more likely to delay seeking HIV care (Katz et al., 1990). Other studies have documented that adult's delay up to 3 months from time of HIV diagnosis and cited that in addition to race/ethnicity, having regular care, and insurance were also factors related to seeking care after learning their HIV status (Turner, 2000). Factors cited as protective among adults in delaying are having medical

insurance and having a usual source of care already in place (Knowlton et al., 2005; Turner et al., 2000). While there is less evidence documenting factors that may influence youth to delay seeking medical care after learning their HIV status, we can glean from the literature on adult's delaying care that the type of peers or network member they have around them, race/ethnicity, and stage of illness may be associated with this behavior. Youth living with HIV/AIDS needing medical services may experience mental health problems, alcohol or drug problems, need stable housing, and regular transportation to health care settings (Martinez et al., 2003).

### **Youth Delaying Care**

Reports documenting youth returning for follow-up HIV services are inconclusive at best, underscoring the importance of understanding the issue of accessing service (Lazebnik et al., 2001). This same study reported that among those youth who did receive anonymous HIV testing, one form of services provided to youth, 42% return for their HIV test results. Those who returned were less likely to be African American, more likely to have had private health care insurance, had unprotected sex while using illegal drugs or alcohol, more likely to have an HIV positive sex partner, and more likely to attend a clinic only for HIV testing.

### **The Role of Social Support Networks in Delaying Care**

Further, other studies suggest that social support systems can decrease delays in time to seeking care (Williams et al., 1997). Mothers living with HIV who delayed seeking primary care were found to have low social support from their peers and family members. In fact, support was most commonly reported to come from minor children in the home. This suggests that other children in the home experienced undue parental or adult responsibilities placed on them as a result of the stress the mother's illness created (Williams et al., 1997).

Factors associated with service seeking behaviors have been documented among various groups. Men living with AIDS sought help from professional care providers and family members

more so than men living with HIV or who were not living with HIV. Men not living with AIDS or who were unaware of their HIV status, sought help from their peers more often than those living with AIDS (Hays et al., 1990).

### **Varying Effects of Social Networks on Health Behaviors**

Social support networks among other groups oftentimes provide necessary services to their network members. At least one study suggested that the role of social networks and the support provided through the networks could ameliorate service burdens placed on health care providers (Hays et al., 1990). Social support relationships, including peers and parents, and their influences on youth seeking health care have been established in sexually transmitted disease research (Crosby et al., 2002). The interplay between social support networks and their role as either a facilitator or a barrier to service seeking behaviors among their network members is important in the context of more immediate improvements to the delivery of care.

### **Negative Effects of Social Networks on Health Behaviors**

Although current literature documents the benefits of friendship and familial networks on a person's mental and physical health status, there is evidence that social networks can also have a negative influence on health behaviors. It has been found when examining adolescent health behaviors among secondary school youth that there is a social learning effect among some youth and their close peers (Prinstein et al., 2001). There were positive associations between suicidal ideations, violent behaviors, and substance use of students and their peers. There was, however, a negative association between youth with suicidal ideations, violent behaviors, and substance use and their peers displaying pro-social behaviors. In this manuscript, prosocial behaviors are defined as positive youth actions such as regular school attendance, involvement in sports or other extracurricular activities, or demonstrating altruism toward friends or peers. Further, the data suggested that the degree of influence each of these negative behaviors had on the youth was influenced by family

dysfunction, perceived acceptance by their peers, and whether or not they experienced depression.

