

Larkin Street Youth Services

HIV Prevention Special Evaluation Project: Housing and HIV Prevention Services

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More than half of new HIV infections in the United States occur in individuals under the age of 25 (AIDS Action, 2001). Among these youth under the age of 25, homeless and marginally housed youth are the most at-risk for becoming infected with HIV (AIDS Action, 2001; Darling, Palmer, & Kipke, 2005; Rosenthal et al., 2007; Rotheram-Borus et al., 2003; Walters, 1999). Moreover, San Francisco homeless youth report among the highest rates of HIV infection (Clements, Gleghorn, Garcia, Katz, & Marx, 1997). Homeless youth report high rates of drug- and sexual- risk behaviors, often because they are in a state of homelessness (Rotheram-Borus, Koopman, & Ehrhardt, 1991; Walters, 1999). In addition to potentially participating in survival sex, street youth become sexually active at a younger age, report a higher number of sexual partners, and report infrequent condom usage (Walters, 1999). Drug use becomes a coping mechanism for many, who are struggling with histories of abuse, trauma and ongoing victimization. Due to their high levels of risk, homeless youth should be targeted for HIV prevention activities.

Housing Status and Risk Behaviors

The literature on adult HIV risk behaviors indicates that providing housing may be an important and viable HIV prevention strategy for unstably housed individuals. Research has shown that there is a relationship between housing status and HIV risk behaviors (Aidala, Cross, Stall, Harre, & Sumartojo, 2005; Andia et al., 2001; Metraux, Metzger, & Culhane, 2004). Aidala and her colleagues demonstrate that unstably housed and homeless adults are more likely to engage in HIV risk behaviors than those who are stably housed. This research lays the foundation for a shift in understanding an individual's behavior within a context of risk, rather than simply viewing some individuals as risk-takers. Through this perspective, homelessness is a state that can be altered, and the provision of housing removes the individual from a context of risk.

The relationship between housing status and risk behavior among youth has received less attention.

Rosenthal et al. (2007) conducted a longitudinal study that examined the relationship between housing stability and risk behaviors among youth. Using multiple measures of housing stability, including the number of moves, time spent with the family, and time spent in institutional settings, Rosenthal did not find a relationship between housing stability and sexual and drug risk behaviors. However, their measure focuses on stability as the measure of housing status, which does not take into account the immediate influence that homelessness may have on risk behaviors.

In line with Aidala's proposition that the individual behaves within a context of risk, Larkin Street practices and promotes housing as a treatment modality. By stabilizing youth in safe and secure housing, Larkin Street helps remove some risk from their context while simultaneously working to expand their life skills and coping mechanisms. Larkin Street expands current research about housing status and risk behaviors based on client data collected over a five year period. Larkin Street's assertion is that providing stable housing is as helpful in youth populations as it has been shown to be in adult populations.

HIV Prevention Service Issues

Conventional HIV prevention wisdom indicates that targeting prevention services to high risk groups is an effective method (AIDS Action, 2001); however, targeting efforts within homeless youth is challenging since all are at high risk for HIV infection. Recent studies have attempted to identify patterns of risk behaviors among subgroups of homeless youth. In a study of homeless youth in Northern California, those reporting injection drug use, heroin and stimulant usage reported higher overall HIV risk behaviors (Gleghorn, Marx, Vittinghoff, & Katz, 1998). In another study, females and youth without stable housing reported higher risk behaviors than males (Clements et al., 1997). These two studies suggest that youth who use hard drugs, as well as unhoused females, should be targeted for HIV prevention efforts. On the other hand, another study identified gay and bisexual male youth as the most at risk for infection because of the

high HIV prevalence rates in that population, but failed to identify clear risk factors among homeless females who are infected with HIV (Walters, 1999). Without a consensus on how to identify subgroups of homeless youth at highest risk, targeting HIV prevention services within homeless youth is challenging.

Homeless youth may possess an understanding of risk behaviors, but knowledge alone has failed to change behavior (Booth, Zhang, & Kwiatkowski, 1999; Liverpool, McGhee, Lollis, Beckford, & Levine, 2002; Wagner, Carlin, Cauce, & Tenner, 2001). Rew (2001) outlines the inadequacy of existing HIV programs, especially since most are tailored to mainstream youth who attend schools and reside with their families. For homeless youth, providing for their basic needs is critical (Podschn, 1993; Rew, 2001). A youth may not be concerned about long-term risk if they are worried about survival in the short-term. In support of this theory, one study found that outreach alone did not change youth's behavior, but that general case management services were utilized by these youth out of necessity (Tenner, Trevithick, Wagner, & Burch, 1998). In fact, Harris (2003) found a synergistic effect for providing both outreach and case management simultaneously. Moreover, because of the diversity within the homeless population, providing personalized services through established relationships is necessary (Wagner et al., 2001).

Project Description

These studies suggest a need for housing and integrated HIV prevention services such as those provided at Larkin Street. The Larkin Street continuum of care provides outreach, emergency housing, case management and support services. Rather than providing a distinct HIV prevention curriculum or group that formally enrolls young people, services are incorporated into these existing services and relationships on an individual basis, as determined by case managers and other staff. There are two primary research questions addressed in this paper:

Question 1: Is there a relationship between housing status and HIV risk behavior among youth?

