

PATIENT-DELIVERED PARTNER THERAPY: ELICITATION RESEARCH USING A  
MIXED-METHOD STUDY DESIGN TO SUPPORT THE DEVELOPMENT OF A  
BEHAVIORAL INTERVENTION FOR SEXUALLY TRANSMITTED INFECTION CLINIC  
PATIENTS

by

Steven A. John

A Dissertation Submitted in  
Partial Fulfillments of the  
Requirements for the Degree of

Doctor of Philosophy  
in Public Health

at

The University of Wisconsin – Milwaukee

December 2016

## ABSTRACT

### PATIENT-DELIVERED PARTNER THERAPY: ELICITATION RESEARCH USING A MIXED-METHOD STUDY DESIGN TO SUPPORT THE DEVELOPMENT OF A BEHAVIORAL INTERVENTION FOR SEXUALLY TRANSMITTED INFECTION CLINIC PATIENTS

by

Steven A. John

The University of Wisconsin – Milwaukee, 2016  
Under the Supervision of Professor Lance S. Weinhardt

The transmission of sexually transmitted infections (i.e., STIs) remains a preventable public health problem within the United States. Repeatedly acquired STIs are highly prevalent despite efficacious treatment options, and mechanisms to increase partner notification are paramount to decreasing reinfections. One mechanism to accelerate the time to partner treatment, increase partner treatment, reduce repeat infections, and reduce community prevalence of STIs is the use of patient-delivered partner therapy (PDPT). PDPT is the practice of providing patients diagnosed with a bacterial STI medication to give directly to their partner for treatment without requiring the partner to participate in diagnostic testing, screening, or an interaction with a healthcare professional. Despite a growing body of research in support of PDPT, further research was needed to: 1) propose and test a theoretical model to understand interpersonal-behavior outcomes, and 2) develop a theoretically-guided behavioral intervention to increase the likelihood that patients will deliver PDPT. In this study, I used a mixed-method data collection strategy that resulted in the collection of interview and survey data from 210 STI clinic patients in support of a revised version of the Interpersonal-Behavioral (I-B) model, and

recommendations are provided for behavioral interventions to be experimentally tested in future research based on this model and patient feedback.

PDPT was found to be an acceptable method of partner treatment for clinic patients, and several structural-level factors that could be addressed in future research and clinical practice were associated with PDPT acceptability, including the normative influences of healthcare providers and the packaging and materials of PDPT kits. When I-B model indicators were regressed on PDPT intentions, factors from primary constructs of information, motivation, social support, and behavioral skills were found to be significantly associated with higher PDPT intentions. Moreover, the I-B model was found to have significantly better model fit than the previously published Information-Motivation-Behavioral Skills model in predicting PDPT intentions. Ample evidence was found to foster the development of behavioral interventions to be experimentally tested in future research to improve PDPT delivery, including the potential for distributing rapid HIV test kits with PDPT. Participants suggested intervention mechanisms for clinic patients, including the need for an updated one-on-one counseling strategy, the use of peer health educators, offering peer support groups, and redesigning the STI clinic structure. Important findings related to the potential for intimate partner violence were also found, which could prevent full implementation of PDPT within STI clinic settings. Encouraging communication between healthcare providers and their patients about the potential for intimate partner violence could facilitate patient triaging that results in the consideration of alternatives to PDPT for patients or partners at risk of harm, and better outcomes for patients and their partners.

© Copyright by Steven A. John, 2016  
All Rights Reserved

To  
my parents  
and my wife.

## TABLE OF CONTENTS

Abstract .....	ii
List of Figures .....	x
List of Tables .....	xi
Acknowledgements .....	xii

### CHAPTER

I.	Introduction .....	1
	The Problem .....	1
	Prevalence of Repeat Bacterial Sexually Transmitted Infections ...	1
	Expediting Partner Treatment .....	2
	Definitions .....	2
	Expedited Partner Therapy (EPT) .....	3
	Patient-Delivered Partner Therapy (PDPT) .....	3
	Other Forms of Partner Referral .....	4
	A Social Justice Issue .....	4
	A Local Effort .....	6
	Literature Review Objectives .....	6
	Specific Aims .....	7
II.	Literature Review .....	9
	Introduction .....	9
	PDPT Compared to Alternative Partner Referral Mechanisms .....	11
	Experimental Evidence of PDPT .....	11
	PDPT vs. Simple Partner Referral .....	11
	PDPT vs. Enhance Partner Referral Strategies .....	12
	Quasi-Experimental Evidence of PDPT .....	13
	The Need for a Combined Intervention Strategy .....	15
	Why PDPT Works from a Partners' Perspective .....	18
	Partners Accept PDPT .....	18
	PDPT Removes Barriers to Treatment with Limitations .....	19
	Acceptance of Expedited Partner Treatment Mech. by Index Patients ...	21
	Proposed Conceptual Framework – Interpersonal-Behavioral Model .....	24
	Information .....	27
	Motivations .....	27
	Attitudes .....	27
	Partner Protection Beliefs .....	29
	Subjective Norms .....	30
	Intentions .....	31
	Behavioral Skills .....	33

	Objective Ability .....	33
	Self-Efficacy .....	34
	Other Factors .....	34
	Structural Barriers & Facilitators .....	34
	Other Factors .....	36
	Ethical Implications of PDPT .....	39
	Legal Status of Expedited Partner Treatment Mechanisms .....	39
	Improper Use of PDPT .....	40
	PDPT for Men who have Sex with Men .....	41
	Summary .....	42
III.	Methods .....	44
	Participants.....	44
	Target Population .....	44
	Eligibility .....	44
	Recruitment .....	45
	Informed Consent .....	47
	Phase 1 Qualitative Interviews .....	48
	Survey Questionnaire Development .....	49
	Phase 2 Cognitive Interviews .....	49
	Phase 3 Survey .....	51
	Assessment Measures .....	51
	Demographics .....	54
	Information .....	54
	Motivational Factors .....	55
	Social Support .....	62
	Behavioral Skills .....	62
	Structural Factors .....	63
	Outcomes .....	64
	Phase 3 Qualitative Interviews .....	65
	Hypotheses .....	65
	Data Reduction & Data Analysis Techniques .....	66
	PDPT Acceptability .....	66
	PDPT Intentions .....	67
	Mediation Analyses .....	67
	Innovation .....	68
IV.	Results .....	69
	Participants .....	69
	Phase 1 Qualitative Interviews .....	69
	Phase 2 Cognitive Interviews .....	70
	Phase 3 Full Mixed-Method Study .....	70
	Survey Recruitment .....	70
	Qualitative Interview Recruitment .....	74
	Qualitative Interview Findings .....	75
	Interpersonal-Behavioral Model Factors .....	75

Information .....	76
Individual Protection Beliefs .....	78
Partner & Community Protection Beliefs .....	79
Infidelity Worry, Embarrassment, and Anxiety .....	81
STI Clinic Stigma .....	82
STI-Related Shame .....	83
Subjective Norms .....	85
Social Support .....	87
Behavioral Skills .....	89
Other Factors .....	91
Decisional Balance Based on Partnership Type .....	91
Implications of Trust .....	92
Structural Factors .....	94
Risk of Violence .....	95
Partners' Insurance Status, Convenience, & Transport. ...	97
Confidentiality & Legal Status .....	98
Inability to Contact Partner .....	100
Drug Resistance .....	101
Patients' Perspectives on OTC, Rapid HIV Test Kits .....	101
"Be on the Safe Side" .....	102
Positive and Negative Perceptions of Partner's React. ...	102
Earlier Identification of an HIV-Positive Person .....	103
Convenience .....	103
Empowerment .....	104
Knowledge, Skills, & Social Support Needed .....	104
Removing the Neg. Implications of STI Clinic Stigma ..	104
Worry About Quality of Test .....	105
Questions of How the Test Works .....	105
Risk of Violence .....	106
Intervention Planning .....	107
PDPT Documentation & Materials .....	107
Counseling .....	108
Peer Health Educators & Peer Support Groups .....	110
Considerations When There is a Risk of Violence .....	111
Structural Changes to the Clinic .....	111
Adverse Outcomes of PDPT .....	112
Quantitative Data Results .....	113
Predictors of PDPT Acceptability .....	113
I-B Model Predictors of PDPT Intentions .....	117
Mediation Analysis .....	122
V. Discussion & Conclusion .....	124
Discussion .....	124
PDPT Acceptability and the Influence of Structural Factors .....	124
I-B Model Factors on PDPT Intentions .....	128
Information .....	129