One study evaluated both positive and negative effects of social support on emotional health of adults. In this same study, the author reported that negative social experiences were more strongly and more consistently related to well-being than positive experiences (Rook, 1992). Other studies on negative experiences including youth also suggested that the impact is more extensive than any study demonstrating a positive effect on emotional health by youth making their peers feel accepted (Schilling, 1987). Other data have established that social networks may act as negative influences on their network members (Schilling, 1987). For example, Neaigus et al., (2001) used social network analysis to explain HIV transmission risk among injection drug users. A social learning effect demonstrating that network members initiated injection drug use based upon their personal networks has been documented in the findings. Studies addressing youth document a negative social learning effect. It has been found that social networks of young injection drug users may model some healthy or prosocial skills, such as cleaning needles, they also may increase HIV transmission risk for young women who tended to be more embedded in social network and therefore injected more or had more sexual contacts (Morris et al., 1995). Young injection drug users were defined by the authors as 25 or younger and older was defined as 26 or older. The mechanism consistent in both positive and negative social network influences is that the behaviors of the social networks influence the behaviors of the individual. Further, the social support to engage in specific behaviors such as sharing syringes among injection drug users (IDU), injecting heroin, cocaine, and speedball, injecting in locations commonly associated with drug users (e.g. "shooting galleries"), crack use and social roles such as selling syringes on the street to other IDU'S is crucial (Morris et al., 1995).

Social support can be manifested in varying ways among different groups of people. Among

injection drug users those with large social networks provided social support, but sharing needles was also more common. Within the network, needle sharing has a positive value associated with it and is seen as offensive not to participate. However, in a sample of runaway or homeless youth were injection drug users in networks that did not provide social support were more likely to inject in shooting galleries (large gathering places for injecting drugs) (Ennett et al., 1999).

Conduct problems are oftentimes observed among youth within negative social networks. These problems among some youth have been defined as frequent lying, stealing, and truancy, to name a few. Lahey et al., (1999) reported that among a sample of youth, boys from the full study sample were significantly more likely to demonstrate one or more conduct problems in the past 12 months as compared with girls. The reports of conduct problems including frequent lying were confirmed by both youth and their parents.

### **Social Support Networks Influence on Health Behaviors**

The association between social support derived from social networks and the subsequent use of mental and physical health services has also been documented in community level studies, among disenfranchised subgroups of youth (Montgomery et al., 2002; Amaya-Jackson et al., 1999). Youth represent the majority of new HIV infections worldwide and the paucity of information regarding youth living with HIV accessing care after learning their HIV status emphasizes the importance of this study. Moreover, the literature primarily reports outcomes on the adult populations, who have different HIV transmission risk patterns than youth. This was an exploratory study with the primary focus of identifying factors that best predict delays in seeking HIV care among youth. To this end, this study considered background factors such as age, gender, and religious affiliation, along with social support network characteristics, and stages of HIV illness as potential predictors to delay in seeking care.

### **Purpose**

The purpose of this study was to explore factors related to delays in seeking care after being diagnosed with HIV among youth. Only the baseline data were used for the analysis.

### **Methods**

#### **Study Design**

Data for this study were extracted from a database of youth living with HIV. The data were collected over a 21-month period from 1994-1996 in four geographical regions of the United States for the behavioral intervention. 393 youth were identified, recruited, and screened through service agencies in the four city sites. Out of these 393, 351 (89.3%) were eligible to participate in the study (25 refused participation and 17 were too ill). The sites were: Miami (n=47), New York (n=133), San Francisco (n=100), and Los Angeles (n=67). Copies of ELISA test results were used to verify self-reported HIV status. Survey questions addressed background information including age, gender, ethnicity, employment, housing, mental health and conduct problems, social network information, social support information, disclosure of HIV status and disclosure of sexual orientation. This study used a cross-sectional design. Further details of the study are reported by Rotheram-Borus et al., (2001).

#### **Sample**

Inclusion criteria for the descriptive analysis presented in this study were all youth who responded to the item, measuring whether or not they answered if they were seen by a doctor or nurse after they tested positive for HIV (n=347, 98.9% of the 351 eligible). Seventy-three youth did not see a health professional and consequently did not respond to the item asking how many days or weeks they waited before seeing a doctor or nurse. These youth were excluded from the linear regression analyses, while an additional 66 youth were excluded from the regression on the basis of missing responses to the independent variables (n=199, 56.7% of eligible).