Hypothesis 1: There is an inverse relationship between housing stability and HIV risk behavior. Youth with more stable housing will report less participation in HIV risk behaviors.

Question 2: Who is targeted by the Larkin Street model of integrated HIV prevention services?

Hypothesis 2: Youth with higher baseline risk will receive higher levels of HIV prevention services, taking into account engagement and duration in services.

In Larkin Street's model of care housing is a treatment modality, and is provided in conjunction with other necessary services to help youth move beyond the streets. In other words, housing is part of a larger HIV prevention strategy that takes into account the basic needs and skill building services that is most appropriate for each youth. These basic services are then supplemented with more specific HIV Prevention services including: individual counseling, groups, and HIV testing.

Program Description

Larkin Street Youth Services (Larkin Street) provides a comprehensive continuum of services to youth (ages 12-24) who are homeless or marginally housed. Larkin Street provides a housing continuum that is supported by HIV Prevention and other support services. Based on the principle that housing is the key to stabilization for these youth, Larkin Street provides emergency housing, transitional housing, and permanent youth housing programs. In tandem with these housing services, the agency provides case management services that coordinate mental health, substance abuse, HIV prevention, employment and education services based on the needs and interest of each youth. Through this integrated model, HIV prevention services are accessible to any youth in any of the programs.

Homeless youth face many challenges. Many have experienced abuse, neglect and/or family conflict prior to their time on the streets. Involvement with foster care or the juvenile justice system are common. These youth have not been prepared for independent living and are vulnerable to further victimization on the streets. Many lack a high school education which impacts their ability to find employment. This results in some youth exchanging sex for money or shelter in order to survive. Drug use is a common coping mechanism and is often associated with survival sex. Consequently, many of these homeless youth are at high risk for STIs and HIV infection (Auerswald, Sugano, Ellen, & Klausner, 2006).

Methods

This study used intake and service data collected from youth receiving services from any Larkin Street program between January 1, 2002 and December 31, 2006. Intake data was collected through one-

Part I – Relationship between Housing Status & Risk Behaviors

on-one interviews conducted by program staff as soon as possible after entry into services. Data was drawn from the four components of the intake: general, substance use, HIV prevention and mental health. The general intake provides information on demographics, educational history and recent housing history. The substance use intake provides information on drug-risk behaviors, and the HIV prevention intake provides information on both drug- and sexual-risk behaviors. The mental health intake provides the youth's history of mental health services. In addition to the intakes, individual and group HIV prevention service data reported by staff members was also used. All analyses were conducted with SPSS version 13.0 for Windows.

The final sample included 1,159 youth. There were two groups of youth who were excluded from the sample: those who were missing any or all of their intake, and those who did not complete all four components of the intake within 2 weeks of initial participation in services. The intake can be administered in one sitting or in multiple sittings, according to the needs of each youth. This results in an extended intake completion process for some of the youth. Many of the variables relevant to this study are time sensitive, especially those that refer to the 30 days prior to intake. In an effort to balance the time sensitive nature of these questions while retaining as many youth as possible, 2 weeks was selected as the cutoff.

Demographics

The final sample of youth was primarily comprised of males (60%). The largest racial group was White/Caucasian (42%), followed by African American (23%) and Latino/a (17%). There was a large percent of lesbian, gay, bisexual and queer (LGBQ) youth (28%). Three percent reported that they were transgender. These rates are comparable to the estimated 20-40% lesbian, gay, bisexual, transgender and questioning youth in the national homeless youth population (Ray, 2007). The average age for the sample was 20.5 years (see Table 1).

The reported educational, employment and mental health history reflects some of the major issues impacting homeless youth. Only 54% of the sample reported at least a high school diploma or equivalency, and only 12% reported full- or part-time employment. Of those who reported income (n = 567), the average amount earned in the 30 days prior to intake was \$507. Seventy-two percent reported previous mental health care including counseling, psychiatric care, psychiatric medication, or psychiatric hospitalization.

Data

Housing Status.

Part I of the study sought to better understand the relationship between housing status and risk behavior among youth. Housing status was created based on the youth's reported living situation in the 30 days prior to intake. There were 20 response options which were collapsed into five categories: unhoused, restrictive housed, unrestrictive housed, other, and missing/unknown. An unhoused youth was one who reported living on the streets during the 30 days prior to intake. A youth in the restrictive housed category was someone who had both housing and a parental figure to monitor their behavior. For example, youth who reported living in a group home or with their parent/guardian were categorized in the restrictive housing category. Finally, a youth in the unrestrictive housed category was someone living independently or with peers, but without any figure who might set and maintain limits for the youth. Examples of youth who fell in this category were those who reported living in a motel/SRO or at a friend's home.

Initially, housing status categories were defined according to potential for permanence, since the goal for all these youth is long-term stability. Housing categories were created from the 20 responses provided by youth, and were based on potential for stable housing. For example, youth on the streets were classified as negative, since residing on the streets long-term was not considered a positive outcome. A youth living in a treatment program or a shelter was considered a neutral housing situation, since those are time-limited housing options. Finally, a youth living in a private residence was considered positive, since there is the potential for these youth to reside there long-term.

