Georgia State University
Digital Archive @ GSU

Nursing Dissertations | School of Nursing

10-1-2012

Factors Influencing Sexual Behavior Among HIV Positive Men Who Have Sex With Men

Noreen McDonough
nem45@bellsouth.net

Follow this and additional works at: http://digitalarchive.gsu.edu/nursing_diss

Recommended Citation
McDonough, Noreen, "Factors Influencing Sexual Behavior Among HIV Positive Men Who Have Sex With Men" (2012). *Nursing Dissertations.* Paper 30.

This Dissertation is brought to you for free and open access by the School of Nursing at Digital Archive @ GSU. It has been accepted for inclusion in Nursing Dissertations by an authorized administrator of Digital Archive @ GSU. For more information, please contact digitalarchive@gsu.edu.

ACCEPTANCE

This dissertation, Factors Influencing Sexual Behavior among HIV Positive Men Who Have Sex with Men by Noreen McDonough was prepared under the direction of the candidate's dissertation committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Nursing in the Byrdine F. Lewis School of Nursing and Health Professions, Georgia State University.

_____
Mary Catherine Gebhardt, PhD, RN, MSN
Committee Chairperson

_____
Cecelia Gatson Grindel, PhD, RN, FAAN
Committee Member

_____
Barbara Blake, PhD, RN, ACRN
Committee Member

_____
Date

This dissertation meets the format and style requirements established by the Byrdine F. Lewis School of Nursing and Health Professions. It is acceptable for binding, for placement in the University Library and Archives, and for reproduction and distribution to the scholarly and lay community by University Microfilms International.

_____
Ptlene Minick, PhD, RN
Associate Director for Graduate Nursing Programs
Byrdine F. Lewis School of Nursing

_____
Joan Cranford, EdD, RN
Director, Byrdine F. Lewis School of Nursing

AUTHOR'S STATEMENT

In presenting this dissertation as a partial fulfillment of the requirements for an advanced degree from Georgia State University, I agree that the Library of the University shall make it available for inspection and circulation in accordance with its regulations governing materials of this type. I agree that permission to quote from, to copy from, or to publish this dissertation may be granted by the author or, in his/her absence, by the professor under whose direction it was written, or in his/her absence, by the Associate Dean for Nursing, Byrdine F. Lewis School of Nursing and Health Professions. Such quoting, copying, or publishing must be solely for scholarly purposes and will not involve potential financial gain. It is understood that any copying from or publication of this dissertation which involves potential financial gain will not be allowed without written permission from the author.

_____

Noreen McDonough

NOTICE TO BORROWERS

All dissertations deposited in the Georgia State University Library must be used in accordance with the stipulations prescribed by the author in the preceding statement.

The author of this dissertation is:

Noreen McDonough
209 Lee Road 155
Opelika, AL 36804

The director of this dissertation is:

Dr. Mary Catherine Gebhardt
Clinical Assistant Professor
Byrdine F. Lewis School of Nursing and Health Professions
Georgia State University
P.O. Box 3982
Atlanta, GA 30302-4019

Users of this dissertation not regularly enrolled as students at Georgia State University are required to attest acceptance of the preceding stipulations by signing below. Libraries borrowing this dissertation for the use of their patrons are required to see that each user records here the information requested.

NAME OF USER	ADDRESS	DATE TYPE OF USE (EXAMINATION ONLY OR COPYING)

CURRICULUM VITA

Personal Information:

Noreen Elizabeth McDonough
209 Lee Road
Opelika, AL 36804

Education:

2012	Georgia State University Atlanta, Georgia	Doctorate of Philosophy in Nursing
1989	Troy State University Montgomery, Alabama	Master of Science in Nursing
1983	Troy State University Troy, Alabama	Bachelor of Science in Nursing

Academic Appointments and Other Significant Work Experience:

2003 - Present	Assistant and Associate Professor, Nursing Columbus State University, Columbus, GA
2002 – 2007	Per Diem Registered Nurse East Alabama Medical Center, Opelika, AL Provided direct patient care to patients admitted to critical care units and functioned as nursing supervisor.
1992 – 2003	Nursing Faculty/Exposure Control Officer Southern Union State Community College, Opelika, AL Nursing Faculty with subsequent responsibilities of course coordinator. Exposure Control Officer: developed the college Exposure Control Plan, implemented and coordinated all biohazard training for college employees, and developed student activities related to prevention of communicable diseases.
1990 – 1992	Unit Manager East Alabama Medical Center, Opelika, AL Fiscal budget responsibilities and management of nursing personnel on an orthopedic unit. Developed cost effective methods for patient care.

1989 – 1990	Nurse Manager Phenix Medical Park Hospital, Phenix City, AL Full administrative responsibility for Coronary Care Unit, Telemetry Unit and Orthopedic floor. Developed alternative staffing patterns, maintained customer relations, screened and selected employees, and managed operations.
1988 – 1989	Registered Nurse East Alabama Medical Center; Opelika, AL Comprehensive responsibilities in monitoring homeostasis of thoracic surgical patients, predominantly those who had undergone coronary artery bypass grafting.
1983 – 1988	Registered Nurse Cobb Memorial Hospital, Phenix City, AL Served in a variety of registered nurse positions including intensive care, telemetry and orthopedics

Membership:

- Sigma Theta Tau, International Nursing Honor Society, member
- American Association of Critical-Care Nurses, member
- National League of Nursing, member
- Georgia Association of Nursing Education, member

Professional Activities:

Reviewer

Columbus State University. (2011). Perspectives.

Smith-Temple, J., & Johnson, J. (2009). Nurses' guide to clinical procedures (6th ed.). Lippincott Williams & Wilkins.

Publication

McDonough, N. (1992). Hospital admission and discharge. In V. Bolander (Ed.), Sorensen and Luckmann's basic nursing: A psychophysiologic approach (3rd ed., pp. 381-397). Philadelphia: W. B. Saunders Company.

Presentations

Taylor, G.A., Blake, B.J. Sanchez-Jones, T. & McDonough, N. Health literacy among adults aging with HIV. 23rd Annual Association of Nurses in AIDS Care Annual Conference, Reno, NV, November 18 – 20, 2010 (Podium Presentation)

Sanchez, T., Taylor, G.A., Blake, B. J., McDonough, N. Health Literacy among older African Americans living with HIV. NGNA 25th Annual Convention, Palm Springs, CA, October 14 - 17, 2010 (Podium Presentation)

Grants/Projects

McDonough, N. (2011). STEPS (Supporting Technology Enhanced PhD Studies) Project. Byrdine F. Lewis School of Nursing, Georgia State University ($3,000). Awarded.

McDonough, N. (2011). STEPS (Supporting Technology Enhanced PhD Studies) Project. Byrdine F. Lewis School of Nursing, Georgia State University ($5,500). Awarded.

McDonough, N. (2010, Summer). STEPS (Supporting Technology Enhanced PhD Studies) Project. Byrdine F. Lewis School of Nursing, Georgia State University ($5,000). Awarded.

McDonough, N. (2009, Aug – 2010, May). STEPS (Supporting Technology Enhanced PhD Studies) Project. Byrdine F. Lewis School of Nursing, Georgia State University ($11,000). Awarded.

McDonough, N. (2008, Aug – 2009, May). STEPS (Supporting Technology Enhanced PhD Studies) Project. Byrdine F. Lewis School of Nursing, Georgia State University ($25,000). Awarded.

ABSTRACT

FACTORS INFLUENCING SEXUAL BEHAVIOR AMONG HIV POSITIVE MEN WHO HAVE SEX WITH MEN

By

NOREEN MCDONOUGH

Men who have sex with men (MSM) are disproportionately affected by HIV infection and account for more than half of all new HIV infections diagnosed in the U. S. The purpose of this study was to explore factors that influence sexual behavior among sexually active HIV positive MSM using constructs from the health belief model (HBM).

A cross-sectional, correlational study was conducted with a non-randomized sample of 216 HIV positive MSM. Participants were predominantly Black/African American (85.6%). The mean age of the sample was 43.02 years (SD = 9.74) and ages ranged from 19 to 66. More than 90% reported a high school educational level or greater; and nearly half (47.2%) had been diagnosed with HIV for more than 10 years.

The overall model predicted that participants who had perceived less severity of living with HIV and who had a positive attitude toward condom use were more likely to practice safer sex, accounting for 24% of the variance in sexual behavior ($p < .001$). When controlling for demographic characteristics

(age, number of years diagnosed as HIV positive, number of recent sexual partners, and current antiretroviral medication use), the overall model accounted for 41% of the variance ($p < .001$). Participants who had a fewer number of recent sex partners and who had a positive attitude toward condom use were more likely to practice safer sex. Additionally, those who practiced safer sex (n = 58, 27%) reported significantly higher levels of perceived severity of living with HIV ($p = .037$), perceived benefits of safe sex ($p = .018$), perceived barriers to safe sex ($p < .001$), and self-efficacy for negotiating safe sex ($p = .013$) compared to those who did not practice safer sex (n = 157, 73%).

Results from the study indicated there was a high prevalence of unsafe sexual practices among the participants. These findings support the need for additional research to explore factors that influence sexual behavior among HIV positive MSM with an emphasis on testing interventions that support safe sex practices.

FACTORS INFLUENCING SEXUAL BEHAVIOR AMONG HIV POSITIVE MEN

WHO HAVE SEX WITH MEN

by

NOREEN MCDONOUGH

A DISSERTATION

Presented in Partial Fulfillment of Requirements for the
Degree of Doctor of Philosophy in Nursing in the Byrdine F. Lewis
School of Nursing and Health Professions
Georgia State University

Atlanta, Georgia

2012

Copyright by

Noreen McDonough

2012

ACKNOWLEDGEMENTS

As I reflect on my experiences toward completing this dissertation, I am reminded of the words of John Donne who wrote “No man is an island, entire of itself”. I hold those words close to my heart knowing that I could not have completed this process without the influence and guidance of so many people.

I would like acknowledge my dissertation committee for their tireless efforts toward my success. Thank you to Dr. Mary Catherine Gebhardt for agreeing to be chair of my committee. Her enthusiasm, encouragement, and resolute dedication to ensuring I completed this project were invaluable. My thanks also to Dr. Cecelia Grindel, whose wisdom, knowledge and commitment to the highest academic standards inspired and motivated me throughout the entire program. I am also truly indebted to Dr. Barbara Blake for her excellent tutelage and for making everything possible. Without her, I wouldn’t have known where to start.

To the faculty, thank you all for your clarity of instruction and dedication to nursing research. We are better scientists because of all of you. To Georgia State University and the University System of Georgia, thank you for the financial support that made this possible. To my cohort, thank you for always being there; and to my study participants, thank you for making the experience fun.

A special thanks to my family and friends who provided confidence and support. Thank you to my parents, James and Annemarie, to my brothers, Brian and Steve, to my aunt, Elizabeth Haigis, to my friends, Janeen, Kim, Sandy and Suzanne, and especially to Mike; I could not have done this without him. God has blessed me by placing each of them in my life and I am thankful each and every day.

TABLE OF CONTENTS

Section Page

List of Tables xviii

List of Figures xix

List of Abbreviations xx

Chapter

I. INTRODUCTION 1

Problem 2

Purpose and AIMS 3

Background and Significance 5

Theoretical Framework 7

Demographic and Sociopsychological Variables 11

Structural Variable: Knowledge of Transmission of HIV 11

Perceived Susceptibility 11

Perceived Severity 12

Perceived Benefits 13

Perceived Barriers 14

Perceived Risk 14

Cues to Action 15

Self-efficacy 16

Section Page

Summary 16

II. REVIEW OF LITERATURE 18

Use of Safe Sex Behaviors 19

Knowing One's HIV Status 19

Abstaining from Sexual Behaviors or Monogamy 21

Correct and Consistent Condom Use 22

Knowledge of Transmission of HIV 24

Perceived Susceptibility to Becoming Re-infected with a Different Strain of HIV 26

Perceived Severity 28

Perceived Benefits 31

Perceived Barriers 32

Perceived Risk 33

Peer Influence 36

Health Care Provider Influence 38

Self-efficacy for Negotiating Safe Sex 41

Disclosure of HIV Status 42

Condom Use 43

Summary 44

III. METHODOLOGY 46

Research Design 46

Participants and Setting 46

Inclusion and Exclusion Criteria 47

Section Page

Protection of Human Subjects 47

Inclusion of Minorities 47

Risks and Benefits 48

Protection Against Risks and Confidentiality 48

Compensation 49

Instruments 49

Sexual Behavior 50

Knowledge of HIV Transmission 52

Susceptibility to Becoming Re-infected 53

Severity of Living with HIV 54

Benefits of Safe Sex Behavior 56

Barriers to Safe Sex Behavior 57

Risk of Transmitting HIV infection 58

Peer Influence 58

Health Care Provider Influence 59

Self-efficacy for Negotiating Safe Sex 60

Data Collection Procedures 62

Data Analysis 63

Summary 69

IV. RESULTS 70

Participant Characteristics 70

Relationship Among Descriptive Characteristics and Sex Behavior 74

Section Page

Relationship Among Independent Variable and Sexual Behavior 76

Statistical Examination of the Specific AIMS 76

AIM 1 76

AIM 2 79

AIM 3 81

AIM 4 81

AIM 5 81

AIM 6 82

AIM 7 82

AIM 8 83

AIM 9 83

AIM 10 83

AIM 11 84

Summary 84

V. DISCUSSION AND CONCLUSIONS 85

Knowledge of Transmission of HIV 87

Perceived Susceptibility to Re-infection 88

Perceived Severity of Living with HIV 88

Perceived Benefits of Safe Sex Behavior 90

Perceived Barriers to Safe Sex Behavior 91

Risk for Transmitting HIV 92

Peer Influence 93

Section Page

Health Care Provider Influence 93

Self-efficacy for Negotiating Safe Sex 94

Number of Recent Partners 95

Limitations 96

Convenience Sampling 96

Scale Reliability 97

Self-reporting Questionnaires 98

Limitations of the Health Belief Model 98

Implications 100

Suggestions for Future Research 101

Anecdotal Information and Future Research 102

Conclusion 104

REFERENCES 105

APPENDICES 146

Appendix A: Informed Consent 146

Appendix B: Demographic Characteristic Form 149

Appendix C: HIV Risk-taking Behaviour Scale 153

Appendix D: HIV Knowledge Questionnaire-18 156

Appendix E: Items for Susceptibility to Re-infection 159

Appendix F: Quality of Life SF-12 Scale 161

Appendix G: Severity Subscale of the Treatment Optimism Scale 165

Appendix H: Altruism Subscale of the Other Sensitive Motivations Scale . 167

Section Page

Appendix I: Attitude Subscale of the Sexual Risk Scale 169

Appendix J: Susceptibility Subscale of the Treatment Optimism Scale 172

Appendix K: Normative Subscale of the Sexual Risk Scale 175

Appendix L: Items for Health Care Provider Influence 177

Appendix M: Brief HIV Disclosure and Safer Sex Self-efficacy Scale 179

Appendix N: Recruitment Flyer 181

LIST OF TABLES

Table Page

Table 3-1: Overview of Data Collection 50

Table 4-1: Participant Characteristics..... 72

Table 4-2: Relationships Among Demographic Data and Sex Behavior..... 75

Table 4-3: Relationships Among Study Variables and Sex Behavior 77

Table 4-4: Summary of Simultaneous Linear Regression Analysis 79

Table 4-5: Summary of Stepwise Linear Regression Analysis 80

LIST OF FIGURES

Figure Page

Figure 1-1: Health Belief Model 8

Figure 1-2: Adapted Health Belief Model 10

Figure 2-1: HIV-1 Groups and Clades 27

LIST OF ABBREVIATIONS

ART	Antiretroviral Therapy
CD_4	Cluster of Differentiation 4
CDC	Centers for Disease Control
CRF's	Circulating Recombinant Forms
HAART	Highly Active Antiretroviral Therapy
HBM	Health Belief Model
HCP	Health Care Provider
HIV-K-Q	HIV Knowledge Questionnaire
HIV-KQ-18	HIV Knowledge Questionnaire-18
HRBS	HIV Risk-taking Behavior Scale
IOM	Institute of Medicine
MCS	Mental Component Summary
MSM	Men Who have Sex with Men
MSMW	Men Who have Sex with Men and Women
OSM	Other Sensitive Motivation
PCS	Physical Component Summary
QOL-SF-12	Quality of Life Short Form 12
TOS	Treatment Optimism Scale
U.S.	United States
UAI	Unprotected Anal Intercourse
URAI	Unprotected Receptive Anal Intercourse
WHO	World Health Organization

CHAPTER I

INTRODUCTION

With more than 33 million infected individuals worldwide (World Health Organization [WHO] & UNAIDS, 2009), the HIV/AIDS pandemic has prompted medical and scientific communities to conduct research in an effort to discover appropriate treatment and preventive health care options to address this national and global issue. Unfortunately, efforts to find a cure or vaccine for HIV infection have been ineffective and attempts to further minimize contagion have been inconsistent in producing long lasting and significant reductions in transmission rates.

In the United States (U.S.), more than 600,000 individuals have died from HIV/AIDS complications (Centers for Disease Control [CDC], 2010b) and more than one million are estimated to be living with the disease (CDC, 2012). Thus far, the most successful attempts to curtail the impact of HIV/AIDS have been in the area of biomedical research, the most significant being the introduction of highly active antiretroviral therapy (HAART) in the mid 1990s. These pharmaceutical agents have a profound effect in controlling symptoms and the course of HIV infection; however, epidemiology data indicate that the virus is continuing to be transmitted to others, most frequently through sexual exposure (CDC, 2010e).

Problem

For thirty years, HIV/AIDS has been a primary health concern that has disproportionately affected men who have sex with men (MSM). According to the CDC, MSM comprise the largest proportion of new HIV infections in the United States; and, in 2009, MSM accounted for 57% of all new diagnoses of HIV infection among men in the 40 states with confidential name-based reporting (CDC, 2011b).

Because there is neither a cure for HIV/AIDS, nor a vaccine to prevent infection, safe sex practices provide the only protection against sexual transmission. Prior efforts to reduce sexual risk behavior associated with HIV transmission have focused on strategies directed at the uninfected population; however, stopping the spread of any communicable disease requires interrupting the process at the source. Given the consequences of continued unprotected sexual practices among HIV positive individuals, there is an urgent need to identify specific characteristics and factors associated with unsafe sexual behaviors among this population.

With the finite resources available for HIV prevention education, it is important for researchers to identify the relationships between variables that play a role in HIV related sexual risk behaviors so that appropriate interventions may be developed. Recent approaches to reduce HIV transmission have emphasized education regarding risk factors directed at changing behavior, particularly sexual behavior (CDC, 2010a). Demographic and psychosocial factors among high risk populations, such as MSM, have been empirically examined and appear to

correlate with high risk sexual behavior (Courtenay-Quirk, Wolitski, Hoff, Parsons, & The Seropositive Urban Men's Study Team, 2003; Marks et al., 2009; Reilly, Woodruff, Smith, Clapp, & Cade, 2010). Such research, however, has focused primarily on the incidence of high-risk behavior or has only minimally examined correlates that influence the decision to practice safe sex. The present study extends the research regarding specific correlates of high-risk sexual behavior among MSM. Additionally, the research describes the differences in the specific correlates of high-risk sexual behavior between HIV positive MSM who practice safe sex behaviors and those who do not practice safe sex behaviors. The findings from this study provide information specific to those most frequently infected, MSM, in the hope of developing interventions expressly for this population.

Purpose and Aims

The purpose of the study was to examine the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer and health care provider (HCP) influence, self-efficacy for negotiating safe sex, and the use of safe sex behaviors among HIV positive MSM. The specific aims of the study were:

- To explore the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and

barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the practice of safe sex among HIV positive MSM.

- To explore the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the practice of safe sex among HIV positive MSM, controlling for selected demographic variables (age, number of years living with HIV, and number of recent partners).
- To determine the difference in knowledge of transmission of HIV between HIV positive MSM who practice safe sex and those who do not practice safe sex.
- To determine the difference in perceived susceptibility of becoming re-infected with a different strain of HIV between HIV positive MSM who practice safe sex and those who do not practice safe sex.
- To determine the difference in perceived severity of living with HIV between HIV positive MSM who practice safe sex and those who do not practice safe sex.
- To determine the difference in perceived benefits of practicing safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex.

- To determine the difference in perceived barriers to practicing safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex.
- To determine the difference in perceived risk of transmitting HIV infection between HIV positive MSM who practice safe sex and those who do not practice safe sex.
- To determine the difference peer influence has on safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex.
- To determine the difference HCP influence has on safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex.
- To determine the difference in self-efficacy for negotiating safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex.

Background and Significance

Considered by some to be the sentinel population in the HIV/AIDS epidemic (Mansergh et al., 2010), MSM account for 57% of new case reports of HIV infection (CDC, 2011b). MSM also account for nearly half of all HIV infections among men, women, and children in the U.S. (CDC, 2010d) “and are the only group in which new HIV infections have been increasing steadily since the early 1990s” (CDC, 2010c, para. 1). The continually increasing incidence of

HIV among MSM reinforces the need to examine sexual practices within this population.

Three primary factors generally account for the rapid spread of HIV infection: sexual contact with an infected person, parenteral transmission including injection drug use and blood transfusion, and perinatal transmission from an infected mother to her child (CDC, 2010a). Of the three, sexual transmission is the most prevalent and because HIV is predominantly spread through risky sexual behaviors that are largely avoidable, efforts directed toward changing individual sexual behaviors have been promoted as an essential approach to curb transmission rates (Bonnell & Imrie, 2001). Indeed, “prevention efforts should be intensified for those individuals living with HIV as, ultimately, only infected individuals can transmit HIV” (DiClemente, Wingood, del Rio, & Crosby, 2002, p. 393).

Recent reports suggest that some MSM have abandoned the use of safe sex practices and are intentionally seeking partners for unprotected anal intercourse (UAI) (Bimbi & Parsons, 2005; Sheon & Crosby, 2004). In fact, one study indicated the incidence of UAI to be as high as 84% among study participants (Halkitis & Parsons, 2003). Another study of HIV positive (n = 31) and HIV negative (n = 89) MSM was conducted to assess motives for intentionally engaging in UAI. Overall, participants reported participation in unprotected receptive anal intercourse (URAI) on multiple occasions with HIV positive participants reporting a greater number of URAI occurrences. (Bauermeister, Carballo-Dieguez, Ventuneac, & Dolezal, 2009). Given these

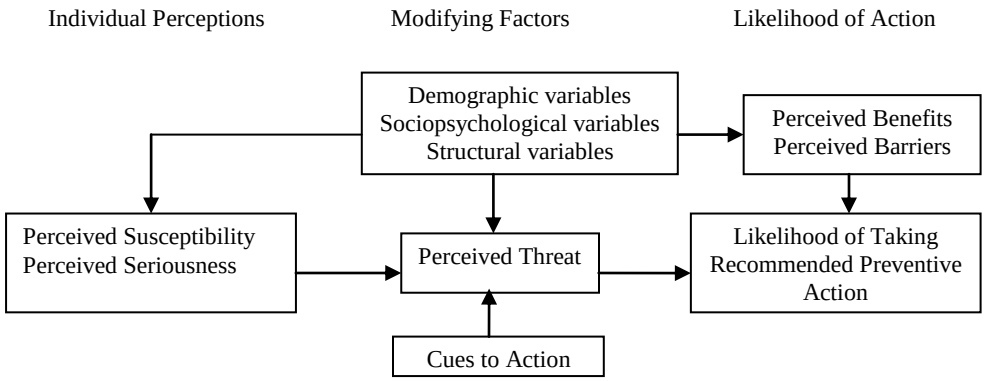
reports of high levels of unprotected sex among MSM, more research is needed to identify other variables associated with sexual risk behavior.

Identifying the theoretically and empirically recognized factors associated with sexual risk behavior among MSM is an important process in designing appropriate behavioral interventions. Theories and models of health behavior are important tools for identifying HIV risk behavior among MSM and for designing interventions to reduce transmission risk. Previously, researchers have drawn on a wide range of theories and models to describe relationships between variables that are believed to predict the adoption of protective sexual practices. These theoretical frameworks have been used to guide identification of variables which affect the expected outcome, but can also serve as explicit blueprints for the development of behavioral interventions to change sexual practices among those most likely to transmit the virus.

Theoretical Framework

The health belief model (HBM) guided the design of the study and has been used extensively to examine how health beliefs affect behavior (Figure 1-1). In studies particular to HIV transmission and infection, the HBM has been used to predict HIV preventive behavior (Neff & Crawford, 1998; Steers, Elliott, Nemiro, Ditman, & Oskamp, 1996; Vanlandingham, Suprasert, Grandjean, & Sittitrai, 1995; Winfield & Whaley, 2002), to identify factors influencing change in behavior (Hollar & Snizek, 1996; Stiles & Kaplan, 2004), and to drive the development of scales of measure applied to HIV risk behaviors (DeHart & Birkimer, 1997; Lux & Petrosa, 1995; Scandell & Wlazelek, 2002).

Figure 1-1 The Health Belief Model



(Adapted from Becker & Maiman, 1975)

The model was developed in the 1950s to explain the failure of healthy individuals to participate in preventive behaviors, such as screening and immunization programs, at little or no cost to the individual. The basic constructs were derived from the behavioral and psychological sciences and identified subjectively determined factors that influence individual compliance with health recommendations. In summary, the model posits that individual compliance with any given health behavior can be explained by six major concepts: 1) perceived susceptibility or the individual's subjective risk for contracting a disease, 2) perceived severity or the perceptions an individual has of the seriousness of contracting a disease or of leaving the disease untreated, 3) perceived benefits or the individual's beliefs of the effectiveness of available courses of action to reduce personal susceptibility to the disease, 4) perceived barriers or the major costs believed to be associated with compliance to the recommended behavior, 5) cues to action or specific stimuli necessary to trigger appropriate health behavior, and 6) self-efficacy or the individual's confidence in their ability to

execute the recommended health behavior. In addition, the HBM posits that in order for an individual to take preventive action, he would first need to believe he is susceptible to the disease and that consequences of the disease would be perceived as severe. These two concepts (perceived susceptibility and perceived severity), when combined, form a single construct, perceived threat or risk of developing the illness or condition. The HBM predicts that when an individual's perceived threat or risk of developing the disease or illness increases, the likelihood of taking preventive action increases as well.

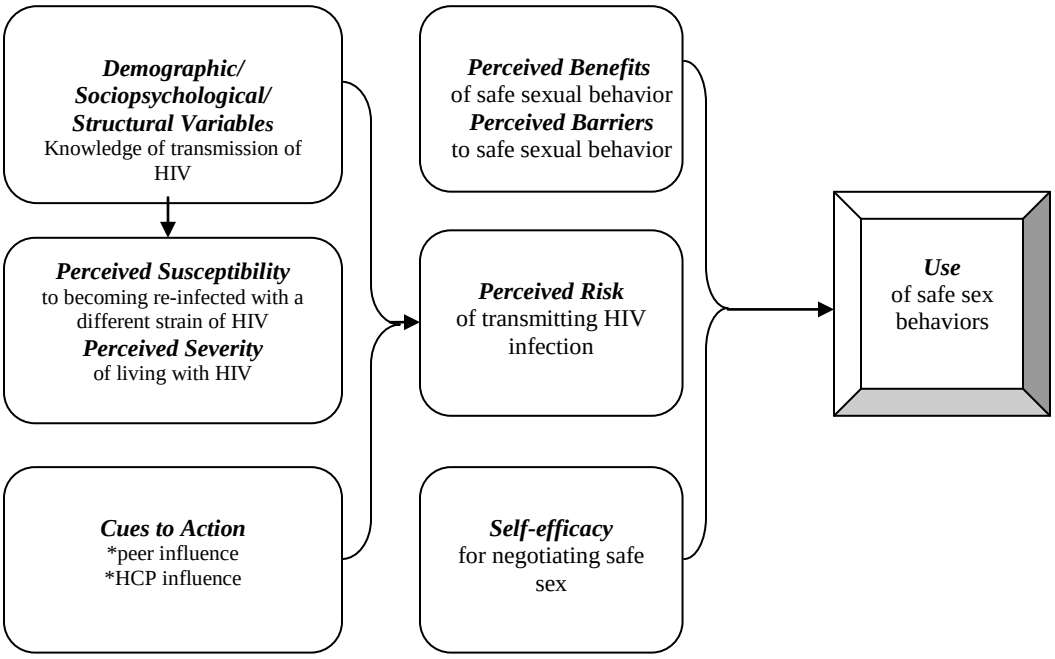
The HBM concepts are based on the assumptions that an individual will take a health related action if a) a negative health condition can be avoided, b) taking a recommended action can prevent the negative health condition, and c) one believes himself capable of successfully taking the recommended action. The authors theorized that an individual's perception of susceptibility to a disease or condition, and the perception for avoiding the disease, would increase the likelihood that actions would be taken to prevent the disease from occurring (Rosenstock, 1974; Rosenstock, Strecher, & Becker, 1988).