## **Measures**

### **Outcome Measure**

The outcome was the time taken to see a medical professional after HIV diagnosis, based on the response to the item, "How many days or weeks did you wait before seeing a doctor or nurse?" Responses were converted to number of days.

### **Predictor Measures**

Each of the predictor variables was measured at the time of the baseline survey, based on self-report.

The dichotomous variables were: gender (male, female), lifetime employment history ("have you ever had a job?"), family economic status (dichotomized as poor or very poor vs. have necessities or comfortable), and recruitment sites [simplified from a nine-category item to either a clinical (hospitals and clinics) or non-clinical setting (community-based services)]. Finally, stage of HIV illness was based on two items: 1) "have you had symptoms of HIV infection" and 2) "have you been diagnosed with AIDS." Originally, there were three response categories, namely "yes," "no," and "don't know." Respondents indicating "don't know" were included in the "no" responses to ensure completeness of data. Descriptive analysis was done to examine the variables' distributions and determine if the sample size was sufficient for further analyses.

The categorical variables used in the analysis were ethnicity and religious affiliation. Ethnicity was recoded from nine categories to four—Latino, African-American, white, or other. Religious affiliation was recoded from nine categories to the following five groups: None, Protestant, Catholic, Jewish, Other.

The continuous items were age, number of partners who were told about the subject's HIV status, number of family and friends to whom respondents disclosed sexual orientation, level of education completed and the number of family members in the social network.

Factor analyses were performed to attempt to reduce the large number of variables for the constructs described next.

### **Social support networks**

Social support networks included a number of items measuring youth's social networks (e.g. how many of your friends do well in school, how many of your friends use alcohol, how many of your friends have sex, how many of your friends get along with their mothers, how many of your friends shoplift). Responses were on a five-point scale from none (0) to all (5). Factor analyses on social support networks supported an eight factor solution: delinquent peer behaviors (comprising items such as those pertaining to shoplifting, stealing, gangs, jail); healthy or prosocial peer behaviors (e.g., play sports, do well in school); supportive characteristics (e.g., often see friends); positive parental relationships (e.g., get along with mothers); peer group interaction (e.g., friends know each other); sexually promiscuous peers (e.g., have sex); and peers' support for one another (e.g., stand by friends) ( $\alpha=0.947$ ). The social network scores from these factor analyses were used as predictors in the regression analyses. In addition, the number of family, peers, or romantic partners and health service providers considered to be in the social network were treated as continuous variables.

### **Mental health**

Mental health was assessed by items measuring general mental health (lifetime) events. The root question asked "at anytime in your life have you seen a psychiatrist, psychologist, or social worker for any of the following reasons: school-academic, school-behavior, home-behavior, aggression/conduct problems, hyperactivity, phobias, anxiety, depression, suicide threat/attempt, drugs/alcohol abuse, other". Follow-up items, asking "how many times have you seen a psychiatrist, psychologist, or social worker" for each of the listed reasons were used to construct the Mental Health scale ( $\alpha=0.691$ ), while the yes/no items were retained as separate dichotomous variables for the regression model.

## Housing Situation

Housing Situation was based on a housing (lifetime) variable that asked youth “during your lifetime how long have you lived in the following situations? (none, less than 1 year, 1-5 years, 5-10 years, More than 10 years)” was used. There were seventeen living situations: with own children, with partner, with both parents, with one parent, with grandparents, with siblings, with other relatives, independently, with foster family, group home, detention center, shelter, drug/alcohol center, hotel/motel, Job Corp, on the streets and other. Factor analyses on housing showed that six factors loaded: living with a stable family member, living with extended family; living independently or with a partner; living with children, and living with parents, or living in other situations ( $\alpha=0.843$ ).