Initial chi-square analyses indicated a spike in risk-behaviors for youth in neutral housing versus those without housing. Upon further analysis, the hypothesized relationship between housing status and risk behaviors was based on the environment in which the youth was housed. Living on the streets, youth would be more exposed to others' risk behaviors, and would participate in some of these risk behaviors for survival. The proposed association is based on the immediate context which may facilitate or hinder the youths' risk behaviors, rather than the experience of instability over time. In light of this, many youth in the neutral category reported housing situations without an authority figure, such as the motel/SRO. In order

Table 1. Demographics		
	<i>n</i> (N=1159)	%*
Ethnicity		
African American	266	23%
White/Caucasian	488	42%
Latino/a	193	17%
Other/Multiracial	188	16%
Missing/Unknown	24	2%
Gender, Sexual Orientation		
Male, Heterosexual	508	44%
Male, Gay/Bisexual/Other/Questioning/Unsure	170	15%
Female, Heterosexual	267	23%
Female, Lesbian/Bisexual/Other/Questioning/Unsure	128	11%
Transgender	35	3%
Missing/Unknown	51	4%
Education Attainment Level at Intake		
Less than a High School Degree	495	43%
High School Degree/Post-Secondary	628	54%
Missing/Unknown	36	3%
Employment Status at Intake		
Employed (FT or PT)	135	12%
Unemployed - Looking	741	64%
Unemployed - Not looking/Volunteering/Disabled	139	12%
Other	126	11%
Missing/Unknown	18	2%
Mental Health Care Prior to Intake		
Yes	839	72%
No	271	23%
Missing/Unknown	59	5%

*Due to rounding some totals do not equal 100%

to take the housing context into account, housing status was redefined as unhoused, restrictive housed, and unrestricted housed. This is the key distinction between housing status defined in this study versus housing stability as constructed by Rosenthal et al. (2007) in their study of housing and HIV risk behaviors.

Risk Variables.

The six risk variables included both drug- and sexual-risk behaviors. Based on the youth's reported behaviors in the 30 days prior to intake, the risk behaviors included hard drug use (speed, cocaine, crack, heroin), intravenous (IV) drug use, any unprotected sexual contacts, unprotected

sexual contacts with someone the youth believed was HIV positive, unprotected sexual contacts with an intravenous drug user (IDU), and unprotected sexual contacts while high. Although youth reported on the number of days in which they participated in

the various risk behaviors, the level of engagement in risk behaviors was most likely less accurate than whether or not the youth engaged in the behavior. Consequently, the six risk behaviors were recoded as dummy variables (see Table 2).

Table 2. Part I - Youth Engagement in Risk Behaviors		
	<i>n</i> (N=1159)	%**
Restrictive Housing		
Unhoused (Nonrestrictive)	412	36%
Nonrestrictive Housed	389	34%
Restrictive Housed	270	23%
Other	69	6%
Missing	19	2%
Hard Drug* Use Within the Last 30 Days		
Yes	239	21%
No	828	71%
Missing	92	8%
IV Drug Use Within the Last 30 Days		
Yes	92	8%
No	997	86%
Missing	70	6%
Unprotected Sexual Contact (Any)		
Yes	379	33%
No	614	53%
Missing	166	14%
Unprotected Sexual Contact with Suspected HIV+ Partner		
Yes	49	4%
No	935	81%
Missing	175	15%
Unprotected Sexual Contact While High		
Yes	191	17%
No	796	69%
Missing	172	15%
Unprotected Contact with IV Drug User		
Yes	72	6%
No	914	79%
Missing	173	15%

*Hard drugs defined as crack, cocaine, speed, heroin

**Due to rounding some totals do not equal 100%

Analyses

Preliminary chi-square or t-tests were used to assess bivariate relationships. These analyses indicated significant relationships between housing status and five of the six risk behaviors. Unprotected contacts with someone the youth believed was HIV positive was not significant. Control variables also demonstrated significant relationships with the risk behaviors (see Table 3).

A logit regression model was used to explore the relationship between housing status and risk behaviors while controlling for other variables. Since the risk behaviors were binary variables, logit was the regression model chosen. Six models were run, with each of the risk behaviors serving

as the response variable in one of the six models. Housing status was the primary explanatory variable, and age, race, gender interacted with sexual orientation, education, employment status, income and psychiatric history were included as control variables.

Part II – Larkin Street HIV Prevention Services Data

Part II of the study sought to identify the clients being targeted by the HIV Prevention Team. Service delivery could be measured in multiple ways, but one was chosen: the number of HIV prevention services received. This variable was coded as a continuous variable.