The HBM also posits that the personal experience of an individual rather than the physical environment determines that individual's behavior. Demographic factors, such as age, ethnicity or race, education, income, and socioeconomic status can either mediate or moderate the relationship between the key HBM constructs and the likelihood of taking the recommended health action. Additionally, structural variables, such as knowledge and prior contact

with the disease, can also mediate or moderate the relationship between the primary constructs and the likelihood of taking action (Rosenstock, 1974).

An adapted HBM (Figure 1-2) was used to examine the constructs of the structural variable of knowledge of transmission of HIV, perceived susceptibility to becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sexual behaviors, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the use of safe sex among HIV positive MSM. The adapted figure more clearly fits the focus of the study by displaying the salient features specific to the HBM constructs as associated with safe sex behavior. Additionally, the construct of self-efficacy has been added to the figure.

Figure 1-2 Adapted Health Belief Model and Safe Sex Behaviors among HIV Positive MSM



(Adapted from Becker & Maiman, 1975)

Demographic and Sociopsychological Variables

From the original model, demographic and sociopsychological variables are defined as modifying variables that have the potential to alter the causal relationship between the constructs under study (Burns & Grove, 2005; Reed & Shearer, 2009). According to the theory, demographic variables include traits of age, sex, race or ethnicity, or other individual identifiers. Sociopsychological variables add other characteristics such as personality, social class, and peer or reference group pressure (Rosenstock, 1974). For this study, demographic and sociopsychological data, as well as clinical background information, were collected in an effort to describe the sample.

Structural Variable: Knowledge of HIV Transmission

Knowledge is defined in context as a structural variable that influences personal perceptions and can be a positive health motivation (Becker, Maiman, Kirscht, Haefner, & Drachman, 1977). The review of literature, however, provides evidence of inaccuracies in knowledge of HIV transmission which may affect sexual practices. Knowledge, in the context of this study, was conceptually defined as an individual's understanding or comprehension of information related to HIV transmission.

Perceived Susceptibility of Becoming Re-infected with a Different Strain of HIV

Perceived susceptibility refers to the probability an individual assigns to his personal vulnerability for developing an adverse health condition, and has been found to be predictive of health protective behaviors. The individual can be

anywhere on the susceptibility continuum; in other words, he may perceive he is highly susceptible to the condition, extremely unlikely of developing the condition, or anywhere in between (Janz & Becker, 1984, Maiman & Becker, 1974; Rosenstock, 1974).

In the case of medically established HIV infection, the individual perception of susceptibility is based on the consequences of the illness and/or susceptibility to re-infection with different strains of the virus. Current evidence suggests that HIV re-infection can occur in the presence of a detectable viral load (Campbell et al., 2009) and that re-infection with a different strain of HIV can lead to an increase in viral load (Jurriaans et al., 2008). Additionally, HAART resistance can be transferred between sexual partners (Smith, Richman, & Little, 2005) and re-infection can occur in the presence of drug-resistant HIV (Koelsch et al., 2003). Because documented cases of HIV re-infection have been identified in the literature, the conceptual definition of perceived susceptibility for this study was the individual's perception of susceptibility to becoming re-infected with a different strain of the virus.

Perceived Severity of Living With HIV

Perceived severity is the individual's belief of how serious the consequences of developing the disease would be. The individual is more likely to take action if he believes that possible negative effects of the condition will produce serious physical, emotional, or social consequences (Janz & Becker, 1984, Maiman & Becker, 1974; Rosenstock, 1974).

Increased HAART success in the treatment of HIV infection has prolonged the lives of individuals living with HIV, increasing beliefs that the disease is not as severe as previously considered, and thus raising concerns of a potential increase of HIV transmission rates (Peterson & Bakeman, 2006). Because the participants already have the disease, perceived severity for this study was defined as the individual's perception of the severity of living with HIV.

Perceived Benefits of Safe Sex Behavior

Perceived benefits refer to the effectiveness of engaging in protective behavior. Motivation to take action to change requires the belief that the protective behavior effectively prevents the condition. Perceived benefits may also be activities which reduce the severity of the condition when prevention is not possible (Janz & Becker, 1984, Maiman & Becker, 1974; Rosenstock, 1974).

Proper and consistent use of condoms prevents transmission of HIV and other sexually transmitted diseases (CDC, 2010c); yet research has demonstrated that condom use is not consistent among sexually active individuals (Lewis, Kaysen, Rees, & Woods, 2010; Peterman et al., 2009). Benefits to condom use identified in the literature include pregnancy prevention (Kennedy et al., 2007; Smith, Fenwick, Skinner, Merriman, & Hallet, 2011; Widdice, Cornell, Liang, & Halpern-Felsher, 2006), reduction in risk for contracting sexually transmitted diseases (Kennedy et al., 2007; Widdice et al., 2006), and responsibility for protecting self and partner (Tung, Farmer, Ding, Tung, & Hsu, 2009). For this study, perceived benefits were defined as an

individual's perception of the benefits of safe sexual behavior, specifically, a responsibility to protect others from contracting the disease.

Perceived Barriers to Safe Sex Behavior

Perceived barriers are the individual's belief about the obstacles to taking preventive action (Janz & Becker, 1984), and the negative influence the likelihood of taking the recommended preventive health action may have. Barriers are the characteristics of a preventive measure that may lead an individual away from taking the preventive health action and are typically represented as being inconvenient, expensive, unpleasant, painful, or psychologically upsetting (Rosenstock, 1974). In other words, perceived barriers are the challenges that need to be overcome in order for an individual to perform the recommended behavior.

Perceived barriers to safe sexual behavior identified in the literature include protective devices, such as condoms, which may change physical sensations during intercourse or partner preference related to condom use (Lux & Petrosa, 1995; Serovich, Craft, McDowell, Gafsky, & Andrist, 2009), fear of sexual rejection (DeHart & Birkimer, 1997), and fear for physical safety (Betron & Gonzalez-Figueroa, 2009; Serovich et al., 2009). In this study, perceived barriers were defined as the individual's belief about the barriers to practicing safe sex and were examined in context of condom use.

Perceived Risk of Transmitting HIV Infection

Perceived risk is an interaction effect of individual perceptions and modifying factors that are mediated by health seeking behaviors or behavioral

changes (Rosenstock, Strecher, & Becker, 1994; Von Ah, Ebert, Ngamvitroj, Park, & Duck-Hee, 2004). The original HBM does not focus on perceived risk as a primary construct; but rather as an outcome or effect of other physical or psychosocial events. For the purpose of this study, perceived risk of transmitting HIV infection was conceptually defined as the perception of an HIV seropositive individual's ability to transmit the virus to others. This perception of transmission ability is affected by their knowledge (accurate or inaccurate) of HIV transmission, perceived susceptibility to a different strain of the virus, perceived severity of HIV infection, and cues to action.

Cues to Action (Peer and HCP Influence)

Cues to action are factors that prompt an individual to make a health change (Becker, Drachman & Kirscht, 1974) and have been described as modifying factors that indirectly affect an individual's perception of risk for developing a disease (Rosenstock, 1974). In essence, cues to action are factors or events that prompt an action and trigger an individual to move from wanting to make a health change to actually making the change. These triggers occur through familial or social relationships, life experiences, media campaigns or relationships with health care providers (Maiman & Becker, 1974).

Primary cues to action identified from the HIV literature are peer and health care provider interaction (Aspinwall, Kemeny, Taylor, Schneider, & Dudley, 1990; Hingson, Strunin, Berlin, & Heeren, 1990). Cues to action in this study were defined as the peer or HCP influence on the use of safe sexual practices.

Self-Efficacy for Negotiating Safe Sex

In an attempt to improve predictability, researchers expanded the HBM to include the concept of self-efficacy (Rosenstock et al., 1988). Bandura (1977) defined self-efficacy as the belief in one's ability to perform a certain behavior. An individual will not try to do something unless they think they can be successful. In the HBM, if the individual believes the new behavior is useful, but does not think he is capable of performing the behavior, he is not likely to take the recommended action (Rosenstock et al., 1988).

In HIV prevention literature, self-efficacy has emerged as a fundamental construct for predicting behavior and behavioral change (Forsyth & Carey, 1998). Kalichman and Nachimson (1999) reported that self-efficacy beliefs were closely related to the ability to negotiate safe sexual practices among HIV positive individuals as well as to effectively disclose seropositive status. According to the authors, self-efficacy is of theoretical importance in behavioral research due to its predictive value. For this study, the conceptual definition of self-efficacy was the individual's belief in their ability to disclose their HIV positive status and to negotiate for safe sex practices by using condoms when intimate with their partners.

Summary

The HBM expands demographic, sociopsychological, and structural variables to the explanation of preventive health behavior by examining motivational factors. Additionally, unlike other theories, the model posits that subjective individual behaviors contribute to the prediction of health behaviors.

This is evidenced by the application of the model to a broad range of behaviors and the demonstrated flexibility of use among various participant populations (Nejad, Wertheim, & Greenwood, 2005). Early applications of the model concentrated on preventive behaviors that required little skill or were conducted in the absence of disease; however, since the addition of the self-efficacy construct, the model has broader application that addresses skill and confidence (Winfield & Whaley, 2002).

A large body of evidence has demonstrated the ability of the HBM to account for an individual's efforts toward preventive health actions, including the use of safe sex behaviors. Substantial empirical evidence has demonstrated the HBM constructs as important contributors to the explanation and prediction of health related behaviors thus making the HBM a useful framework for examining determinants of safe sexual behavior.

CHAPTER II

REVIEW OF LITERATURE

As of 2009, the Centers for Disease Control (CDC) reported that men accounted for the highest proportion of HIV infections (76%) in the United States (U. S.). From 2006 to 2009, the number of HIV infections among men who have sex with men (MSM) increased with 57% of all new diagnoses being attributed to MSM sexual transmission (CDC, 2011b). These high rates of HIV infection may be explained by previous empirical evidence which suggests that knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sexual behavior, perceived risk of transmitting HIV infection, peer and health care provider (HCP) influence, and self-efficacy for negotiating safe sex are factors that are statistically predictive of the use of safe sex behaviors. In this chapter, a review of research studies that address these factors among MSM and other populations will be presented. Due to the limited number of recent U. S. studies which examined some of the factors, such as barriers to safe sex and self-efficacy for negotiating safe sex, some studies published before 2005 will be used.

Use of Safe Sex Behaviors

Use of safe sexual behaviors has been chosen as the outcome variable for this study and involves sexual activities that reduce the risk of HIV transmission from one person to another. Safe sexual behavior recommendations from the CDC include knowing one's HIV status, abstaining from sexual activity or participating in a monogamous relationship with an uninfected individual, and correct and consistent use of condoms. Other recommendations are avoidance of intravenous drug use, utilization of a clean needle and injection paraphernalia with each injection, and male circumcision, which has been shown to reduce transmission risk between infected females to men (CDC, 2010a). Literature relevant to the incidence of safe sexual behavior practices will be presented in this section.

Knowing one's HIV status

Recommendations from the CDC for knowing one's HIV status advise that individuals between the ages of 13 and 64 should be tested for HIV at least once. Individuals with high risk behavior classifications, such as MSM, illicit injection drug users, and individuals with multiple sex partners, should be tested at least annually (CDC, 2010a). A 2008 CDC study of urban MSM found that 44% of the study group were HIV seropositive yet were unaware they were infected. Notably, 55% of those participants indicated they had not been tested in the previous year as recommended (CDC, 2010c).

Unrecognized HIV infection was also identified among participants of a research study conducted by Raymond, Bingham, and McFarland (2008) in San

Francisco and Los Angeles. Among 543 participants in the Los Angeles cohort, 9% were HIV positive and did not know it prior to the study; among the 386 San Francisco participants, 5% were unaware they were HIV positive. Similar findings of unknown HIV positive status were also demonstrated by MacKellar et al. (2006). Among 1,075 MSM who believed they were HIV negative, 7% were actually positive for HIV infection. Additionally, more than 33% of the study participants had not been tested in the previous year.

The CDC currently recommends annual HIV testing among MSM, more frequently in the presence of risky sexual behavior (CDC, 2010c); but this recommendation may be insufficient to curtail HIV transmission rates. A longitudinal study of 4,295 HIV negative MSM examined the incidence of seroconversion based on sexual risk factors. The participants were assessed for periods up to 48 months during the study and demonstrated an overall incidence of HIV infection of 2.1 per 100 person-years (95% CI, 1.9-2.4) (Koblin et al., 2006). It is well documented that unprotected receptive anal intercourse (URAI), particularly with an HIV positive partner, has the highest risk for seroconversion (CDC, 2010a).

These studies support the notion that HIV positive MSM do not know their HIV serostatus and are not being tested at least annually as recommended by the CDC. The following sections will support the assumption that HIV positive individuals are engaging in high risk sexual behaviors and are not participating in the recommended safe sexual practices of abstinence or monogamy and correct and consistent condom use.

Abstaining from sexual behaviors or participating in a monogamous relationship with an uninfected individual

A substantial percentage of HIV positive MSM continue to engage in sexual behaviors that put others at risk for contracting HIV infection. A meta-analysis of unprotected anal intercourse (UAI) practices among MSM in the U. S. demonstrates a high prevalence of high risk sexual behaviors among HIV infected individuals. Aggregate findings from 30 studies with more than 18,000 participants conducted between 2000 and 2007 found that UAI was practiced by 43% of the participants (95% CI = 37- 48). UAI prevalence was higher among seroconcordant HIV positive partners (30%) than serodiscordant partners (13%) or serostatus unknown partners (16%) (Crepaz et al., 2009).

Studies of individuals who use the internet to pursue sexual interests and to arrange off-line meetings have demonstrated similar results in discordance for the recommended practice of sexual abstinence. In a sample of 2,716 MSM who completed on-line surveys, a study explored the relationship between compulsive sexual behavior and the incidence of UAI. Among the participants, 49% reported having anal intercourse with their most recent sexual partner whom they met on-line and 26% of those individuals reported having UAI. Additionally, 40% of those who completed the survey indicated they had anal intercourse with individuals they had met off-line with 28% of those encounters involving UAI. In each instance, participants who engaged in UAI had statistically significant higher scores for compulsive sexual behavior (Coleman et al., 2010).

In another study, 240 MSM internet users were surveyed with similar results. The author investigated the term ‘barebacking’ in which participants intentionally practice UAI. Participants were grouped as MSM who intentionally practice UAI (n = 94) and those who do not (n = 146). Results indicated that more than 30% of the participants intentionally practiced UAI. Additionally, those who intentionally sought UAI experiences (M = 5.50) reported a greater frequency of UAI compared to men who did not intentionally seek UAI (M = 0.58) (r = 0.496, p = < 0.001) (Berg, 2008).

The CDC does not recommend UAI among MSM and considers such behavior a high risk for transmission of HIV infection. Results from the aforementioned studies indicate abstinence and monogamy practices are not being implemented by all MSM.

Correct and consistent use of condoms

Correct and consistent use of condoms is another recommended prevention method against HIV transmission; however, empirical evidence indicates errors in condom application among men and women. Additionally, the literature supports the premise that condoms are not consistently used among HIV positive individuals.

A study of 158 college men evaluated condom use errors determined by self-report. Among the participants, 74% failed to check the condom for visible damage and 61% did not check the packaging for an expiration date prior to usage. Regarding actual condom usage, 43% applied the condom after initiating sex and 15% removed the condom prior to completion of sexual activity.

Additionally, 40% did not leave the recommended space at the tip of the condom, 30% placed the condom on upside down, and more than 42% did not change condoms when switching between oral, anal or vaginal positions (Crosby, Sanders, Yarber, Graham, & Dodge, 2002).

Similar findings were identified in a study of men (n = 118) and women (n = 142). Thirty-eight percent reported condom application after the initiation of sexual activity and 14% indicated condoms were removed prior to completion of sexual activity (Crosby, Sanders, Yarber, & Graham, 2003).

The CDC recommendation for consistent use of condoms has also been evaluated. A study of 183 MSM was conducted to investigate sexual behaviors at a MSM social gathering; 51% of the study participants reported having sexual relations with a total of 116 partners during the social event. In opposition to recommended condom use, 34% of the participants engaged in unprotected oral sex, and 15% participated in UAI (Patel et al., 2006). Further evidence of inconsistent use of condoms can be verified by evaluating the incidence of sexually transmitted diseases. In 2008, of the more than 46,000 cases of syphilis diagnosis, 63% occurred among MSM (CDC, 2009b).

Summary

The use of safe sexual behaviors is inconsistent among the MSM population. Noncompliance with the CDC's risk reduction strategies (knowing one's HIV status, practice of sexual abstinence or monogamy, and correct and consistent use of condoms) is prevalent.

Further studies are indicated to identify factors that may impact recommendation compliance. From the literature, knowledge of transmission of HIV, perceived susceptibility to becoming infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sexual behavior, perceived risk of transmitting HIV infection, peer and HCP influence, and self-efficacy for negotiating safe sex have been identified as variables which influence use of safe sexual behaviors.

Knowledge of Transmission of HIV

For individuals living with HIV/AIDS, sexual practice decisions are closely linked to knowledge of sexual transmission and beliefs about infectiousness. Although early concerns of infection influenced individual behavior, current successes of highly active antiretroviral therapy (HAART) have lowered concerns of threat among HIV positive individuals (Kalichman, Cherry et al., 2010; van der Snoek, DeWit, Mulder, & van der Meijden, 2005). Some asymptomatic individuals with low or undetectable viral loads believe they are incapable of transmitting the virus, and although transmission may be reduced, infection can occur (Wilson, 2010).

Erroneous knowledge of transmission of HIV has been identified among various populations. A national telephone survey of 1,283 heterosexual adults (44% male and 56% female) found inaccuracies in knowledge of HIV transmission. One third of male participants and 45% of the female participants believed a man could become HIV infected following unprotected sex with a seronegative man. Additionally, respondents were more likely to believe that HIV

transmission was more apt to occur between uninfected MSM than between an uninfected man and woman; and one in five participants indicated that sex between two seronegative individuals could result in HIV infection if a condom was used (Herek, Widaman, & Capitanio, 2005).

Research has also found that knowledge of HIV transmission risk does not always prompt safe sexual behaviors. A randomized digit dialing telephone survey was conducted to explore respondent knowledge and beliefs about HIV transmission. Respondents who believed condoms were effective in preventing HIV transmission and worried they might contract HIV through sexual activity were 3.1 times more likely to use condoms all the time. However, of those who were sexually active, 31% (n = 320) reported always using a condom, 32% (n = 345) sometimes used a condom, and 37% (n = 385) never used a condom (Hingson et al., 1990).

Summary

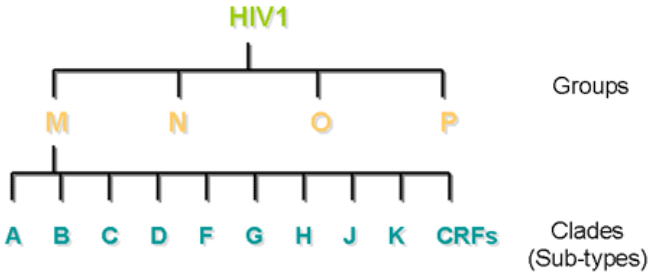
While early research showed no significant relationship between knowledge of HIV transmission and use of safe sexual behaviors (Baldwin & Baldwin, 1988), accuracy of knowledge has been correlated to perceived benefits of and barriers to safe sexual behavior and to perceived risk of transmitting HIV (Kalichman et al., 2000). Subsequently, although knowledge of HIV transmission cannot ensure the practice of safe sex, it is a necessary condition for determining methods to prevent transmission.

Perceived Susceptibility to Becoming Re-infected with a Different Strain of HIV

Two types of HIV have been identified since the pandemic began: HIV-1 and HIV-2. Transmission routes and clinical presentation are the same although HIV-2 is less easily transmitted and has a longer window between infection and clinical presentation (AVERT, 2011). HIV-1 is the most frequently identified cause of infection; however, cases of co-infection with both strains have been identified (Gunthard et al., 2009).

HIV-1 has been further classified into four groups that reflect the vector of transmission to humans (Figure 2-1). The most common of these, group M, has multiple genetically distinct clades (AVERT, 2011; Gupta, Sahni, Jena, & Nema, 2005; Hunt, 2010). Infection with two clades can occur simultaneously (Smith, et al., 2005) or after the primary strain has been established and seroconversion has occurred (Campbell et al., 2009; CDC, 2009a; Smith et al., 2004). Circulating recombinant forms of the virus also develop when two clades of the virus infect a single individual (AVERT, 2011; Fung, Gambhir, van Sighem, de Wolf, & Garnett, 2010; Kalish et al., 2004). This superinfection or re-infection of different viral subtypes can lead to viral mutations with drug resistance capabilities (Quan, Liang, Brenner, & Wainberg, 2009; Smith et al., 2004) and hasten progression of the disease with adverse outcomes (Clerc, Colombo, Yerly, Telenti, & Cavassini, 2010; Gottlieb et al., 2004; Gottlieb et al., 2007; Streeck et al., 2008).

Figure 2-1 HIV-1 Groups and Clades



(Hunt, 2010, para. 5)

In a study of 121 HIV positive serologic samples, 47% of the participants demonstrated clinical resistance to antiretroviral therapy (ART). Thirty two percent of those were resistant to one ART drug classification, 12% were resistant to two ART drug classifications, and 3% demonstrated drug resistance to three ART classifications (Sethi et al., 2004). Another study of 333 HIV positive individuals identified 27% of the participants with ART resistant forms of the virus (Kozal et al., 2004).

In spite of the evidence which supports the occurrence of HIV re-infection, few recent studies have been identified which examine the HIV re-infection beliefs among HIV positive individuals. Colfax et al. (2004) examined re-infection beliefs among 554 MSM. Most participants (85%) had heard that HIV re-infection could occur and more than half indicated they practiced safer sex because of their concerns about re-infection. Kalichman, Eaton et al. (2010) had similar results among 490 men, women and transgender participants. Results demonstrated that super-infection beliefs were significantly associated with safer sex practices among those who believed re-infection occurred and was damaging to one's health.

Summary

Studies confirm re-infection with a second strain of HIV after primary infection. Different strains of HIV can be passed between two HIV infected individuals, making treatment of the infection less successful especially in the presence of drug resistant strains. Although ART has transformed the lives of many infected with HIV, few studies have examined concerns about becoming re-infected with a resistant strain of HIV or whether such concerns may prompt individuals to reduce risk behavior.

Perceived Severity of Living with HIV

HIV disease is a highly stigmatized disease associated with chronic illness that can significantly decrease an individual's physical quality of life and emotional well-being (Whetten, Reif, Whetten, & Murphy-McMillan, 2008). In the early history of the HIV/AIDS pandemic, infected individuals presented with fatal and rare physical conditions such as pneumocystis carinii pneumonia, Kaposi's sarcoma, or other diseases linked to deficiencies of the immune system (Wilcox & Saag, 2008). Currently, gastrointestinal disorders account for a high proportion of symptoms among HIV infected individuals (Senya et al., 2003) as do flu-like symptoms that occur at time of seroconversion (Dosekum, Kober, Richardson, Parkhouse, & Fisher, 2010) such as fever, sore throat, rash, headache, myalgia, diarrhea, and fatigue (Schacker, Collier, Hughes, Shea, & Corey, 1996; Sudarshi, Pao, Murphy, Parry, Dean, & Fisher, 2008). HIV/AIDS related metabolic and physiologic conditions (lipid abnormalities, insulin resistance, subcutaneous fat redistribution, etc.) have also been identified and, when combined with the side

effects of some HAART drugs, cause increased cardiovascular disease risk (Grinspoon et al., 2008).

Since the introduction of HAART in the 1990s, mortality and morbidity rates from HIV infection have decreased; however, the spectrum of complications associated with use of these drugs has been persistent. A significant number of patients receiving ART experience drug toxicities such as peripheral neuropathy and gastrointestinal problems (Heath et al., 2003) resulting in pharmaceutical adjustments within and between ART drug classifications (Dieleman et al., 2002). The benefit of controlling the disease and extending life through pharmaceutical management may be mitigated by the side effects of the medications (Burgoyne & Tan, 2008).

A study comparing HIV positive women (n = 1,574) and MSM (n = 955) examined the prevalence of self-reported symptoms among individuals receiving HAART. Nearly 70% of the HIV positive participants reported gastrointestinal, neurologic, and/or metabolic symptoms or had complaints of general malaise, weight loss, or night sweats. Additionally, 20 – 25% of the participants reported four or more symptoms during the data collection periods. Regardless of race or ethnicity, both gender cohorts (41.4% of the women; 43.1% of the MSM) reported neurologic symptoms most frequently. A comparison group of demographically similar HIV negative women (n = 711) and MSM (n = 1126) were also recruited and although the type of symptoms were similar by gender cohort, overall percent of self reported symptoms was lower in the comparison group. The

authors posit that HIV disease and the use of HAART are predictors of symptom prevalence (Silverberg, Jacobson, French, Witt, & Gange, 2009).

In addition to the physical conditions associated with HIV disease, psychosocial aspects have been examined to determine the severity of living with the disease. Addressing mental health concerns of HIV positive individuals is an important component of providing quality HIV healthcare; however, studies of overall psychosocial well-being among HIV positive individuals, and particularly HIV positive MSM, are uncommon. Identified in the literature have been studies which examine stigma and individual perception of quality of life (Holzemer et al., 2009), coping ability, social support, and depression effects on subjective health status (Mosack et al., 2009), stress and affective symptomology (Gayner et al., 2012), and beliefs concerning treatment optimism and general well-being (Peterson, Miner, Brennan, & Rosser, 2012). No studies were identified which specifically examined perceived severity of living with HIV from a physical and psychosocial outlook.

Summary

For nearly three decades, HIV/AIDS has progressed from a fatal disease to one of frequently manageable chronic conditions. Treatment modalities have increased life expectancy among those infected and co-morbidities such as hepatitis, organ failure, and malignancies are increasingly included as causes of death (Selwyn & Rivard, 2003). HIV/AIDS related symptoms attributed to either the disease and/or treatment associated side effects, influence individual

perception of well-being (Carrieri et al., 2003; Lorenz, Cunningham, Spritzer, & Hays, 2006; Preau et al., 2004; Saunders & Burgoyne, 2002).