Factor analysis on 27 dichotomous conduct problems reported in the past six months [such as school expulsion, vandalism, getting fired from a job, purse snatching, bullying, fire starting, gang membership, trouble with police, serious physical fight, fibbing (lying)] showed six themes: robbery-burglary, arrested because of trouble with the law, suspended/expelled from school, told a lot of lies, stolen from caregiver-abusive toward others, threatened to steal from others ( $\alpha=0.799$ ) (see Table 1).

**Table 1. Summary of Factor Analyses**

Scale	Cronbach's alpha
Mental health scale	0.691
Social support network scale	0.947
Housing situation scale	0.843
Conduct Problems scale	0.799

## Data Analysis Procedures

Data were analyzed using SPSS version 10 (2000). Frequencies and percentages were produced on all the variables proposed to influence the length of time it took youth to initiate medical care after receiving an HIV positive diagnosis. A linear regression model was used to predict factors related to youth delay

in seeking care after an HIV diagnosis. The sample size used in the linear regression model was  $n = 199$  (72.6% of the  $N=274$ ); this was based on the completeness of the responses.

Factor analyses were performed to appropriately reduce the number of variables associated with key factors used in the study. Both factor scores and individual items from variables measuring social network, housing, mental health, and conduct problems were potentially included in the regression model, depending on which measure was most predictive of the outcome. Regression analyses were performed to determine the predictors of youth delay seeking care. The analyses used the stepwise regression procedure in SPSS to find the best predictors of how long it took for a participant to visit a provider following HIV diagnosis. The stepwise regression procedure omitted the variables that were not good predictors of youth delay in seeking care and retained those variables that were the best predictors.

## Results

Descriptive analysis on the youth in this research showed that the majority (59.9%) did not classify themselves as “white,” with the Latino youth making up the largest proportion (36.3%), Black youth the second largest proportion (23.6%), and white youth making up the third largest group (18.1%). The youth in this sample ranged in ages 13-24 years. The mean age was 20.78 years old, with 6.9% aged 13-17, 19.0% aged 18-19 and 47.6% aged 20-22, and 26.5% aged 23-24 years old. Few had a 12th grade education (20.2%). The youth were mostly male (72.3%), most youth identified as somewhat spiritual or religious (51.6%) and reported their religious affiliation as Catholic (31.2%), Protestant (19.2%), Other (13.2%) and Jewish (13.3%). (See table 2).

Of interest was the size and type of the youth’s social networks, as previous research had shown a relationship between the nature of the social network and HIV status. In general, youth maintained moderate to small networks and had regular contact with them. A majority of the youth (81.2%) reported having family in their

networks; 76.1% reported having peers/romantic partners in their networks; and 2.9% reported having service providers in their networks. Among those reporting to have family in their social network, 21% reported having at least one person and 11% reported six people in their

network. When analyzing how many providers were reported to be in their networks, 8.9% indicated they had at least one provider in their network. The mean number of network members was 4.52 persons; mean family members = 2.53; mean peers/romantic partners = 1.80; mean number of service providers = 0.19.

Table 2. Sample Characteristics (n = 347)

	<u>N</u>	<u>%</u>
Visited a health care provider after diagnosis	274	79.0
Ethnicity:		
Latino	126	36.3
African-American	82	23.6
White	63	18.1
Other	76	21.9
Education:		
Completed 12 <sup>th</sup> grade	71	20.2
Gender:		
Male	251	72.3
Female	96	27.7
Religion:		
Catholic	108	31.2
Protestant	66	19.1
No denomination	60	17.3
Economic status:		
Poor or very poor family economic situation	118	34.0
Service organization characteristics:		
Type of agency recruited youth: Clinical	243	86.2
Type of agency recruited youth: Non-Clinical	39	13.8
Had symptoms of HIV infection	132	38.0
Been diagnosed with AIDS	35	10.1
	<u>Mean</u>	<u>SD</u>
Days taken to visit a health care provider after diagnosis (outcome variable)	41.2	113.3
Age	20.8	2.1
Years of education	11.5	2.3
Number of partners disclosed HIV status to	9.7	34.8
Family members disclosed orientation to	4.7	3.8
Friends disclosed orientation to	7.6	3.5
Family members in social network	2.5	2.2
Peers in social network	1.8	1.8
Health providers in social network	0.2	0.7