		Within the Past 30 Days					
		Drug Use		Unprotected Sexual Contact			
		IV Drugs	Crack, Cocaine, Speed, Heroin	Any	With Partner Believed to be HIV+	With IV Drug User	While High
Restrictive Housing	χ^2	17.182***	33.807***	10.588**	0.855	6.249*	6.084*
	p-value	0.000	0.000	0.005	0.652	0.044	0.048
Education Level	χ^2	4.075*	3.490+	1.667	3.569+	1.101	0.859
	p-value	0.044	0.062	0.197	0.059	0.294	0.354
Previous Mental Health Care	χ^2	7.088**	3.966*	11.452***	3.055+	7.742**	5.170*
	p-value	0.008	0.046	0.001	0.080	0.005	0.023
Employment Status	χ^2	10.098*	19.261***	5.032	1.765	11.326**	11.209*
	p-value	0.018	0.000	0.170	0.623	0.010	0.011
Gender/ Sexual Orientation	χ^2	13.425**	33.240***	36.207***	67.029***	30.565***	23.310***
	p-value	0.009	0.000	0.000	0.000	0.000	0.000
Ethnicity	χ^2	51.588***	58.240***	13.819**	9.945*	27.417***	12.195**
	p-value	0.000	0.000	0.003	0.019	0.000	0.007

*** indicates significance at the 0.001 level, ** = 0.01 level, * = 0.05 level, + = 0.10 level

There were seven risk variables included in the analyses, all of which were collected at intake. These risk variables were selected based on defined Behavior Risk Populations as well as input from the Larkin Street Manager of HIV Prevention. The final risk variables included were (See Table 4):

1. Alcohol or pot use in the 30 days prior to intake,
2. Intravenous drug (IV) use in the 30 days prior to intake,
3. Hard drug use in the 30 days before intake,
4. Sex in exchange for drugs or money in the 12 months before intake,
5. Condom use during last sexual contact,
6. Anal or vaginal sex in the last 12 months,
7. Males who had sex with males.

Table 4. Part II - Engagement in Risk Behaviors			
		N	%
Use Within the Past 30 Days	Alcohol or Pot		
	Yes	727	63%
	No	260	22%
	Missing	172	15%
	IV Drug Use		
	Yes	92	8%
	No	997	86%
	Missing	70	6%
	Hard Drugs		
	Yes	254	22%
	No	905	78%
	Missing	0	0%
Participated in the Behavior Within the Past 12 Months	Sex For Drugs or Money		
	Yes	201	17%
	No	913	79%
	Missing	45	4%
	Anal or Vaginal Sex		
	Yes	913	79%
	No	178	15%
Missing	68	6%	
Participated During Most Recent Sexual Contact	Condom Use		
	Yes	485	42%
	No	362	31%
	Missing	312	27%
Participated in the Behavior	Males Who Have Sex With Males		
	Yes	181	16%
	No	955	82%

		Use Within the Past 30 Days			Within the Past 12 Months		Condom Use During Last Sexual Contact
		IV Drugs	Crack, Cocaine, Speed, Heroin	Alcohol or Pot	Sex for Drugs or Money	Anal or Vaginal Sex	
Total HIV Services	t-test	0.402	2.362	-2.182*	3.894*	1.317	-0.031
	p-value	0.526	0.125	0.029	0.049	0.269	0.975
Ethnicity	χ^2	51.588***	58.240***	51.170***	4.388	32.972***	22.069**
	p-value	0.000	0.000	0.000	0.223	0.000	0.005
Gender/ Sexual Orientation	χ^2	13.425**	33.420***	20.625*	65.690***	38.944***	49.806***
	p-value	0.009	0.000	0.024	0.000	0.000	0.000
Education Level	χ^2	4.075*	3.490+	0.858	0.007	2.115	1.946
	p-value	0.044	0.062	0.651	0.931	0.347	0.378

*** indicates significance at the 0.001 level, ** = 0.01 level, * = 0.05 level, + = 0.10 level

Analyses

Chi-square, t-tests and correlations were used to assess bivariate relationships. These analyses indicated significant relationships between services delivered and some, but not all, of the risk behaviors. There was a significant relationship between total HIV services and alcohol or pot use in the 30 days prior to intake and sex in exchange for drugs or money (see Table 5).

Multinomial logit regression was used to explore the relationship between reported risk behaviors and HIV Prevention services. Although the dependent variable (the number of HIV prevention services) is a continuous variable, its distribution is skewed to the right. Consequently, ordinary least squares regression was not the appropriate model, and multinomial logit was deemed to be appropriate once the service data was recoded as a categorical variable. Both ordinal logit and ordinal probit were initially explored, but the data violated the assumption of parallelism. Consequently, multinomial logit was used.

In regards to service usage, it was decided that the difference between high, medium and low usage carries more relevance than understanding the difference between accessing one and two services, and so on. Therefore the decision was made to create a categorical variable in which the number of HIV services received was divided into four categories: no receipt of services, low receipt of services (received 1-3 services), medium receipt (4-13), and high receipt (14 or more) of services.

The high receipt category was of particular interest since prior research has indicated that 10-14 services is the threshold beyond which homeless youth begin to change their behavior (AIDS Action, 2001). Of those who received any HIV prevention services (70%), the proportion in each intensity group was roughly equal. By grouping the number of services received, the model provided more practical information.

Results

Part I – Drug-risk behaviors versus sex-risk behaviors

The six logit regression models in Part I demonstrated variable results by risk behavior, although there appeared to be some commonalities among the drug-risk behaviors versus the sex-risk behaviors. The results are presented in Table 6. Housing status was significant for both of the drug-risk behaviors -- intravenous (IV) drug use and hard drug use. The odds of a youth engaging in drug-risk behaviors were highest for the unhoused youth, followed by the nonrestrictive housed youth and finally the restrictive housed youth. In comparison to the restrictive housed youth, an unhoused youth was 5.3 times as likely to report IV drug use and 3.7 times more likely to report hard drug use. On the other hand, an unrestrictive housed youth was 2 times as likely to report hard drug use. There appears to be a relationship between housing status and drug-risk behaviors, particularly in comparing the unhoused and the restrictive housed youth.