Perceived Benefits to Safe Sex Behavior

The literature suggests that consistent use of condoms may reduce HIV transmission by as much as 80% to 95% (Davis & Weller, 1999; Hallett, Smit, Garnett, & de Wolf, 2011; Pinkerton & Abramson, 1997; WHO, 2012). Few studies were identified that specifically examined perceived benefits associated with HIV and safe sex; however, among adolescents, identified benefits to using a condom included risk reduction of pregnancy, prevention of contracting sexually transmitted diseases, and demonstration of love for sexual partner (Parsons, Halkitis, Bimbi, & Borkowski, 2000; Widdice et al., 2006).

Among MSM, benefits of condom use have been reported to include protection against HIV re-infection or infection with another sexually transmitted disease, prevention of HIV transmission to another (Harawa, Williams, Ramamurthi, & Bingham, 2006; Nimmons & Folkman, 1999; O'Dell, Rosser, Miner, & Jacoby, 2008; Rosser et al., 2010), and prolongation of erections (Harawa et al., 2006). A qualitative study demonstrated that moral and altruistic values influence the practice of safe sex. Among the 250 HIV positive MSM participants, 72% spontaneously described a perception of responsibility for preventing HIV transmission (Wolitski, Bailey, O'Leary, Gomez, & Parsons, 2003). Carballo-Diequez and Dolezal (1996) demonstrated a 90% response for illness prevention as a rationale for condom use among 182 MSM participants.

Summary

The findings from the identified studies indicate perceived benefits to safe sexual behaviors are related to personal norms and are largely determined by moral concerns or personal feelings of responsibility to protect others from infection (Godin, Savard, Kok, Fortin, & Boyer, 1996; van Kesteren, Hospers, van Empelen, van Breukelen, & Kok; 2007). Further study is recommended to examine altruism as a factor that would support the practice of safe sex.

Perceived Barriers to Safe Sex Behavior

Practicing safe sexual behavior is known to decrease HIV transmission rates, and condoms are a primary method promoted to reduce HIV transmission risk when sexual activity is planned (Laurence, 1999). In a qualitative study of 57 HIV positive MSM, participants reported decreased sensation with condom use as a reason for not using condoms. Fear of sexual rejection and fear for physical safety were other reasons reported by participants for restricted condom use. In circumstances where the individual sensed danger, such as a possible confrontation, or when a belief that a meaningful relationship could develop, participants were more likely to implement different communication techniques to promote condom use. However, not all participants indicated condom use occurred despite their strategies (Serovich et al., 2009).

In a quantitative study of 452 participants (88.9% male), 62% of the participants felt condoms decreased pleasure during intercourse and 46% considered using condoms during sex as a “hassle” (Lux & Petrosa, 1995). In developing a sexual risk scale related to HIV transmission, DeHart and Birkimer

(1997) demonstrated that attitude items associated with condom use accounted for 24% of the total item variance. Other research findings also indicated that fear of rejection was statistically significant in reducing one's likelihood of practicing safe sexual behaviors. Potential for rejection, abandonment, physical and emotional abuse and other consequences are additional barriers to safe sexual behaviors. (Greenwood et al., 2002; Relf, 2001; Rothenberg & Paskey, 1995).

Summary

Despite years of emphasizing condom use, efforts to educate and promote safe sex practice as a means of preventing the spread of HIV have produced disappointing results as evidenced by the increasing incidence of new sexually transmitted disease and HIV infection rates. Given the complexity of the noted barriers to safe sexual behavior, understanding the factors associated with lack of condom use must be examined in order to develop more effective interventions which promote HIV preventive behavior.

Perceived Risk of Transmitting HIV Infection

The use of HAART has been successful in reducing viral loads to undetectable levels causing some asymptomatic individuals to believe they are less likely to, or incapable of, transmitting HIV infection to others (Kalichman et al., 2006; Munoz-Laboy, Castellanos, & Westacott, 2005; Remien, Halkitis, O'Leary, Wolitski, & Gomez, 2005). There is evidence to substantiate the belief that HIV transmission may be reduced when viral load is low or absent (Attia, Egger, Muller, Zwahlen, & Low, 2009; Cohen & Gay, 2010; Dieffenbach & Fauci, 2009; Wilson, Law, Grulich, Cooper, & Kaldor, 2008); however, transmission still

occurs and recommendations from the CDC continue to support safe practices when engaging in sexual behaviors (CDC, 2007).

Perceived risk of transmitting the virus, particularly among MSM, is related to perceived infectiousness and has been significantly associated with the use of safe sexual behaviors. Forty-four HIV positive participants were recruited for biological specimen collection to determine the relationship between perceived infectiousness (serum and semen viral load levels) and protective sexual behaviors. Controlling for years since seropositive diagnosis, men with higher levels of HIV in their semen than in their blood demonstrated lower perceptions of risk for transmitting the virus to uninfected individuals (Kalichman, et al. 2002). Munoz-Laboy et al. (2005) had similar findings in a study of 395 MSM of unknown HIV status. Individuals who indicated they would have unprotected intercourse with partners who had an undetectable viral load were five times more likely to participate in unsafe sexual activities.

In a study of 158 HIV positive men and women receiving pharmacologic treatment for HIV infection, there was a significant reduction in perceived risk among discordant couples when the HIV positive partner had a low viral load. Fifty-two percent of the participants indicated they had engaged in unprotected intercourse within the previous three months. Thirty-six percent of those who reported participating in unprotected sexual activity indicated they had intercourse with individuals whose HIV status was unknown. The study also found that discordant unprotected intercourse and treatment beliefs (low viral

load) were significantly related to increased frequency of engaging in unprotected intercourse (Kalichman et al., 2006).

Sidat, Rawtorne, Lister, and Fairley (2006) performed a cross-sectional study of MSM who were either HIV negative or of unknown HIV status. The authors examined the sexual behavior of 261 participants to evaluate perception of risk and perceptions of living with HIV/AIDS. Findings indicated the participants believed that reduced risk of contracting HIV was present if the infected partner had a low viral load. The researchers termed this belief as 'HIV treatment optimism'.

Summary

Since the introduction of HAART in 1996, researchers have speculated that HIV treatment effectiveness beliefs were associated with increased sexual risk (Huebner, Rebchook, & Kegels, 2004). Several studies have reported that positive beliefs about the efficacy for HAART to reduce transmission risk were associated with increased sexual risk among MSM (Dukers et al., 2001; Huebner et al., 2004; Kalichman, Nachimson, Cherry, & Williams, 1998; Vanable, Ostrow, McKirnan, Taywaditep, & Hope, 2000) while other studies have demonstrated a lack of an association between HAART efficacy and increased sexual risk (Cox, Beauchemin, & Allard, 2004; Reminen et al., 2005; Vanable, Ostrow, & McKirnan, 2003).

Treatment optimism regarding HIV transmission and disease management has been influenced by individual perceptions of the benefits of ART (Blackard & Mayer, 2004; Wolitski, Valdiserri, Denning, & Levine, 2001). Studies have

demonstrated that participants using ART are less likely to practice safer sex (Kelly, Hoffman, Rompa, & Gray, 1998; van der Straten, Gomez, Saul, Quan, & Padian, 2000) and that HIV positive persons with undetectable viral loads express less concern about infecting their partners and are more likely to practice UAI than those with detectable viral loads (Kalichman et al., 2002; Ostrow et al., 2002).

Peer Influence

Peer influence and the use of safe sexual behaviors among HIV positive individuals have been examined in the literature. Peers provide information and motivation to promote the prevention of HIV transmission and peer influence has been significantly related to increased condom use among specific populations (Bazargan, Kelley, Stein, Husaini, & Basargan, 2000; Galvan, Davis, Banks, & Bing, 2008).

A study of young gay and bisexual African-American MSM examined perception of peer support toward condom use and sexual risk behavior. Among 849 participants, aged 18-25, perception of strong peer support for condom use was associated with decreased likelihood of unprotected insertive anal intercourse (OR = 0.43; 95% CI = 0.30 – 0.62, $p < 0.001$) and unprotected receptive anal intercourse (OR = 0.43; 95% CI = 0.31 – 0.62, $p < 0.001$). However, participants who self-identified as gay were more likely to practice URAI. Self-reported gay identity was also associated with increased UAI with steady partners and did not differ in sexual risk taking practices based on

perceived peer norms (Bakeman, Peterson, & The Community Intervention Trial for Youth Study Team, 2007).

Agronick et al. (2004) examined whether peer influence on condom use mediated the relationship between reported sexual identity and sexual behaviors among 441 self-identified gay and bisexual Latino MSM. Sexual risk practices based on self-reported sexual identity (gay versus bisexual) were not explained by perception of lower peer support. Additionally, 71% of self-identified bisexual and 54% of self-identified gay participants were more likely to report insertive anal intercourse.

In support of the above studies, a cross-sectional study of African-American (n = 816) and Latino (n = 832) MSM reported higher likelihood of UAI when peer support of condom use was low, regardless of participant race or ethnicity (Carlos et al., 2010). Not described in this study is the receptive/insertive position of the participants. Research indicates transmission risk is greater when the insertive partner is HIV positive and the receptive partner is negative (CDC, 2004; Vittinghoff et al., 1999).

The Bakeman et al. (2007) study indicated most self-identified gay participants were likely to be the receptive partner while the Agronick et al. (2004) study indicated most self-identified gay and bisexual participants reported higher frequency of insertive positioning. In both studies, gender identity was a factor associated with the predictive power of peer norms for safe sexual practices.

Summary

Peer group influences have been identified in the literature as having predictive capacity for the use of safe sexual practices, albeit among specific groups. Findings are inconsistent, however, with regard to the formative impact peer group influences have. In addition to the above, some studies have found non-sexual social relationships significantly associated with practicing safe sexual behaviors (DeHart & Birkimer, 1997; Lux & Petrosa, 1995), while others indicate that sexual and non-sexual social relationships are not associated with practicing safe sexual behaviors (Hart, James, Purcell, & Farber, 2008; Mimiaga, Skeer, Mayer, & Safren, 2008).

HCP Influence

HCPs may influence HIV positive individuals to utilize safe sexual practices. The empirical support however, is inconclusive as to the effectiveness of HCPs being a positive influence on a patient's use of safe sex practices. Blake, Taylor, Reid, and Kosowski (2008) found that HIV positive women (n = 64) were disturbed by the insensitive treatment they received from their HCP, while Bairan et al. (2007) found that study participants (n = 104) were most likely to disclose seropositive status with their primary HCP.

A prospective study by Kinsler, Wong, Sayles, Davis, and Cunningham (2007) examined 223 HIV positive, low-income individuals to evaluate the relationship between perceived stigma from a HCP (baseline and follow up) and access to care. Related to stigma, the participants reported that "a health care provider had been uncomfortable with them…, treated them as an inferior…,

preferred to avoid them…, or refused them service" (p.587). Twenty six percent (n = 58) of the participants reported perceived stigma from a HCP at baseline and 19% (n = 33) reported provider stigma at 6 month follow up.

In contrast, a qualitative study of 24 HIV positive participants demonstrated that positive interaction with the HCP influenced engagement in HIV management through emotional support, instrumental support and informational support. In the study, provision of emotional support by HCPs was identified as providing encouragement to adhere to ART regimens, encouragement to keep regularly scheduled appointments, and/or active listening. Instrumental support from HCPs was described as providing medications, transportation, assisting with application for Medicare, and general availability to provide care and advocacy. Informational support included providing information and resources (George et al., 2009).

A descriptive, correlational study to examine relationships between the perception of engagement with a HCP and demographic characteristics, health status, and adherence to a therapeutic regimen was conducted with a sample of 707 HIV positive participants. Results demonstrated that participants who reported more engagement with the HCP also reported greater adherence to a therapeutic regimen. Additionally, those who were less engaged scored lower on the measure for following advice (Bakken, et al., 2000).

HCPs may also be a source of accurate information and able to dispel myths, especially regarding the controversial beliefs that low viral loads reduce transmission risk or that prophylactic use of antiviral agents prevent HIV

transmission. Chou, Holzemer, Portillo, and Slaughter (2004) found that the HCP was the most frequently reported source of HIV medication information.

Of importance to note, however, are studies which evaluate the accuracy of HIV knowledge among physicians. Arshad, Rothberg, Rastegar, Spooner, and Skiest (2009) found that accuracy of knowledge regarding ART medications among 157 HCPs was below average. Mean percent correct responses for ART medication knowledge was 33% among residents (n = 65), 37% among attending physicians (n = 81), and 90% among HIV specialists (n=11). Additionally, Torabi, Aguillon, and Jeng (2000) examined 144 physicians and found only a 67% correct response rate in accuracy of knowledge regarding HIV/AIDS transmission and prevention strategies; while Thomas, Rogers, and Maclean (2003) found that accuracy of knowledge for confidentiality and proper administration of care issues associated with managing HIV positive individuals was low among 34 multi-year medical students at an academic medical center. Study participants had a 51.2% correct response rate on tested information items concerning HIV patient confidentiality and other legal or ethical issues associated with the HIV positive population. Interestingly, a recent brief published by the Institute of Medicine (IOM) recommended shifting more HIV care to primary care physicians, advanced practice nurses, and physician's assistants, stating that decreasing numbers of HIV specialists, along with a growing HIV positive population, are placing strains on the current healthcare system. Recommendations from the same IOM brief also indicated that with the recommended shift of care to other than HIV specialists, increased exposure to HIV issues and continuing education

courses must be made available to HCPs (IOM, 2011). In light of the above findings concerning accuracy of HCP knowledge, the suggested exposure to HIV issues and continuing education courses would be paramount to successful transition away from HIV specialty care.

Summary

HCP interaction may provide a positive tool to effectively encourage HIV positive individuals to consistently internalize use of safe sexual behaviors. Patient perception of care has a direct effect on their level of engagement. Reinforcing positive collaboration between patient and HCP, by educating HCPs to the patient's concerns, results in a significant increase in positive outcomes. Regardless of the patient's social status or income, the HCP must show concern and care in order to be effective in educating the patient.

Self-efficacy for Negotiating Safe Sex

Findings from studies have demonstrated the predictive powers of self-efficacy with respect to safe sexual behaviors. Investigators have found statistically significant relationships between self-efficacy and safe sexual behaviors such as condom use, refusal of sexual intercourse, and sexual negotiations for safe sex (Forsyth & Carey, 1998; Schultz et al. 2011). Although self-efficacy has been referred to frequently in the context of HIV transmission, statistically significant associations have been demonstrated between self-efficacy and the practice of safe sex, most frequently in self-efficacy to disclose HIV serostatus and self-efficacy to negotiate safe sex.

Disclosure of HIV Status

Disclosure of HIV positive serostatus has been found to be associated with the type of partner relationship (Semple, Zains, Grant, & Patterson, 2006). Study findings indicate that disclosure of HIV positive status occurs most frequently in long term or committed relationships (Bairan et al., 2007; Poppen, Reisen, Zea, Bianchi, & Echeverry, 2005). Particularly among MSM, the likelihood of using safe sexual practice is diminished in casual relationships or during anonymous sex where neither partner has previous knowledge of the other. A study of 250 MSM found that HIV positive (n = 50) and HIV negative (n = 200) individuals were significantly more likely to disclose serostatus when negotiating for sex on the Internet as opposed to in person. Of the 50 HIV positive participants, 41% admitted to having misrepresented their serostatus to the casual partners they met online. Additionally, HIV positive MSM were significantly more likely to report not wanting to use a condom than seronegative MSM [$X^2(1, N = 115) = 4.4, p = .035$] (Carballo-Dieguez, Miner, Dolezal, Rosser, & Jacoby, 2006).

Self-efficacy and HIV positive serostatus disclosure was specifically examined in a study of 150 HIV positive men who have sex with men and women (MSMW). A targeted sample of African-American, Latino, and White participants was recruited for equal representation among the three groups (n = 50). Participants were assessed for self-efficacy for disclosure of their HIV positive status with male and female partners. Results differed by race and ethnicity for male partners [F(2,147) = 11.70, 147, p < 0.001] and female partners [F(2,147) =

10.16, p < 0.001]. Among all three groups, unprotected sex occurred more frequently with male partners (47%) than with female partners (28%). Additionally, African-Americans (38%) and Latinos (30%) were more likely to report unprotected intercourse without disclosure to their female partners compared to whites (16%), X^2 (2) = 6.15, $p < .05$ (Mutchler et al., 2008).

Self-efficacy for disclosure of seropositive HIV status was also examined in a study of 999 HIV positive male (n = 625) and female (n = 374) injection drug users. The participants were grouped as those who reported having sex in the past three months with HIV positive partners only (37%), HIV negative partners only (20%) and with serostatus unknown partners only (43%). Unprotected sexual intercourse occurred with 53.5% of all participants. The highest rate of unprotected intercourse occurred among those participants who reported serostatus partners unknown only (63.7% of the group), followed by participants whose partners were also HIV positive (54.5% of the group) and participants whose partners were HIV negative only (29% of the group). Participants who reported having sexual intercourse with partners of unknown serostatus reported significantly lower self-efficacy for disclosing their HIV seropositive status (Mizuno et al., 2010).

Condom Use

In a qualitative sample of 14 women, participants reported physical abuse following a request to use a condom. The study was performed to explore the barriers to negotiating condom use experienced by women in abusive relationships (Davila & Brackley, 1999). A more recent study had similar findings.

Among 848 women, intimate partner violence was correlated to risky sexual behaviors (AOR = 2; 95% CI = 1/5-2.8), inconsistency in condom use (AOR = 1.60; 95% CI = 1.1-2.3), and the incidence of sexually transmitted infections (AOR = 1.98; 95% CI = 1.3-3.0) (Seth, Raiford, Robinson, Wingood, & DiClemente, 2010).

Summary

From a review of literature, Kalichman et al. (2001) identified factors of self-efficacy including potential rejection, abandonment, and physical and emotional abuse as barriers to negotiating sexual behaviors and disclosure of HIV serostatus. The preceding studies indicate instances where the ability to negotiate safe sex is out of one's control and demonstrate a potential interaction effect between barriers to safe sexual practices and self-efficacy for negotiating safe sex.

Summary

The above findings provide evidence of continued sexual risk-taking among HIV positive individuals. The majority of reported studies have found that as many as one in three HIV infected individuals may continue to engage in unsafe sexual behaviors (DiClemente et al., 2002; Kalichman, 2000; Semple et al., 2006). Many of these studies have investigated the persistence of high risk sexual practices and the correlates among HIV positive and HIV negative individuals; however, a vast number of these studies were performed without the use of a theoretical model. A multifaceted and intricate study of the moderating effects of the independent variables (knowledge of transmission of HIV,

perceived susceptibility of becoming infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sexual behavior, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the use of safe sex behaviors) is clearly necessary to evaluate HIV transmission related behaviors.

CHAPTER III

METHODOLOGY

In this chapter, the quantitative methods used to conduct this study are described. The study design, sample and setting, instruments used to measure the major variables, data gathering procedures, and analysis techniques will be discussed .

Research Design

A cross-sectional, correlational design was used to examine the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex, perceived risk of transmitting HIV infection, peer and health care provider influence, self-efficacy for negotiating safe sex, and the use of safe sex among HIV positive men who have sex with men (MSM). A non-random sample of HIV positive MSM participants was recruited from two agencies in the state of Georgia that provide HIV prevention and care services. Data collection occurred via self-report using pen and paper surveys and was collected at one time point for each participant. Following published test specific assumptions, statistical analyses were used.

Participants and Setting

Participants were recruited from two Georgia agencies that provide HIV prevention and care services. Calculations to estimate sample size were based

on existing literature, intended design of the study and external resources. Using an alpha of 0.05 and a minimum power of 0.80, the sample size projected using "A-Priori Sample Size for Multiple Regression" was 118 participants (Soper, 2010). A total of 235 individuals completed the survey packets. Since data collection occurred at one point in time, allowance for attrition was not calculated or implemented.

Inclusion/Exclusion Criteria

The target population for the study was HIV positive MSM. The primary criteria for inclusion in the study were a) self-report of HIV positive serostatus as diagnosed by a health care provider, b) self-identify as MSM, c) 18 years of age or older, e) able to read, write, and speak English, and f) by self-report, being sexually active in the past month. Participants were excluded from the study if they, by self-report, had previously participated in the current study.

Protection of Human Subjects

Prior to initiating data collection, all materials, forms, and procedures were reviewed by the Georgia State University Institutional Review Board. A waiver of documented consent was obtained and the study was approved as submitted.

Inclusion of Minorities

A non-randomized sample was recruited for this study, therefore minority populations were not specifically solicited for participation, nor were they excluded from the study. However, recent results from the CDC indicate the highest rates of new HIV infection, regardless of transmission route, occurred among Black/African Americans (52%), Whites/Caucasians (28%), and

Hispanic/Latinos (17%) (CDC, 2011b). Thus, the inclusion of minorities was important to the study.

Risks and Benefits

Data collection occurred in open rooms of two agencies that provide prevention and care services to people living with HIV. Anonymity was not guaranteed within the open environment. A cover sheet was provided and seating was such that participant opportunity to view other's responses was negligible. Participants were provided with a copy of the informed consent (Appendix A) that provided contact information for the researcher, but no identifying information was attached to the completed survey packet. A time commitment, conservatively estimated for completion of the survey packet, was 20 to 30 minutes. Most participants completed the survey within the estimated time frame. No other risks were identified. Additionally, there were no identified benefits to participation in the study.

Protection against Risks and Confidentiality

Each survey packet contained a numbered questionnaire and a corresponding consent form that was also numbered. Participants were informed of the time commitment prior to beginning the study. Completion and return of the packet to the researcher provided consent, and each participant was provided with a copy of an unnumbered consent form after completing the questionnaire. Confidentiality was assured and no identification of a particular participant was assigned to the pen and paper packets. The researcher maintains sole possession of all files, which are kept in a locked file cabinet. All

completed surveys will be destroyed at the end of three years. Participant identity was not obtained and only group data will be used in publication or presentation.

Compensation

Due to the time commitment for completing the survey, participants were given a $25 gift card to Walmart. Additionally, a $200 donation was made to each agency where data collection occurred in appreciation for use of the rooms.

Instruments

A researcher developed demographic characteristics questionnaire, nine scales and subscales, and two additional assessments comprised the instruments for this study. Data elements in the demographic characteristics questionnaire (Appendix B) included age, ethnic background, educational level, employment status, annual household income, number of years diagnosed with HIV, relationship status, and current or prior use of antiretroviral therapy (ART).

An overview of the data collection plan to include variables, instruments, number of items, and prior/current reliability coefficients are presented in Table 3-1. Each of the selected instruments had demonstrated acceptable reliability. Reading level of the instruments and assessments using the Flesch Kincaid Grade Level from Microsoft Word indicated all measures were rated at a 7.0 reading level or lower with the exception of the Treatment Optimism Scale, Susceptibility subscale which had a reading level of 12.0. The researcher was available to assist any participants who may have difficulty with the reading level of the survey.

Table 3-1 Overview of Data Collection: Variables, Instruments, Number of Items, and Reliability.

Variable	Instrument	Number of Items	Prior Reliability	Current Reliability
Safe Sex	HIV Risk-Taking Behaviour Scale	11	0.70 -0.77	0.63
Safe Sex	Sexual Behavior subscale	5	Not reported	0.47*
Knowledge	HIV Knowledge Questionnaire-18	18	0.75 – 0.89	0.87
Susceptibility	Response variables to re-infection	4	0.72	0.99*
Severity	Quality of Life SF-12 Scale	12	PCS= 0.89 MCS= 0.76	Not Applicable
Severity	Treatment Optimism Scale (Severity subscale)	4	0.71	0.97*
Benefits	Other Sensitive Motivations Scale (Altruism subscale)	9	0.83 – 0.91	0.97
Barriers	Sexual Risk Scale (Attitude subscale)	13	0.88	0.91
Risk of transmitting	Treatment Optimism Scale (Susceptibility subscale)	10	0.86	0.93
Peer influence	Sexual Risk Scale (Norms subscale)	7	0.83	0.93
HCP influence	Items from the Healthcare Utilization, Providers and General Health Assessment	3	Not Applicable	0.90*
Self-efficacy	Brief HIV Disclosure and Safer Sex Self-Efficacy Scale	10	0.90-0.95	0.94
Participant Characteristics	Demographic data developed by investigator	15	Not Applicable	
Total		110		

***** small number of items influence reliability

Sexual Behavior

Items from the HIV Risk-taking Behaviour Scale (HRBS) were used to measure the outcome variable of safe sex behavior for the study. The 11-item scale assesses past month behavior for sexual risk and drug injection use. Five

scale assesses past month behavior for sexual risk and drug injection use. Five of the items are totaled to calculate the Sexual Behavior subscale and six of the items are totaled to calculate the Drug Use subscale (specifically injection drug use). All responses are scored on a six-point scale for frequency of behaviors ranging from 0 to 5. Total scores for the 11 items range from 0 to 55 with higher scores indicating more risky behavior (Darke, Hall, Heather, Ward, & Wodak, 1991; Ward, Darke, & Hall, 1990).

Originally tested on 175 participants, internal reliability for the entire scale was 0.70. Test-retest correlations among 64 participants demonstrated a coefficient of 0.86. Validity was examined by collateral collaboration with 33 regular sex partners of the participants with percentage agreements between participant and sex partners ranging from 81.8% to 100% (Darke et al., 1991). The Cronbach's alpha for the HRSB in this study was 0.63.

The HRSB (Appendix C) was administered to the participants for this study. Because the outcome variable of the study was a measure of safe sex, only items from the Sexual Behaviour subscale were used in the analysis. The five items related to sexual activity in the month prior to data collection examined the number of sexual partners, condom use with regular and casual partners, condom use in paid sexual encounters, and participation in anal intercourse. As with the total scale, responses were scored on a six-point scale for frequency of occurrence ranging from 0 to 5. Total subscale scores range from 0 to 25 with higher scores indicating greater HIV risk taking behavior (Ward et al., 1990).

Three items from the Sexual Behavior subscale were used to differentiate those who practiced safe sex from those who did not practice safe sex: *how often have you used condoms when having sex with your regular partner(s) in the last month, how often did you use condoms when you had sex with casual partners,* and *how often have you used condoms when you have been paid for sex in the last month*. Participants who indicated they had used condoms regardless of partner type were placed in the group who practiced safe sex. All other participants were placed into the group that did not practice safe sex.

Internal reliability for the Sexual Behavior subscale was not reported; however, collateral validity among the participants and their regular sex partner was established with a greater than 95% agreement rate and the Sexual Behaviour subscale accounted for 20% of the variance in HIV risk behavior (Darke et al., 1991). Petry (2001) demonstrated similar results among 84 study participants. Cronbach's alpha ranged from 0.69 to 0.82 for the entire scale and although correlations were not performed on the subscales, the Sexual Behavior subscale accounted for 22% of the variance in HIV risk behavior among the study participants. Cronbach's alpha for the Sexual Behavior subscale for this study was 0.47.

Knowledge of HIV Transmission

The 18-item HIV Knowledge Questionnaire (HIV-KQ-18) was used to measure the participant's knowledge of HIV transmission (Appendix D) and was derived from the 45-item HIV Knowledge Questionnaire (HIV-K-Q). The HIV-K-Q reported an internal consistency of 0.93 to 0.91 over a 12 week period with

validity established through expert review of the items and through final outcome analysis. Discriminate evidence of validity was demonstrated by correlating results from the HIV-K-Q to other reliable and valid instruments (Carey, Morrison-Beedy, & Johnson, 1997).

The brief version (HIV-KQ-18) was tested on three samples of more than 1,000 participants and consists of 18 of the original HIV-K-Q items. Internal consistency across the three samples was present with acceptable Cronbach's alphas of 0.75 to 0.89. Response options to the items are *true, false, and I don't know*. Correct answers are summed for a total score of 0 to 18 (items answered with the *I don't know* response are scored as incorrect) and higher scores are associated with greater HIV transmission knowledge (Carey & Schroder, 2002). Acceptable internal consistency and statistical significance for the brief version have been demonstrated in other studies (Kalichman & Simbayi, 2003; Mimiaga, Reisner, Cranston et al., 2009; Swenson et al., 2010). The Cronbach's alpha for this study was 0.87.