The linear regression predicting time to see a health care provider was developed using stepwise selection. The outcome variable was measured in number of days, such that the coefficients represent the number of days each risk factor delays help seeking. The mean time taken to see a provider was 42 days (Table 2). The final model resulting from the stepwise selection is shown in Table 3. The regression illustrated that the effect of the youth's social networks demonstrating healthy or prosocial peer behaviors ( $p = .020$ ) and excessive fibbing (lying) in the past six months ( $p = .048$ ) both significantly predicted delay in seeking medical care among youth living with HIV (see Table 3), after controlling for the other variables in the model.

**Table 3. Linear Regression Model**  
**Outcome = Number of Days to See a Provider**  
**After Being Diagnosed HIV+ (n=199)**

Independent Variable	B	Significance level (p < .05)
Gender	35.029	0.097
Age	8.488	0.080
Delinquent Peer Behaviors	-15.872	0.149
Prosocial Peer Behaviors	26.752	0.020*
Friends know each other very well	43.829	0.076
Friends have met each other	30.390	0.247
Number of professional in social network	-9.200	0.457
Family is poor or very poor	34.835	0.075
Involved in robbery-burglary in past 6 months	21.432	0.057
Excessive fibbing in past 6 months	22.700	0.048*
Ever seen a psychologist-for suicide threat	11.559	0.553
Living in other situation	14.077	0.077

\*  $p < .05$

While not significant, there was a p-value trend suggesting that there is potential importance in that female participants took 34 days longer to make their first visit than males ( $p = .097$ , n.s.).

In addition, there were trends that older youths ( $p = .080$ , n.s.), those having friends who knew one another well ( $p = .076$ , n.s.), those self-reporting poor family background ( $p = .075$ , n.s.) and those living in alternative housing situations ( $p = .077$ , n.s.) were more likely to delay seeking care. Another trend suggests that participants involved in robbery or burglary in the past 6 months take 21 more days to see a doctor ( $p = .057$ , n.s.). For each year of additional age, it took participants 8.5 days longer to visit a provider ( $p = 0.080$ , n.s.). Participants from a poor or very poor family took 35 days longer to visit a provider than those who did not identify their family as poor ( $p = .075$ , n.s.).

### Discussion

Findings from this study imply that youth may postpone seeking HIV care for non-traditional reasons and that service providers from a range of settings should be aware of these factors when they encounter youth living with HIV. The final model excluded a number of variables that were insignificant. Among those not significant in predicting the outcome, was ethnicity. Literature suggests that White youth have better access to services as compared with minority youth (Ennett et. al., 1999). These data did not support this information. Ethnicity may not have been a predictor of delay in seeking care due to the affect economic status has on access to services. Nearly two-thirds of the sample reported that their families were either poor or very poor; therefore, experiences, attitudes and beliefs about the quality of care lower income people may receive or assumptions about the medical costs associated with HIV treatment could have prevented youth from entering into care more quickly. Of particular interest, was the relationship among social networks, background variables such as age, education, employment history, mental health, conduct problems, stage of HIV illness, and housing situations from the time of diagnosis to the youth's first health care visit.

Additionally, based on common knowledge, we expected that having symptoms of HIV infection or AIDS would predict youth entering into care



sooner than those not reporting either of these conditions. However, neither of these conditions predicted the outcome. This may have been related to the ability of these youths to access services. The instrument did not allow for respondents to indicate whether or not they had medical insurance at the time of diagnosis. Therefore it is not clear, but possible that youth ignored their symptoms due to inadequate health insurance.

Also, it is unknown why females were more reluctant to seek medical care after their diagnosis. Perhaps the delay is because of the negative stereotypes related to the disease or other responsibilities demanding their attention and time.