Table 6: Part I - Logit Models

	Drug Use				Unprotected Sexual Contacts							
	IV Drugs		Crack, Cocaine, Speed, Heroin		Any		With Partner Believed to Be HIV+		With IV Drug User		While High	
	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)
Restrictive Housing - Restrictive REF	0.000		0.000		0.137		0.600		0.113		0.439	
Unhoused (Nonrestrictive)	0.000	5.251***	0.000	3.654***	0.320	1.224	0.665	0.809	0.043	2.355*	0.123	1.469
Housed (Nonrestrictive)	0.137	2.071	0.005	2.090**	0.097	1.384+	0.630	1.232	0.890	1.064	0.519	1.173
Other	0.595	1.446	0.876	0.934	0.196	0.630	0.255	0.365	0.629	1.362	0.638	0.810
Missing	0.998	0.000	0.895	1.114	0.978	1.016	0.998	0.000	0.998	0.000	0.916	0.918
Education Level - Less than high school REF	0.730		0.822		0.248		0.811		0.839		0.683	
High school or more	0.472	1.214	0.641	1.085	0.717	1.058	0.836	0.927	0.643	0.873	0.973	1.007
Missing	0.642	1.463	0.621	1.295	0.117	0.381	0.576	1.900	0.670	0.616	0.389	0.506
Gender/SexualOrientation - Male, Heterosexual REF	0.494		0.000		0.000		0.000		0.001		0.000	
Male, Gay/Bisexual/Other/Questioning/Unsure	0.107	1.705	0.000	2.198***	0.061	1.502+	0.000	13.203***	0.000	5.346***	0.000	2.966***
Female, Heterosexual	0.993	1.003	0.051	0.638+	0.000	2.450***	0.018	3.971*	0.004	3.334**	0.031	1.685*
Female, Lesbian/Bisexual/Other/Questioning/Unsure	0.570	0.783	0.293	0.754	0.000	2.970***	0.108	3.104	0.000	4.671***	0.002	2.421**
Transgender	0.309	2.042	0.902	1.060	0.250	1.674	0.522	2.089	0.801	1.317	0.096	2.354+
Missing	0.688	1.269	0.115	0.450	0.868	1.065	0.493	2.165	0.164	2.647	0.088	2.058+
Mental Health Care - No REF	0.097		0.415		0.015		0.482		0.179		0.047	
Yes	0.031	2.202*	0.236	1.272	0.015	1.570*	0.228	1.791	0.144	1.884	0.342	1.243

*** indicates significance at the 0.001 level, ** = 0.01 level, * = 0.05 level, + = 0.10 level

Table 6: Part I - Logit Models

	Drug Use				Unprotected Sexual Contacts							
	IV Drugs		Crack, Cocaine, Speed, Heroin		Any		With Partner Believed to Be HIV+		With IV Drug User		While High	
	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)	sig	Exp(B)
Missing	0.208	2.177	0.943	0.971	0.658	0.851	0.559	1.581	0.724	0.740	0.074	0.389+
Ethnicity - White/Caucasian REF	0.002		0.000		0.111		0.272		0.052		0.360	
Black/African American	0.000	0.111***	0.000	0.294	0.019	0.625*	0.073	0.313+	0.016	0.264*	0.140	0.692
Latino/a	0.016	0.331*	0.089	0.665+	0.346	0.811	0.951	1.029	0.141	0.499	0.290	0.747
Other/Multiracial	0.216	0.655	0.020	0.582*	0.819	1.049	0.378	1.466	0.674	0.853	0.783	1.070
Missing	0.980	0.980	0.282	0.489	0.281	0.568	0.675	1.584	0.247	2.301	0.282	0.436
Employment - Employed (FT or PT) REF	0.534		0.052		0.087		0.484		0.105		0.048	
Unemployed - Looking	0.360	1.656	0.009	2.487**	0.038	1.696*	0.493	1.454	0.104	3.090	0.004	3.041**
Unemployed - Not Looking, Volunteering, & Disabled	0.109	2.638	0.002	3.399**	0.302	1.394	0.400	1.784	0.013	6.405*	0.064	2.323+
Other	0.367	1.733	0.014	2.670*	0.674	1.152	0.311	0.403	0.080	3.797+	0.063	2.374+
Missing	0.998	0.000	0.275	2.584	0.378	0.483	0.999	0.000	0.999	0.000	0.896	1.158
Income CONT	0.028	1.001*	0.059	1.000+	0.199	1.000	0.074	1.001+	0.025	1.001*	0.384	1.000
Reported Age CONT	0.514	1.838	0.404	1.546	0.017	3.097*	0.592	1.598	0.020	20.948*	0.144	2.434
Age Squared CONT	0.572	0.988	0.415	0.990	0.018	0.973*	0.747	0.994	0.026	0.933*	0.129	0.978
Constant	0.994	0.000	0.214	0.001	0.007	0.000+	0.995	0.000	0.987	0.000	0.073	0.000+