Some items contained in the scale refer to HIV transmission in a gender specific manner. For example, *A woman cannot get HIV if she has sex during her period.* Although the study population is MSM, the entire scale was utilized without change since some men self-identify as bisexual and report having sex with both men and women.

Susceptibility to Becoming Re-infected

Susceptibility to becoming re-infected with a different strain of HIV was measured using 4 items adapted from a study that examined re-infection beliefs

among 554 HIV positive MSM. Response options that ranged from strongly agree to strongly disagree were dichotomized to agree and disagree components and statistically associated with sexual practices (Colfax et al., 2004).

An adapted version of the scale was used in another study which examined the incidence of re-infection and sexual practices among HIV positive MSM. Response options again ranged from strongly agree to strongly disagree and were also dichotomized for analysis (Sidat et al., 2008). In both studies, reliability and validity data were not reported.

A third study was identified in the literature that used adapted items from the above studies. Participants were assessed for awareness of the possibility of re-infection with *yes* or *no* responses and were assessed with three items for other re-infection beliefs. The three items were assessed with a 6-point scale with responses of (1) strongly disagree to (6) strongly agree. Internal consistency for the three items was acceptable with an alpha of 0.72 (Kalichman, Eaton et al., 2010).

In the current study, four items adapted from the Colfax et al. (2004) study were used (Appendix E). A 5-point scale with responses of (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree were used. Total scores range from 4 to 20 with higher scores reflecting an increased perception of susceptibility to re-infection. Cronbach's alpha for this study was 0.99.

Severity of Living with HIV

Severity of living with HIV was measured using two separate scales, the Quality of Life—SF 12 (QOL SF-12) and the Severity subscale of the Treatment

Optimism Scale (TOS). The QOL SF-12 (Appendix F) provides an overall assessment of the respondent's physical and mental health and was developed relative to the general U. S. population. The Severity subscale of the TOS (Appendix G) was developed specifically to measure treatment optimism among HIV positive individuals.

The QOL SF-12 is a 12-item health survey that generates two scores, the physical component summary (PCS) and mental component summary (MCS). The items were analyzed using provided software and reflect an individual score relative to a mean of 50 (SD = 10) in the general U. S. population. Scores for the PCS range from 4.62 to 76.36 with higher scores indicating no physical limitations, disabilities, or reductions in individual well-being. The MCS scores range from 1.32 to 79.48 with higher scores indicating absence of psychological distress or limitations in social or role activities due to emotional problems (Ware et al, 2009).

The Severity subscale of the TOS was also used to measure participant perception of the severity of living with HIV. The TOS was designed to measure HIV treatment optimism among HIV positive individuals. Three independent subscales make up the TOS and were developed to measure susceptibility, condom motivation, and severity beliefs concerning living with HIV and associated transmission risks with the use of HAART (Brennan et al., 2009).

The Severity subscale reflects beliefs about the quality of life while taking HAART and consists of four items. Seven point responses labeled (1) strongly agree to strongly disagree (7) are used and scores range from 4 to 28 with higher

scores indicating a lower sense of disease severity while taking HAART. Among 346 participants, reliability coefficients were significant (α = 0.71). Internal and external validity was identified in the theoretical definitions of each of the constructs. Additionally, use of HIV positive individuals in drafting the items and the administration of two pretests aided in establishing validity (Brennan et al., 2009). Cronbach's alpha for the Severity subscale of the TOS for this study was 0.97.

The two summaries from the QOL SF-12 and the Severity subscale of the TOS were used to measure three separate concepts associated with examining the severity of living with HIV. Severity of living with HIV—physical health was measured using the PCS. Severity of living with HIV—mental health was measured using the MCS. The Severity subscale of the TOS was used to measure severity of living with HIV—HAART use.

Benefits of Safe Sex Behavior

The Altruism subscale of the Other-Sensitive Motivations (OSM) Scale was used to examine participant perceived susceptibility to re-infection with a different strain of HIV (Appendix H). Sample items include *Having safer sex shows that I care about my partner* and *I don't want anyone else to have to go through getting infected.* Responses reflect level of agreement as measured on the 9-item scale with scores ranging from 9 to 45. Higher scores indicate a higher level of HIV prevention altruism. Cronbach's alpha among participants in the original study was 0.78 (Nimmons, Acree, & Folkman, 2000). Subsequent

use of the subscale in two other studies demonstrated a reliability of 0.91 (O'Dell et al., 2008; Rosser et al., 2010). Cronbach's alpha for this study was 0.97.

Barriers to Safe Sex Behavior

The Attitude subscale of the Sexual Risk Scale (SRS) was used to measure perceived barriers to safe sex behavior (Appendix I). The SRS was developed following a thorough review of literature and examination of multiple theories and models. Open-ended questions were developed and administered to participants (n = 26) to elicit beliefs and opinions about safer sexual activity. From the information gained in the pilot study, the authors extracted subscales related to safe sexual activity which were administered to 296 participants. Responses from this group allowed item elimination based on psychometric testing and resulted in a Cronbach's alpha for the entire scale of 0.86. Content validity was identified in the theoretical definition of perceived susceptibility derived predominantly from the Health Belief Model. Additionally, the correlation between the various constructs of the entire scale was statistically supported by factor analysis (DeHart & Birkimer, 1997).

The Attitude subscale consists of 13 items which assess participant perceptions toward condom use. Cronbach's alpha for the subscale was assessed in two studies ($\alpha = 0.90$, $\alpha = 0.88$ respectively) (DeHart & Birkimer, 1997). Five point responses labeled (1) strongly disagree to (5) strongly agree are used and scores range from 13 to 65 with higher scores reflecting more supportive beliefs about safe sex practices. The Cronbach's alpha for this study was 0.91.

Risk of Transmitting HIV Infection

The Susceptibility subscale of the TOS measured participant perception of the risk of transmitting HIV infection to others (Appendix J). As described previously, the TOS was developed to measure HIV treatment optimism among HIV positive individuals (Brennan et al., 2009).

The Susceptibility subscale consists of 10 items with seven-point responses labeled (1) strongly agree to (7) strongly disagree. Scores range from 10 to 70 with higher scores indicating a stronger belief in decreased HIV transmissibility when taking HAART. Among 346 participants, reliability coefficients were significant ($\alpha = 0.86$). Internal and external validity was identified in the theoretical definitions of each of the constructs. Additionally, use of HIV positive individuals in drafting the items and the administration of two pretests were used to establish validity (Brennan et al., 2009). Cronbach's alpha for this study was 0.93.

Peer Influence

The Normative subscale of the SRS measured peer influence for use of safe sex (Appendix K). As indicated previously, the SRS was developed following a thorough review of literature and examination of multiple theories and models. Content validity was identified in the theoretical definition of perceived susceptibility derived predominantly from the Health Belief Model. Additionally, the correlation between the various constructs of the entire scale was statistically supported by factor analysis. Psychometric testing resulted in a Cronbach's alpha for the entire scale of 0.86 (DeHart & Birkimer, 1997).

The Normative subscale consists of seven items and reflects participant perception of peer beliefs that are supportive of safe sex. Cronbach's alpha for the subscale was assessed in two studies (α = 0.84, α = 0.83 respectively). Three-point responses labeled agree, undecided and disagree were used (DeHart & Birkimer, 1997). A 5-point response option has since been reported (Childs, Moneyham, & Felton, 2008) and was used in this study to maintain a closer consistency in the number of response options associated with other scales being used. Each item is rated on a 5-point scale with responses ranging from (1) strongly disagree to (5) strongly agree. Total scores range from 7 to 35 with higher scores indicating more positive perception of peer beliefs in safe sex practices. Cronbach's alpha for this study was 0.93.

Healthcare Provider Influence

Three items adapted from the Healthcare Utilization, Providers, and General Health Assessment: Including STD and Pregnancy Assessment were used to determine HCP influence (Appendix L). The entire assessment contains questions regarding health care utilization, HCP interaction, and general health assessment data and does not represent a scale; therefore, reliability and validity have not been established. The assessment has been used in the Health Living Project: Multi-Institutional Collaborative Research Project, Project Teens and Adults Learning to Communicate (TALC)—Los Angeles, and Project TALC—New York City (Center for Community Health, Semel Institute—Neuropsychiatric Institute of the University of California, Los Angeles, n.d.).

The first two items selected from the assessment to measure HCP interaction are based on a 6-point scale with responses organized in a negative to positive perception of the HCP. Response six is a non-applicable response and will not be scored in the analysis but will be kept as a response option for those participants who are not currently utilizing a HCP. Participant perception of the HCP's attitude toward them and their level of satisfaction with the HCP are evaluated with scores ranging from 1 to 5 with higher scores indicating a more positive perception of the HCP (Center for Community Health, Semel Institute—Neuropsychiatric Institute of the University of California, Los Angeles, n.d.).

The third item is measured on a 6-point scale and asks the participant to rate the HCP's knowledge of HIV and AIDS. Responses include (1) poor to (4) above average. The other responses (*Doctor does not know your health status; I do not have a doctor or health care provider)* are not applicable and will not be scored in analysis but will be kept as a response option for those participants who have not informed their HCP of their serostatus or for those who do not have a current HCP. Scores range from 1 to 4 with higher scores indicating higher perception of the HCP's knowledge (Center for Community Health, Semel Institute—Neuropsychiatric Institute of the University of California, Los Angeles, n.d.). No prior reliability was identified and although only three items were used from the assessment, Cronbach's alpha for this study was 0.90.

Self-Efficacy for Negotiating Safe Sex

The Brief HIV Disclosure and Safer Sex Self-Efficacy Scale was used to measure self-efficacy for negotiating safe sex (Appendix M). The scale consists

of 10-items that evaluate self-efficacy for disclosure of HIV status and negotiating safe sex behaviors. Four studies were conducted to develop and test the psychometric properties of the scale (Kalichman et al., 2001).

The first study consisted of scenario development following elicitation interviews with HIV positive men and women. The scenarios were then presented to focus group participants who provided feedback and helped refine the content (Kalichman et al., 2001).

The second study tested the psychometric properties of the scales. Participants read scenarios and were asked how confident they felt in their ability to take specific actions based on each scenario. Their responses were based on a10-item scale that was summed across all scenarios. Internal consistencies were similar between men and women and the alpha was > 0.90 (Kalichman et al., 2001).

The third study provided evidence of consistency in reliability and for validity. The authors examined the associations of the scales and self-reported sexual behaviors. Reliability analysis confirmed previous findings with internal consistencies ranging from 0.92 to 0.95. Construct validity was analyzed by testing the relationships between the individual self-efficacy scales and the associated behavior. Participants who had not previously disclosed their HIV status to their sex partners scored significantly lower on the self-efficacy disclosure subscale ($M = 6.1$, $SD = 3.4$), compared to those who had disclosed [($M = 7.4$, $SD = 2.6$), $t(339) = 3.7$, $p < 0.01$). Findings were similar for the negotiating safe sex subscale. Participants who always used condoms during

intercourse (M = 9.1, SD = 2.3), as opposed to those who inconsistently used condoms (M = 7.8, SD = 2.2), supported negotiating safe sex [$t(240) = 5.2$, $p < 0.01$] (Kalichman et al., 2001).

The final study was conducted to provide evidence of construct, convergent, and divergent validity. Again, the reliability was satisfactory (α = 0.90 – 0.95). Convergent, divergent and construct validity was established with analysis results similar to those cited above. In addition, the measures showed no evidence of redundancy (Kalichman et al., 2001).

All 10 items were administered to the participants with responses of strongly agree (1) to strongly disagree (4). Scores ranged from 10 to 40 with higher scores indicating a greater self-efficacy for negotiating safe sex. Cronbach's alpha for the entire scale for this study was 0.94.

Data Collection Procedures

Following IRB approval, contact was made with the two agencies where data collection occurred. Dates, times, and seating areas for survey completion were determined at each meeting. Staff were informed of the purpose and eligibility criteria and agreed to disseminate information about the study to potential participants. Flyers (Appendix N) were provided to each agency with the predetermined dates and times data collection was to occur, the purpose of the study and inclusion criteria. A local cell phone number was also listed on the flyer for participants who sought additional information about the study.

On the scheduled dates of data collection, participants were informed of the purpose of the study, evaluated for adherence to eligibility criteria, and the

researcher provided answers to participant questions. Those who consented to participate were given a numbered survey packet that contained a copy of the consent form and the questionnaire. Each packet was numbered to ensure accuracy of data entry and analysis, but there was no information that could be linked to any single individual.

The data are stored in a locked file cabinet behind a locked steel door and will be destroyed after three years. The electronic data are stored in a password-protected computer. All data are the sole property of the researcher and may not be used without written permission.

Data Analysis

Participant responses from the questionnaire were recorded in the Statistical Package for the Social Sciences (SPSS) version 18 for Windows in a password-protected computer. The double entry method was used to ensure accuracy of transcribed data. Preliminary analysis was conducted using descriptive statistics to evaluate frequency, measures of central tendency, measures of dispersion, and distribution. Internal reliability coefficients were computed on all scales and assessment items and reported earlier. Data were analyzed using descriptive and inferential statistics.

A total of 235 surveys were completed and entered for statistical analysis. Although participants were assessed for the eligibility criteria prior to being given the survey packet, 10 individuals indicated on the demographic characteristics form that they had not been sexually active in the past month. These 10 cases were deleted from the analysis leaving a sample size of 225. Frequency

distributions and other graphical methods were examined for approximations to normality for the variables of interest. Kolmogorov-Smirnov and Shapiro-Wilk tests were also performed. Nine outlier cases were identified. Total scores for these participants on study variables were 54% to 78% below the mean value on each variable. No demographic characteristic differences were identified between the nine outliers and the rest of the participants and when variable transformations made no difference in frequency results they were deleted based on a z score greater than 3.29 (Fields, 2009). The final sample for analysis consisted of 216 participants.

Bivariate correlation coefficients were used to identify issues with multicollinearity, to examine the relationships between the study variables, and to determine variables to be included in the final model. In addition to the covariates identified in the literature (age, number of years living with HIV, and number of recent partners), correlation coefficients were used to examine the demographic characteristics for additional potential covariates specific to study participants. Demographic data concerning employment status was dichotomized to those who were currently employed and those who were not currently employed (unemployed, currently in school, retired, or disabled).

Missing data between and within participants were examined to determine whether imputations were needed for analysis. This was particularly important for regression where R automatically excludes all cases in which any of the inputs were missing (Fields, 2009). Imputations were not performed and the

integrity of the data was maintained by using pairwise deletion which only removed cases that had missing values from the variable under consideration.

The first aim of the study was to explore the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the likelihood of practicing safe sex among HIV positive MSM. Distribution results determined the use of parametric versus nonparametric correlations. To select the appropriate variables for the final analysis, a correlation matrix was used to describe the strength and direction of the relationships and to evaluate for multicollinarity. For this study, the strength of the relationship was described as weak ($r < 0.3$), moderate ($r = 0.3 – 0.49$), and strong ($r = > 0.5$). Statistically significant correlations greater than 0.1 were used in the model. There were no correlations of $r > 0.5$ and multicollinarity was not present. Following this analysis, simultaneous multiple linear regression was performed to examine the linear relationship among the independent variables and the outcome variable of safe sex behaviors.

Aim two sought to explore the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the likelihood of

practicing safe sex among HIV positive MSM, controlling for selected demographic variables (age, number of years living with HIV, and number of recent partners). In addition to the covariates identified in the literature, correlation coefficients were used to determine variables from the demographic characteristics form which may have acted as covariates. Distribution results were again used to determine parametric verses non-parametric correlations. Current and prior HAART use was identified as a potential covariate and controlled for in the regression.

For the remaining aims of the study, participants were categorized into one of two groups: those who practiced safe sex and those who did not. Three items from the HRSB Sexual Behavior subscale were used to determine group designation: Item two which states "*how often have you used condoms when having sex with your regular partner(s) in the last month?*", Item three which states "*how often did you use condoms when you had sex with casual partners*?", and Item four which states "*how often have you used condoms when you have been paid for sex in the last month*?". The responses were dichotomized and individuals were grouped based on whether or not they used condoms every time they had sexual intercourse. The level of significance for the remaining aims was set at 0.05.

Aim three of the study was to determine the difference in knowledge of transmission of HIV between HIV positive MSM who practice safe sex and those who do not practice safe sex. Distribution results were used to determine parametric versus nonparametric testing to examine the correlations in

knowledge of transmission between the two groups (MSM who practiced safe sex and those who did not). Although responses to the HIV-KQ-18 were dichotomized, a total score was obtained which reflected participant level of knowledge of transmission. An independent t-test was used to examine the differences in knowledge of HIV transmission between men who practiced safe sex and those who did not.

The fourth aim of the study was to determine the difference in perceived susceptibility of becoming re-infected with a different strain of HIV between HIV positive MSM who practice safe sex and those who do not practice safe sex. Based on the safe sex grouping, an independent t-test was used to examine the difference in perceived susceptibility of becoming re-infected with a different strain of HIV. Levene's test for equality of variances was statistically significant, $F = 5.203$, $p = .024$, and the results reported are based on equal variances not assumed results.

The fifth aim of the study was to determine the difference in perceived severity of living with HIV between HIV positive MSM who practice safe sex and those who do not practice safe sex. An independent t-test was used to examine the difference in perceived severity of living with HIV between the two groups. Correlation coefficients indicated each measurement (physical health, mental health, and HAART use) could be examined independently using a t-test.

Determining the difference in perceived benefits to practicing safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex was the sixth aim of the study. Total scores from the Altruism subscale

from the OSM were examined using an independent t-test following examination of correlation coefficients. Levene's test for equality of variances was statistically significant, $F = 4.681$, $p = .032$, and the results reported are based on equal variances not assumed results.

The seventh aim of the study was to determine the difference in perceived barriers to practicing safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex. Items from the Attitude subscale of the SRS were totaled following reverse coding as instructed by the instrument developers. Correlation coefficients were run after reverse coding and the total scores between the groups were examined using an independent t-test. Levene's test for equality of variances was statistically significant, $F = 4.474$, $p = .036$, and the results reported are based on equal variances not assumed results.

Aim eight of the study was to determine the difference in perceived risk of transmitting HIV infection between HIV positive MSM who practice safe sex and those who do not practice safe sex. The ten items of the Susceptibility subscale of the TOS were totaled and examined between groups using an independent t-test.

The ninth aim of the study was to determine the difference peer influence has on safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex. The seven items of the Norm subscale of the SRS were totaled and examined using an independent t-test.

Determining the difference HCP influence has on safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex was

the tenth aim of the study. An independent t-test was used to examine the total scores of the items examining HCP influence.

The eleventh and final aim of the study was to determine the difference in self-efficacy for negotiating safe sex between HIV positive MSM who practice safe sex and those who do not practice safe sex. Responses from the 10-item BSES were totaled and examined using an independent t-test.

Summary

A cross-sectional, correlational design was used to examine the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the use of safe sex among HIV positive MSM. Data were collected via self report questionnaires from a non-random sample recruited from area agencies that provide services to the targeted population. Including the demographic characteristics form, 11 assessments were performed. Data were analyzed using SPSS 18.0 for Windows following test specific assumptions.

CHAPTER IV

RESULTS

This chapter presents the results of this cross-sectional, correlational study to examine the relationship between knowledge of transmission of HIV, perceived susceptibility to becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer and health care provider (HCP) influence, self-efficacy for negotiating safe sex, and the use of safe sex behaviors among HIV positive MSM. A description of the sample and the results of the research aims are reported.

Participant Characteristics

The final sample included 216 HIV positive MSM. Table 4-1 shows the mean and standard deviation of the participants' age and reported CD_4 cell counts as well as a summary of the frequency distributions for race/ethnicity, educational level, employment status, income, number of years diagnosed as HIV positive, prior and current use of highly active antiretroviral therapy, and absence / presence of symptoms associated with the disease.

More than three-fourths of the participants were Black/African American (85.6%). The mean age of the sample was 43.02 years (*SD* = 9.74) and ages ranged from 19 to 66 years. More than 90% of the participants had obtained at

least a high school diploma or equivalent, and 56% reported either having some college or technical schooling or being college graduates. Nearly half of the participants (45.8%) reported being disabled and a similar number (48.6%) reported an annual household income of less than $10,000 per year.

In addition to the information contained in Table 4-1, data regarding current treatment of specific diseases was also obtained. At the time of the study, nearly 17% (n = 36) of the participants were being treated for hypertension, 13.4% (n = 29) were receiving treatment for elevated cholesterol levels, 13.4% (n = 29) were being treated for sexually transmitted diseases, 9.3% (n = 20) were receiving treatment for diabetes mellitus, 8.8% (n = 19) were being treated for hepatitis C, and 6.9% (n = 15) were receiving treatment for hepatitis B. Other co-morbidities included arthritis, kidney disease, heart disease, chronic infection, respiratory disease, lipodystrophy, tuberculosis, and neuropathy.

Although components of the QOL SF-12 were used as a measure of perceived severity of living with HIV, results for the group are highly descriptive of the participants. As previously indicated, two composite scores (PCS, MCS) are generated by the scale. The PCS is a summary of participant physical health. Scores range from 4.62 to 76.36 with higher scores indicating absence of physical limitations or disabilities. Among the participants, the mean PCS was 47.03 (*SD* = 9.41) with a range of 20.20 to 65.76. The MCS is a summary of participant mental health. Scores range from 1.32 to 79.48 with higher scores indicating absence of psychological distress or limitations in social or role

activities due to emotional problems. Among the participants, the mean MCS was 43.47 (*SD* = 10.61) with a range of 10.21 to 63.78.

Table 4-1

Participant Characteristics (N=216)

Characteristic	*n*	*%*	*M*	*SD*	*Range*
Age	214		43.02	9.74	19-66
Race					
Black/African American	185	85.6			
White/Caucasian	24	11.1			
Hispanic/Latino	2	0.9			
Asian / Pacific Islander	1	0.5			
Native American	1	0.5			
Education					
8th grade or less	3	1.4			
Some High School	13	6			
High School Grad or GED	72	33.3			
Some college / tech	90	41.7			
College Grad (bachelor's)	22	10.2			
Graduate (masters / doctorate)	11	5.1			
Employment Status					
Working full-time	18	8.3			
Working part-time	40	18.5			
Unemployed or laid off and looking for work	35	16.2			
Unemployed and not looking for work	4	1.9			
Currently in school	6	2.8			
Retired	8	3.7			
Disabled	99	45.8			

(Table 4-1 Continued)

Characteristic	*n*	*%*	*M*	*SD*	*Range*
Income					
Less than $10,000	105	48.6			
$10,001 to $19,999	47	21.8			
$20,000 to $29,999	38	17.6			
$30,000 to $39,999	7	3.2			
$40,000 to $49,999	5	2.3			
$50,000 to $69,999	6	2.8			
$70,000 to $99,999	3	1.4			
Years diagnosed HIV positive					
Less than one year	10	4.6			
One to two years	17	7.9			
Two to three years	13	6			
Three to four years	5	2.3			
Four to five years	12	5.6			
Five to ten years	53	24.5			
More than ten years	102	47.2			
Last CD_4 cell count	184		555.03	967.38	2-12,400
History of HAART use	180	83.3			
Current HAART use	173	80.1			
Symptomology					
HIV positive with symptoms	43	19.9			
HIV positive without symptoms	111	51.4			
AIDS positive with symptoms	19	8.8			
AIDS positive without symptoms	34	15.7			

Note. N = 216. *n* varied due to missing data

Relationships among Descriptive Characteristics and Sex Behavior

Bivariate correlations were used to examine the relationships among participant characteristics and sexual behavior. Pearson's correlations coefficients (r) were calculated for those variables that were normally distributed and Spearman's rho correlation coefficients (r_s) were calculated for the relationship involving CD_4 cell counts. The results are presented in Table 4-2. Numerous significant relationships were found. Among the sample characteristics, older age was associated with current unemployment status (r = -.156, p =.024), greater number of years since HIV positive diagnosis (r = .484, p < .001), a history of HAART use (r =.205, p = .003), and current use of HAART (r = .209, p = .002). Higher income was associated with higher educational level (r = .236, p = .001). Current employment was associated with higher income (r = .362, p < .001), while unemployment status was associated with a greater number of years since being diagnosed as HIV positive (r = -.219, p < .002) and current use of HAART (r = -.169, p < .014). Higher income was associated with increased CD_4 cell counts (r_s = .168, p = .026). A greater number of years since being diagnosed as HIV positive was associated with a history of HAART use (r = .374, p < .001), current use of HAART (r = .389; p < .001) and a greater likelihood of practicing safe sex (r = -.169, p = .014). As expected, a history of HAART use was associated with current use of HAART (r = .751, p < .001) and a greater likelihood of practicing safe sex (r = -.224, p =001). Current use of HAART was also associated with a greater likelihood of practicing safe sex (r = -.234, p = .001).

Table 4-2

Relationships among Demographic Data and Sex Behavior

	1	2	3	4	5	6	7	8
1. Age								
2. Education	-.020							
3. Employment status	-.156*	.068						
4. Income	.008	.236**	.362**					
5. Years Dx as HIV (+)	.484**	.006	-.219**	.055				
6. Last CD_4 count	-.129	.147	-.131	.168*	.038			
7. Hx HAART use	.205**	.091	-.113	.032	.374**	-.052		
8. Current HAART use	.209**	.098	-.169*	.011	.389**	.036	.751**	
9. Sex Behavior	-.079	.044	.026	.012	-.169*	.055	-.224**	-.234**

Note. *$p < .05$, **$p \leq .001$; non-parametric correlations used for race and last CD_4 count

Relationships among the Independent Variables and Sex Behavior

Pearson's correlation coefficients were calculated for the independent variables and are shown in Table 4-3. There were several significant relationships among and between the predictor variables and safe sex behavior. Among the participants, safer sexual behavior was associated with greater perceived severity of living with HIV—HAART use ($r = -.168$, $p = .018$) and perceived severity of living with HIV—mental health ($r = -.288$, $p = .002$), greater perceived benefits of safe sex ($r = -.203$, $p = .003$), lower perceived barriers to safe sex ($r = -.456$, $p < .001$), greater perceived risk for transmitting HIV to others ($r = .244$, $p < .001$), higher perception of peer influence ($r = -.172$, $p = .013$), and greater self-efficacy for negotiating safe sex ($r = -.158$, $p = .026$). The variables of perceived severity of living with HIV—physical health, knowledge of transmission of HIV, susceptibility of becoming re-infected with a different strain of HIV, and HCP influence were not associated with sexual behavior.

Statistical Examination of the Specific AIMS

AIM 1

Simultaneous linear regression was used to explore the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the practice of safe sex among HIV positive MSM. Correlation

Table 4-3

Relationships among Variables and Sex Behavior

		1	2	3	4	5	6	7	8	9	10	11
1.	Physical											
2.	Psychosocial	.062										
3.	Knowledge	.134	.102									
4.	Susceptibility	-.049	.021	.077								
5.	HAART use	.006	.204**	.100	.185**							
6.	Benefit	.072	.135	.166*	.195**	.241**						
7.	Barrier	.015	.215**	.036	.048	.112	.307**					
8.	Risk	-.066	-.056	-.233**	-.148*	-.015	-.339**	-.299**				
9.	Peer	.027	.149*	.063	-.085	.121	.361**	.275**	-.049			
10.	HCP	-.040	.255**	.208**	.044	.195**	.271**	.048	-.038	.153*		
11.	Self-efficacy	.080	.101	-.008	-.039	.049	.327**	.324**	-.018	.298**	.095	
12.	Sex behavior	-.070	-.288**	.003	-.028	-.168**	-.203**	-.456**	.244**	-.172**	-.094	-.158**

Note. *p < .05, **p < .001

coefficients indicated there was no association between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV—physical health, HCP influence, and the practice of safe sex. As a result, those variables were not included in the regression model.