	Motivation .....	130
	Social Support .....	134
	Behavioral Skills .....	135
	Fitting the Constructs Together .....	136
	Medication Delivery Self-Efficacy as a Mediator .....	137
	The Risk of Violence .....	138
	The Potential for Including HIV Test Kits with PDPT.....	140
	Intervention Planning.....	142
	The Need for Triage Patients at Risk of IPV .....	143
	PDPT Packaging & Materials .....	144
	Counseling .....	144
	Peer Health Educators & Peer Support Groups .....	146
	Structural Changes to the STI Clinic .....	147
	Limitations .....	147
	Conclusions .....	148
VI.	References .....	150
VII.	Appendices .....	159
	Appendix A: Clinic Demographic Screening Form .....	159
	Appendix B: IRB Approval Letter .....	161
	Appendix C: Phase 1 Qualitative Interview Guide .....	163
	Appendix D: Cognitive Interview Guide .....	166
	Appendix E: Final Survey .....	185
	Appendix F: Partner and Comm. Protection Beliefs Factor Analysis ....	199
	Appendix G: STI Clinic Stigma & STI-Related Shame Fact. Analysis .	201
	Appendix H: Phase 3 Qualitative Interview Guide .....	205
	Appendix I: Information Pamphlet for PDPT .....	207
VIII.	Curriculum Vitae .....	211

## LIST OF FIGURES

Figure 1: Interpersonal-Behavioral Model .....	25
Figure 2: Enrollment Flow Diagram for Full Mixed-Method Study .....	72
Figure 3: Path Diagram of Partner Motivation-to-Comply on Medication Delivery Self-Efficacy and PDPT Intentions.....	123
Figure 4: Interpersonal-Behavioral Model Revised .....	129
Figure 5: Flow Diagram of PDPT Intervention Mechanisms .....	143

## LIST OF TABLES

Table 1: Descriptive Statistics, Distributional Properties, and Reliabilities of Measures .....	53
Table 2: Demographic and Background Characteristics of STI Clinic Patients....	73
Table 3: Bivariate Linear Regression Coefficients of Model Predictors on PDPT Acceptability among a Sample of STI Clinic Patients .....	114
Table 4: Linear Regression Coefficients of the Final Model Predicting PDPT Acceptability among a Sample of STI Clinic Patients .....	116
Table 5: Linear Regression Coefficients of the Final Model Predicting PDPT Intentions among a Sample of STI Clinic Patients .....	118
Table 6: Linear Regression Coefficients of the Final Model Predicting PDPT Intentions among a Sample of STI Clinic Patients .....	121
Table 7: Linear Regression Coefficients of the Fully-Adjusted Models Predicting Medication Delivery Self-Efficacy and PDPT Intentions among a Sample of STI Clinic Patients .....	123

## ACKNOWLEDGEMENTS

First and foremost, I want to thank my advisor, Lance Weinhardt, who saw my research and career potential early in my graduate studies. His commitment to me as a student was unwavering throughout my Masters and Doctoral studies. I also want to thank the entire Zilber School of Public Health faculty at UW-Milwaukee for their instruction and mentorship throughout my graduate school education, especially Young Cho, Amy Harley, Paul Florsheim, Renee Walker, Emmanuel Ngui, and Alice Yan of the Community and Behavioral Health Promotion core. I want to give a special thank you to staff at the Zilber School of Public Health who provided guidance and assistance frequently during my tenure, especially Darcie Warren, Bonnie Murphy, and George Henion. Thank you to the Dean's office at the Zilber School of Public Health, especially Founding Dean Magda Peck who has remained supportive of my studies and professional growth beyond her tenure as Dean. Faculty from other schools and colleges at UW-Milwaukee also contributed to my personal and professional development, most notably Katie Mosack, Lucy Mkandawire-Valhmu, Ron Cisler, Patricia Stevens, and Anne Dressel. Faculty and staff from the Center for AIDS Intervention Research (CAIR) at the Medical College of Wisconsin also merit special mention for their support and mentorship, including Jennifer Walsh, Kevin Brown, Cheri Treffinger, and Kristin Hackl. A special thank you also to the Undergraduate Research Assistants who helped in the data collection of my dissertation research, including Amie Emrys, Katelyn Dallman, Ratka Galijot, and Steven Lovejoy. Additionally, I want to thank the entire City of Milwaukee Health Department staff who helped provide an atmosphere supportive of research and data collection within their clinic space, especially Paul Hunter, Irmine Reitl, and Otilio Oyervides. Finally, I want to thank the

many clinic patients who participated in this study; this research would not have been possible without their valuable contributions.

I want to give a special thank you and mention to the various funding sources that made my education and this research possible. First, all of my Doctoral studies and most of my Masters education were supported by the National Institute of Mental Health, under research funding received by Lance Weinhardt (R01-MH089129). I want to thank the Dean's Office at the Zilber School of Public Health, which awarded a Public Health Doctoral Student Award to fund a portion of this dissertation research, and I want to thank Lance Weinhardt for his use of discretionary funding that provided the additional support necessary to complete this project. Lastly, I want to thank the Chancellor's Office, which awarded a large financial scholarship early on in my graduate education when it was needed most.

Finally, I want to give a *huge* thank you to my family and friends who supported me throughout my education. My wife, Nancy, is an incredibly supportive partner who concurrently obtained her educational goals as a Masters trained nurse. Most importantly, she helped me obtain balance against the high rigors of my Doctoral program. I want to thank my mother, Dr. Laura Joosse, who is an inspiring woman. As the first of her family to obtain a college degree, she continued on in her educational journey as I was a young adult and obtained her terminal degree as a PhD trained nurse. Thank you to my father, who instilled a work ethic and level of determination that made enduring graduate school possible. Thank you to my step-father, who guided and supported my career path into public health after his own professional experiences as a psychiatrist. Lastly, I want to give a large shout out to my Milwaukee area friends, who joined me in activities of triathlon, cycling, volleyball, softball, and tennis. These fun activities helped me stay mentally and physically fit throughout the rigors of graduate school.

# PATIENT-DELIVERED PARTNER THERAPY: BIOMEDICAL AND BEHAVIORAL SCIENCE INTERVENTION FOR A COMMUNITY-BASED PUBLIC HEALTH SEXUALLY TRANSMITTED INFECTION CLINIC

## CHAPTER 1: INTRODUCTION

### The Problem

The transmission of sexually transmitted infections (i.e., STIs) remains a preventable, public health problem within the United States (U.S.). An urgent need for treatment and prevention of STIs is evident by Health People 2020 target objectives aimed at reducing rates of bacterial and other viral STIs (Healthy People 2020, 2015). National data highlight this need; over 1.4 million cases of chlamydia and over 333,000 cases of gonorrhea were reported to the Centers for Disease Control and Prevention (CDC) in 2013 (CDC, 2014). Trichomoniasis – another common bacterial STI but without mandatory reporting to the CDC – affects about 225,000 women a year (CDC, 2014). An estimated 19.7 million new STI infections, including both viral and bacterial infections, occur annually within the U.S. with a direct cost to the healthcare system estimated at \$15.6 billion (Owusu-Edusei et al., 2013).

### Prevalence of Repeat Bacterial Sexually Transmitted Infections

Successful treatment options with high efficacy are available for bacterial STIs (Workowski, Bolan, & CDC, 2015); as such, repeat infections are caused mostly by engaging in unprotected sexual activity with an untreated or new sexual partner. Standard risk-reduction counseling practices are designed to prevent the latter, but partner notification methods – where potentially exposed sexual partners are contacted to receive testing and/or treatment – are designed to prevent re-exposure to an untreated sexual partner and decrease network prevalence (Ferreira, Young, Mathews, Zunza, & Low, 2013; Workowski et al., 2015). Despite efficacious treatment, reviews have identified median reinfection incidence at 13.9% (range: 0-32%) and

11.7% (range: 2.6-40%) for women with chlamydia or gonorrhea, respectively (Hosenfeld et al., 2009), and 11.3% (range: 9.8-18.3%) and 7.0% (range: 0-30.8%) for men, respectively (Fung, Scott, Kent, and Klausner, 2007). Reinfection rates for trichomoniasis are not well reported due to previously limited diagnostic screening procedures (Workowski et al., 2015), but a recent study conducted with improved diagnostic technology identified a high reinfection rate of 22% (Alcaide et al., 2015). Serious complications related to repeated or untreated bacterial STIs include pelvic inflammatory disease, infertility, and ectopic pregnancy (Workowski et al., 2015), which make reinfection prevention and partner treatment target priorities.

### **Expediting Partner Treatment**

Mechanisms to increase partner notification are paramount to decreasing reinfections. In a mathematical modelling study, researchers found that quickly treating sexual partners after diagnosis of the index patient can substantially reduce repeat infections (Low, Heijne, Herzog, & Althaus, 2014). Without partner notification, median repeat infection rates were predicted at 19.4% and 12.5% for chlamydia and gonorrhea, respectively. When all current sexual partners received treatment within three days from the index patient's diagnosis, median reinfection estimates decreased to 4.2% for chlamydia and 5.5% for gonorrhea (Low et al., 2014). Thus, mechanisms to expedite the partner notification and treatment process could have a substantial impact on reducing repeat infections among patients seen in clinics for bacterial STIs.

### **Definitions**

One mechanism to accelerate the time to partner treatment is the use of expedited partner therapy. Expedited partner therapy is an umbrella term used by the CDC, which is defined as the provision of medication or prescription to a patient for sexual partner treatment (2015). Thus, medications or a prescription for medications are provided to a patient to give to their partner

without requiring the partners to undergo diagnostic testing before receiving treatment. Other terms have been used to describe similar expedited methods of partner treatment including patient-delivered partner therapy, patient-delivered partner medication, expedited partner treatment, and accelerated partner therapy. Ambiguity and inconsistency in terminology was found within the literature, requiring more explicit definitions for use within this dissertation. As such, two specific definitions are provided to delineate the delivery of prescriptions from medications to patients.