*** indicates significance at the 0.001 level, ** = 0.01 level, * = 0.05 level, + = 0.10 level

There were fewer significant relationships between housing status and the sex-risk behaviors. In comparison to restrictive housed youth, unhoused youth were no more or less likely to engage in any unprotected sexual contact, unprotected sexual contact with someone they believed to be HIV positive, or to engage in unprotected sexual contact while high. However, unhoused youth were 2.4 times more likely to report an unprotected sexual contact with an IDU. For the nonrestrictive housed youth, they were 1.4 times as likely to report any unprotected sexual contact compared to the restrictive housed youth. There did not appear to be a significant difference in the odds ratio in engaging in any unprotected sexual contact between the unhoused youth and restrictive housed youth, while there was a significant difference for the nonrestrictive housed youth versus the restrictive housed youth. This may reflect the effect of providing unsupervised housing, enabling a youth to privately engage in sexual behaviors with more freedom than those who reside on the streets.

There were also significant relationships between the risk behaviors and control variables. In comparison to those who were not employed, those with employment were more likely to report hard drug use, unprotected contacts with an IDU and unprotected contacts while high. Also, the more income reported, the more likely a youth was to engage in IV drug use, hard drug use, and unprotected contacts with an IDU. These results indicate that employment and income may facilitate these youths' abilities to acquire illegal substances. A youth with a history of mental health care was also more likely than a youth without a similar history to report IV drug use and unprotected sexual contacts.

Demographic variables were also significant across most or all of the risk behaviors. In comparison to heterosexual males, gay/bisexual/questioning males were 2.2 times as likely to report hard drug use, 1.5 times as likely to report an unprotected sexual contact, 13.2 times as likely to report an unprotected contact with someone they believed was HIV positive, 5.3 times as likely to engage in unprotected sex with an IDU, and 3 times as likely to engage in an unprotected contact while high. Female heterosexuals were less likely than heterosexual males to report hard drug use, but more likely to report any of the four unprotected sexual contact behaviors.

Ethnicity also appeared to significantly alter the likelihood that a youth would engage in risk behaviors. African American youth were less likely than White youth to engage in any of the risk behaviors, although unprotected contacts while high was not significant. Latino youth were also less likely than White youth to engage in drug-risk behaviors (IV use and hard drug use), with no statistical significance for the sex-risk behaviors.

Part II – HIV Prevention Service Delivery

It was hypothesized that youth reporting high levels of baseline risk behavior would receive the highest level of HIV prevention services. These youth, particularly those who reported IV drug use, or identified as a man who has sex with men, were expected to be the most likely to receive HIV prevention services. However, this hypothesis was not supported. At low- and medium- level of services, there were very few relationships between risk behaviors and/or control variables. Some of the expected relationships, but not all, appeared for those who received a high-level of services.

The results are presented in Table 7. For youth who received a low (1-3) level of HIV services compared to none, youth who did not report on their IV usage were 3.3 times as likely than those who reported IV use to receive services, and youth who reported no hard drug use were less likely than those who reported hard drug use to receive services.

For youth who received a medium (4-13) level of services versus youth receiving no services, African American youth were 1.7 times as likely as White youth to receive services, and those who did not report any previous psychiatric care were 0.6 times as likely to receive services in comparison to those who reported previous care.

For youth who received a high (14 or more) level of services, youth who were male and did not report having sex with males were 0.5 times as likely to receive services than MSMs, Latino/a youth were 2.6 times as likely to receive services compared to White youth, gay/bisexual/questioning male youth were 2.2 times as likely to receive services, and transgender youth were 4.8 times as likely to receive services compared to heterosexual male youth. Control variables were also significant, where those who reported less than a high school

Table 7. Part II: Multinomial Logit Model

		Low Level of HIV Services			Mid Level of HIV Services			High Level of HIV Services			
		B	Exp(B)	Sig.	B	Exp(B)	Sig.	B	Exp(B)	Sig.	
Intercept		5.369		0.267	5.369		0.749	-10.424		0.095	
Days in Service		0.000	1.000	0.456	0.000	1.000	0.884	0.001	1.001***	0.000	
Age		-0.495	0.609	0.290	-0.495	1.120	0.830	1.034	2.813+	0.084	
Age Squared		0.011	1.011	0.321	0.011	0.998	0.879	-0.026	0.974+	0.069	
Reported at Intake											
Substance Use Within the Past 30 Days	Alcohol or Pot	Missing	0.224	1.251	0.398	0.224	0.848	0.567	0.498	1.645+	0.072
		No	-0.067	0.935	0.772	-0.067	1.294	0.245	0.342	1.408	0.127
		Yes	0	.	.	0	.	.	0	.	.
	IV Drugs	Missing	1.184	3.269*	0.014	1.184	2.262	0.130	0.798	2.222	0.137
		No	0.607	1.835+	0.091	0.607	1.930+	0.094	0.382	1.466	0.333
		Yes	0	.	.	0	.	.	0	.	.
	Crack, Cocaine, Speed Heroin	No	-0.791	0.453**	0.002	-0.791	0.677	0.142	0.083	1.087	0.769
		Yes	0	.	.	0	.	.	0	.	.
	Participated in Behavior Within the Past 12 Months	Traded Sex for Drugs or Money	Missing	0.324	1.383	0.528	0.324	0.970	0.955	0.083	1.086
No			0.267	1.306	0.285	0.267	1.259	0.368	0.392	1.481	0.128
Yes			0	.	.	0	.	.	0	.	.
Anal or Vaginal Sex		Missing	0.052	1.053	0.894	0.052	0.802	0.596	-0.253	0.776	0.562
		No	0.890	2.435	0.347	0.890	1.842	0.524	-0.404	0.668	0.751
		Yes	0	.	.	0	.	.	0	.	.
Used Condom During Last Sexual Contact	Missing	0.320	1.377	0.263	0.320	1.151	0.633	-0.449	0.638	0.130	
	No	0.144	1.154	0.608	0.144	1.178	0.569	-0.436	0.647	0.130	
	NA	-0.593	0.553	0.548	-0.593	0.737	0.761	0.129	1.137	0.922	
	Yes	0	.	.	0	.	.	0	.	.	
Participated in Behavior Ever	Males Have Sex with Males	Missing	-1.518	0.219+	0.074	-1.518	1.012	0.986	-1.422	0.241+	0.085
		No	-0.314	0.730	0.436	-0.314	0.591	0.191	-0.784	0.457*	0.049
		Yes	0	.	.	0	.	.	0	.	.