The overall model significantly predicted sexual behavior [$R^2 = .267$, $R^2_{adj} = .238$, $F(7, 179) = 9.312$, $p < .001$] and accounted for 24% of the variance. The β weights indicated that two predictor variables, severity of living with HIV—mental health ($\beta = -.181$, $t = -2.707$, $p = .007$) and barriers to safe sex behavior ($\beta = -.361$, $t = -4.899$, $p < .001$) significantly contributed to the model and are shown in Table 4-4. The model predicted that those participants who perceived less psychological distress or limitations in social or role activities due to emotional problems and those who had a positive attitude toward condom use were more likely to practice safe sex. The remaining variables were not statistically significant ($p > .05$).

Table 4-4

Summary of Simultaneous Linear Regression Analysis for Variables Predicting Sexual Behavior

Variable	B	SE B	ß	*P*
Severity—Mental Health	-.071	.026	-.181	.007
Severity—HAART Use	-.054	.042	-.087	.119
Benefit	.008	.062	.010	.896
Barrier	-.144	.029	-.361	.000
Risk	.037	.021	.126	.079
Peer Influence	-.025	.061	-.030	.677
Self-Efficacy	-.010	.068	-.010	.889

AIM 2

Stepwise linear regression was used to explore the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer and HCP influence, self-efficacy for negotiating safe sex, and the practice of safe sex among HIV positive MSM, controlling for age, number of years living with HIV, and number of recent partners. As with the first aim and based on correlation coefficient results, knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV—physical health, and HCP influence

were not included in the model. Current use of HAART was added as a covariate based on correlation coefficient results discussed in Chapter III.

The overall model significantly predicted sexual behavior [R^2 = .424, R^2_{adj} = .409, F (5, 181) = 26.696, p < .001] and accounted for 41% of the variance in sexual behavior. The β weights from block 1 examining the covariates indicated that only recent number of partners (β =.503, t = 7.946, p < .001) significantly contributed to the model and accounted for 29% of the variance in sexual behavior. The β weights from the stepwise entry of the predictor variables indicated that only barriers to safe sex behavior (β = -.360, t = -6.167, p < .001) significantly contributed to the model and accounted for an additional 12% of the variance in sexual behavior and are shown in table 4-5. Among the participants, those who had fewer sexual partners in the previous month and who had a positive attitude toward condom use were more likely to practice safe sex. The remaining variables were not statistically significant (p > .05).

Table 4-5

Summary of Stepwise Linear Regression Analysis for Variables Predicting Sexual Behavior Controlling for Age, Number of Years Living with HIV, Number of Recent Partners, and Current Use of HAART

Variable	B	SE B	ß	*P*
Number of Recent Sex Partners	2.164	.272	.503	.000
Barriers	-.143	.023	-.360	.000

AIM 3

An independent t-test was used to examine the difference in knowledge of transmission of HIV between HIV positive MSM who practiced safe sex (n = 55) and those who did not practice safe sex (n = 152). There was no difference in knowledge of transmission of HIV between those who practiced safe sex and those who did not practice safe sex [t (205) = -1.063, p = .289].

AIM 4

An independent t-test was used to examine the difference in perceived susceptibility of becoming re-infected with a different strain of HIV between HIV positive MSM who practiced safe sex (n = 58) and those who did not practice safe sex (n = 156). There was no difference in perceived susceptibility to becoming re-infected with a different strain of HIV between those who practiced safe sex and those who did not practice safe sex [t (212) = -0.28, p = .780].

AIM 5

Three measures were used to examine perceived severity of living with HIV. An independent t-test was used to determine the difference in perceived severity of living with HIV between HIV positive MSM who practice safe sex and those who do not practice safe sex. Perceived severity of living with HIV—physical health was higher between those who practiced safe sex (n = 58, M = 47.32, SD = 9.36) and those who did not practice safe sex (n = 154, M = 46.84, SD = 9.50). The difference was not significant [t (210) = .331, p = .741].

Perceived severity of living with HIV—mental health was greater between those who practiced safe sex (n = 58, M = 45.88, SD = 9.66) and to those who

did not practice safe sex (n = 154, M = 42.49, SD = 10.80). The difference was significant [t (210) = 2.094, p = .037].

Perceived severity of living with HIV—HAART use was greater between those who practiced safe sex (n = 56, M= 20.82, SD = 6.16) and to those who did not practice safe sex (n = 144, M = 18.99, SD = 6.85). The difference was not significant [t (198) = 1.748, p = .082].

AIM 6

An independent t-test was used to determine the difference in perceived benefits of practicing safe sex between HIV positive MSM who practiced safe sex (n = 58) and those who did not practice safe sex (n = 153). Perceived benefits of practicing safe sex was significantly greater between those who practiced safe sex (M = 40.97, SD = 4.61) and those who did not practice safe sex (M = 39.17, SD = 5.38), [t (119) = 2.40, p = .018]. Among the participants, those who practiced safe sex had significantly higher scores for the perception of benefits of practicing safe sex than those who did not practice safe sex reflecting a higher level of HIV prevention altruism.

AIM 7

An independent t-test was used to determine the difference in perceived barriers to practicing safe sex between HIV positive MSM who practiced safe sex (n = 55) and those who did not practice safe sex (n = 147). Perceived barriers to practicing safe sex was significantly less between those who practiced safe sex (M = 52.45, SD = 8.06) and those who did not practice safe sex (M = 42.14, SD = 9.87), [t (118) = 7.60, p < .001]. Among the participants, those who practiced

safe sex scored higher on the assessment for perceived barriers to practicing safe sex reflecting more positive beliefs about condom use.

AIM 8

An independent t-test was used to determine the difference in perceived risk of transmitting HIV infection between HIV positive MSM who practiced safe sex (n = 57) and those who did not practice safe sex (n = 147). Individuals who practiced unsafe sex (M = 29.47, SD = 13.78) believed they had a decreased risk of transmitting HIV than those who practiced safe sex (M = 26.61, SD = 14.62). However, the difference was not significant [t (202) = -1.76, p = .079].

AIM 9

An independent t-test was used to determine the difference peer influence has on safe sex between HIV positive MSM who practiced safe sex (n = 58) and those who did not practice safe sex (n=150). There was no difference in the perceived effect of peer influence between those who practiced safe sex and those who did not practice safe sex, [t (206) = 0.894, p = .373].

AIM 10

An independent t-test was used to determine the difference HCP influence has on safe sex between HIV positive MSM who practiced safe sex (n = 56) and those who did not practice safe sex (n = 141). HCP influence was nearly equal among those who practice safe sex (M = 13.09, SD = 1.76) and those who did not practice safe sex (M = 13.05, SD = 1.57). The difference was not significant [t (195) = 0.154, p = .878].

AIM 11

An independent t-test was used to determine the difference in self-efficacy for negotiating safe sex between HIV positive MSM who practiced safe sex (n = 55) and those who did not practice safe sex (n = 146). Self-efficacy for negotiating safe sex was significantly higher among those who practiced safe sex and those who did not practice safe sex, [t (199) = 2.51, p = .013]. Participants who practiced safe sex scored significantly higher on the measure assessing self-efficacy for negotiating safe sex reflecting a stronger belief in their ability to disclose their positive HIV status and to negotiate condom use compared to those who did not practice safe sex.

Summary

Chapter IV has presented the results of this cross-sectional, correlational study to explore and examine factors associated with sexual behavior among HIV positive MSM. The overall model predicted that participants who perceived less severity of living with HIV—mental health and who had a positive attitude toward condom use were more likely to practice safe sex. When controlling for demographic characteristics, participants with fewer recent sex partners and those who had a positive attitude toward condoms were more likely to practice safe sex. Additionally, the constructs of perceived severity of living with HIV—mental health, perceived benefits of and barriers to safe sex and self-efficacy for negotiating safe sex demonstrated statistically significant differences between those participants who practiced safe sex and those who did not.

CHAPTER V

DISCUSSION AND CONCLUSIONS

This chapter presents a discussion of the results from this cross-sectional, correlational study to explore factors associated with safe sexual behavior among HIV positive MSM. Results will be compared to published findings and a discussion of the limitations, implications, and suggestions for further research will be included.

Constructs from the HBM were examined to explore sexual behavior among HIV positive MSM. The study findings indicated that the majority of the participants (≈ 73%) had participated in unsafe sexual behavior in the month prior to data collection. Although a recent study found that MSM are engaging in less risky sexual behavior (McFarland et al., 2011), results from this study are consistent with previous findings that reported a significant number of HIV positive individuals engaging in high risk sexual practices (Crepaz et al., 2009; Rosser et al., 2009; van Kesteren, Hospers, & Kok, 2007) particularly those most recently diagnosed and those with a current substance use history (Koblin et al., 2006; Mayer et al., 2010). The large percentage of participants engaging in UAI in this study indicates that sexual risk reduction strategies were not implemented by the majority of the participants. Implications of such sexual activity would suggest that HIV infection rates among MSM will continue to increase.

The results of the regression analysis demonstrated that perceived benefits of and barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer influence, and self-efficacy for negotiating safe sex explained 24% of the variance in sexual behaviors among the HIV positive MSM participants. Two predictor variables, severity of living with HIV—mental health and barriers to safe sex behavior, significantly contributed to the model. Among the participants, the more positive mental outlook and the more positive perception of condom use, the more frequently safe sex practices were performed.

When controlling for demographic characteristics (age, number of recent partners, number of years diagnosed as HIV positive, and current use of HAART), only the number of recent partners was statistically significant and accounted for 29% of the variance in sexual behavior among the participants. The more sexual partners an individual had, the more sexual risk they took. Barriers to safe sexual behavior also significantly contributed to the model and accounted for an additional 12% of the variance in sexual behavior. The more positive perception of using condoms, the less sexual risk the participants took.

Independent t tests were used to examine the differences in the HBM constructs among those who practiced safe sex and those who did not practice safe sex. Results demonstrated that differences in severity of living with HIV—mental health, benefits of and barriers to safe sex, and self-efficacy for negotiating safe sex were statistically significant between the two groups. No studies have been identified that actually examined differences between HIV positive MSM who practice safe sex and those who do not practice safe sex.

The purpose of the study was to examine the relationship between knowledge of transmission of HIV, perceived susceptibility of becoming re-infected with a different strain of HIV, perceived severity of living with HIV, perceived benefits of and barriers to safe sex behavior, perceived risk of transmitting HIV infection, peer and health care provider (HCP) influence, self-efficacy for negotiating safe sex, and the use of safe sex behaviors among HIV positive MSM. The following is a comparison of the results and published literature.

Knowledge of Transmission of HIV

There was no significant relationship between knowledge of transmission of HIV and sexual behavior among the participants of this study. These findings differ from previous research where greater knowledge of transmission of HIV was associated with decreased sexual risk (Bowen, Williams, Daniel, & Clayton, 2008). In fact, Mimiaga, Reisner, Cranston et al. (2009) utilized the same HIV knowledge questionnaire (HIV-K-Q-18) among predominantly Black (n = 84) MSM participants and found that as participant knowledge of transmission increased, sexual risk decreased.

Although the results of this study demonstrated no statistically significant relationship between knowledge of transmission of HIV and sexual behavior, even when testing for differences between those who practiced safe sex and those who did not, adequate knowledge of HIV transmission is essential for reducing the risk of re-infection, preventing co-infection with other sexually transmitted diseases, and protecting the uninfected. Higher levels of knowledge

of HIV/AIDS transmissibility has been shown to be a necessary condition of prevention behaviors (Wagenaar, Sullivan, & Stephenson, 2012) but may be insufficient as a single factor when planning interventions to reduce sexual risk.

Perceived Susceptibility of Becoming Re-infected with a Different Strain of HIV

In this study, perceived susceptibility of becoming re-infected with a different strain of HIV was not associated with sexual behavior or perceived differently between participants who practiced safe sex and those who did not practice safe sex. This finding is supported by prior studies that indicate there may be general assumptions that HIV infected individuals can not be re-infected and such a belief may contribute to increased unsafe sexual behaviors, particularly among MSM (Blackard, Cohen, & Mayer, 2002). The estimated annual incidence of HIV re-infection is approximately 4% (Kalichmen, Eaton et al, 2010) which is relatively low when one considers that there are more than one million estimated cases of HIV in the U.S. (CDC, 2012). Because of the low incidence of re-infection, perception of susceptibility may also be low. This would suggest that greater effort may be needed to educate HIV positive individuals about the potential for re-infection with a different strain.

Perceived Severity of Living with HIV

In this study, perceived severity of living with HIV was examined from three different aspects: mental health perception of severity, physical health perception of severity, and perceived severity of living with HIV associated with HAART use. In addition to other variables, the results of the regression analysis

demonstrated that perception of severity of living with HIV—mental health was negatively associated with sexual behavior. Participants who perceived more psychological distress or limitations in social or role activities were less likely to practice safe sex. There were also differences in mental health perception of severity between those who practiced safe sex and those who did not. These findings were supported in the literature which has demonstrated that higher rates of mental health issues and post-traumatic stress disorder are present among HIV positive individuals (Safren, Blashill, & O'Cleirigh, 2011; Whetten et al., 2008) and are associated with numerous physical and mental health effects which may be higher among HIV positive MSM (Pantalone, Schneider, Valentine, & Simoni, 2012; Ramachandran, Yonas, Silvestre, & Burke, 2010; Stephenson, Rentsch, Salazar, & Sullivan, 2011; Stephenson, Khosropour, & Sullivan, 2010). These higher rates of mental health issues are associated with unsafe sexual practices (Safren, Reisner, Herrick, Mimiaga, & Stall, 2010) suggesting that interventions among HIV positive individuals with mental health issues may be beneficial in changing sexual behavior.

The lack of association between the physical aspects of perceived severity of living with HIV and perceived severity of living with HIV as associated with HAART use obtained in this study was neither expected nor unexpected. Empirical evidence from multiple studies has been contradictory. Several recent studies have reported that optimistic beliefs about HIV treatments were associated with increased sexual risk among MSM (Bakeman et al., 2007; Brennan et al, 2009; Brennan et al., 2010; Huebner et al., 2004) while others

have demonstrated a lack of association (Cox et al., 2004; Remien et at., 2005; Vanable et al., 2003). Some variability in study results may arise because of the disparateness of the study populations and may have impacted the current study as well. Heterogeneity of subjects should be examined in any future studies examining perceived severity of living with HIV.

Perceived Benefits of Safe Sex Behavior

In the current study, there was a significant difference between perceived benefits of safe sexual behavior among participants who practiced safe sex and those who did not practice safe sex; however, regression analysis found no significant association between perceived benefits and sexual behavior. The measure used in the current study examined participant responses to items which evaluated moral and altruistic reasons for practicing safe sex. Evidence in the literature has demonstrated that motivation to engage in safe sex behavior was associated with reported responsibility to protect sexual partners from HIV infection (Nimmons & Folkman, 1999; O'Dell et al., 2008; Wolitski et al., 2003). The inconsistency between findings in this study and the literature may be explained by the method of data collection. Both the Nimmons and Folkman (1999) study and the Wolitski et al. (2003) study were based on findings obtained using qualitative research. No reporting of participant sexual practices was provided in either study. The O'Dell et al. (2008) study, quantitative in method, found that those who had a higher perception of benefit, as measured by altruistic items, were less likely to report participating in anal intercourse. This

suggests that sexual behavior may be related to personal norms or altruistic concern for others.

Perceived Barriers to Safe Sex Behavior

Perceived barriers in the current study were predominantly measured by examining participant perception of condom use. Results from regression analysis found a statistically significant association between perceived barriers and sexual behavior. In addition, significant differences in perceived barriers to safe sex behavior were found between those who practiced safe sex and those who did not. These findings are consistent with the literature. Although only one study was identified that examined condom use as a barrier among MSM specifically, results of the study demonstrated that decreased sensation was an issue and a reported reason for not using condoms (Serovich et al., 2009). This finding supports the need for the development of protective barriers that do not decrease sensation; however, the finding is limited by the measure used. Since the measure of the construct was specific to condom use, other studies may be needed that evaluate other perceived barrier constructs identified in the literature such as fear of sexual rejection, fear for physical safety, and fear of potential rejection (Rothenberg & Paskey, 1995; Serovich et al., 2009)

One should also note that antiretroviral therapy has proven effective in reducing viral load to an undetectable level. There is some evidence that individuals who do not perceive HIV as a threat due to an increase in effective pharmaceutical therapies may not use condoms consistently (Halkitis et al. 2003; Kalichman, Cherry et al. 2010; Ostrow et al., 2002; Remien et al., 2005)

Risk of transmitting HIV Infection

The findings from this study differ from previous research indicating that HAART beliefs regarding transmission risk were associated with sexual behavior. There is empirical evidence of increased practice of unsafe sexual behavior resulting from beliefs of decreased transmission risk by individuals with a low viral or semen HIV load or when taking HAART (Joseph, Flores, Parsons, & Purcell, 2010; Kalichman et al., 2006; Sidat et al., 2006). However, findings from the current study found no association between perceived risk of transmitting HIV infection and sexual behavior. Additionally, when examining perceived risk of transmitting HIV infection among participants who practiced safe sex and those who did not, there was no statistically significant difference between the two groups.

As HIV infected MSM live longer, the prevalence of HIV infection among that population is increasing. Recent data indicates that unsafe sexual behavior is increasing and has lead to outbreaks of sexually transmitted infections which can foster HIV transmission (Vellozzi et al., 2009).

The ability of HAART to suppress HIV replication and reduce viral load (Granich, Gilks, Dye, DeCock, & Williams, 2009; HIV Causal Collaboration, 2010) has prompted the Swiss Federal AIDS Commission to issue a report indicating that “an HIV-infected individual without additional STD and on an anti-retroviral therapy (ART) with completely suppressed viremia…is sexually non-infectious” (Vernazza, Hirschel, Bernasconi, & Flepp, 2008, para. 1). This finding has been substantiated by a National Institute of Health study of 1,763 couples which

found a 96% reduction in HIV transmission rates when taking antiretroviral therapies (CDC, 2011a). This recommendation may have influenced sexual behavior among the current study participants resulting in lack of statistical significance.

Peer Influence

The results of the regression analysis found no statistically significant association between peer influence and sexual behavior among the study participants. Additionally, there were no significant differences in peer influence between those participants who practiced safe sex and those who did not. These findings differ from other studies that found group norms to be associated with sexual behavior (Mimiaga et al., 2008). In fact, Frye et al. (2010) found that communities with a significant MSM presence had a statistically significant positive influence on safe sexual behaviors; however, measurement of influence was based in part on number of households headed by same sex partners. This difference in measurement of peer influence many account for the difference in the findings.

HCP Influence

HCP influence was not associated with sexual behavior in this study; nor were there differences in HCP influence between those who practiced safe sex and those who did not practice safe sex. Although HCP satisfaction among HIV positive individuals has been well studied, no studies were identified that examined HCP influence on sexual behaviors. While a number of studies have demonstrated associations between HCP satisfaction and medication adherence

among HIV positive individuals (Heckman, Catz, Heckman, Miller, & Kalichman, 2004; Roberts, 2002), and other studies have identified the ability of HCPs to identify individuals who are sexually at risk for other STDs (Mimiaga, Reisner, Bland et al., 2009), evidence of HCP influence on sexual behavior is lacking in the literature. Failure of the current study to find an association between HCP influence and sexual behavior, in light of previous evidence of a HCP provider having a positive influence on medication adherence and the ability to identify sexual risk for other STDs, suggests a need for further study.

Self-efficacy for Negotiating Safe Sex

The results of regression analysis found no statistically significant association between self-efficacy for negotiating safe sex and sexual behavior. The study did find that there were differences in self-efficacy for negotiating safe sex between those who practiced safe sex and those who did not practice safe sex. Previous research has reported significant positive associations between self-efficacy and safe sexual behavior (Casey, Timmermann, Allen, Krahn, & Turkiewicz, 2009; Miner, Peterson, Welles, Jacoby, & Rosser, 2009; Schultz et al., 2011).

Control over sexual situations that carry risk of infection requires self-efficacy in communicating frankly about sexual behaviors. Although the regression analysis was not significant, there were differences between those who practiced safe sex and those who did not practice safe sex among participants in this study.

Number of Recent Partners

Earlier research indicated that the number of recent sex partners was significantly associated with sexual behavior and HIV incidence (Ostrow, DiFranceisco, Chmiel, Wagstaff, & Wesch, 1995; Rosenberg, Sullivan, DiNenno, Salazar, & Sanchez, 2011; Samuel et al., 1993; Vittinghoff et al., 1999). In the current study, the number of recent partners accounted for 29% of the variance in sexual behavior among the study participants. In a study of 4,295 MSM, Koblin et al. (2006) found that 32% of the HIV infection incidence occurred among participants who had four or more recent sex partners.

A study of 770 MSM found that 76% of the participants reported having had anal intercourse in the three months prior to data collection—36% UAI—and more than 70% of the participants reported having had four or more sexual partners (Horvath, Rosser, & Remafedi, 2008). Thiede et al. (2009) examined determinants of recent HIV infection among HIV positive and HIV negative MSM and found that over 70% (n = 38) of the recently diagnosed HIV positive MSM and 55% (n = 110) of the HIV negative MSM reported five or more sexual partners in the six months prior to the study.

Findings from the current study are supported by evidential literature which has identified an association between unsafe sexual practices and number of recent sexual partners among MSM. The implications of such findings are that infection rates among the MSM population will increase and effective responses will be needed that will provide the necessary level of resources committed to HIV/AIDS treatment and care programs.

Limitations

As with most research, there are factors associated with the sample and design of the study that may limit the interpretation of the results. In addition to the cross-sectional nature of this study which does not permit determination of causal associations, three predominant limitations were identified. First, participants were recruited via convenience sampling. Second, reliability of the scale used to assess sexual behavior was less than previously reported; and third, self-report questionnaires were used.

Convenience Sampling

A non-randomized sample was recruited from two agencies located in Georgia. Although the purpose of this study was not to draw conclusions about the cause and effect relationships, use of a single geographic location can produce a loss in external validity of the study and affect generalizability of the results to individuals living in other areas of the country.

Another limitation associated with the use of a convenience sample is the issue of race/ethnicity. The most recent HIV/AIDS Surveillance Report of the 2010 data indicates that among MSM, 45% of new diagnosis of HIV positive status occurred among Blacks/African Americans, 29% among Whites/Caucasians, and 21.5% among Hispanics/Latinos (CDC, 2012). Participants from this study were predominantly Black/African American (85.6%) which precludes generalizability to the national population of HIV positive MSM. This disproportionate number of a single race/ethnicity may have affected this research examining known correlates of sexual behavior.

Network sampling also affected the recruitment process. Although participants were recruited from two specific agencies that provide prevention and care services to HIV positive MSM, some participants indicated they had heard about the study from friends or from seeing the recruitment flyer posted in locations throughout the city. This ‘snowballing’ effect may have been beneficial in meeting the sample size requirements but may also have affected the demographic characteristics of the sample thereby reducing the ability to generalize the study findings.

A final limitation associated with use of a convenience sample centers on the issues of years since diagnosis and current and prior history of substance use. Among the participants of this study, 4.7% (n = 10) had been diagnosed as HIV positive for less than one year and 10% (n = 22) reported injection drug use in the month prior to data collection. As previously indicated, high risk sexual practices have been documented among those newly diagnosed and those with a current substance use history. Although these two limitations were not associated with the purpose or aims of this study, previous research has demonstrated these factors to be associated with sexual risk and use of a convenience sample diminished the ability of this study to examine such an association.

Scale Reliability

The HIV Risk-Taking Behavior Scale was used to examine sexual practices among the participants. The reliability of the entire scale in previous studies has been consistently reported as greater than .70 (Darke et al., 1991;

Petry, 2001), but in this study, the reliability was established as .63 for the overall scale. Although items only related to sexual risk taking in context of number of partners and condom use were used, analysis showed that the subscale was not reliable (r = .47). No studies were identified that reported reliability of the sexual risk subscale. This lack of reliability may have altered the results of the study.

Self-Reporting Questionnaires

Because a self-report measure was used and participants were asked to report on previous behavior, participant responses may not have accurately reflected their sexual practices. This seems unlikely since the majority of the participants (≈ 73%) indicated they had participated in risky sexual behavior in the previous month. In addition, because of the sensitivity of the social data obtained, participants may not have been comfortable documenting their unsafe sexual behavior in a group setting. Although steps were taken to mitigate difficulty with confidentiality, such as arranging seating to maximize space between participants, it was noted that several participants knew each other and had personal conversations outside the data collection area. Again, it seems unlikely this had an effect on participant responses since a majority of the participants reported having unsafe sex in the previous month.

Limitations of the Health Belief Model

Limitations of the HBM model center on four identified issues. First, investigations using the HBM as the theoretical framework have integrated only selected constructs from the model. Therefore, the efficacy of the model as a whole has not been tested (Family Health International, 2004). Although a

review of the literature reveals studies that purport to use structural equation modeling to test the HBM, (Becker et al., 1977; Becker et al., 1979; Winfield & Whaley, 2002), each investigation incorporated at least one additional construct not inherent to the HBM; these additions may have altered the findings for the test of the whole model. Second, other factors, such as the environment or economics, influence health behaviors and are not accounted for in the theory (Family Health International, 2004). One could propose that the demographic, sociopsychological, and structural modifying variables in the model could be developed to reflect environment or economic influences. Third, the variables of social norms and peer influence are not integrated into the model (Family Health International, 2004); but, one could also suggest that the modifying variables (cues to action, sociopsychological variables) would be inclusive of social norms and peer influence. The final limitation identified in the model is a lack of adequate operational definitions of the constructs (Davidhizar, 1983). Burns and Grove (2005) define operational definitions as a “description of how variables or concepts will be measured or manipulated in a study” (p. 744); yet Davidhizar (1983) states “no two studies of the model’s variables have used identical questions for determining the presence of absence of a belief” (p.470). One could then argue against Davidhizar’s limitation by stating that the operational definition of a construct is independent of the theory and specific to the intent of the study.

The ability to argue against these identified limitations to the HBM influenced the decision for use as the theoretical framework for this study. The

fact that the constructs did not provide statistically significant data for all of the constructs may reflect a limitation of the HBM to explain HIV/AIDS preventive behavior. More specifically, the current findings suggest that sexual behavior may be determined by select variables from the HBM, but there are other factors influencing consistent safe sexual practices.

Implications

The findings from this study have important implications for the development of physical and behavioral interventions for the prevention of HIV transmission to non-infected individuals, for the prevention of possible re-infection with a different strain of the virus, and for the prevention of other sexually transmitted diseases. Because some HIV positive MSM are not using condoms, interventions are needed that will increase adoption of safe sexual practices among this population.

Previous research suggesting that condoms are uncomfortable and decrease sexual pleasure was supported by this study indicating a need for different barrier devices that would not detract from sexual pleasure. One might suggest an adaptation of the female condom could be useful as a barrier method, but previous and current research reported similar issues with the female condom of diminished pleasure or problems with slipping, breakage, or leakage (Gibson, McFarland, Wohlfeiler, Scheer, & Katz, 1999; Kelvin, Smith, Mantell, & Stein, 2009; Renzi et al., 2003). Efforts should therefore be directed at development of other physical barriers that would provide protection against HIV transmission while allowing or maintaining maximum sensation.

In addition to barriers to safe sexual behavior, perceived severity of living with HIV—mental health, perceived benefits to using safe sex practices as measured with altruistic items, and self-efficacy for negotiating safe sex were also found to be statistically significant when examining differences between those who practiced safe sex and those who did not. Each of these variables intimates a psychosocial aspect associated with sexual behavior indicating behavioral interventions might be effective in reducing risky sexual behavior. These results could be used to develop studies that identify specific psychosocial predictors of sexual behavior.