**Expedited partner therapy (EPT).** EPT is redefined here as the provision of a *prescription* for medications to a patient for delivery directly to their partner for partner treatment. Similarly, EPT does not require a partner to undergo diagnostic testing or screening, but it does require the additional step of filling the prescription from a pharmacy or other medication distribution site.

**Patient-delivered partner therapy (PDPT).** PDPT is then the practice of providing index patients *medication* for delivery directly to their partner for partner treatment, without requiring partners to participate in diagnostic testing, screening, or an interaction with a healthcare professional. Because index patients provide the actual medication directly to their partners, PDPT is the most immediate mechanism of partner treatment.

Researchers sometimes followed the CDC's definition of expedited partner therapy, where medications or prescriptions were provided to patients. When possible, research papers were searched for their definitions of the partner referral mechanism in an effort to provide a more specific definition of EPT or PDPT as defined here. When a definition was not provided and the PI was unable to determine if EPT or/and PDPT was used under the aforementioned definitions, the referral mechanism is described as EPT and/or PDPT, PDPT/EPT, or expedited

partner treatment mechanisms. Similarly, this strategy was used when citing multiple publications together when both mechanisms were used within the cited works collectively. As EPT distinctly requires an additional behavioral step in obtaining treatment (e.g., seeking a pharmacy), PDPT was differentiated as much as possible. However, all publications on methods of expedited partner treatment (i.e., EPT and PDPT) were considered in the review because of their similarity in not requiring a diagnostic screening before treatment. Ambiguity in terminology used is a limitation of the entire collection of published literature, but I've attempted to be as clear as possible when reporting literature review findings.

**Other forms of partner referral.** Alternative forms of partner notification include simple partner referral, enhanced partner referral, and provider referral. Simple partner referral refers to the verbal consultation from a health service provider encouraging the patient to ensure partners are tested and treated, whereas enhanced partner referral techniques include the provision of educational materials to the index patient, information-transfer techniques for index patients to provide written information from the provider to partners, home-sampling STI test kits, website tools, theory-based counseling, and other contact mechanisms for providers to remind index patients to notify partners. Finally, provider referral is an approach that uses a health specialist or clinician to contact partners directly (Ferreira et al., 2013). Thus, PDPT provides the most immediate mechanism of partner treatment of all partner referral types.

### **A Social Justice Issue**

STI incidence and repeat infection rates are not equitable between racial/ethnic groups in the U.S. In 2013, the rates of chlamydia and gonorrhea – two of the most common bacterial STIs in the United States – were 6.4 and 12.4 times higher for Blacks than Whites, respectively (CDC, 2014). Data from the National Health and Examination Survey provide evidence of similar disparity for trichomoniasis, where Black women had 10 times higher prevalence than White

women (Sutton et al., 2007). Data from Add Health, a nationally-representative survey of adolescents into adulthood that conducted STI screening, found that 21% of Black young adults (age 18-26) had an incident STI at the time of interview compared to 8% of Hispanics, 7% of Whites, and 6% of Asians (Wildsmith, Schelar, Peterson, & Manlove, 2010). After diagnosis and treatment, Black men and women also have 3.0 and 1.6 times greater likelihood of obtaining a repeat infection compared to non-Black patients, respectively (Newman, Warner, & Weinstock, 2006). Due to unequal morbidity by race, issues of bacterial STIs in the U.S. are a social justice issue.

Expediting partner treatment is one mechanism to reduce population disparities in bacterial STIs. Since resource limitations often inhibit the practice of provider-intensive forms of partner notification within public health departments (CDC, 2014), many patients are required to notify their sexual partners themselves. PDPT is a biomedical intervention that requires patients to self-notify sexual partners, but provides immediate treatment to partners. Experimental evidence of the effectiveness of PDPT is clear; PDPT reduced the risk of repeat infection by 29% compared to simple partner referral in meta-analytic review (Ferreira et al., 2013). Moreover, PDPT reduced reinfection rates far more effectively than simple partner referral for Black patients and those seen within an STI clinic (Shiely et al., 2010), which provides evidence that the provision of PDPT could help reduce health disparities if implemented in STI clinics typically providing care to minority Black patients. Population-level effects of expedited partner treatment mechanisms were also observed; a 10% decrease in chlamydia and gonorrhea prevalence was observed in women after randomized block implementation of EPT and PDPT across multiple local health jurisdictions (Golden et al., 2015). Therefore, targeted implementation of PDPT as a biomedical intervention alone has potential to reduce STI

disparities by race, but this dissertation study expands PDPT to a bio-behavioral intervention by exploring the behavioral components of PDPT in an effort to develop a behavioral intervention to support PDPT.

**A local effort.** In an effort to target local STI disparities by race, this study collects data from a local public STI clinic in Milwaukee, Wisconsin, serving a priority population for HIV and STI prevention; more than 95% of patients diagnosed with a bacterial STI are Black or African American and repeat infections are common. In 2015, the STI clinic had 5,326 patient visits, and STI clinic staff were responsible for diagnosing over 2,100 cases of bacterial STIs. More specifically, 658 new cases of chlamydia, 591 cases of gonorrhea, and 245 cases of trichomoniasis were diagnosed in this clinic in the 2015 calendar year. The clinic also diagnosed 694 cases of nongonococcal urethritis – a less specific diagnosis – which is an STI from bacteria other than gonorrhea, requires antibiotic treatment and partner referral, and is most often caused by chlamydia (O. Oyervides, personal communication, July 19, 2016). Thus, mixed-method data collected from this clinic will be used to design a behavioral intervention for use with PDPT for patients seen at this specific STI clinic. An effective intervention specifically tailored for this population could reduce repeat infections, improve partner treatment rates, and reduce community STI prevalence.

### **Literature Review Objectives**

The first objective of this dissertation was to review literature of expedited partner treatment mechanisms and provide key recommendations for clinical practice and future research. This review provided additional evidence in support of expedited partner treatment mechanisms, particularly the use of PDPT. An adapted theoretical model titled the Interpersonal-Behavioral model (i.e., I-B model) was proposed as a useful conceptual framework for

understanding partner notification and delivery of PDPT to sexual partners based on a review of existing literature. A key finding from this review was that additional research was needed to develop a theoretically-guided behavioral intervention for delivery with PDPT; however the first step in intervention development was to conduct mixed-method elicitation research.

### **Specific Aims**

The specific aims of this dissertation research were to: 1) identify perceived patient barriers and facilitators of PDPT delivery to their sexual partners; 2) develop and pre-test a quantitative survey instrument measuring the proposed theoretical model's behavioral constructs; 3) determine the acceptability of PDPT as a partner notification and treatment mechanism; 4) test the effects of the proposed theoretical model's constructs on intentions to use PDPT; and 5) identify potential behavioral intervention mechanisms to help patients be successful in delivering PDPT to sexual partners after diagnosis with chlamydia, gonorrhea, or trichomoniasis.

The specific aims of this research were accomplished through five main steps. First, I developed a quantitative survey based on a review of the literature and qualitative interview findings from a small sample ( $N=5$ ) of patients attending a community-based, public STI clinic. Second, I pre-tested the developed survey with another sample ( $N=5$ ) of STI clinic patients by using a think aloud interview strategy with participants to further refine the survey instrument. Third, I conducted mixed-method elicitation research with 200 STI clinic patients. Participants were recruited for participation into a quantitative survey measuring theoretical constructs and outcomes of acceptability and intentions to use PDPT. Concurrently, a subsample ( $N=15$ ) of survey respondents were purposively sampled for additional in-depth, qualitative interviewing to identify barriers and facilitators to PDPT delivery, intervention mechanisms, and potential for including over-the-counter, rapid HIV test kits with PDPT, all important for developing a

behavioral intervention to support PDPT. An interpretive phenomenological analysis method of thematic coding was used for qualitative analysis, and results are presented with quantitative survey data in this mixed-method design. Forth, theoretical constructs were regressed on PDPT intentions. The additive contributions of theoretical constructs specific to the proposed conceptual model were then tested by comparison to the Information-Motivation-Behavioral Skills model in a nested-model comparison. Last, group-specific needs and intervention tactics are recommended based on feedback from STI clinic patients and other findings from this mixed-method research study.