*** indicates significance at the 0.001 level, ** = 0.01 level, * = 0.05 level, + = 0.10 level

		Low Level of HIV Services			Mid Level of HIV Services			High Level of HIV Services		
		B	Exp(B)	Sig.	B	Exp(B)	Sig.	B	Exp(B)	Sig.
Ethnicity	Missing	0.259	1.296	0.630	0.259	0.469	0.361	0.259	1.296	0.704
	African American	0.180	1.198	0.461	0.180	1.732*	0.026	0.960	2.613***	0.000
	Latino/a	-0.545	0.580*	0.047	-0.545	1.283	0.335	0.467	1.595+	0.082
	Other/Multiracial	-0.242	0.785	0.333	-0.242	0.887	0.650	0.359	1.432	0.174
	White/Caucasian	0	.	.	0	.	.	0	.	.
Gender/ Sexual Orientation	Missing	0.681	1.977	0.127	0.681	2.055	0.110	0.218	1.243	0.669
	Male, Gay/ Bisexual/Other/ Questioning/Unsure	-0.247	0.781	0.548	-0.247	0.896	0.785	0.787	2.198*	0.044
	Female, Heterosexual	0.135	1.144	0.540	0.135	0.856	0.514	0.262	1.299	0.267
	Female, Lesbian/ Bisexual/Other/ Questioning/Unsure	-0.061	0.940	0.833	-0.061	1.320	0.334	-0.054	0.948	0.870
	Transgender	0.975	2.651	0.132	0.975	2.390	0.177	1.579	4.849**	0.009
	Male, Heterosexual	0	.	.	0	.	.	0	.	.
Education Level	Missing	-0.441	0.643	0.402	-0.441	0.617	0.356	-0.086	0.918	0.862
	Less than high school	-0.064	0.938	0.729	-0.064	0.703+	0.063	-0.602	0.548**	0.002
	High school or more	0	.	.	0	.	.	0	.	.
Any Previous Mental Health Care	Missing	-0.394	0.674	0.269	-0.394	0.488+	0.073	-1.281	0.278**	0.006
	No	-0.341	0.711+	0.097	-0.341	0.613*	0.021	-0.703	0.495**	0.002
	Yes	0	.	.	0	.	.	0	.	.
STD or Hepatitis in Past 12 Months	Missing	-0.392	0.676	0.578	-0.392	0.162	0.115	-0.718	0.488	0.339
	No	-0.066	0.936	0.844	-0.066	1.081	0.822	-0.464	0.629	0.145
	Yes	0	.	.	0	.	.	0	.	.
Ever Had an HIV Test	Missing	20.661	939,184,28 9.191***	0.000	20.661	507,972,58 5.967***	0.000	19.173	212,14 5,912.367	.
	No	0.193	1.213	0.339	0.193	0.910	0.660	-0.318	0.728	0.169
	Yes	0	.	.	0	.	.	0	.	.

*** indicates significance at the 0.001 level, ** = 0.01 level, * = 0.05 level, + = 0.10 level

education were 0.5 times as likely to receive a high level of services compared to those who graduated from high school. Finally, those who reported no previous mental health care were 0.5 times as likely to receive services than those who did report a mental health history.

Finally, the model included the number of days the youth had been in Larkin Street services, since the

longer a youth is in services, the more likely they are to receive HIV prevention services. However, there was no significant relationship between time in service and low or medium level of services. In comparing youth receiving a high level of services to those receive no services, for every additional day in services, a youth was 0.1% more likely to receive a high level of services.

Discussion

Part I of this study indicates that there is a relationship between housing status and risk behaviors for homeless and marginally housed youth. Unhoused youth are more likely to report drug-risk behaviors than are youth in a restrictive housed setting. Additionally it appears that youth in an unrestrictive housed situation are more likely to engage in sexual-risk behaviors than youth in the other two housing categories. These results suggest that restrictive housing is the most preferential housing arrangement for discouraging HIV risk behaviors. Adolescent attitudes toward risk are different from adults, and so prevention strategies that are most effective with adults may be less effective for adolescents (Reyna & Farley, 2006). This suggests that housing should be provided in conjunction with other skill building services, and that for youth, housing alone might not be an effective HIV prevention model. This supports the Larkin Street continuum of care model.