Suggestions for Future Research

Although the statistical analysis used in this study demonstrated significant relationships within the model, each model was only able to explain a small amount of the variance in sexual practices, particularly when controlling for the number of recent sexual partners. This suggests that additional or stronger predictor variables are associated with sexual behavior. Future research should be conducted to explore additional predictors and interactions to determine if more clinically significant relationships can be found.

When examining differences among those who practiced safe sex and those who did not, severity of living with HIV—mental health, benefits of safe sex practices measured in the context of altruism, barriers related to condom use, and self-efficacy for negotiating safe sex were statistically significant. These results are consistent with other research findings; but efforts should be directed at generalizability of these variables to the MSM population as a whole. If the

variables remain significant in a representative population, interventions should be developed with these factors in mind.

Barriers, as measured in the context of condom use, were statistically significant in each of the analyses performed in this study. Although previous research has found that social, cultural, emotional, and physical factors affect perception of condom use as a barrier to practicing safe sex, qualitative research studies should be conducted to determine the perception among HIV positive MSM, specifically with regard to consistent condom use.

Anecdotal Information and Future Research

Although this study was conducted using quantitative means, impromptu conversations occurred with some of the study participants that generated other ideas for future qualitative research. For example, one participant described the social isolation he felt being HIV positive and recounted his past partner experience where he believed he had finally found a long-term mate. The relationship ended and the partner left after “cleaning out my bank account”. This particular participant was subsidizing his income by participating in research studies.

Although prior qualitative studies have been conducted examining this issue, it appears the current economic dishevel in the U. S. may be affecting HIV/AIDS prevention and care services. A report from the National Alliance of State & Territorial AIDS Directors (2011) stated that nearly 11 million dollars had been cut from the 2011 HIV/AIDS, STD and/or viral hepatitis state budgets. Reduced fiscal support for HIV/AIDS prevention and care services may impact

sexual transmission of the disease, particularly if funding is not available to provide free condoms or reduced cost antiretroviral therapies.

Another participant stated he had been HIV positive since the early 1980's and indicated there were distinct differences between sexual risk factors among younger HIV positive MSM and those who had been living with the disease for a number of years. He stated "the young ones don't have a clue what being HIV positive means or what their responsibilities are". Research comparing those individuals who have been infected for a longer period of time to those more recently infected may add light to differences in sexual predictors among the MSM population. Stigma and discrimination associated with a positive HIV status is well documented in the literature and if perceptions of these variables are reduced among the newly diagnosed individuals, different strategies to educate about preventive measures may be necessary.

A final suggestion for future research is also based on a conversation with one study participant. The rapid growth of Internet use has lead to an explosion of social networking sites that provide a forum for individuals to communicate with one another. One study participant stated that he was on a website which had "over 100,000 men trying to hook up" at a local Georgia park known to be frequented by MSM during nighttime hours. Studies indicate the Internet is sometimes used to arrange sexual meetings and given the rapid increase in Internet use as a social meeting forum, a broader evaluation of the benefits and potential risks of social networking among HIV positive MSM may be warranted. Data from the 2010 HIV/AIDS Surveillance Report indicates that Georgia has the

fifth highest number of diagnoses of HIV in the U. S. (CDC, 2012). If there truly are more than 100,000 individuals seeking sexual partners at a single park in Georgia, efforts should be directed at examining sexual practices among those individuals so that interventions can be made to reduce transmission and re-infection rates.

Conclusion

The number of new HIV infections identified each year among MSM demonstrates a lack of regular practice of HIV/AIDS preventive behavior. The findings of this study support the need for continued research to identify sexual behaviors among members of this population in order to decrease their risk of transmitting the virus to others and to protect themselves from re-infection with a different strain of the virus or infection with other sexually transmitted diseases. This study adds to the body of knowledge related to HIV/AIDS transmission among MSM. Because there is neither a cure for HIV/AIDS, nor a vaccine to prevent infection, safe sex practices provide the only protection against sexual transmission. In order to maximize the impact of prevention efforts, identification of statistically significant contributors to the explanation and prediction of unsafe sexual practices among this population is warranted.

REFERENCES

Agronick, G., O'Donnell, L., Stueve, A., Doval, A. S., Duran, R., & Vargo, S. (2004). Sexual behaviors and risks among bisexually- and gay-identified young Latino men. *AIDS and Behavior*, 8, 185-197. doi:10.1023/B:A IBE. 0000030249.11679.d0

Arshad, S., Rothberg, M., Rastegar, D. A., Spooner, L. M., & Skiest, D. (2009). Survey of physician knowledge regarding antiretroviral medications in hospitalized HIV-infected patients. *Journal of the International AIDS Society*, 12, 1-10. doi: 10.1186/1758-2652-12-1. Retrieved from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2649037/pdf/1758-2652-12-1.pdf

Aspinwall, L., Kemeny, M., Taylor, S., Schneider, S., & Dudley, J. (1990). Psychosocial predictors of gay men's AIDS risk reduction behavior. *Health Psychology*, 10, 432-444. doi: 10.1037/0278-6133.10.6.432

Attia, S., Egger, M., Muller, M., Zwahlen, M., & Low, N. (2009). Sexual transmission of HIV according to viral load and antiretroviral therapy: Systematic review and meta-analysis. *AIDS*, 23, 1397-1404. doi: 10.1097/QAD.0b013e32832b7dca

AVERT. (2011). *HIV types, groups, and subtypes*. Retrieved from http://www.avert.org/hiv-types.htm

Bairan, A., Taylor, G., Blake, B., Akers, T., Sowell, R., & Mendiola, R. (2007). A model of HIV disclosure: Disclosure and types of social relationships. *Journal of the American Academy of Nurse Practitioners*, 19, 242-250. doi: 10.1111/j.1745-7599.2007.00221.x

Bakeman, R., Peterson, J., & The Com[105] Intervention Trial for Youth Study Team. (2007). Do beliefs about HIV treatment affect peer norms and risky sexual behaviour among African-American men who have sex with men? *International Journal of STD & AIDS*, 18, 105-108. doi: 10.1258/095646207779949637

Bakken, S., Holzemer, W., Brown, M., Powell-Cope, G., Turner, J., Inouye, J., … Corless, I. (2000). Relationships between perception of engagement with health care provider and demographic characteristics, health status, and adherence to therapeutic regimen in persons with HIV. *AIDS Patient Care and STD's*, 14, 189-197. doi:10.1089/108729100317795

Baldwin, J. D., & Baldwin, J. I. (1988). Factors affecting AIDS-related sexual risk taking behavior among college students. *Journal of Sexual Research*, 25, 181-196. doi:10.1080/00224498809551454

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review*, 84, 191-215. doi: 10.1037/0033-295X.84.2.191

Bauermeister, J. A., Carballo-Dieguez, A., Ventuneac, A., & Dolezal, C. (2009). Assessing motivations to engage in intentional condomless anal intercourse in HIV-risk contexts ("bareback sex") among men who have sex with men. *AIDS Education and Prevention*, 21, 156-168. doi: 10.1521/aeap.2009.21.2.156

Bazargan, M., Kelly, E., Stein, J., Husaini, B., & Bazargan, S. (2000). Correlates of HIV risk-taking behaviors among African-American college students: The effect of HIV knowledge, motivation, and behavioral skills. *Journal of the National Medical Association*, 92, 391-404.

Becker, M. H., Drachman, R., & Kirscht, J. (1974). A new approach to explaining sick-role behavior in low-income populations. *American Journal of Public Health*, 64, 205-216.

Becker, M. H., & Maiman, L. A. (1975). Sociobehavioral determinants of compliance with health and medical care recommendations. *Medical Care*, 13, 10-24.

Becker, M. H., Maiman, L. A., Kirscht, J. P., Haefner, D. P., & Drachman, R. H. (1977). The health belief model and prediction of dietary compliance: A field experiment. *Journal of Health and Social Behavior*, 18, 348-366. Retrieved from http://www.jstor.org/stable/2955344

Becker, M. H., Radius, S. M., Rosenstock, I. M., Drachman, R. H. Schuberth, K. C., & Teets, K. C. (1979). Compliance with a medical regimen for asthma: A test of the health belief model. *Public Health Reports*, 93, 268-277.

Berg, R. C. (2008). Barebacking among MSM Internet users. *AIDS Behavior*, 12, 822-833. doi: 10.1007/s10461-007-9281-0

Betron, M., & Gonzalez-Figueroa, E. (2009). Gender identity and violence in MSM and transgenders: A literature review and a call for screening. Washington, DC: Futures Group International, USAID Health Policy Initiative, Task Order I. Retrieved from http://pdf.usaid.gov/pdf_ docs/PNADU585.pdf

Bimbi, D. S., & Parsons, J. T. (2005). Barebacking among Internet based male sex workers. *Journal of Gay and Lesbian Psychotherapy*, 9, 85-105. doi: 10.1300/J236v09n03_06

Blackard, J. T., Cohen, D. E., & Mayer, K. H. (2002). Human immunodeficiency virus superinfection and recombination: Current state of knowledge and potential clinical consequences. *Clinical Infectious Diseases*, 34, 1108-1114. doi: 10.1086/339547

Blackard, J. T., & Mayer, K. H. (2004). HIV superinfection in the era of increased sexual risk-taking. *Sexually Transmitted Diseases*, 31, 201-204. doi: 10.1097/01.OLQ.0000118082.45312.1F

Blake, B., Taylor, G., Reid, P., & Kosowski, M. (2008). Experiences of women in obtaining human immunodeficiency virus testing and health care services. *Journal of the American Academy of Nurse Practitioners*, 20, 40-46. doi: 10.1111/j.1745-7599.2007.00283.x

Bonnell, C., & Imrie, J. (2001). Behavioural interventions to prevent HIV infection: Rapid evolution, increasing rigour, moderate success. *British Medical Bulletin*, 58, 155-170. doi: 10.1093/bmb/58.1.155

Bowen, A. M., Williams, M. L., Daniel, C. M., & Clayton, S. (2008). Internet based HIV prevention research targeting rural MSM: Feasibility, acceptability and preliminary efficacy. *Journal of Behavioral Medicine*, 31, 463-477. doi: 10.1007/s10865-008-9171-6

Brennan, D. J., Welles, S. L., Miner, M. H., Ross, M. W., Mayer, K. H., Rosser, B. R. S., & the Positive Connections Team. (2009). Development of a treatment optimism scale for HIV positive gay and bisexual men. *AIDS Care*, 21, 1090-1097. doi: 10.1080/09540120802705859

Brennan, D. J., Welles, S. L., Miner, M. H., Ross, M. W., & Rosser, B. R. S. (2010). HIV treatment optimism and unsafe anal intercourse among HIV-positive men who have sex with men: Findings from the positive connections study. *AIDS Education and Prevention*, 22, 126-137. doi: 10.1521/aeap.2010.22.2.126

Burgoyne, R. W., & Tan, D. H. S. (2008). Prolongation and quality of life for HIV-infected adults treated with highly active antiretroviral therapy (HAART): A balancing act. *Journal of Antimicrobial Chemotherapy*, 61, 469-473. doi: 10.1093/jac/dkm499

Burns, N., & Grove, S. K. (2005). *The practice of nursing research: Conduct, critique, and utilization* (5th ed.). St. Louis: Elsevier Saunders.

Campbell, M. S., Gottlieb, G. S., Hawes, S. E., Nickle, D. C., Wong, K. G., Deng, W.,…Mullins, J. I. (2009). HIV-1 superinfection in the antiretroviral therapy era: Are seroconcordant sexual partners at risk? *PLoS ONE*, 4, e5690. doi: 10.1371/journal.pone.0005690

Carballo-Diequez, A., & Dolezal, C. (1996). HIV risk behaviors and obstacles to condom use among Puerto Rican men in New York City who have sex with men. *American Journal of Public Health*, 86, 1619-1622. doi:10.2105/AJPH.86.11.1619

Carballo-Dieguez, A., Miner, M., Dolezal, C., Rosser, B. R. S., & Jacoby, S. (2006). Sexual negotiation, HIV-status disclosure, and sexual risk behavior among Latino men who use the internet to seek sex with other men. *Archives of Sexual Behavior*, 35, 473-481. doi: 10.1007/s10508-006-9078-7

Carey, M., Morrison-Beedy, D., & Johnson, B. (1997). The HIV-knowledge questionnaire: Development and evaluation of a reliable, valid, and practical self-administered questionnaire. *AIDS and Behavior*, 1, 61-74. doi: 10.1023/A:1026218005943

Carey, M., & Schroder, K. E. E. (2002). Development and psychometric evaluation of the brief HIV knowledge Questionnaire. *AIDS Education and Prevention*, 14, 172-183. doi: 10.1521/aeap.14.2.172.23902

Carlos, J., Bingham, T. A., Stueve, A., Lauby, J., Ayala, G., Millett, G. A., & Wheeler, D. (2010). The role of peer support on condom use among Black and Latino MSM in three urban areas. *AIDS Education and Prevention*, 22, 430-444. doi:10.1521/aeap.2010.22.5.430

Carrieri, P., Spire, B., Duran, S., Katiama, C., Peyramond, F., Francois, C.,…APROCO Study Group. (2003). Health-related quality of life after 1 year of highly active antiretroviral therapy. *Journal of Acquired Immune Deficiency Syndromes*, 32, 38-47. doi:10.1097/00126334-200301010-00006

Casey, M. K., Timmermann, L., Allen, M., Krahn, S. & Turkiewicz, K. L. (2009). Response and self efficacy of condom use: A meta-analysis of this important element of AIDS education and prevention. *Southern Communication Journal*, 74, 57-78. doi: 10.1080/10417940802335953

Center for Community Health, Semel Institute—Neuropsychiatric Institute of the University of California, Los Angeles. (n.d.). *Healthcare utilization, providers, and general health assessment: Including STD and pregnancy assessment*. Retrieved from http://chipts.ucla.edu/wp-content/uploads/downloads/2012/02/Healthcare-Utilization-Providers-STD-Preg.pdf

Centers for Disease Control and Prevention. (2004). High-risk sexual behavior by HIV-positive men who have sex with men—16 sites, United States, 2000-2002. *Morbidity Mortality Weekly Report*, 53, 891-894.

Centers for Disease Control and Prevention. (2007). *CDC HIV prevention strategic prevention plan: Extended through 2010*. Retrieved from http://www.cdc.gov/hiv/resources/reports/psp/pdf/psp.pdf /reports/2008report/pdf/2008SurveillanceReport.pdf

Centers for Disease Control and Prevention. (2009a). *Effect of antiretroviral therapy on risk of sexual transmission of HIV infection and superinfection*. Retrieved from http://www.cdc.gov/hiv/topics/treatment/resources/ factsheets/art.htm

Centers for Disease Control and Prevention. (2009b). *Syphilis*. Retrieved from http://www.cdc.gov/std/stats08/syphilis.htm

Centers for Disease Control and Prevention. (2010a). *Basic information about HIV and AIDS*. Retrieved from http://www.cdc.gov/hiv/topics/basic/index. htm

Centers for Disease Control and Prevention. (2010b). *HIV/AIDS surveillance report, 2008*. Retrieved from http://www.cdc.gov/hiv/surveillance/resources /reports/2008report/pdf/2008SurveillanceReport.pdf

Centers for Disease Control and Prevention. (2010c). *HIV among gay, bisexual and other men who have sex with men (MSM)*. Retrieved from http://www.cdc.gov/hiv/topics/msm/pdf/msm.pdf

Centers for Disease Control and Prevention. (2010d). *HIV in the United States*. Retrieved from http://www.cdc.gov/hiv/resources/factsheets/PDF/us.pdf

Centers for Disease Control and Prevention. (2010e). *HIV transmission*. Retrieved from http://www.cdc.gov/hiv/resources/qa/transmission.htm

Centers for Disease Control and Prevention. (2011a). *E-Hap direct*. Retrieved from http://www.cdc.gov/hiv/ehap/resources/direct/05132011/discordant.htm

Centers for Disease Control and Prevention (2011b). *HIV/AIDS surveillance report, 2009*. Retrieved from http://www.cdc.gov/hiv/surveillance/resources/reports/2009report/pdf/2009SurveillanceReport.pdf

Centers for Disease Control and Prevention (2012). *HIV/AIDS surveillance report, 2010*. Retrieved from http://www.cdc.gov/hiv/surveillance/resources/reports/2010report/pdf/2010_HIV_Surveillance_Report_vol_22.pdf

Childs, G., Moneyham, L., & Felton, G. (2008). Correlates of sexual abstinence and sexual activity of low-income African American adolescent females. *Journal of the Association of Nurses in AIDS Care*, 19, 432-442. doi:10.1016/j.jana.2008.04.013

Chou, F., Holzemer, W., Portillo, C., Slaughter, R. (2004). Self-care strategies and sources of information for HIV/AIDS symptom management. *Nursing Research*, 53, 332-339. doi: 10.1097/00006199-200409000-00008

Clerc, O., Colombo, S., Yerly, S., Telenti, A., & Cavassini, M. (2010). HIV-elite controllers: Beware of super-infections. *Journal of Clinical Virology*, 47, 376-378.

Cohen, M. S., & Gay, C. L. (2010). Treatment to prevent transmission of HIV-1. *Clinical Infectious Diseases*, 50, S85-S95. doi: 10.1086/651478

Coleman, E., Horvath, K. J., Miner, M., Ross, M. W., Oakes, M., Rosser, B. R. S., & Men's INTernet Sex Team. (2010). Compulsive sexual behavior and risk for unsafe sex among internet using men who have sex with men. *Archives of Sexual Behavior*, 39, 1045-1053. doi: 10.1007/s10508-009-9507-5

Colfax, G. N., Guzman, R., Wheeler, S., Mansergh, G., Marks, G., Rader, M., & Buchbinder, S. P. (2004). Beliefs about HIV reinfection (superinfection) and sexual behavior among a diverse sample of HIV-positive men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes*, 36, 990-992. doi: 10.1097/00126334-200408010-00017

Courtenay-Quirk, C., Wolitski, R. J., Hoff, C., Parsons, J. T., & The Seropositive Urban Men's Study Team. (2003). Interests in HIV prevention topics of HIV-seropositive men who have sex with men. *AIDS Education and Prevention*, 15, 401-412. doi: 10.1521/aeap.15.6.401.24040

Cox, J., Beauchemin, J., & Allard, R. (2004). HIV status of sexual partners is more important than antiretroviral treatment related perceptions for risk taking by HIV positive MSM in Montreal, Canada. *Sexually Transmitted Infections*, 80, 518-523. doi:10.1136/sti.2004.011288

Crepez, N., Marks, G., Liau, A., Mullins, M. M., Aupont, L. W., Marshall, K. J.,…Wolitski, R. J. (2009). Prevalence of unprotected anal intercourse among HIV-diagnosed MSM in the United States: a meta-analysis. *AIDS*, 23, 16-17-1629. doi: 10.1097/QAD.0b013e32832effae

Crosby, R., Sanders, S. A., Yarber, W. L, & Graham, C. A. (2003). Condom-use errors and problems: A neglected aspect of studies assessing condom effectiveness. *American Journal of Preventive Medicine*, 24, 367-370.

Crosby, R., Sanders, S. A., Yarber, W. L., Graham, C. A., & Dodge, B. (2002). Condom use errors and problems among college men. *Sexually Transmitted Diseases*, 29, 552-557. doi:10.1016/S0749-3797(03)00015-1

Darke, S., Hall, W., Heather, N., Ward, J., & Wodak, A. (1991). The reliability and validity of a scale to measure HIV risk-taking behaviour among intravenous drug users. *AIDS*, 5, 181-185. doi:10.1097/00002030-199102000-00008

Davidhizar, R. (1983). Critique of the health-belief model. *Journal of Advanced Nursing*, 8, 467-472. doi: 10.1111/j.1365-2648.1983.tb00473.x

Davila, Y. R., & Brackley, M. H. (1999). Mexican and Mexican American women in a battered women's shelter: Barriers to condom negotiation for HIV/AIDS prevention. *Issues in Mental Health Nursing*, 20, 333-355.

Davis, K. R., & Weller, S. C. (1999). The effectiveness of condoms in reducing heterosexual transmission of HIV. *Family Planning Perspectives*, 31, 272-279. doi:10.2307/2991537

DeHart, D. D., & Birkimer, J. (1997). Trying to practice safer sex: development of the sexual risks scale. *The Journal of Sex Research*, 34, 11-25. Retrieved from http://www.jstor.org/stable/3813297

DiClemente, R. J., Wingood, G. M., del Rio, C., & Crosby, R. A. (2002). Prevention interventions for HIV positive individuals. *Sexually Transmitted Infections*, 78, 393-395. doi: 10.1136/sti.78.6.393

Dieffenbach, C. W., & Fauci, A. S. (2009). Universal voluntary testing and treatment for prevention of HIV transmission. *JAMA*, 301, 2380-2382. doi: 10.1001/jama.2009.828

Dieleman, J. P., Jambroes, M., Gyssens, I. C., Sturkenboom, M. C., Stricker, B. H, Mulder, W. M.,…Brinkman, K. (2002). Determinants of recurrent toxicity-driven switches of highly active retroviral therapy. The ATHENA Cohort. *AIDS*, 16, 737-745. doi: 10.1097/00002030-200203290-00009

Dosekun, O., Kober, C., Richardson, D., Parkhouse, A., & Fisher, M. (2010). It's not all swine flu…are we missing opportunities to diagnose primary HIV infection in patients with flu symptoms? *Journal of STD & AIDS*, 21, 145-146. doi: 10.1258/ijsa.2009.009514

Dukers, N. H., Goudsmit, J., de Wit, J. B., Prins, M., Weverling, G. J., & Coutinho, R. A. (2001). Sexual risk behavior relates to the virologic and immunological improvements during highly active antiretroviral therapy in HIV-1 infection. *AIDS,* 15, 369-378. doi:10.1097/00002030-200102160-00010

Family Health International. (2004). *Behavior change—a summary of four major theories*. Retrieved from http://www.fhi.org/nr/rdonlyres/ei26vbslpsidmahhxc332vwo3g233xsqw22er3vofqvrfjvubwyzclvqjcbdgexyzl3msu4mn6xv5j/bccsummaryfourmajortheories.pdf

Fields, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Los Angeles, CA: Sage.

Forsyth, A. D., & Carey, M. P. (1998). Measuring self-efficacy in the context of HIV-risk-reduction: Research challenges and recommendations. *Health Psychology*, 17, 559-568. doi: 10.1037/0278-6133.17.6.559

Frye, V., Koblin, B., Chin, J., Beard, J., Blaney, S., Halkitis, P.,…Galea, S. (2010). Neighborhood-level correlates of consistent condom use among men who have sex with men: A multi-level analysis. *AIDS Behavior*, 4, 974-985. doi: 10.1007/s10461-008-9438-5

Fung, I. C. H., Gambhir, M., van Sighem, A., de Wolf, F., & Garnett, G. P. (2010). Superinfection with a heterologous HIV strain per se does not lead to faster progression. *Mathematical Biosciences*, 224, 1-9. doi:10.1016/j.mbs.2009.11.007

Galvan, F., Davis, M., Banks, D., & Bing, E. (2008). HIV stigma and social support among African Americans. *AIDS Patient Care and STDs*, 22, 423-436. doi: 10.1089/apc.2007.0169

Gayner, B., Esplen, M. J., DeRoche, P., Wong, J., Bishop, S., Kavanagh, L., & Butler, K. (2012). A randomized controlled trial of mindfulness-based stress reduction to manage affective symptoms and improve quality of life in gay men living with HIV. *Journal of Behavioral Medicine*, 35, 272-285. doi: 10.1007/s10865-011-9350-8

George, S., Garth, B., Wohl, A. R., Galvan, F. H., Garland, W., & Myer, H. F. (2009). Sources and types of social support that influence engagement in HIV care among Latinos and African Americans. *Journal of Health Care for the Poor and Underserved*, 20, 1012-1035. doi: 10.1353/hpu.0.0210

Gibson, S., McFarland, W., Wohlfeiler, D., Scheer, K., & Katz, M. H. (1999). Safety and acceptability of the Reality condom for anal sex among men who have sex with men. *AIDS Education and Prevention*, 11, 65-71.

Godin, G., Savard, J., Kok, G., Fortin, C., & Boyer, R. (1996). HIV seropositive gay men: Understanding adoption of safe sexual practices. *AIDS Education and Prevention*, 8, 529-545.

Gottlieb, G. S., Nickle, D. C., Jensen, M. A., Wong, K. G., Grobler, J., Li, F., …Mullins, J. I. (2004). Dual HIV-1 infection associated with rapid disease progression. *The Lancet*, 363, 619-622. doi: 10.1016/S0140-6736(04)15596-7

Gottlieb, G. S., Nickle, D. C., Jensen, M. A., Wong, K. G., Kaslow, R. A., Shepherd, J. C., …Mullins, J. I. (2007). HIV type 1 superinfection with a dual-tropic virus and rapid progression to AIDS: A case report. *Clinical Infectious Diseases*, 45, 501-509. doi: 10.1086/520024

Granich, R. M., Gilks, C. R., Dye, C., DeCock, K. M., & Williams, B. G. (2009). Universal voluntary HIV testing with immediate antiretroviral therapy as a strategy for elimination of HIV transmission. A mathematical model. *The Lancet*, 373, 48-57. doi: 10.1016/S0140-6736(08)61697-9

Greenwood, G. L., Relf, M. V., Huang, B., Pollack, L. M., Canchola, J. A., & Catania, J. A. (2002). Battering victimization among a probability-based sample of men who have sex with men. *American Journal of Public Health*, 9, 1964-1969. doi: 10.2105/AJPH.92.12.1964

Grinspoon, S. K., Grunfeld, C., Kotler, D. P., Currier, J. S., Lundgren, J. D., Dube, M. P.,…Eckel, R. H. (2008). State of the Science Conference: Initiative to decrease cardiovascular risk and increase quality of care for patients living with HIV/AIDS: Executive summary. *Circulation*, 118, 198-210. doi: 10.1161/CIRCULATIONAHA.107.189622

Gunthard, H., F., Huber, M., Kuster, H., Shah, C., Schupbach, J., Trkola, A., & Boni, J. (2009). HIV-1 superinfection in an HIV-2-infected woman with subsequent control of HIV-1 plasma viremia. *Clinical Infectious Diseases*, 48, e117-120. doi: 10.1086/598987

Gupta, R. M., Sahni, A. K., Jena, J., & Nema, S. K. (2005). Genomic diversity of human immunodeficiency viruses. *Medical Journal of Armed Forces India*, 61, 267-270. doi:10.1016/S0377-1237(05)80171-6

Halkitis, P. N., & Parsons, J. T. (2003). Intentional unsafe sex (barebacking) among HIV-positive gay men who seek sexual partners on the internet. *Aids Care*, 15, 367-378. doi: 10.1080/0954012031000105423

Hallett, T. B., Smit, C., Garnett, G. P., & de Wolf, F. (2011). Estimating the risk of HIV transmission from homosexual men receiving treatment to their HIV-uninfected partners. *Sexually Transmitted Infections*, 87, 17-21. doi: 10.1136/sti.2010.042622

Harawa, N. T., Williams, J. K., Ramamurthi, H. C., & Bingham, T. A. (2006). Perceptions towards condom use, sexual activity and HIV disclosure among HIV positive African American men who have sex with men: Implications for heterosexual transmission. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 83, 682-694. doi: 10.1007/s11524-006-9067-0

Hart, T., James, C., Purcell, D., & Farber, E. (2008). Social anxiety and HIV transmission risk among HIV-seropositive male patients. *AIDS Patient Care and STDs*, 22, 879-866. doi: 10.1089/apc.2008.0085

Heath, K. V., Montaner, J. S. G., Bondy, G., Singer, J., O'Shaughnessy, M. V., & Hogg, R. S. (2003). Emerging drug toxicities of highly active antiretroviral therapy for human immunodeficiency virus (HIV) infection. *Current Drug Targets*, 4, 13-22.