*This study is the first to conceptualize a theoretical model for understanding PDPT outcomes and represents the formative work in the development of behavioral interventions to support PDPT.*

## **CHAPTER 2: LITERATURE REVIEW**

### **Expedited Partner Treatment Mechanisms for Sexually Transmitted Infections: An Integrative Review and Introduction of the Interpersonal-Behavioral Model (I-B Model)**

#### **Introduction**

Patients who repeatedly acquire STIs represent a population of significant concern because of their increased risk for complications and their disproportionate share of morbidity. Complications associated with repeat or untreated infection include infertility, ectopic pregnancy, and pelvic inflammatory disease (Leichliter, Ellen, & Gunn, 2007). Further, individuals who repeatedly acquire STIs place themselves at greater risk for contracting HIV by continued engagement in sexual risk behavior and increased susceptibility, resulting in an increased risk of HIV infection by two- to five-fold (CDC, 1998; Nusbaum, Wallace, Slatt, & Kondrad, 2004; Wasserheit, 1992). Median reinfection rates range from 7-14% depending on bacterial STI and patient sex despite the multiple treatment options with high levels of efficacy (Fung, Scott, Kent, & Klausner, 2007; Hosenfeld et al., 2009; Workowski et al., 2015). Thus, repeat infections are caused mostly by engaging in unprotected sexual activity with an untreated or new sexual partner. Standard risk-reduction counseling practices are designed to prevent the latter, but partner notification methods – where potentially exposed sexual partners are contacted to receive testing and/or treatment – are designed, in part, to facilitate access to treatment, prevent repeated exposure to infected partners, and decrease STI prevalence in efforts to reduce repeat infections and HIV potential (Ferreira et al., 2013; Steen, Wi, Kamali, & Ndowa, 2009; Workowski et al., 2015). The use of expedited partner therapy (i.e., EPT) and patient-delivered partner therapy (i.e., PDPT) are the most immediate mechanisms of partner treatment; therefore a literature review was conducted in an effort to provide key recommendations for future research that will foster new knowledge and address scientific gaps.

Peer-reviewed literature was reviewed from PubMed (National Library of Medicine) without a date restriction in June, 2015. Key search terms included patient-delivered partner therapy, patient-delivered partner medication, expedited partner treatment, expedited partner therapy, and accelerated partner therapy. Backwards citation review was also conducted to identify any literature missed through the database review. To broaden the perspective of this paper, additional theoretical and sexual health research was used throughout to provide a more critical understanding of the current state of research with expedited partner treatment mechanisms for STIs.

This critical and integrative review is organized to provide key recommendations for clinical practice and future research. In this paper, I review experimental and quasi-experimental evidence of PDPT compared with alternative partner referral strategies. After recommending the need for the development of a new behavioral intervention for delivery with PDPT, I describe the need for behavioral health theory in developing a bio-behavioral intervention. Previous behavioral research is reviewed and an adapted theoretical model titled the Interpersonal-Behavioral model (i.e., I-B model) is proposed as a conceptual framework for understanding partner notification and delivery of PDPT to sexual partners. Next, I discuss ethical considerations in PDPT including the legal status by state law, improper use, and use within a specific subgroup of STI clinic patients. Finally, I recommend the need to conduct mixed-method elicitation research as the formative work in developing a theory-based, motivational interviewing counseling intervention for patients receiving PDPT to be experimentally tested in future research.

## **PDPT Compared to Alternative Partner Notification Mechanisms**

Four main partner notification strategies were identified within the published literature including simple and enhanced partner referral, provider referral, and expedited partner treatment mechanisms (Ferreira et al., 2013). Simple partner referral refers to verbal consultation with a health service provider encouraging the patient to ensure partners are tested and treated. Enhanced partner referral techniques included the provision of educational materials to the index patient, information-transfer techniques for index patients to provide written information from the provider to partners, home-sampling STI test kits, website tools, theory-based counseling, and other contact mechanisms for providers to remind index patients to notify partners. Provider referral is an approach that uses a health specialist or clinician to contact partners directly. Variations on this method include contract referral wherein health specialists are only used if the elicited partners do not receive testing and treatment. Provider referral is generally the preferred strategy (Workowski et al., 2015), but resource limitations often inhibit the practice of this notification strategy in public health departments (CDC, 2014). When considered within the context of a continuum of services received when screened and treated for an STI, these partner notification strategies are within the CDC's "partner services" provided to patients to increase the number of people infected with an STI who receive treatment (Workowski et al., 2015). All of these models have been previously tested, but experimental and quasi-experimental evidence indicates differences in effectiveness.

### **Experimental Evidence of PDPT**

**PDPT vs simple partner referral.** Nine studies to date have studied the efficacy of PDPT compared to simple partner referral. PDPT reinfection results are available from randomized controlled trials on chlamydia (Cameron et al., 2009; Schillinger et al., 2003),

trichomoniasis (Kissinger et al., 2006; Schwebke & Desmond, 2010), and chlamydia or gonorrhea (Kissinger et al., 2005; Golden et al., 2005). In most studies, researchers found decreased risk for repeat infection in PDPT intervention participants compared to those receiving simple patient referral (Golden et al., 2005; Kissinger et al., 2006; Kissinger et al., 2005; Schillinger et al., 2003; Schwebke & Desmond, 2010), and in one study, limited by sample size, researchers found null effects (Cameron et al., 2009). In meta-analytic review, Ferreira et al. (2013) found a combined risk ratio of 0.71 for repeat infection favoring the PDPT intervention strategy; thus patients had 29% lower risk of repeat infection when given PDPT over simple partner referral. Among studies where researchers measured the number of partners notified (Cameron et al., 2009; Estcourt et al., 2015; Golden et al., 2005; Kerani, Fleming, DeYoung, & Golden, 2011; Kissinger et al., 2005; Mohammed, Leichter, Schmidt, Farley, & Kissinger, 2010), researchers found a significant increase in the number of partners notified compared to simple partner referral in two of the studies (Kissinger et al., 2005; Mohammed et al., 2010). However, men were significantly more likely to notify their partner when assigned PDPT, but women were not, due to high rates of disclosure regardless of partner notification method assignment (Mohammed et al., 2010). Nonetheless, patients assigned PDPT consistently had more partners treated compared to those assigned simple partner referral (Golden et al., 2005; Kerani et al., 2011; Kissinger et al., 2005; Nuwaha et al., 2001; Schwebke et al., 2010). In summary, PDPT was shown to be superior to simple partner referral in randomized controlled trial studies.

**PDPT vs enhanced partner referral strategies.** Enhanced forms of partner notification can be more effective than simple partner referral, but the type of enhancement is important. For example, methods using home-sampling STI kits and websites for referral assistance were found

to be ineffective at reducing repeat infections compared to simple partner referral (Cameron et al., 2009; Tomnay, Pitts, Kuo, & Fairley, 2006). In contrast, other methods including the provision of information booklets, use of Disease Intervention Specialists, and the delivery of additional counseling resulted in decreased reinfection rates for prescribed patients compared to simple partner referral (Kissinger et al., 2005; Low et al., 2006; Wilson et al., 2009). When additional comparisons between PDPT and enhanced partner referral strategies were conducted, researchers found that neither intervention was more effective than the other at reducing repeat infection (Kissinger et al., 2005; Kissinger et al., 2006; Golden et al., 2005). Nonetheless, researchers found that PDPT reduced reinfection rates far more effectively for Black patients and those seen within an STI clinic (Shiely et al., 2010), which provides evidence that the provision of PDPT could help reduce health disparities if implemented in STI clinics typically providing care to Black patients.

### **Quasi-Experimental Evidence on the Effectiveness of PDPT**

PDPT has also shown great promise within quasi-experimental research to improve the external validity of findings compared to randomized controlled trials. Randomized controlled studies are limited when recruitment issues result in the participant sample not being representative of the general studied population, apparent in some studies (Kerani et al., 2011; Estcourt et al., 2015). However, quasi-experimental research allows assessment of the PDPT intervention within study designs that allow greater generalizability of the findings to the intended populations under study (Shadish, Cook, & Campbell, 2002).

Supporting evidence of PDPT has also been found in quasi-experimental research. A randomized program implementation by local health jurisdictions allowed evaluation of outcomes before and after implementation of PDPT and EPT (Golden et al., 2015). Specifically,

researchers implemented a program where PDPT and/or EPT were provided for free to clinicians for use within their clinical setting. A letter was provided to clinicians working in STI services informing them of the clinical guidelines recommending PDPT or EPT when a partner is unlikely to present for testing and treatment. The implementation of this program was introduced into different local health jurisdictions in a staggered time series design using step-wise block randomization. Researchers found that a structural introduction of PDPT and/or EPT into clinical programming significantly improved the number of people receiving these services (18 to 34%) and the number of patients receiving partner services more generally (25 to 45%), which resulted in a population-level 10% decrease in chlamydia and gonorrhea infections in women after adjusting for historical trends. While the confidence limit included 1.0 (0.80-1.01; Golden et al., 2015), this design was limited in power and experimental contamination across groups through sexual networks was possible. Similarly, Schumacher and Ghanem (2013) found a population-level effect on reducing repeat infections after EPT implementation after adjusting for secular trends. EPT had an independent effect, where patients provided EPT had lower reinfections compared to patients treated before EPT was available (Schumacher & Ghanem, 2013). Lack of provision of PDPT by clinicians to patients also resulted in a seven-fold increase in the chance of having patients with untreated partners (Golden et al., 2007). Alternatively, patient-selected mechanisms between the United Kingdom's (U.K.'s) version of PDPT and EPT – where providers are required to first establish contact with partners directly by means such as a phone call before medication or prescription can be legally distributed for a partner – significantly improved partner notification and treatment compared to simple partner referral (Estcourt et al., 2012). Among non-randomized cohort studies, the provision of PDPT or EPT had mixed results on repeat infection. Patients receiving expedited partner treatment mechanisms had significantly

lower rates of reinfection compared to those who were prescribed simple partner referral in two studies (Kissinger et al., 1998; Taylor et al., 2013), but no significant differences were observed in three others (Kerns et al., 2011; Mickiewicz, Al-Tayyib, Thurn, & Reitmeijer, 2012; Stephens, Bernstein, Katz, Philip, & Klausner, 2010). Nonetheless, these non-randomized cohort studies were severely limited by selection bias from loss to follow-up (i.e., no required screening for reinfection) and inability to account for potential unmeasured differences in EPT or PDPT provision and/or acceptance (i.e., patients provided PDPT could have had higher behavioral risk for reinfection). Given these limitations, any behavioral intervention developed for use with PDPT should thus be tested first using an experimental study design. In summary, PDPT programs had relatively positive outcomes to date including population-level impacts on communities. These results, taken in tandem with experimental evidence, provide substantial evidence in support of PDPT implementation within high STI morbidity communities.

