Lost to Care in Bexar: What Role do Individual and Contextual Factors Play in HIV/AIDS Patient Retention in a Majority Hispanic Community?

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Hispanics comprise the second largest group of newly diagnosed cases of HIV in the United States after African Americans. Although clinical advances have made HIV/AIDS a highly treatable disease (Shapiro et al., 2000), a strict treatment plan is required for optimal disease management and quality of life. Therefore, patient retention is critical. However, in 2010,1 in every 3 persons living with HIV were lost to care in Texas, potentially leading to reduced quality of life and an increased risk of developing AIDS for infected patients.

Previous research has identified that being Hispanic, having low levels of education, younger age groups, not having health -insurance, and living in the South are factors associated with patient retention and access to antiviral therapy (Andersen et al., 2000; Henao-Martínez & Castillo-Mancilla, 2013; Morales et al., 2004). Although previous studies have mapped general tendencies for barriers to care and treatment at the individual level, little is known about how contextual factors and neighborhood opportunity structures influence HIV management and patient retention. Further, to our knowledge no study to date has investigated the risk of being or becoming lost to care specifically in the Hispanic population, particularly one living in a predominantly Hispanic metropolitan area. Therefore, this study aims to examine the role that individual and contextual factors play in HIV patient retention in a minority-majority Hispanic setting.

This research is guided by Anderson's Behavioral Model of Health Services Utilization. In brief, the framework applied to patient retention hypothesizes that the risk of patients being or becoming lost to care is the result of the interplay of predisposing, enabling and perceived need factors on the patient level as well as contextual factors. We expand on the model's contextual component to include the Opportunities for High-Risk Behaviors model and the networks and geospatial factors framework (Latkin, German, Vlahov, & Galea, 2013). We hypothesized that above and beyond the individual level effects, neighborhood characteristics will affect patients' likelihood of being or becoming lost to care.

We use data from electronic medical records of HIV positive patients seen at a healthcare clinic in Bexar County, Texas from 2008 and 2013. The clinic offers complete primary and specialized medical care, medical case management services, psychiatry, mental health/substance abuse counseling, nutritional services and a full service specialty pharmacy. After obtaining approval from the Institutional Review Board of the University of Texas Health Science Center at San Antonio, medical records were queried from a Microsoft® Access database hosted by the health system that the clinic is part of. Administrative data such as age, sex, race/ethnicity, language, and employment status and clinical variables (visit dates, medications, lab results, mode of transmission, and any indication of having previously experienced abuse) were obtained for patients 18 years of age and older who have been diagnosed with HIV. Patient ZIP codes were also obtained in order to link the individual level data to neighborhood characteristics obtained from the 2012 5-year summary files of the American Community Survey. Zip Codes were used as proxy for neighborhoods. Neighborhood characteristics include level % Hispanic, % Black, % living below the poverty federal threshold, % Unemployed, % Underemployed, % of female-headed households, and % with a high school degree or less. In addition, data from the Census Bureau's ZIP code business patterns data from 2008 through 2012 were used to examine the concentration of alcohol outlets.

Bivariate descriptive statistics (see table 1) as well as multilevel logistic regression models (see table 2) were used to examine the association between the patient characteristics and contextual characteristics and the risk of being or becoming lost to care for all patients and for Hispanic patients separately. The risk of being/becoming lost to care was defined as not having had a healthcare visit at the clinic in more than 8 months or as having a higher than average rate of letting more than 90 days pass between visits (the average was 5 times). Data analyses were conducted using R 3.1.1 (R Core Team, 2014) and missing observations were imputed using the Amelia II package (Honaker, Gary, & Blackwell, 2009).

Preliminary analyses highlighted the following points. 1) Predisposing characteristics such as being older and being of Hispanic descent increased the odds of being/becoming lost to care compared to Whites. 2) Individuals who contracted HIV through intravenous drug use (IVDU) were significantly less likely to being/becoming lost to care compared to those who contracted HIV from same-sex contact. 3) Those who spoke a language other than English were less likely of being/becoming lost to care compared to English-speakers. 4) The enabling variables of marital status and being on a form of public health insurance increased the odds of being/becoming lost to care. 5) Interestingly, being immunocompromised and having a high viral load of HIV lowered the odds of being/becoming lost to care, which seems to indicate that it is the healthier patients the ones who worry less about their visits. 6) Introducing neighborhood level characteristics to the model did not result in significant associations between neighborhood characteristics and individual level risk of being lost to care, thus leading to the tentative rejection of the hypothesis that neighborhood characteristics, at least for this specific study cohort, may not fully influence the pathway of being/becoming lost to care. 7) Lastly, we examined the Hispanic population separately, showing that despite stratifying by race/ethnicity, the previous associations remained unchanged in magnitude, significance and direction.