Heckman, B. D., Catz, S. L., Heckman, T. G., Miller, J. G., & Kalichman, S. C. (2004). Adherence to antiretroviral therapy in rural persons living with HIV disease in the United States. *AIDS Care*, 16, 219-230. doi: 10.1080/09540120410001641066

Hereck, G. M., Widaman, K. F., & Capitanio, J. P. (2005). When sex equals AIDS: Symbolic stigma and heterosexual adults' inaccurate beliefs about sexual transmission of AIDS. *Social Problems*, 52, 15-37. doi: 10.1525/sp.2005.52.1.15

Hingson, R., Strunin, L., Berlin, B., & Heeren, T. (1990). Beliefs about AIDS, use of alcohol and drugs, and unprotected sex among Massachusetts adolescents. *American Journal of Public Health*, 80, 295-299. doi:10.2105/AJPH.80.3.295

HIV Causal Collaboration, Ray, M., Logan, R., Sterne, J. A., Hernandez-Diaz, S., Robins, J. M.,…Hernan, M. A. (2010). The effect of combined antiretroviral therapy on overall mortality of HIV-infected individuals. *AIDS*, 24, 127-127. doi: 10.1097/QAD.0b013e3283324283

Hollar, D. S., & Snizek, W. E. (1996). The influences of knowledge of HIV/AIDS and self-esteem on the sexual practices of college students. *Social Behavior and Personality*, 21, 75-86. doi: 10.2224/sbp.1996.24.1.75

Holzemer, W. L., Human, S., Arudo, J., Rosa, M. E., Hamilton, M. J., Corless, I.,…Maryland, M. (2009). Exploring HIV stigma and quality of life for persons living with HIV infection. *Journal of the Association of Nurses in AIDS Care*, 20, 161-168. doi: 10.1016/j.jana.2009.02.002

Horvath, K. J., Rosser, B. R. S., & Remafedi, G. (2008). Sexual risk taking among young internet-using men who have sex with men. *American Journal of Public Health*, 98, 1059-1067. doi: 10.22105/AJPH.2007.111070

Huebner, D. M., Rebchook, G. M., & Kegeles, S. M. (2004). A longitudinal study of the association between treatment optimism and sexual risk behavior in young adult gay and bisexual men. *Journal of Acquired Immune Deficiency Syndromes*, 34, 1514-1519. doi: 10.197/01.qau.0000127027.55052.22

Hunt, R. (2010). Virology-chapter seven, part seven: Human immunodeficiency virus and AIDS: Life cycle of HIV. *Microbiology and Immunology Online, University of South Carolina School of Medicine*. Retrieved from http://pathmicro.med.sc.edu/lecture/hiv6.htm

Institute of Medicine. (2011). HIV screening and access to care. Retrieved from http://www.iom.edu/~/media/Files/Report%20Files/2011/HIV-Screening-and-Access-to-Care/HIV%20Screening%202011%20Report%20Brief.pdf

Janz, N., & Becker, M. (1984). The health belief model: A decade later. *Health Education Quarterly*, 11, 1-47. doi: 10.1177/109019818401100101

Joseph, H. A., Flores, S. A., Parsons, J. T., & Purcell, D. W. (2010). Beliefs about transmission risk and vulnerability, treatment adherence, and sexual risk behavior among a sample of HIV-positive men who have sex with men. *AIDS Care*, 22, 29-39. doi: 10.1080/09540120903012627

Jurriaans, S., Kozaczynska, K., Zorgfrager, F., Steingrover, R., Prins, J. M., van der Kuyl, A. C., & Cornelissen, M. (2008). A sudden rise in viral load is infrequently associated with HIV-1 superinfection. *Journal of Acquired Immune Deficiency Syndromes*, 47, 69-73. doi: 10.1097/QAI.0b013e3181582d6f

Kalichman, S. C. (2000). HIV transmission risk behaviors of men and women living with HIV-AIDS: prevalence, predictors, and emerging clinical interventions. *Clinical Psychology: Science and Practice,* 7, 32-47. doi: 10.1093/clipsy.7.1.32

Kalichman, S. C., Benotsch, E., Suarez, T., Catz, S., Miller, J., & Rompa, D. (2000). Health literacy and health-related knowledge among persons living with HIV/AIDS. *American Journal of Preventive Medicine*, 18, 325-331. doi:10.1016/S0749-3797(00)00121-5

Kalichman, S. C., Cherry, C., Amaral, C. M., Swetzes, C., Eaton, L., Macy, R.,…Kalichman, M. O. (2010). Adherence to antiretroviral therapy and HIV transmission risks: implications for test-and-treat approaches to HIV prevention. *AIDS Patient Care and STDs*, 24, 271-277. doi:10.1089/apc.2009.0309

Kalichman, S. C., Eaton, L., Cain, D., Cherry, C., Pope, H., & Kalichman, M. (2006). HIV treatment beliefs and sexual transmission risk behaviors among HIV positive men and women. *Journal of Behavioral Medicine*, 29, 401-410. doi: 10.1007/s10865-006-9066-3

Kalichman, S. C., Eaton, S., Cherry, C., Pope, H., White, D., Amaral, … Kalichman, M. O. (2010). HIV super-infection beliefs and sexual practices of people living with HIV/AIDS. *Sex Health*, 7, 420-424. doi: 10.1071/SH09121

Kalichman, S. C., & Nachimson, D. (1999). Self-efficacy and disclosure of HIV positive serostatus to sex partners. *Health Psychology*, 18, 281-287. doi: 10.1037/0278-6133.18.3.281

Kalichman, S. C., Nachimson, D., Cherry, C., & Williams, E. (1998). AIDS treatment advances and behavioral prevention setbacks: Preliminary assessment of reduced perceived threat of HIV-AIDS. *Health Psychology*, 17, 546-550. doi: 10.1037//0278-6133.17.6.546

Kalichman, S. C., Rompa, D., Cage, M., Austin, J., Luke, W., Barnett, T., …Schinazi, R. R. (2002). Sexual transmission risk perceptions and behavioural correlates of HIV concentrations in semen. *AIDS CARE*, 14, 343-349. doi: 10.1080/09540120220123720

Kalichman, S.C., Rompa, D., DiFonzo, K., Simpson, D., Kyomugisha, F., Austin, J., & Luke, W. (2001). Initial development of scales to assess self-efficacy for disclosing HIV status and negotiating safer sex in HIV-positive persons. *AIDS & Behavior*, 5, 291-296. doi: 10.1023/A:1011300912395

Kalichman, S. C., & Simbayi, L. C. (2003). HIV testing attitudes, AIDS stigma, and voluntary HIV counseling and testing in a black township in Cape Town, South Africa. *Sexually Transmitted Infections*, 79, 442-447. doi:10.1136/sti.79.6.442

Kalish, M. L., Robbins, K. E., Pieniazek, D., Schaefer, A., Nzilambi, N., Quinn, T. C.,…Folks, T. M. (2004). Recombinant viruses and early global HIV-1 epidemic. *Emerging Infectious Diseases*, 10, 1227-1234. doi:10.3201/eid1007.030904

Kelly, J. A., Hoffman, R. G., Rompa, D., & Gray, M. (1998). Protease inhibitor combination therapies and perceptions of gay men regarding AIDS severity and the need to maintain safer sex. *AIDS*, 12, F91-F95. doi: 10.1097/00002030-199810000-00001

Kelvin, E. A., Smith, R. A., Mantell, J. E., & Stein, Z. A. (2009). Adding the female condom to the public health agenda on prevention of HIV and other sexually transmitted infections among men and women during anal intercourse. *American Journal of Public Health*, 985-987. doi: 10.2105/AJPH.2008.141200

Kennedy, S., Nolen, S., Applewhite, J., Pan, Z., Shamblen, S., & Vanderhoff, K. J. (2007). A quantitative study on the condom-use behaviors of eighteen to twenty-four-year-old urban African American males. *AIDS Patient Care STDS*, 21, 306-320. doi: 10.1089/apc.2006.0105

Kinsler, J., Wong, M., Sayles, J., Davis, C., & Cunningham, W. (2007). The effect of perceived stigma from a health care provider on access to care among a low- income HIV-positive population. *AIDS PATIENT CARE and STDs*, 21, 584. doi: 10.1089/apc.2006.0202

Koblin, B. A., Husnik, M. J., Colfax, G., Huang, Y., Madison, M., Mayer, K.,…Buchbinder, S. (2006). Risk factors for HIV infection among men who have sex with men. *AIDS*, 20, 731-739. doi:10.1097/01.aids.0000216374.61442.55

Koelsch, K. K., Smith, D. M., Little, S., Ignacio, C. C., Marcaranas, T. R., Brown, A. J. L.,…Wong, J. (2003). Clade B HIV-1 superinfection with wild-type virus after primary infection with drug-resistant clade B virus. *AIDS*, 17, F11-F16. doi: 10.1097/00002030-200305020-00001

Kozal, M. J., Amico, K. R., Chiarella, J., Schreibman, T., Cornman, D., Fisher, W.,…Friedland, G. (2004). Antiretroviral resistance and high-risk transmission behavior among HIV-positive patients in clinical care. *AIDS*, 18, 2185-2189. doi: 10.1097/0002030-200411050-00011

Laurence, J. (1999). *Stopping Heterosexual HIV*. Retrieved from http://www.cig.salk.edu/extra_html/meds_editorial_trans.htm

Lewis, M. A., Kaysen, D. L., Rees, M. & Woods, B. A. (2010). The relationship between condom-related protective behavioral strategies and condom use among college students: Global-and event-level evaluations. *Journal of Sex Research*, 47, 471-478. doi: 10.1080/00224490903132069

Lorenz, K. A., Cunningham, W. E., Spritzer, K. L., & Hays, R. D. (2006). Changes in symptoms and health-related quality of life in a nationally representative sample of adults in treatment with HIV. *Quality of Life Research*, 15, 951-958. doi:10.1007/s11136-005-6010-x

Lux, K., & Petrosa, R. (1995). Preventing HIV infection among juvenile delinquents: Educational diagnosis using the health belief model. *International Quarterly of Community Health Education*, 15, 145-163. doi:10.2190/WTBA-HVC1-R16N-RRT5

MacKellar, D. A., Valleroy, L. A., Behel, S., Secura, G. M., Bingham, T., Celentano, D. D.,…Torian, L. V. (2006). Unintentional HIV exposures from young men who have sex with men who disclose being HIV-negative. *AIDS*, 20, 1637-1644. doi: 10.1097/01.aids.0000238410.67700.d1

Maiman, L. A., & Becker, M. H. (1974). The health belief model: origins and correlates in psychological theory. *Health Education Monograpy*, 2, 336-353.

Mansergh, G., McKirnan, D. J., Flores, S. A., Hudson, S. M., Koblin, B. A., Purcell, D. W., & Colfax, G. N. (2010). HIV-related attitudes and intentions for high-risk, substance-using men who have sex with men: Associations and clinical implications for HIV-positive and HIV-negative MSM. *Journal of Cognitive Psychotherapy: An International Quarterly*, 24, 281-293. doi: 10.1891/0889-8391.24.4.281

Marks, G., Millett, G. A., Bingham, T., Bond, L., Lauby, J., Liau, A.,…Stueve, A. (2009). Understanding differences in HIV sexual transmission among Latino and Black men who have sex with men: The Brothers y Hermanos study. *AIDS Behavior*, 13, 682-690. doi: 10.1007/s10461-008-9380-6

Mayer, K. H., O'Cleirigh, C., Skeer, M., Covahey, C., Leidolf, E., Vanderwarker, R., & Safren, S. A. (2010). Which HIV infected men who have sex with men in care are engaging in risky sex: acquiring sexually transmitted infections: Findings from a Boston community health centre. *Sexually Transmitted Infections*, 86, 66-79. doi:10.1136/sti.2009.036608

McFarland, W., Chen, Y. H., Raymond, H. F., Nguyen, B., Colfax, G., Mehrtens, J., …Truong, H. M. (2011). HIV seroadaptation among individuals, within sexual dyads, and by sexual episodes, men who have sex with men, San Francisco, 2008. *AIDS Care*, 23, 261-268. doi: 10.1080/09540121.2010.507748

Mimiaga, M. J., Reisner, S. L., Bland, S., Skeer, M., Cranston, K., Isenberg, B. A.,…Mayer, K. H. (2009). Health system and personal barriers resulting in decreased utilization of HIV and STD testing services among at-risk black men who have sex with men in Massachusetts. *Journal of Urban Health*, 86, 602-623. doi: 10.1007/s11524-009-9363-6

Mimiaga, M. J., Reisner, S. L., Cranston, K., Isenberg, D., Bright, D., Daffin, G.,…Mayer, K. H. (2009). Sexual mixing patterns and partner characteristics of Black MSM in Massachusetts at increased risk for HIV infection and transmission. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 86, 602-623. doi: 10.1007/s11524-009-9363-6

Mimiaga, M. J., Skeer, M., Mayer, K. H., & Safren, S. A. (2008). Study participation as a social group influencing sexual behaviours in an HIV prevention trial for men who have sex with men. *AIDS Care*, 20, 346-355. doi: 10.1080/09540120701562070

Miner, M. H., Peterson, J. L., Welles, S. L., Jacoby, S. M., & Rosser, B. R. S. (2009). How do social norms impact HIV-positive men who have sex with men? Multiple mediator effects. *Journal of Health Psychology*, 14, 761-770. doi: 10.1177/1359105309338976

Mizuno, Y., Purcell, D. W., Latka, M. H., Metsch, L. R., Ding, H., Gomez, A., & Knowlton, A. R. (2010). Is sexual serosorting occurring among HIV-positive injection drug users? Comparison between those with HIV-positive partners only, HIV-negative partners only, and those with any partners of unknown status. *Aids and Behavior*, 14, 92-102. doi: 10.1007/s10461-009-9548-8

Mosack, K. E., Weinhardt, L. S., Kelly, J. A., Gore-Felton, C., McAuliffe, T. L., Johnson, M. O.,…Morin, S. F. (2009). Influence of coping, social support, and depression on subjective health status among HIV-positive adults with different sexual identities. *Behavioral Medicine*, 34, 133-144. doi: 10.3200/BMED.34.4.133-144

Munoz-Laboy, M., Castellanos, D., & Westacott, R. (2005). Sexual risk behaviour, viral load, and perceptions of HIV transmission among homosexually active Latino men: An exploratory study. *AIDS CARE*, 17, 33-54. doi: 10.1080/09540120412331305115

Mutchler, M. G., Bogart, L., McKay, T., Elliot, M., Suttorp, M., & Schuster, M. (2008). Psychosocial correlates of unprotected sex without disclosure of HIV-positivity among African-American, Latino, and White men who have sex with men and women. *Archives of Sexual Behavior*, 37, 736-747. doi: 10.1007/s10508-008-9363-8

National Alliance of State & Territorial AIDS Directors. (2011). *2010 state general revenue cutes in HIV/AIDS, STD and viral hepatitis programs*. Retrieved from http://www.hrsa.gov/about/budget/budgetjustification 2012.pdf

Neff, J., & Crawford, S. (1998). The health belief model and HIV risk behaviors: A causal model analysis among Anglos, African-Americans, and Mexican Americans. *Ethnicity and Health*, 3, 283-299. doi: 10.1080/13557858 .9961871

Nejad, L. M., Wertheim, E. H., & Greenwood, K. M. (2005). *Comparison of the health belief model and the theory of planned behavior in the prediction of dieting and fasting behavior*. Retrieved from http://ojs.lib.swin.edu. au/index.php/ejap/article/ viewFile/7/16

Nimmons, D., Acree, M., & Folkman, S. (2000). *Talking beyond ourselves: Quantitative support for other-sensitive motives to safer sex*. Unpublished manuscript, University of California, San Francisco.

Nimmons, D., & Folkman, S. (1999). Other-sensitive motivation for safer sex among gay men: Expanding paradigms for HIV prevention. *AIDS and Behavior*, 3, 313-324. doi: 10.1023/A:1025437418276

O'Dell, B. L., Rosser, B. R. S., Miner, M. H., & Jacoby, S. M. (2008). HIV prevention altruism and sexual risk behavior in HIV-positive men who have sex with men. *AIDS Behavior*, 12, 713-720. doi: 10.1007/s10461-007-9321-9

Ostrow, D. E., Fox, K. J., Chmiel, J. S., Silvestre, A., Visscher, B. R., Vanable, P. A.,…Strathdee, S. A. (2002). Attitudes toward highly active antiretroviral therapy are associated with sexual risk taking among HIV infected and uninfected homosexual men. *AIDS*, 16, 775-780. doi: 10.1097/00002030-200203290-00013

Ostrow, D. G, DiFranceisco, W. J., Chmiel, J. S., Wagstaff, D. A., & Wesch, J. (1995). A case-control study of human immunodeficiency virus type 1 seroconversion and risk-related behaviors in the Chicago MACS/CCS cohort, 1984-1989. *American Journal of Epidemiology*, 142, 875-883.

Pantalone, D. W., Schneider, K.L., Valentine, S. E., & Simoni, J. M. (2012). Investigating partner abuse among HIV-positive men who have sex with men. *AIDS Behavior*, 16, 1032-1043. doi: 10.1007/s10461-011-0011-2

Parsons, J. T., Halkitis, P. N., Bimbi, D., Borkowski, T. (2000). Perceptions of the benefits and costs associated with condom use and unprotected sex among late adolescent college students. *Journal of Adolescence*, 23, 377-391. doi: 10.1006/jado.2000.0326

Patel, P., Taylor, M. M., Montoya, J. A., Hamburger, M. E., Kerndt, P. R., & Holmberg, S. D. (2006). Circuit parties: Sexual behaviors and HIV disclosure practices among men who have sex with men at the White Party, Palm Springs, California, 2003. *AIDS Care,* 18, 1046-1049.

Peterman, T. A., Tian, L. H., Warner, L., Satterwhite, C. L., Metcalf, C. A., Malotte, K. C.,…RESPECT-2 Study Group (2009). Condom use in the year following a sexually transmitted disease clinic visit. *International Journal of STD & AIDS*, 20, 9-13. doi: 10.1258/ijsa.2008.008177

Peterson, J. L., & Bakeman, R. (2006). Impact of beliefs about HIV treatment and peer condom norms on risky sexual behavior among gay and bisexual men. *Journal of Community Psychology*, 34, 37-46. doi: 10.1002/jcop.20082

Peterson, J. L., Miner, M. H., Brennan, D. J., & Rosser, B. R. S. (2012). HIV treatment optimism and sexual risk behaviors among HIV positive African American men who have sex with men. *AIDS Education and Prevention*, 24, 91-101. doi: 10.1521/aeap.2012.24.2.91

Petry, N. M. (2001). Reliability of drug users' self-reported HIV risk behaviors using a brief, 11-item scale. *Substance Use and Misuse*, 36, 1731-1747. doi: 10.1081/JA-100107576

Pinkerton, S. D., & Abramson, P. R. (1997). Effectiveness of condoms in preventing transmission. *Social Science Medicine*, 44, 1303-1312. doi:10.1016/S0277-9536(96)00258-4

Poppen, P., Reisen, C., Zea, M., Bianchi, F., & Echeverry, J. (2005). Serostatus disclosure, seroconcordance, partner relationship, and unprotected anal intercourse among HIV-positive Latino men who have sex with men. *AIDS Education and Prevention*, 17, 227-237. doi: 10.1521/aeap.17.4.227.66530

Preau, M., Leport, C., Salmon-Ceron, D., Carrieri, P., Portier, H., Chene, G.,…The APROCO Study Group. (2004). Health-related quality of life and patient-provider relationships in HIV-infected patients during the first three years after starting PI-containing antiretroviral treatment. *AIDS CARE*, 16, 649-661. doi: 10.1080/09540120410001716441

Quan, Y., Liang, C., Brenner, B. G., & Wainberg, M. A. (2009). Multidrug-resistant variants of HIV Type 1 (HIV-1) can exist in cells as defective quasispecies and be rescued by superinfection with other defective HIV-1 variants. *Journal of Infectious Diseases*, 200, 1479-1483. doi: 10.1086/606117

Ramachandran, S., Yonas, M. A., Silvestre, A. J., & Burke, J. G. (2010). Intimate partner violence among HIV positive persons in an urban clinic. *AIDS Care*, 22, 1536-1543. doi: 10.1080/09540121.2010.482199

Raymond, H. F., Bingham, T., & McFarland, W. (2008). Locating unrecognized HIV infections among men who have sex with men: San Francisco and Los Angeles. *Aids Education and Prevention*, 20, 408-419. doi:10.1521/aeap.2008.20.5.408

Reed, P., & Shearer, N. B. (2009). *Perspectives on nursing theory* (2nd ed.). Philadelphia: Lippincott Williams & Wilkins.

Reilly, T., Woodruff, S. I., Smith, L., Clapp, J. D., & Cade, J. (2010). Unsafe sex among HIV positive individuals: Cross-sectional and prospective predictors. *Journal of Community Health*, 35, 115-123. doi: 10.1007/s10900-009-9203-3

Relf, M. V. (2001). Battering and HIV in men who have sex with men: A critique and synthesis of the literature. *Journal of the Association of Nurses in AIDS Care*, 12, 41-8. doi: 10.1016/S1055-3290(06)60143-X

Remien, R., Halkitis, P., O'Leary, A., Wolitski, R., & Gomez, C. (2005). Risk perception and sexual risk behaviors among HIV-positive men on antiretroviral therapy. *AIDS and Behavior*, 9, 167-176. doi: 10.1007/s10461-005-3898-7

Renzi, C., Tabet, S. R., Stucky, J. A., Eaton, N., Coletti, A. S., Surawicz, C. M.,…Celum, C. M. (2003). Safety and acceptability of the Reality condom for anal sex among men who have sex with men. *AIDS*, 17, 727-731

Roberts, K. J. (2002). Physician-patient relationships, patient satisfaction, and antiretroviral medication adherence among HIV infected individuals attending a public health clinic. *AIDS Patient Care and STDs*, 16, 43-50. doi: 10.1089/108729102753429398

Rosenberg, E. S., Sullivan, P. S., DiNenno, E. A., Salazar, L. F., & Sanchez, T. H. (2011). Number of casual male sexual partners and associated factors among men who have sex with men: Results from the national HIV behavior surveillance system. *BMC Public Health*, 11, 189-197. doi: 10.1186/1471-2458-11-189

Rosenstock, I. M. (1974). Historical origins of the health belief model. *Health Education Monographs*, 2, 328-335.

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1988). Social learning theory and the health belief model. *Health Education Quarterly*, 15, 175-183. doi: 10.1177/109019818801500203

Rosenstock, I. M., Strecher, V. J., & Becker, M. H. (1994). The health belief model: HIV risk behavior change. In R.J. DeClemente & J. L. Peterson (Eds.), *Preventing AIDS: Theories and methods of behavioral intervention* (pp. 5-24). New York, NY: Plenum Press.

Rosser, B. R. S., Hatfield, L. A., Miner, M. H., Ghiselli, M. E., Lee, B. R., Welles, S. L., & The Positive Connections Team. (2010). Effects of behavioral intervention to reduce serodiscordant unsafe sex among HIV positive men who have sex with men: The Positive Connections randomized controlled trial study. *Journal of Behavior Medicine*, 33, 147-158. doi: 10.1007/s10865-009-9244-1

Rosser, B. R. S., Oakes, J. M., Horvath, J. K., Konstan, J. A., Danilenko, G. P., & Peterson, J. L. (2009). HIV sexual risk behavior by men who use the internet to seek sex with men: Results of the men's internet sex study II (MINTS II). *AIDS Behavior*, 13, 488-498. doi: 10.1007/s10461-009-9524-3

Rothenberg, K. H., & Paskey, S. (1995). The risk of domestic violence and women with HIV infection: Implications for partner notification, public policy, and the law. *American Journal of Public Health*, 85, 1569-1576. doi:10.2105/AJPH.85.11.1569

Safren, S. A., Blashill, A. J., & O'Cleirigh, C. M. (2011). Promoting the sexual health of MSM in the context of comorbid mental health problems. *AIDS Behavior*, 15, S30-S34. doi: 10.1007/s10461-011-9898-x

Safren, S. A., Reisner, S. L., Herrick, S., Mimiaga, M. J., & Stall, R. D. (2010). Mental health and HIV risk in men who have sex with men. *Journal of Acquired Immune Deficiency Syndromes*, 55, S74-S77. doi: 10.1097/QAI.0b013e3181fbc939

Samuel, M. C., Hessol, N., Shiboski, S., Engel, R. R., Speed, T. P., & Winkelstein, W. Jr. (1993). Factors associated with human immunodeficiency virus seroconversion in homosexual men in three San Francisco studies, 1984-1989. *Journal of Acquired Immune Deficiency Syndromes*, 6, 303-312.

Saunders, D. S., & Burgoyne, R. W. (2002). Evaluating health-related wellbeing outcomes among outpatient adults with human immunodeficiency virus infection in the HAART era. *International Journal of STD & AIDS*, 13, 683-690. doi: 10.1258/095646202760326435

Scandell, D. J., & Wlazelek, B. (2002). A validation study of the AIDS health belief scale. *The Canadian Journal of Human Sexuality*, 11, 41-49.

Schacker, T., Collier, A. C., Hughes, J., Shea, T., & Corey, L. (1996). Clinical and epidemiologic features of primary HIV infection. *Annals of Internal Medicine*, 125, 257-264.