### **The Need for a Combined Intervention Strategy**

Despite the evidence in support of PDPT, there is room for improvement in implementation and outcomes. Presumably not all partners receive the medications given to patients, and it is possible that a behavioral intervention could help. Three of the previously discussed experimental studies compared PDPT to an enhanced partner referral strategy (Cameron et al., 2009; Kissinger et al., 2005; Kissinger et al., 2006). Researchers indicated no significant differences in reinfection rates comparing the two strategies, but all previous interventions were limited to the provision of a basic PDPT protocol likely because of the focus on biomedical efficacy. Procedures for the delivery of PDPT based on previous studies included the provision of medication and information only (e.g., contact information for the health professional, STI information, drug safety information, and clinic locations and hours for testing;

Cameron et al., 2009; Golden et al., 2005; Kissinger et al., 2005; Kissinger et al., 2006; Schillinger et al., 2003). Only one study mentioned any standardized procedure for the delivery of PDPT, and the scripted intervention included basic information about dosing and warnings only (Schwebke & Desmond, 2010).

The addition of a behavioral intervention to PDPT is urgently needed because of the interpersonal complexity of notifying a partner of an STI and providing medications for their treatment. Previous evidence presented shows the promise of PDPT, but this mechanism is not without normative barriers. An unprepared patient could be at risk for not notifying their partner of the STI or not providing the medications for their partner's treatment. STI-related stigma, blame, and perception of partner responsibility for the STI were all found to be barriers to PDPT acceptance by partners (McBride, Goldsworthy, & Fortenberry, 2010). Moreover, lack of trust, poor relationship quality, and lack of relationship closeness were all identified as influential in determining acceptability in receiving PDPT as a partner (McBride, Goldsworthy, & Fortenberry, 2009; McBride et al., 2010). These barriers are typical of partner notification in general, but could be addressed if the index patient responsible for PDPT delivery has improved behavioral skills obtained through a behavioral counseling intervention. However, further research with the specific target populations is needed to determine which behavioral skills might be important for them to successfully notify their sexual partner of an STI. While better communication skills seem intuitive to focus on for notifying a partner of an STI given the aforementioned perceptions, further research with STI clinic patients is needed to determine which skills are most applicable in their preparation for partner notification. Beyond behavioral skills, patients must also be able to disseminate important knowledge about the medications and STI in a manner that is understood by the partner to motivate acceptance of their exposure even

if they are not showing any signs or symptoms of the STI. Further research is also needed to determine if the aforementioned normative factors and other motivational factors can be addressed within a behavioral intervention with STI clinic patients. Therefore, the complexity of partner notification and PDPT delivery requires further study and formative work in developing a behavioral intervention to support PDPT in STI clinic settings.

Based on previous sexual risk-reduction behavioral interventions, theory-based motivational interviewing strategies have the potential to increase protective behaviors of STI clinic patients (e.g., Project RESPECT using the Information-Motivation-Behavioral Skills model; Kamb et al., 1998); however additional intervention strategies using interpersonal medication delivery mechanisms need to be experimentally tested. Results could have widespread generalizability beyond sexual health issues. For example, Naloxone delivery to prevent accidental drug overdose (Doe-Simkins, Walley, Epstein, & Moyer, 2009) is a similar medication delivery issue that could benefit from a behavioral intervention for index patients. The impact of coupled biomedical and advanced behavioral (i.e., bio-behavioral) interventions may be significant, as evident from the expansion of a motivational interviewing approach within a recent study on pre-exposure prophylaxis (i.e., PrEP) for HIV prevention which found higher rates of adherence, higher rates of detectable drug levels, and larger decreases in HIV incidence post-implementation (Mansoor et al., 2014). When a bio-behavioral strategy is considered with PDPT, behavioral interventions have the potential to decrease the rate of repeat infection, decrease the spread of bacterial STIs, and increase efforts to reduce transmission of HIV within sexual networks far better than PDPT alone. I also believe this research represents the formative work for future interpersonal delivery mechanisms of PrEP and highly-active antiretroviral therapy (i.e., HAART) for HIV prevention and treatment.

In summary, the following recommendations are suggested to move science and practice forward: 1) PDPT should be recommended as a partner notification and treatment mechanism because of positive evidence reported to date; 2) expedited partner treatment mechanisms reduce community prevalence and should be implemented in high morbidity areas; 3) implementation of PDPT within STI clinic settings caring for Black patients could help reduce racial health disparities for STIs; 4) PDPT should be combined with an enhanced behavioral intervention and experimentally tested; and 5) additional research is needed to determine which if any behavioral skills are most important for preparing STI clinic patients to deliver PDPT to their sexual partners. Further, additional research is needed to determine if PDPT is an acceptable method of partner treatment for a particularly vulnerable population of patients seen at a public STI clinic in Milwaukee, Wisconsin.

### **Why PDPT Works from a Partners' Perspective**

PDPT is a mechanism of partner notification and treatment that is predicated on partner acceptance. Acceptance of PDPT by sexual partners reduces barriers to treatment that would otherwise require visiting a clinic for STI screening and treatment. In this section, I describe previously published evidence in support of PDPT acceptance by sexual partners and reasons for acceptability. Next, I describe how PDPT removes a barrier to receiving STI treatment, and in doing so discuss why the provision of PDPT is preferred over the alternative method of prescription delivery (i.e., EPT). Last, I highlight a critical limitation and missed opportunity for HIV testing with the current PDPT delivery model that should be addressed in future research.

#### **Partners Accept PDPT**

Reported acceptance and willingness to take PDPT or EPT was generally high and varied by partners' symptoms, partners' sexual risk behavior, and visibility of PDPT treatment packs.

Acceptability of PDPT varied from 49-90% within the reviewed literature (Coyne, Cohen, Smith, Mandalia, & Barton, 2007; Goldsworthy & Fortenberry, 2009; Holloway, Jones, Bell, & Westhoff, 2011; Jones, Holloway, Pressman, Meier, & Westhoff, 2013; Kerani, Fleming, & Golden, 2013; McBride et al., 2009; McBride et al., 2010). By partner symptom status, 80% of respondents said they would take PDPT if symptomatic compared to only 65% with a hypothetical asymptomatic status (Coyne et al., 2007). Previous sexual risk behavior of partners also predicted higher willingness to take PDPT. In a sample of men who have sex with men (MSM), willingness varied between 49-58% where MSM who engaged in riskier sexual behavior had the highest willingness to take PDPT brought to them by a partner (Kerani et al., 2013). Variability in willingness to receive PDPT from a partner was also found to be based on whether the respondent had seen the packaging. With the packaging in hand, 88.9% were willing to receive PDPT from a partner compared to only 57% when respondents did not see the PDPT packaging (McBride et al., 2009). The implications of these findings are that PDPT acceptance is largely dependent upon a risk appraisal accounting for symptoms and previous sexual behavior. Moreover, the packaging of PDPT likely has an impact on the perceived legitimacy of this previously atypical mode of treatment delivery, which requires further study to more fully understand why legitimacy could change based on how the medications are presented and received from partners.

### **PDPT Removes Barriers to Treatment with Limitations**

PDPT is effective at reducing repeat infections of index patients and increasing partner treatment rates because it removes barriers to receiving treatment and aligns with personal protection beliefs for some. Individual beliefs in support of EPT or PDPT include the perception that treatment would protect their health, cure the STI, reduce the spread of the STI further, and

that the allergy risk was weighted less heavily compared to the benefits of treatment (Goldsworthy & Fortenberry, 2009; McBride et al., 2009; McBride et al., 2010). A barrier to PDPT use was the belief that the partner should undergo testing and treatment from a healthcare provider (McBride et al., 2009; McBride et al., 2010), but this barrier should be considered within the context that normative support for PDPT by healthcare providers facilitated PDPT acceptance (Goldsworthy & Fortenberry, 2009). PDPT was also perceived to facilitate their treatment as a partner because of higher convenience, limited cost, more privacy, and the ability to avoid a perceived unnecessary trip to the clinic (Goldsworthy & Fortenberry, 2009; McBride et al., 2009; McBride et al., 2010). Partners who had a prior STI were more likely to accept PDPT from a partner (Holloway et al., 2011), perhaps the result of a lower risk assessment of taking the medications and previous interactions with STI healthcare providers. Moreover, 87% of partners were very or quite supportive of expedited partner treatment mechanisms (Cameron et al., 2010), likely the result of minimizing the aforementioned barriers to treatment. Sixty-five percent of partners were satisfied with any form of partner notification in another study, and the most common reason for dissatisfaction was the desire to have received PDPT and avoid the clinic for treatment (Melvin et al., 2009). Since EPT still requires a partner to see a healthcare provider or pharmacist to receive medications through a prescription, PDPT is preferred over prescription voucher methods for partner treatment.