In conclusion, our analysis brings a fresh perspective to the topic of HIV. Hispanics are the fastest growing minority in the United States, and the second largest minority with HIV, and thus, the examination of this population requires further attention that can be achieved through analysis such as the one presented here. Next steps include the further investigation of neighborhood characteristics and the development of a neighborhood risk index as well as investigation the distribution of patients lost to care or at risk of becoming lost to care in Bexar County using ArcGIS.

References

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Table 1. Descriptive Statistics for Predisposing, Enabling and Perceived Need Factors of HIV Patients by Patient Retention Status in Bexar County 2008-2013 (N=2,815)

	Outcome				p-value
	Not Lost To Care		Lost To Care/ At risk of becoming lost to care		
	N	%	N	%	
	1,782	63.3	1,033	36.7	
Predisposing Factors					
Sex					0.70
Male	1,397	49.6	817	29.0	
Female	385	13.7	216	7.7	
Age(mean)	41		46		<0.01
18 to 39 years	811	28.8	271	9.6	
40 to 80 years	971	34.5	762	27.1	
Race & Ethnicity					<0.01
White NH	473	16.8	230	8.2	
Hispanic	902	32.0	640	22.7	
Black NH & Other	407	14.5	163	5.8	
Language					<0.01
English	1,539	54.7	893	31.7	
Bilingual	65	2.3	49	1.7	
Spanish	135	4.8	83	2.9	
Other	43	1.5	8	0.3	
Mode of Transmission					0.19
Same-Sex Contact	845	30.0	481	17.1	
Heterosexual Contact	455	16.2	288	10.2	
IVDU	113	4.0	48	1.7	
2 or more	292	10.4	162	5.8	
Other/Unknown	77	2.7	54	1.9	
Employment					0.02
Unemployed	537	19.1	268	9.5	
Employed	1,245	44.2	765	27.2	
Abuse					0.28
No	1,696	60.2	993	35.3	
Yes	86	3.1	40	1.4	
Enabling Factors					
Marital Status					<0.01
Single	1,635	58.1	892	31.7	
Married	147	5.2	141	5.0	
Insurance					<0.01
Private	621	22.1	249	8.8	
Public	1,161	41.2	784	27.9	
Perceived Need					
STD					0.04
No	1,069	38.0	578	20.5	
Yes	713	25.3	455	16.2	
Viral Load					<0.01
No	1,387	49.3	980	34.8	
Yes	395	14.0	53	1.9	
Immunocompromised					<0.01
No	659	23.4	486	17.3	
Yes	1,123	39.9	547	19.4	

Table 2. Adjusted Odds Ratios (OR) for being/becoming lost to care from the Nested-Multilevel Logistic Regression Models

		All Groups				Hispanics	
		Model 1		Model 2		Model 3	
		OR		OR		OR	
Predisposing Characteristics							
Age	18-39 years (ref.)						
	40-80 years	2.25	***	2.28	***	2.15	***
Sex	Male (ref.)						
	Female	0.92		0.92		1.04	
Race/Ethnicity	White (ref.)						
	Hispanic	1.51	***	1.51	***		
	Black and other	0.82		0.82			
Transmission Mode	Same Sex Contact (ref.)						
	Heterosexual contact	1.04		1.05		0.86	
	IVDU	0.65	*	0.65	*	0.55	*
	2 or more possible ways	0.91		0.92		0.93	
	Other way/Unknown	1.28		1.29		1.28	
Language	English (ref.)						
	Bilingual	0.97		0.97		0.99	
	Spanish	0.73	.	0.74	.	0.76	
	Other language	0.32	**	0.31	**	0.43	
Employment Status	Unemployed (ref.)						
	Employed	1.19	.	1.19	.	1.05	
Has History of Abuse	No (ref.)						
	Yes	0.85		0.85		0.62	
Enabling Characteristics							
Marital Status	Single (ref.)						
	Married	1.67	***	1.67	***	1.74	**
Health Insurance	Private (ref.)						
	Public	1.59	***	1.60	***	1.64	***
Perceived Need							
Is Immuno-compromised	No (ref.)						
	Yes	0.73	***	0.74	***	0.70	**
Viral Load	Low (ref.)						
	High	0.21	***	0.21	***	0.20	***
Has STDs	No (ref.)						
	Yes	1.04		1.05		1.06	
Neighborhood Characteristics(z-scored)							
Alcohol Outlet Density				1.01			
Percent Hispanic				1.04			
Percent Black				0.95			
Percent Poor				0.86	.		
Percent Less than High School				0.89			
Percent Unemployed				1.17			
Percent Underemployed				1.08			
Percent Female Householders Alone				1.07			

*p < .05. **p < .01. ***p < .001
Note: ref.=reference group