Schultz, M., Godin, G., Kok, G., Vezina-Im, L. Naccache, H., Otis, J., & the MAYA Study Group. (2011). Determinants of condom use among HIV-positive men who have sex with men. *International Journal of STD and AIDS*, 22, 391-397. doi: 10.1258/ijsa.2011.010205

Selwyn, P. A., & Rivard, M. (2003). Palliative care for AIDS: Challenges and opportunities in the era of highly active anti-retroviral therapy. *Journal of Palliative Medicine*, 6, 475-487. doi:10.1089/109662103322144853

Semple, S., Zians, J., Grant, I., & Patterson, T. (2006). Sexual risk behavior of HIV-positive methamphetamine-using men who have sex with men: The role of partner serostatus and partner type. *Archives of Sexual Behavior*, 35, 461-471. doi: 10.1007/s10508-006-9045-3

Senya, C., Mehta, A., Harwell, J. I., Pugatch, D., Flanigan, T., & Mayer, K. H. (2003). Spectrum of opportunistic infections in hospitalized HIV-infected patients in Phnom Penh, Cambodia. *International Journal of STD & AIDS*, 14, 411-416. doi: 10.1258/095646203765371312

Serovich, J., Craft, S., McDowell, T., Grafsky, E., & Andrist, D. (2009). Methods of promoting safer sex behaviors utilized by men who have sex with male casual sex partners. *AIDS Education and Prevention*, 21, 1-13. doi: 10.1521/aeap.2009.21.1.1

Seth, P., Raiford, J. L., Robinson, L. S., Wingwood, G. M., & DiClemente, R. J. (2010). Intimate partner violence and other partner-related factors: Correlates of sexually transmissible infections and risky sexual behaviours among young adult African American women. *Sexual Health*, 7, 25-30. doi:10.1071/SH08075

Sethi, A. K., Celentano, D. D., Gange, S. J., Gallant, J. E., Vlahov, D., & Farzadegan, H. (2004). High-risk behavior and potential transmission of drug-resistant HIV among injection drug users. *Journal of Acquired Immune Deficiency Syndromes*, 35, 503-510. doi:10.1097/00126334-200404150-00008

Sheon, N., & Crosby, G. M. (2004). Ambivalent tales of HIV disclosure in San Francisco. *Social Science and Medicine*, 58, 2105-2118. doi:10.1016/j.socscimed.2003.08.026

Sidat, M. M., Mijch, A. M., Lewin, S. R., Hoy, J. F., Hocking, J., & Fairley, C. K. (2008). Incidence of putative HIV superinfection and sexual practices among HIV-infected men who have sex with men. *Sexual Health*, 5, 61-67. doi:10.1071/SH07041

Sidat, M. M., Rawtorne, P., Lister, N., & Fairley, C. (2006). Association between risk of acquiring HIV and beliefs and perceptions about the lived experience of HIV/AIDS among HIV-negative or untested men who have sex with men. *AIDS Care*, 18, 934-941. doi: 10.1080/09540120500337534

Silverberg, M. J., Jacobson, L. P., French, A. L., Witt, M. D., & Gange, S. J. (2009). Age and racial/ethnic differences in the prevalence of reported symptoms in human immunodeficiency virus-infected persons on antiretroviral therapy. *Journal of Pain and Symptom Management*, 38, 197-207. doi:10.1016/j.jpainsymman.2008.08.007

Smith, D. M., Richman, D. M., & Little, S. J. (2005). HIV superinfection. *Journal of Infectious Diseases*, 192, 438-444. *doi: 10.1086/431682*

Smith, D. M., Wong, J. K., Hightower, G. K., Ignacio, C. C., Koelsch, K. K., Daar, …Little, S. J. (2004). Incidence of HIV superinfection. *Journal of the American Medical Association*, 292, 1177-1178. doi: 10.1001/jama. 292.10.1177

Smith, J. L., Fenwick, J., Skinner, R., Merriman, G., & Hallett, J. (2011). Young adult males' perspectives on pregnancy, fatherhood and condom use: Where does responsibility for birth control lie? *Sexual & Reproductive Healthcare*, 2, 37-42. doi: 10.1016/j.srhc.2010.10.002

Soper, D. S. (2010). *A-priori sample size calculator for multiple regression*. Retrieved from http://www.danielsoper.com/statcalc/calc01.aspx

Steers, W. N., Elliott, E., Nemiro, J., Ditman, D., & Oskamp, S. (1996). Health beliefs as predictors of HIV-preventive behavior and ethnic differences in prediction. *The Journal of Social Psychology*, 136, 99-110. doi: 10.1080/00224545.1996.9923032

Stephenson, R., Rentsch, C., Salazar, L. F., & Sullivan, P. S. (2011). Dyadic characteristics and intimate partner violence among men who have sex with men. *Western Journal of Emergency Medicine*, 12, 324-332.

Stephenson, R., Khosropour, C., & Sullivan, P. S. (2010). Reporting of intimate partner violence among men who have sex with men in an online survey. *Western Journal of Emergency Medicine*, 11, 242-246.

Stiles, B. L., & Kaplan, H. B. (2004). Factors influencing change behavior: Risk reduction for HIV infection. *Social Behavior and Personality*, 32, 511-534. doi: 10.2224/sbp.2004.32.6.511

Streeck, H., Li, B., Poon, F. Y., Schneidewind, A., Gladden, A. D., Power, K. A.,…Allen, T. M. (2008). Immune-driven recombination and loss of control after HIV superinfection. *Journal of Experimental Medicine*, 205, 1789-1796. doi: 10.1084/jem.20080281

Sudarshi, S., Pao, D., Murphy, G., Parry, J., Dean, G., & Fisher, M. (2008). Missed opportunities for diagnosing primary HIV infection. *Sexually Transmitted Infections*, 84, 14-16. doi:10.1136/sti.2007.026963

Swenson, R. R., Rizzo, C. J., Brown, L. K., Vanable, P. A., Carey, M. P., Valois, R. F.,…Romer, D. (2010). HIV knowledge and its contribution to sexual health behaviors of low income African American adolescents. *Journal of the National Medical Association*, 102, 1173-1182.

Thiede, H., Jenkins, R. A., Carey, J. W., Hutcheson, R., Thomas, K. K., Stall, R. D.,…Golden, M. R. (2009). Determinants of recent HIV infection among Seattle-area men who have sex with men. *American Journal of Public Health*, 99, S157-164. doi: 10.2105/AJPH.2006.098582

Thomas, M., Rogers, R., & Maclean, R. (2003). Physician perceptions and knowledge of legal and ethical issues regarding HIV/AIDS confidential disclosure in managing persons with HIV/AIDS at an academic medical center. *The Internet Journal of Law, Healthcare and Ethics*, 1. Retrieved from http://www.ispub.com/journal/the-internet-journal-of-law-healthcare-and-ethics/volume-1-number-2/physician-perceptions-and-knowledge-of-the-legal-and-ethical-issues-regarding-hiv-aids-confidential-disclosure-in-managing-persons-with-hiv-aids-at-an-academic-medical-center-amc.html

Torabi, M. R., Aguillon, S., Jeng, I. (2000). Family Physicians' knowledge, attitudes, and practices regarding HIV/AIDS prevention. *The Health Education Monograph Series*, 18, 51-58.

Tung, W. C., Farmer, S., Ding, K., Tung, W. K., & Hsu, C. H. (2009). Stages of condom use and decisional balance among college students. *International Nursing Review*, 56, 346-353. doi: 10.1111/j.1466-7657.2008.00704.x

Vanable, P. A., Ostrow, D. G., & McKirnan, D. J. (2003). Viral load and HIV treatment attitudes as correlates of sexual risk behavior among HIV-positive gay men. *Journal of Psychosomatic Research*, 54, 263-269. doi: 10.1016/S0022-3999(02)00483-X

Vanable, P. A., Ostrow, D. G., McKirnan, D. J., Taywaditep, K. J., & Hope, B. A. (2000). Impact of combination therapies on HIV risk perceptions and sexual risk among HIV positive and HIV negative gay and bisexual men. *Health Psychology*, 19, 134-145. doi:10.1037//0278-6133.19.2.134

van der Snoek, E. M., De Wit, J. B., Mulder, P. G., & van der Meijden, W. I. (2005). Incidence of sexually transmitted diseases and HIV infection related to perceived HIV/AIDS threat since highly active antiretroviral therapy availability in men who have sex with men. *Sexually Transmitted Diseases*, 32, 170-175. doi:10.1097/01.olq.0000149786.09706.66

van der Straten, A., Gomez, C. A., Saul, J. Quan, J., & Padian, N. (2000). Sexual risk behaviors among heterosexual HIV serodiscordant couples in the era of post-exposure prevention and viral suppressive therapy. *AIDS*, 14, F47-F54. doi:10.1097/00002030-200003100-00003

van Kesteren, N. M. C., Hospers, H. J., Kok, G. (2007). Sexual risk behavior among HIV-positive men who have sex with men: A literature review. *Patient Education and Counseling*, 65, 5-20. doi: 10.1016/j.pec.2006.09.003

van Kesteren, N. M. C., Hospers, H. J., van Empelen, P., van Breukelen, G., & Kok, G. (2007). Sexual decision-making in HIV-positive men who have sex with men: How moral concerns and sexual motives guide intended condom use with steady and casual sex partners. *Archives of Sexual Behavior*, 36, 437-449. doi: 10.1007/s10508-006-9125-4

Vanlandingham, M. J., Suprasert, S., Grandjean, N., & Sittitrai, W. (1995). Two views of risky sexual practices among northern Thai males: The health belief model and the theory of reasoned action. *Journal of Health and Social Behavior*, 36, 195-212. Retrieved from http://www.jstor.org/stable/2137225

Vellozzi, C., Brooks, J. T., Bush, T. J., Conley, L. J., Henry, K., Carpenter, C. C. J.,…the SUN Study Investigators. (2009). The study to understand the natural history of HIV and AIDS in the era of effective therapy (SUN study). *American Journal of Epidemiology*, 169, 642-652. doi: 10.1093/aje/kwn361

Vernazza, P., Hirschel, B., Bernasconi, E., & Flepp. M. (2008). HIV- infizierte menschen ohne andere STD sind unter wirksamer antiretroviraler therapie sexuell nicht infektiös [HIV-infected people free of other STDs are sexually not infectious on effective antiretroviral therapy]. *Schweizerische Ärztezeitung* 2008; 89:165-169. Retrieved from www.aids.ch/e/fragen/pdf/swissguidelinesART.pdf

Vittinghoff, E., Douglas, J., Judson, F., McKirnan, D., MacQueen, K., & Buchbinder, S. P. (1999). Per-contact risk of human immunodeficiency virus transmission between male sexual partners. *American Journal of Epidemology*, 150, 306 – 311.

Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., & Duck-Hee, K., (2004). Predictors of health behaviors in college students. *Journal of Advanced Nursing*, 48, 463-474. doi: 10.1111/j.1365-2648.2004.03229.x

Wagenaar, B. H., Sullivan, P. S., & Stephenson, R. (2012). HIV knowledge and associated factors among internet using men who have sex with men (MSM) in South Africa and the United States. *PlosOne*, 7, e32915. doi: 10.1371/journal.pone.0032915

Ward, J., Darke, S., & Hall, W. (1990). *The HIV risk-taking behaviour scale manual*. Retrieved from http://www.imh-initiative.org/resources/IDU% 20HIV %20Risk%20Assessment%20Q.pdf

Ware, J. E., Kosinski, M., Turner-Bowker, D. M., Sundaram, M., Gandek, B., & Maruish, M. E. (2009). *SF-12v2 health survey: Administration guide for clinical trial investigators*. Lincoln, RI: Quality Metric Incorporated.

Whetten, K., Reif, S., Whetten, R., & Murphy-McMillan, L. K. (2008). Trauma, mental health, distrust, and stigma among HIV-positive persons: Implications for effective care. *Psychosomatic Medicine*, 70, 531-538. doi: 10.1097/PSY.0b013e31817749dc

Widdice, L. E., Cornell, J. L., Liang, W., & Halper-Felsher, B. L. (2006). Having sex and condom use: Potential risks and benefits reported by young, sexually inexperienced adolescents. *Journal of Adolescent Health*, 39, 588-595. doi:10.1016/j.jadohealth.2006.03.016

Wilcox, C. M., & Saag, M. S. (2008). Gastrointestinal complications of HIV infection: Changing priorities in the HAART era. *Gut*, 57, 861-870. doi:10.1136/gut.2006.103432

Wilson, D. P. (2010). Evidence is still required for treatment as prevention for riskier routes of HIV transmission. *AIDS*, 24, 2891-2893. doi: 10.1097/QAD.0b013e328340871d

Wilson, D. P., Law, M. G., Grulich, A. E., Cooper, D. A., & Kaldor, J. M. (2008). Relation between HIV viral load and infectiousness: A model-bases analysis. *The Lancet*, 372, 314-320. doi:10.1016/S0140-6736(08)61115-0

Winfield, E. B., & Whaley, A. L. (2002). A comprehensive test of the health belief model in the prediction of condom use among African American college students. *Journal of Black Psychology*, 28, 330-346. doi: 10.1177/009579802237541

Wolitski, R. J., Bailey, C. J., O'Leary, A., Gomez, C. A., & Parsons, J. T. (2003). Self-perceived responsibility of HIV-seropositive men who have sex with men for preventing HIV transmission. *AIDS and Behavior*, 7, 363-372. doi: 10.1023/B:AIBE.0000004728.73443.32

Wolitski, R. J., Valdiserri, R. O., Denning, P. H., & Levine, W. C. (2001). Are we headed for a resurgence of the HIV epidemic among men who have sex with men? *American Journal of Public Health*, 91, 883-888. doi: 10.2105/AJPH.91.6.883

World Health Organization. (2012). *Condoms for HIV prevention*. Retrieved from http://www.who.int/hiv/topics/condoms/en/

World Health Organization, & UNAIDS. (2009). *Global summary of the HIV/AIDS epidemic, December 2008*. Retrieved fromhttp://www.who.int/hiv/data/2009_global_summary.gif

APPENDIX A

Participant Consent Form

Georgia State University
Byrdine F. Lewis School of Nursing
Informed Consent

Title: ANTIRETROVIRAL THERAPY AND TRANSMISSION BELIEFS AMONG HIV POSITIVE MEN WHO HAVE SEX WITH MEN

Principle Investigator: Catherine Gebhardt, PhD, RN
Student Investigator: Noreen McDonough, MSN, RN

I. Purpose:

You are invited to participate in a research study. The purpose of the study is to investigate your beliefs about the use of safe sexual behaviors. You are invited to participate because you are a man who has sex with men and because you are HIV positive. A total of 118 participants will be recruited for this study. Participation will require approximately 20 to 30 minutes of your time.

II. Procedures:

If you decide to participate, you will be asked to fill out a questionnaire packet that consists of 11 short sections as well as some questions about your background. Upon return of the survey, you will be given a $25 gift card to Walmart for your time spent completing the packet even if some questions are not answered.

III. Risks:

In this study, you will not have any more risks than you would in a normal day of life.

IV. Benefits:

Participation in this study may not benefit you personally. Overall, we hope to gain information about the use of safe sexual behaviors among men who have sex with men.

V. Voluntary Participation and Withdrawal:

Participation in research is voluntary. You do not have to be in this study. If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or stop participating at any time. Whatever you decide, you will not lose any benefits to which you are otherwise entitled.

VI. Confidentiality:

We will keep your records private to the extent allowed by law. Noreen McDonough will have access to the information you provide. Information may also be shared with those who make sure the study is done correctly (Georgia State University Institutional Review Board, the Office for Human Research Protection). We will number each survey packet for data entry purposes. All information will be confidential. There will be no method of

identifying which packet you complete. The information you provide will be stored in a locked cabinet behind a steel door. The consent form will be kept in a separate office in a locked file cabinet. Your name and other facts that might point to you will not appear when we present this study or publish its results. The findings will be summarized and reported in group form. You will not be identified personally.

VII: Treatment of Injury:

There is no expectation of injury associated with this study.

VIII. Contact Persons:

Contact Dr. C. Gebhardt at (404) 413-1161 or Noreen McDonough at (706) 568-5052 if you have any questions about this study. If you have questions or concerns about your rights as a participant in this research study, you may contact Susan Vogtner in the Office of Research Integrity at (404) 413-3513.

IX. Copy of Consent Form to Subject:

We will give you a copy of this consent form to keep.

If you agree to participate in this research, please continue with the survey.

APPROVED *Consent Form Approved by Georgia State University IRB August 17, 2011 - August 15, 2012*

APPENDIX B

Demographic Characteristic Form

Please answer the following items by either filling in the blank space or by circling the choice that most closely matches your situation.

1. How old are you? _____ **years old**
2. Date of Birth: _____ (**month**); _____ (**day**); _____ (**year**)
3. Are you Hispanic?

   Yes No

4. What is your racial origin? (**choose one**)

   Asian or Pacific Islander Black/African American

   Native American White/Caucasian

   Other: _____

5. How much schooling have you had? (**circle one**)

   8th grade or less Some high school

   High school graduate or GED Some college or technical school

   College graduate (bachelor's degree) Graduate degree (master's or doctorate)

6. Which best describes your current employment status? (**circle one**)

   Working Full Time Working Part Time

   Unemployed or laid off and looking for work Unemployed and not looking for work

   Currently in school Retired

   Disabled, not working

7. What is your current household income? (**circle one**)

Less than $10,000	$10,001 to $19,999
$20,000 to $29,999	$30,000 to $39,999
$40,000 to $49,999	$50,000 to $69,999
$70,000 to $99,999	$100,000 or more

8. How many years have you been diagnosed with HIV? (**circle one**)

Less than one year	One to two years
Two to three years	Three to four years
Four to five years	Five to ten years
More than ten years	

9. Have you been sexually active in the past month? (**circle one**)

Yes No

10. Do you currently have only one steady partner? (**circle one**)

Yes No

11. Have you ever been prescribed antiviral medications to treat your HIV status? (**circle one**)

Yes No

12. Are you currently taking antiviral medications to treat your HIV status? (**circle one**)

Yes No

13. What was your last CD_4 cell count? _____

14. Are you (**circle one**):

HIV positive with symptoms	HIV positive without symptoms
AIDS positive with symptoms	AIDS positive without symptoms

15. Are you currently being treated for any of the following? (**circle each you are being treated for**)

Diabetes	Hypertension	Cholesterol Problems
Hepatitis B	Hepatitis C	Heart Disease
Respiratory Disease	Tuberculosis	Kidney Disease
Arthritis	Lipodystrophy	Chronic Infection
Sexually Transmitted Disease		

APPENDIX C

Items for Sexual Behavior (HRBS)

How many people, including clients, have you had sex with in the last month?	None	One	Two	3 – 5 people	6 – 10 people	More than 10 people
How often have you used condoms when having sex with your regular partner(s) in the last month?	No regular sex partners	Every time	Often	Sometimes	Rarely	Never
How often did you use condoms when you had sex with casual partners?	No casual sex partners	Every time	Often	Sometimes	Rarely	Never
How often have you used condoms when you have been paid for sex in the last month?	No paid sex	Every time	Often	Sometimes	Rarely	Never
How many times did you have anal sex in the last month?	No times	One time	Two times	3 – 5 times	6 – 10 times	More than 10 times
How many times have you hit up (i.e. injected any drugs) in the last month?	Haven't hit up	Once a week or less	More than once a week (but less than once a day)	Once a day	2 – 3 times a day	More than 3 times a day

How many times in the last month have you used a needle after someone else has already used it?	No times	One time	Two times	3 – 5 times	6 – 10 times	More than 10 times
How many different people have used a needle before you in the last month?	None	One person	Two people	3 – 5 people	6 – 10 people	More than 10 people
How many times in the last month has someone used a needle after you have used it?	No times	One time	Two times	3 – 5 times	6 – 10 times	More than 10 times
How often, in the last month, have you cleaned needles before re-using them?	Don't re-use	Every time	Often	Sometimes	Rarely	Never
Before using needles again, how often in the last month did you use bleach to clean them?	Don't re-use	Every time	Often	Sometimes	Rarely	Never

APPENDIX D

Items for Knowledge of Transmission of HIV (HIV-KQ-18)

Coughing and sneezing DO NOT spread HIV.	True	False	I don't know
A person can get HIV by sharing a glass of water with someone who has HIV.	True	False	I don't know
Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex.	True	False	I don't know
A woman can get HIV if she has anal sex with a man.	True	False	I don't know
Showering, or washing one's genitals/private parts after sex keeps a person from getting HIV.	True	False	I don't know
All pregnant women infected with HIV will have babies born with AIDS.	True	False	I don't know
People who have been infected with HIV quickly show serious signs of being infected.	True	False	I don't know
There is a vaccine that can stop adults from getting HIV.	True	False	I don't know
People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.	True	False	I don't know
A woman cannot get HIV if she has sex during her period.	True	False	I don't know
There is a female condom that can help decrease a woman's chance of getting HIV.	True	False	I don't know

A natural skin condom works better against HIV than does a latex condom.	True	False	I don't know
A person will NOT get HIV if she or he is taking antibiotics.	True	False	I don't know
Having sex with more than one partner can increase a person's chance of being infected with HIV.	True	False	I don't know
Taking a test for HIV 1 week after having sex will tell a person if she or he has HIV.	True	False	I don't know
A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.	True	False	I don't know
A person can get HIV from oral sex.	True	False	I don't know
Using Vaseline or baby oil with condoms lowers the chance of getting HIV.	True	False	I don't know

APPENDIX E

Items for Susceptibility to Re-infection

I believe HIV re-infection occurs	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I am concerned about re-infection	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I believe re-infection damages health	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I practice safer sex due to concerns about re-infection	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

APPENDIX F

Items for Severity of Living with HIV from the QOL SF-12

Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. ***Thank you for completing this survey!***

For each of the following questions, please mark an ☒ in the one box that best describes your answer.

1. **In general, would you say your health is:**

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

2. **The following questions are about activities you might do during a typical day. Does <u>your health now limit you</u> in these activities? If so, how much?**

	Yes, limited a lot	Yes, limited a little	No, not limited at all
a <u>Moderate activities</u>, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐ 1	☐ 2	☐ 3
b Climbing <u>several</u> flights of stairs	☐ 1	☐ 2	☐ 3

3. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Accomplished less than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Were limited in the kind of work or other activities	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Accomplished less than you would like	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Did work or other activities less carefully than usual	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?

Not at all	A little bit	Moderately	Quite a bit	Extremely
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

6. These questions are about how you feel and how things have been with you <u>during the past 4 weeks</u>. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the <u>past 4 weeks</u>…

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
a Have you felt calm and peaceful?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b Did you have a lot of energy?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c Have you felt downhearted and depressed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

All of the time	Most of the time	Some of the time	A little of the time	None of the time
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

7. During the <u>past 4 weeks</u>, how much of the time has your <u>physical health or emotional problems</u> interfered with your social activities (like visiting with friends, relatives, etc.)?

Thank you for completing these questions!

APPENDIX G

Items for Severity of Living with HIV from the Severity Subscale of the TOS

		Strongly Disagree ⟷ Strongly Agree						
Since being on combination drug therapy (HAART) I feel physically healthier.	Not on HAART	1	2	3	4	5	6	7
My life is much better now that I am on combination drug therapy (HAART).	Not on HAART	1	2	3	4	5	6	7
Since being on combination drug therapy (HAART), I enjoy sex more.	Not on HAART	1	2	3	4	5	6	7
HIV effective therapy has made the lives of people living with HIV who take the drugs better.		1	2	3	4	5	6	7

APPENDIX H

Items for Benefits of Safe Sexual Behavior from the Altruism Subscale of the OSM

I have a responsibility to stop my partner from doing something risky.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Part of being in a committed relationship is protecting each other from HIV.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
I don't want any partner of mine to get any disease from me.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
I tell friends when they're taking stupid risks.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
I don't want anyone else to have to go through getting infected.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Having safer sex is good for my partner as well as for me.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
By having safer sex, I am setting an example for others.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Having safer sex shows that I care about my partner.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Having safer sex is one way for me to teach others about it.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree

APPENDIX I

Items for Barriers to Safe Sex Behavior from the Attitude Subscale of the SRS

It is a hassle to use condoms.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
People can get the same pleasure from “safer” sex as from unprotected sex.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Using condoms interrupts sex play.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
The proper use of a condom could enhance sexual pleasure.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Condoms are irritating.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
I think “safer” sex would get boring fast.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
“Safer” sex reduces the mental pleasure of sex.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
The idea of using a condom doesn’t appeal to me.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Condoms ruin the natural sex act.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
Generally, I am in favor of using condoms.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree

Condoms interfere with romance.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
The sensory aspects (smell, touch, etc.) of condoms make them unpleasant.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
With condoms, you can't really "give yourself over" to your partner	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree

APPENDIX J

Items for Risk of Transmitting HIV Infection to Others from the Susceptibility Subscale of the TOS

	Strongly Disagree ◆ Strongly Agree						
People on combination drug therapy (HAART) are less likely to pass HIV on to an HIV-negative sexual partner through unprotected receptive anal sex (having HIV-negative sexual partner fuck them without a condom.	1	2	3	4	5	6	7
HIV combination drug therapy (HAART) has made it less important for me to use condoms for insertive anal sex (fucking).	1	2	3	4	5	6	7
People on combination drug therapy (HAART) are less likely to pass HIV on to an HIV-negative sexual partner through unprotected oral sex.	1	2	3	4	5	6	7
HIV combination drug therapy (HAART) has made it less important for me to use condoms for receptive anal sex (getting fucked).	1	2	3	4	5	6	7
People on combination drug therapy (HAART) are less likely to pass HIV on to an HIV-negative sexual partner through unprotected insertive anal sex (fucking an HIV-negative partner without a condom).	1	2	3	4	5	6	7

	Strongly Disagree ◆ Strongly Agree						
Because we now have effective treatment for HIV, using condoms every time I have receptive anal sex (being fucked) is less important to me.	1	2	3	4	5	6	7
Because we now have effective treatment for HIV, using condoms every time I have insertive anal sex (fucking) is less important to me.	1	2	3	4	5	6	7
People who are on combination drug therapy (HAART) need to be less concerned about sexually transmitted diseases (such as gonorrhea, or syphilis) than those who are not on combination drug therapy.	1	2	3	4	5	6	7
A person with a viral load that is “undetectable” means that someone with HIV is less likely to transmit HIV to an HIV-negative sexual partner.	1	2	3	4	5	6	7
Having treatments for HIV (like HAART) means that AIDS is very nearly cured.	1	2	3	4	5	6	7

APPENDIX K

Items for Peer Influence from the Normative Subscale of the SRS

If I had sex and I told my friends that I did not use condoms, they would be angry or disappointed.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
My friends talk a lot about “safer” sex.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
My friends and I encourage each other before dates to practice “safer” sex.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
If a friend knew that I had sex on a date, he/she wouldn’t care if I had used a condom or not.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
When I think that one of my friends might have sex on a date, I ask them if they have a condom.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
If a friend knew that I might have sex on a date, he/she would ask me if I was carrying a condom.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree
If I thought that one of my friends had sex on a date, I would ask them if they used a condom.	Strongly Disagree	Disagree	Neutral/ Undecided	Agree	Strongly Agree

APPENDIX L

Items for Health Care Provider Influence from the Healthcare Utilization, Providers, and General Health Assessment: Including STD and Pregnancy Assessment

How would you describe your doctor's or health care provider's attitude toward you?	Very Negative	Somewhat Negative	Neutral	Somewhat Positive	Very Positive	Not Applicable
How would you rate your level of satisfaction with your doctor or health care provider?	Very Negative	Somewhat Negative	Neutral	Somewhat Positive	Very Positive	Not Applicable
How would you rate your doctor's or health care provider's knowledge of HIV and AIDS?	Poor	Below Average	Average	Above Average	Doctor does not know your health status	I do not have a doctor or health care provider

APPENDIX M

Items for Self-efficacy for Negotiating Safe Sex from the Brief HIV Disclosure and Safer Sex Self-efficacy Scale

If I did not know a person's HIV status, I am certain that I could decide about telling them my status before having sex.	Strongly Disagree	Disagree	Agree	Strongly Agree
I am certain that I can discuss being HIV positive with a new sex partner.	Strongly Disagree	Disagree	Agree	Strongly Agree
I feel confident telling someone I was dating that I am HIV positive.	Strongly Disagree	Disagree	Agree	Strongly Agree
I am certain that I could decide about disclosing my HIV status to a new sex partner if I had been drinking.	Strongly Disagree	Disagree	Agree	Strongly Agree
I would rather not have sex than deal with decisions to disclose.	Strongly Disagree	Disagree	Agree	Strongly Agree
I am confident about suggesting using condoms with new sex partners.	Strongly Disagree	Disagree	Agree	Strongly Agree
I am certain that I would remember to use a condom even if I were drinking or using drugs.	Strongly Disagree	Disagree	Agree	Strongly Agree
I am confident that I can have safer sex and satisfy my partner.	Strongly Disagree	Disagree	Agree	Strongly Agree
I am confident that I can have safer sex that is satisfying to me.	Strongly Disagree	Disagree	Agree	Strongly Agree
I am certain that I know how to use a condom correctly.	Strongly Disagree	Disagree	Agree	Strongly Agree

APPENDIX N

Recruitment Flyer

RESEARCH STUDY SEEKING PARTICIPANTS

When: (date)

Where: (agency name and room number)

Time: (times student will be on-site)

We are seeking 118 HIV positive MSM to participate in a doctoral research project. Participants must also be HIV positive as diagnosed by a health care provider, must be 18 years of age or older, must be able to read, write and speak English, and must have been sexually active in the past month. A pencil and paper survey will be used for data collection and takes approximately 20 to 30 minutes to complete. A $25 gift card to Walmart will be given to participants who complete the survey.