The treatment of partners without diagnostic screening has limitations. Mainly, PDPT could result in a missed opportunity to screen for HIV and other STIs, which was an important barrier identified by healthcare providers and partners (Jotblad et al., 2012; McBride et al., 2010; Pavlin et al., 2010). One method to minimize the barrier of a missed opportunity to screen for HIV is the provision of over-the-counter, rapid HIV tests with PDPT packs; however no

published evidence to date has explored the potential acceptability of HIV test kit provision to STI clinic patients for their partners. Future research is urgently needed to investigate the potential of including rapid-HIV test kits with PDPT packs to alleviate this risk of missed HIV testing opportunities for partners.

In summary, the following recommendations are made to advance clinical practice and address an important scientific gap: 1) medication delivery to patients for their partners (i.e., PDPT) is the preferred strategy over prescription delivery (i.e., EPT), but both PDPT and EPT reduce barriers to partner treatment; and 2) future research should investigate the potential of including rapid-HIV test kits with PDPT packs to minimize the risk of a missed opportunity for HIV screening.

#### **Acceptance of Expedited Partner Treatment by Index Patients**

Research on acceptability of expedited partner treatment mechanisms provides evidence of high acceptability by patients diagnosed with bacterial STIs. Researchers found hypothetical acceptability of EPT and PDPT from 77% to 85% in cross-sectional surveys of patients waiting to be seen within STI clinics (Holloway et al., 2011; Radovic et al., 2013; Shivasankar, Challenor, & Ekanayak, 2008). Among patients prescribed expedited treatment for partners after diagnosis of an STI, PDPT and EPT acceptability varied from 48% to 78% between studies (Diclemente et al., 2014; Mickiewicz et al., 2012; Ricks et al., 2015; Temkin, Klassen, Mmari, & Gillepsie, 2011). Main reasons for refusal included inability or unwillingness of the partner to be contacted (34%), partner already received treatment (27%), and the partner was not in geographic proximity (18%); only 11% were reported by clinicians to have explicitly declined EPT for other reasons (Cameron et al., 2010). In summary, PDPT and EPT acceptability is high

among patients suggesting the utility of this intervention for a large portion of STI care consumers.

First-choice preference for PDPT compared to other partner notification strategies differed by population demographics and setting. In the U.K., 59% of STI clinic patients wanted PDPT offered as part of clinical services available to them (Coyne et al., 2007), but preference varied by gender. Sixty-seven percent of women chose PDPT over other mechanisms, but only 11% of men chose a mechanism using PDPT (Melvin et al., 2009). However, the reason for this difference is unclear suggesting the need for further research. In U.S. patient samples of mostly Black STI clinic patients, preference for PDPT varied greatly. Over 46% of patients preferred an expedited method of partner treatment over other partner notification mechanisms in Pittsburgh (Gursahaney, Jeong, Dixon, & Wiesenfeld, 2011), but researchers from another study of patients in 3 cities' STI clinics found only 20% preferred PDPT over other mechanisms (Howard et al., 2011). A gender effect was also found between delivering PDPT compared to receiving PDPT among a diverse sample of STI clinic patients. Women had higher preference for delivering PDPT compared to receiving PDPT as a partner, and men had higher preferences for receiving PDPT than delivering (McBride et al., 2009).

Discrepancies between first-choice preference and intended adherence of PDPT if provided from a healthcare provider warrant additional study. Specifically, many patient populations with low first-choice preference had high intended use of PDPT (or EPT) if offered. Among young Black women in an STI clinic, 11.2% preferred EPT or PDPT over other partner notification mechanisms, but most (85%) preferred simple partner referral to no referral at all; however, most (96%) of these young women would give the medication or prescription to their partners if provided (Buchsbaum et al., 2014). In contrast, Latino men preferred PDPT or EPT

6% of the time as a first-choice preference compared to 13% of Latina women (Holloway et al., 2011; Jones et al., 2013). Nonetheless, 77-88% of these Latino patients accepted PDPT or EPT as a method of partner notification and treatment within their clinical setting despite low first-choice preference (Holloway et al., 2011; Jones et al., 2013). Further research is recommended to identify gender- and culturally-appropriate mechanisms for specific populations – including STI clinic patients in Milwaukee, Wisconsin – to improve perceptions of PDPT use given the variability in first-choice preference for this biomedical strategy reported to date. Additional research is also needed to identify why there is a discrepancy between first-choice preference and intended adherence of PDPT if offered. Future research delineating PDPT acceptability from delivery intentions could provide intervention mechanisms at both the structural-level in the clinic (e.g., the packaging of PDPT) and at the patient-level through behavioral factors (e.g., information, motivation, and behavioral skills) that could address PDPT acceptability and intentions, respectively.

Researchers that attempted to compare expedited partner treatment mechanisms on first-choice preference found that patients favored PDPT over EPT, and the inclusion of postal testing kits was a contributing factor to preference for some. Self-selection between PDPT and EPT identified a large (85%) preference for PDPT over EPT (13%) among South African STI clinic patients (Young et al., 2007); similar estimates were found in the U.S. Seventy-nine percent of STI clinic patients in Pittsburgh preferred PDPT over other expedited partner treatment mechanisms (Gursahaney et al., 2011). When the inclusion of an STI screening kit was considered, another U.S. STI clinic sample preferred PDPT with an STI screening kit more frequently (75%) compared to either intervention alone (McBride et al., 2010) suggesting the potential of including rapid HIV test kits with PDPT. Lastly, PDPT was preferred over EPT

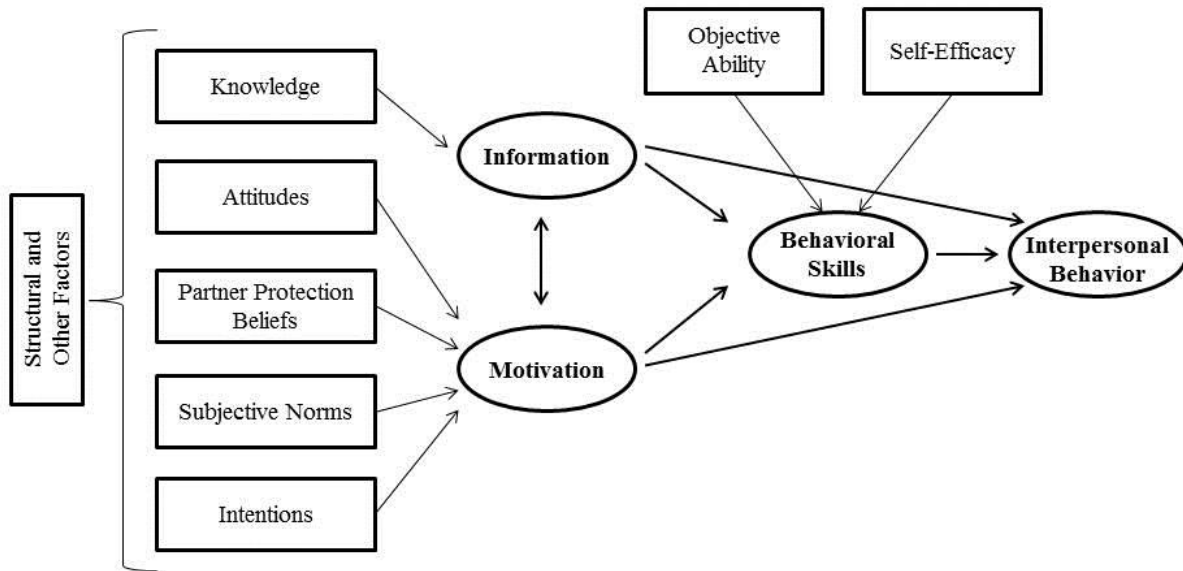
when partners knew the patient was attending the STI clinic (Sutcliffe, Brook, Chapman, Cassell, & Estcourt, 2009), perhaps the result of the partners' unwillingness to attend the clinic with the patient. If unwilling to attend the clinic when aware of the need for testing, this preference aligns with an appraisal of their partners' unwillingness to engage with healthcare professionals that a prescription voucher method fails to alleviate. Further exploration of predictors on acceptance and willingness to deliver expedited partner treatment mechanisms with specific samples will provide greater explanation of cognitive, motivational, and structural factors that affect individual decision making for specific target populations.