Part II of this study indicated that initial assessment of HIV risk behaviors were not effective in predicting who would receive HIV services. A broad cross-section of Larkin Street clients are receiving low- and medium- level HIV prevention services, while those receiving a high-level of services appear to report some of the specifically targeted behaviors. One interpretation of these results is that the youth who need the services most are not receiving them. In this case, youth with the highest baseline risk would be considered the most in need of services. However, there are other possibilities.

First, homelessness is a temporary state, not a permanent characteristic. Consequently, just as a youth's housing status changes, their risk behaviors will change due to shifts in housing status and other factors. It is likely that as the youth become more involved in program services, their risk behaviors are reduced so that at the time of service, those with highest baseline risk may no longer be the most in need of HIV prevention services. Staff operate on the most immediate and accurate information they collect from these youth through relationships developed over time, and may be accurately targeting services based on current behavior rather than baseline risk assessments.

Another possibility is that these youth are not accurately reporting on their risk behaviors at intake. The intake components ask questions that are personal and sensitive in nature and are administered at program entry. Many youth may

not feel comfortable enough to honestly report on such intimate details of their lives. Consequently, they may become more open with staff as trust is established and relationships are strengthened. For this reason, baseline risk may not be the only indicator of those youth most in need of HIV Prevention services.

Another finding from Part II of the study is that the Larkin Street model of integrated HIV services does not target youth for low- and medium-level prevention services. Because all these homeless and marginally housed youth are at high-risk for HIV, providing a basic level of service to as many youth as possible is appropriate. Using those initial services to further screen the youth, staff can then provide more targeted services to youth deemed to be at high risk. AIDS Action (2001) states that 10-14 services are required for homeless youth to begin to change behaviors. Consequently, it is the youth who receive a high-level of services who are of most interest. Further investigation is required to more fully understand this relationship between service dosage and risk behaviors.

A final possibility explaining why high-risk youth may have been underserved is related to the voluntary nature of the program. Youth have the choice to participate in group or individual services. Although Larkin Street staff work to engage these youth in HIV Prevention and other services, youth at highest-risk may not be interested in participating in groups or individual sessions regarding their behaviors, or may be the least open to HIV Prevention services. Consequently, staff may be targeting the youth at highest-risk, but these youth may be actively refusing to participate. Staff would then focus on retaining these youth in services by addressing other issues or concerns that the youth may be more open to working through. This sort of service deflection is not captured in the data.

Assuming that staff are able to more accurately identify youth engaging in high-risk behaviors as compared to the initial intake, this study provides support for recognizing the dynamic state of these youth and their engagement in high-risk behaviors. Consequently, there is the need to redefine how HIV prevention services are targeted. Within the homeless and marginally housed youth population, all are at high-risk of contracting HIV. Although there is a general need to target prevention services, the direction of those targets may be best defined by the staff working directly with youth on a day-to-day basis.

While this study provides valuable insight into HIV risk behaviors among youth, it poses several limitations. First, the housing status variable is a self-reported variable that was created based on responses from the youth. Because this is a cross-sectional study, not a longitudinal study, it does not take into account how a change in housing status will impact changes in risk behavior for the same youth. As Larkin Street continues to collect data, the hope is that a longitudinal study will be feasible in the near future.

Part I of the study examines the relationship between individual risk behaviors and housing status, but it fails to take into account how involvement in one risk behavior may affect involvement in another risk behavior. Furthermore, the variables provided limited information in that they measured the presence or absence of risk rather than taking into account the intensity/severity of risk. Based on the available data, taking into account the level of risk and the interaction of risk behaviors was not possible, but would be interesting for future research.

In Part II of the study, HIV prevention services do not take into account the type or quality of the services. The homeless youth population is a transient and unpredictable population, so that creating a structured curriculum would not be effective. Consequently, although services provided to youth are individualized, it is impossible to ascertain whether every unit of service delivered to each youth is comparable. Moreover, this study examined how HIV prevention services were targeted, but cannot provide insight on how effective those services were. Without an assessment of any changes in risk behavior, knowledge of the quality of targeting these services is limited. Further research should include outcome measures to ascertain how youth receiving services are responding to those services.

Despite these limitations, this study provides support for the Larkin Street continuum of care. There is evidence of a relationship between housing status and risk behaviors among youth. Whereas the adult literature provides evidence that providing housing can be an effective HIV prevention strategy, among youth, their developmental stage should be taken into account as well. Housing for homeless and marginally housed youth should be provided as a treatment modality, in concert with other support services that will assist these young people in their transition into independent

living. Moreover, these youths' engagement in risk behaviors will vary as their situation changes. HIV prevention services, in conjunction with other services, should be responsive to each youth's most immediate needs.

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Since 1984, Larkin Street Youth Services has been committed to helping San Francisco's most vulnerable youth ages 12-24 move beyond street life. This commitment has fueled the development of a comprehensive continuum of services that is nationally recognized as a model of innovative and effective care. We offer stability, safety and the opportunity for a better life.

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