The data from this study indicated that youth who engaged in excessive fibbing, a behavioral related to delinquency, were more likely to postpone seeking care. While the link between fibbing and care seeking is not self-evident, it is possible that this behavior is related to a constellation of conduct problems including impulse control in general or broader mental health or substance abuse issues not detected by this study's instrument. However, it is possible that these youth are already in some type of service system or justice system where medical services are more readily available to them as compared to youth who do not steal.

Finally, we expected that youth engaging in healthy or prosocial peer behaviors would be a group whose positive attributes could be generalized across domains; therefore, these youth would enter into care sooner as compared to those who did not possess these attributes. This expectation was not met by the data. This effect could be a result of the attributes among the youth they were interacting with, were negative and more influential on behaviors than their own personal behaviors.

The results from the full regression model suggest that youth living with HIV most likely to delay receiving necessary medical treatment are youth who were engaged in more prosocial peer behaviors and who exhibited delinquent behaviors such as excessive fibbing.

Other results noted such as excessive fibbing may not have an obvious relationship to youth delay seeking care, but it may be an indicator of larger mental and emotional health issues not observed in this study's data. These youth would most likely require additional services that are responsive to a client's access to spiritual support, economic situation, and related to this, their ability to obtain and maintain stable housing and a regular health care provider. Other research has also found that a low income is positively correlated with HIV status (Knowlton et. al., 2005; Neaigus et. al., 2001). Being poor and uninsured is connected with lack of medical care for those with AIDS. Consistent with other findings in this study and in other studies was the relationship between ethnicity and HIV status (Knowlton et. al., 2005). The ethnicity breakdown is similar to that found in previous research, especially that of Montgomery et al., (2002) and Turner et al., (2000).

Data suggests that youth living with HIV are more likely to avoid seeking care if they have negative peer influences around them and do not have steady linkages to medical care. Other research has shown the importance of the social network and whether the network is a positive or negative influence. Relationships are powerful in shaping the behavior of an individual, including those with AIDS (Morris et al., 1995). This research corroborated similar work showing that later entry into medical care was observed among males, those with lower incomes, people with no health insurance, those with little education, and persons referred from prison (Suh et al., 1999). This study found that the older the male youth, the longer taken to seek care. A difference was that females delayed seeking care by 34 days as compared to males, ( $p < .05$ ).

### **Conclusion**

There are several limitations to this study. The data were self-reported by youth and therefore may not be completely reliable. Therefore, future studies should utilize multiple methods of data collection and a more objective assessment of the factors may influence youth delay in seeking care. Additionally, because a cross-

sectional study design does not allow for a statement of causality to be made about the dependent variable, researchers may want to design studies that are not limited to a single time point. Another limitation to this study is the nature of archival data not allowing for important questions related to aspects of the research for example, medical insurance at time of diagnosis. Finally, the Together Learning Choices formerly called Teens Linked to Care (TLC) dataset was collected prior to HAART treatments being the standard of care for HIV positive patients, and community norms and may change among those living with HIV over time as a result of longer life expectancies based on current treatments available.

This study focused on identifying factors predicting youth delay seeking care after an HIV diagnosis. Timely information was revealed in this study that can inform future research using a more rigorous design. Nevertheless, given the seriousness of the illness and continued absence of a cure, evidence-based interventions addressing inadequate linkage between HIV identification and access to services that target

the most vulnerable populations are urgently needed in public health.

#### **Disclaimer**

The manuscript was developed while Dr. Jones was completing her dissertation as a doctoral student at Loma Linda University, School of Public Health, Department of Health Promotion & Education. She is currently Acting Team Leader at the U.S. Centers for Disease Control and Prevention, Division of HIV/AIDS Prevention, Prevention Research Branch, Research Synthesis and Translation Team, Replicating Effective Programs (REP). The views and opinions expressed in this manuscript are those of the authors and are not the views of the institutions affiliated with the authors.

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