In summary, acceptability of PDPT is high among STI clinic patients suggesting the utility of this intervention. The potential for including rapid HIV test kits with PDPT is evident from the reviewed literature, but further research is needed to more fully explore STI clinic patients' perceptions to better prepare them for HIV test kit delivery and partner support. Moreover, additional elicitation research is recommended to identify culturally-appropriate mechanisms to improve perceptions of PDPT use because of the variability in preference of PDPT reported to date.

### **Proposed Conceptual Framework – Interpersonal-Behavioral Model**

The delivery of medication or prescriptions for partner treatment of bacterial STIs is complex, yet no known conceptual frameworks have been developed to understand this health behavior. To address this gap in the literature, a theoretical model titled the Interpersonal-Behavioral model (I-B model; see *Figure 1*) is proposed based on a review of previously published data on PDPT, EPT, and health behavior theory. The adaptation of this model from previous theories is described and the main hypotheses on the connectivity of behavioral constructs are then reported with supporting literature.

**Figure 1:** Interpersonal-Behavioral Model



Note: this model is an adapted version of the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992).

Previous theories and models that provided a starting framework for the I-B model included the Theory of Reasoned Action, Theory of Planned Behavior, and the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992; Montano & Kasprzyk, 2008). Aligned with the Theory of Reasoned Action and later extension to the Theory of Planned Behavior (Montano & Kasprzyk, 2008), the proposed I-B model hypothesizes a connection between attitudes, subjective norms, perceived control, and intentions. The inclusion of information and behavioral skills, partially aligned with perceived control, added important components of theoretical reasoning from the Information-Motivation-Behavioral Skills model which has been frequently used within STI and HIV prevention research (Fisher & Fisher, 1992; Fisher, Fisher, Bryan, & Misovich, 2002; Fisher, Fisher, Misovich, Kimble, & Malloy, 1996). Unique to this model, partner protection beliefs are an important predictor of behavioral outcomes and were thus added to the motivational construct of the hypothesized model based on

literature review findings. Lastly, structural and other factors are addressed as external factors to the model in an effort to account for factors outside the control of the patient and other factors that could influence behavioral constructs and health behavior.

This I-B model posits that information, motivation, behavioral skills, and structural factors are important predictors of interpersonal health behavior. Knowledge is unlikely to predict behavior change alone, but is an influential component to motivation and behavioral skills. Attitudes, subjective norms, and intentions are important motivational factors to behavioral performance consistent with the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992). A fourth component specific to the I-B model is the construct of partner protection beliefs. The I-B model is hypothesized to predict behavior that influences individual health as well as the health of others; therefore the inclusion of partner protection beliefs is the noteworthy addition of this model that distinguishes it from previous health behavior theories. Highly motivated and informed individuals must also have the necessary behavioral skills – the third major construct of the I-B model – to engage in the behavior. The aforementioned cognitive factors are hypothesized as important predictors of interpersonal behavior, but structural factors outside the control of the individual that could impede or enable the behavior must also be considered because they could be modifiable or addressed by reconsideration of how PDPT is distributed in the STI clinic. Therefore, structural factors were added to improve the generalizability of this model to behaviors that may not be under complete volitional control. The adaptation of this model with structural factors extends it beyond an individual-level model, and could improve its utility and generalizability in understanding interpersonal behaviors.

## **Information**

Knowledge alone is unlikely to affect behavior, but information could still have an important contribution on behavioral outcomes. A partially mediated effect of knowledge on PDPT delivery is hypothesized in the model through motivational factors and behavioral skills consistent with previous sexual health research (Fisher, Fisher, & Shuper, 2009). Low knowledge was found to be a barrier to proper PDPT use within the reviewed literature. Specifically, STI clinic patients had variability in how they defined sex and a sex partner (McBride et al., 2009). Many individuals lacked an understanding of treatment (e.g., medication names), symptoms, and transmission concepts about bacteria and infections (McBride et al., 2009). If unaddressed, limited knowledge about STIs, transmission routes, and medications could impede efforts to promote successful partner notification and delivery of PDPT by minimizing motivation. Moreover, the ability to convey complex information to partners in an understandable way was found to be a useful behavioral skill in facilitating PDPT delivery (Temkin et al., 2011), further implying the association of knowledge and behavioral skills. Therefore, accurate information of STI transmission routes and other concepts could motivate patients to provide PDPT to all potentially-exposed partners, which could be facilitated by higher behavioral skills. Further study of information is needed to more specifically understand how deficiencies in knowledge can negatively impact PDPT outcomes.

## **Motivations**

**Attitudes.** Conceptualized by previous theories into experiential and instrumental beliefs (Montano & Kasprzyk, 2008), attitudes had a positive and negative influence on PDPT perceptions. Experiential beliefs – “how do you feel about the idea of *behavior X* (Montano & Kasprzyk, 2008)” – were consistently negative within the reviewed literature due to the

complicated behavior of notifying a sexual partner of an STI diagnosis and the associated infidelity implications. STI-related stigma, embarrassment, shame, anxiety, and worry of infidelity blame were consistently identified as barriers to partner notification and PDPT/EPT delivery (McBride et al., 2009; McBride et al., 2010; Sutcliffe et al., 2009; Temkin et al., 2011). Despite these findings, empirical studies had varying results. Higher STI-related stigma significantly decreased intentions to notify partners of exposure to an STI, and higher STI-related stigma and shame significantly reduced intentions to bring PDPT to partners (Morris et al., 2014). However, STI-related stigma and shame did not significantly influence non-PDPT/EPT partner notification success longitudinally (Gursahaney et al., 2011). Additional research is needed to understand this lack of agreement, but two plausible hypotheses include: 1) the anticipated provision of PDPT could increase perceived STI-related stigma because of an appraisal of “reality” (McBride et al., 2009; Young et al., 2007), or 2) positive partner protection motivations discussed next could outweigh the negative perceptions of STI-related stigma and shame that resulted in no influence in partner notification success over time.

Common instrumental beliefs – the balance of advantages and disadvantages of doing a behavior (Montano & Kasprzyk, 2008) – were identified within the reviewed literature and included individual protection beliefs against reinfection and disruption of STI transmission. Partner treatment verification was found to facilitate PDPT use (Ricks et al., 2015; Young et al., 2007), which could have implications for individual protection beliefs or next-discussed partner protection beliefs. Moreover, beliefs about patient-delivered STI screening kits were perceived to decrease reinfection risk and reduce STI transmission (McBride et al., 2010). Refusal of PDPT for one or more partners was identified by instrumental beliefs that treatment is unnecessary with condom use (Temkin et al., 2011); therefore individuals declined PDPT when they had no

intentions of providing medication to their partners because, for example, they felt it was unnecessary to protect themselves. Framed from the individual perspective, the instrumental beliefs discussed above only incorporated views that affected the patient's individual health. The next section describes the importance of partner protection beliefs that provide additional motivation for partner treatment.

**Partner protection beliefs.** Partner protection beliefs are hypothesized to have a motivating effect on partner notification and PDPT delivery. Partner treatment is related to individual beliefs and outcomes previously discussed, but partner treatment was also found to be altruistic – patients had a desire to protect their partner's health that contributed to higher willingness to use PDPT (McBride et al., 2009; Bride et al., 2010; Ricks et al., 2015; Temkin et al., 2011). When patients were asked about their opinions of delivering PDPT, respondents identified worries of product safety and potential side effects for their partners; however these beliefs were not elicited when asked about their own opinions of receiving PDPT (McBride et al., 2009). This surprising risk appraisal finding for others compared to self demonstrates that partner protection beliefs are individually important and essential to consider for some, but may not always align with concerns they have for themselves. Additionally, higher partner protection beliefs of PDPT providing a cure and treatment ease were found to significantly increase willingness to deliver PDPT to partners (Goldsworthy & Fortenberry, 2009).

Some participants felt taking responsibility was important, but others had a limited desire to provide medications to partners. Participants who had a feeling of limited responsibility for their partner's health were found to decline PDPT (Temkin et al., 2011). Consistently reported, individual beliefs about whether partners need testing and treatment by a healthcare provider was factored into individual decision-making about PDPT provision to partners (McBride et al.,

2009; McBride et al., 2010; Melvin et al., 2009; Sutcliffe et al., 2009; Young et al., 2007).

Thirty-nine percent of surveyed respondents in a young men's health clinic felt that only healthcare providers should give medications for treatment, and 35% of all participants endorsed the desire for their partner to go to a clinic (Holloway et al., 2011). Reasoning for these beliefs could be directly related to concerns of partner protection; a desire for partners to receive face-to-face contact and counseling from a healthcare provider were identified as large barriers to the provision or hypothetical provision of PDPT to partners (Sutcliff et al., 2009; Young et al., 2007).

As other individual protection behaviors are available (e.g., condom use), both positive and negative partner protection beliefs are likely weighed with individual beliefs before behavioral action is considered. To account for this weighted belief, both individual attitudes and partner protection beliefs are included in the proposed I-B model. More specifically, higher individual protection beliefs are hypothesized to independently increase PDPT delivery outcomes in an effort to prevent reinfection. Partner protection beliefs are hypothesized to have a direct effect on PDPT outcomes, but are hypothesized to correlate with individual attitudes. If a patient has positive perceptions of PDPT, they are likely to endorse this behavior as an appropriate mechanism for their partner's treatment. In contrast, infidelity blame could result in lower perceptions of PDPT and negative partner protection beliefs, suggesting these two constructs will be associated within a conceptual model.

**Subjective norms.** Subjective norms are based on an appraisal of an individual's normative beliefs about what is or is not approved by others (Montano & Kasprzyk, 2008), and findings within the reviewed literature provide evidence that subjective norms have a large influence on PDPT uptake. Perceptions of healthcare providers' support for PDPT were found to

significantly predict higher PDPT delivery willingness (Goldsworthy & Fortenberry, 2009). In contrast, patient motivations to comply with normative influences from casual sex partners were low regardless of their perceptions of what they believed their partner would want them to do (Goldsworthy & Fortenberry, 2009). Normative influence perceptions were found to facilitate PDPT acceptance. Beliefs that partners have a general aversion to healthcare and want to avoid the embarrassment of going to a clinic for treatment facilitated PDPT acceptance (Temkin et al., 2011), suggesting the potential implications for patients' perceptions of partner approval. Partner approval perceptions were also based on STI-related stigma associated with going to a clinic for treatment when provided PDPT over EPT and other mechanisms that require healthcare provider communication (Young et al., 2007). Alternatively, patients worried about their partners' accusations of promiscuity, disbelief about their STI infection status, and potential anger as significant barriers to expedited treatment (Young et al., 2007). The appraisal of these normative influences had a large effect on motivations to comply with any potential positive normative influences about the treatment mechanism, further complicating the behavioral decision-making process for partner notification and treatment. Researchers with empirical results found subjective norms to be the most influential predictor of PDPT uptake over attitudes and barriers/facilitators (Goldsworthy & Fortenberry, 2009); therefore improving social norms is a priority intervention component that should be incorporated with other motivational factors including individual attitudes, partner protection beliefs, and intentions discussed next.

**Intentions.** The last component of the motivational construct is intention to notify and deliver PDPT to a partner after STI diagnosis, but research on PDPT intentions is limited to date. The aforementioned concepts of acceptance and willingness to use PDPT and EPT have already been discussed, but these concepts may not fully align with intentions to use expedited partner

treatments. Individuals have accepted PDPT with other intentions than partner delivery including self-use and distribution to non-network members (Temkin et al., 2011). Moreover, it is plausible that STI clinic patients would be willing to deliver PDPT, but may not intend to do so based on an appraisal of individual attitudes, partner protection beliefs, and subjective norms. Previous empirical literature is deficient in the study of intentions; only Morris et al. (2014) studied the influence of intentions as a behavioral outcome consistent with the Theories of Reasoned Action and Planned Behavior (Montano & Kasprzyk, 2008).

A limitation of these previous individual theories is the assumption that intentions are the biggest determinant of behavior (Montano & Kasprzyk, 2008). The complexity of delivering PDPT to sexual partners with the barriers discussed provides reasoning that well-intentioned individuals still need the behavioral skills to carry out the planned behavior. Intentions are only another component within the theoretical model that influences potential outcomes consistent with the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992) and the proposed I-B model, but intentions are frequently used as an outcome within cross-sectional research designs because of the inability to test the influence of intentions on health behavior over time. Specifically, individuals could have stronger intentions to deliver PDPT with more knowledge, more positive attitudes, stronger partner protection beliefs, and more positive subjective norms.

In summary, attitudes, partner protection beliefs, subjective norms, and intentions are all linked within the motivation construct. As knowledge alone is unlikely to influence health behavior, motivational factors are important for facilitating behavioral action. However, individuals must also possess the skills necessary to enact the behavior. The I-B model posits

behavioral skills discussed next are an important contributor to intentions, motivational factors, and health behavior discussed next.

### **Behavioral Skills**

**Objective ability.** Behavioral skills in previous Information-Motivation-Behavioral Skills model research included both objective ability (e.g., condom application skills) and perceived self-efficacy of the behavior (Fisher et al., 2009). For PDPT, the objective ability most likely includes the ability to effectively communicate with a partner. A need for strong communication skills was stressed by participants given PDPT or EPT (Young et al., 2007), and researchers found that limited communication skills of patients were a large barrier to potential PDPT success (Temkin et al., 2011). Participants suggested the need for more coaching and transcripts for communication with their partners about PDPT use because of their experiences with limited preparation previously (Temkin et al., 2011). Respondents identified higher communication skills including the ability to effectively communicate without medical jargon, avoid blame, and place a positive spin on the situation to facilitate PDPT use (Temkin et al., 2011). Methods avoiding face-to-face confrontation (e.g., phone call) were also found to facilitate successful partner notification (Ricks et al., 2015), but electronic communication via email was not successful for others (Temkin et al., 2011). Nonetheless, direct communication for delivery of PDPT is still required after successful partner notification within the PDPT model of care. A unique finding was the potential differentiation between typical sexual health discussions and potential PDPT discussions with partners. Ricks et al. (2015) found that infrequent STI discussions with partners was associated with PDPT acceptance; thus STI treatment discussions could differ from STI prevention negotiations among those considered higher risk. Further

research is needed to more fully understand the distinct motivations that could separate STI treatment and prevention discussions.

**Self-efficacy.** Beyond objective abilities to notify partners and provide PDPT, individuals must also possess the perceived self-efficacy (i.e., confidence in one's ability to effectively engage in a particular behavior) to do so. Higher self-efficacy for partner notification was found to be a significant predictor for successful partner notification more generally and associated with EPT acceptance by STI clinic patients (Buchsbaum et al., 2014; Radovic et al., 2013). Self-efficacy is an important construct within the I-B model for intervention planning because partner communication self-efficacy was found to be modifiable. DiClemente et al. (2014) found that individual counseling can significantly increase partner communication self-efficacy. Nonetheless, communication self-efficacy had no effect on PDPT acceptance within a small sample of incarcerated young Black women (Ricks et al., 2015), suggesting the need to conduct elicitation research with the target population prior to intervention planning to determine which behavioral skills, if any, are most relevant and modifiable.

### **Other Factors**

**Structural barriers and facilitators.** A further adaptation of this model from the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992) is the inclusion of structural barriers and facilitators – even as external factors – within the model. Most barriers and facilitators to PDPT delivery found in previous research were practical issues. For example, the inability to contact or locate a sexual partner was a large barrier to PDPT delivery (McBride et al., 2009; McBride et al., 2010; Temkin et al., 2011). Among those who could contact a partner via mechanisms other than face-to-face contact, getting a response from the partner to allow PDPT delivery was a challenge for some (Temkin et al., 2011). Patients who were able to

notify partners and provide PDPT or EPT also found significant barriers in how partners responded. Partners' refusal to take treatment was a barrier for successful PDPT use, and partners' refusal to go to a clinic to receive expedited treatment was a barrier for EPT (Young et al., 2007). A discontinued relationship was an intuitive reason for refusing PDPT (Ricks et al., 2015), but other mechanisms of partner notification could be more suitable for situations in which no contact is intended (e.g., provider referral). Participants questioned the legality of PDPT, which was a barrier to actual medication delivery (McBride et al., 2009). Additional practical concerns were related to the lack of necessity for PDPT because their partner was already treated or also in the clinic for treatment (Temkin et al., 2011; Vaidya, Johnson, Rogers, Nash, & Schillinger, 2014).

Structural factors that facilitated PDPT and EPT use included its low cost and high convenience (McBride et al., 2009; McBride et al., 2010; Melvin et al., 2009; Sutcliffe et al., 2009; Temkin et al., 2011; Young et al., 2007). Although convenient and practical, medication and associated materials' packaging were considered important to facilitate PDPT use. Goldsworthy and Fortenberry (2009) found that sealed medication, a note provided from a healthcare provider, and "official" packaging materials were significantly associated with PDPT uptake. Lastly, instrumental support – tangible support offered in the form of aid and services (Heaney & Israel, 2008) – was identified within the reviewed literature as a PDPT facilitator. Social network members were used to assist in notifying partners of the patient's STI diagnosis (Ricks et al., 2015). Even if the patient was able to successfully notify sexual partners by a phone call, social support members were also used as third-party members to deliver PDPT medications after successful partner notification (Temkin et al., 2011). These barriers and facilitators are hypothesized to impact the associations between PDPT delivery with motivation and behavioral

skills. Specifically, more facilitators and fewer barriers would allow patients to enact a health behavior when they are highly informed, motivated, and behaviorally skilled; thus these components are highly important to consider within intervention planning.

**Other factors.** The last component of the proposed I-B model includes consideration of other factors that could affect constructs within the primary model. Relationship characteristics, prior STI care experiences, and patient demographics are important to consider within testing a health behavior theory, but are not an intervention point directly. At most, these characteristics better inform population-specific nuances to intervention planning, but are largely unmodifiable. Within this section, I report findings related to these external variables only to highlight the discrepancies in findings.

Relationship characteristics can have significant influences on relevant outcomes for PDPT and EPT use. Longer, more serious relationships were found to significantly predict partner notification success and likelihood of expedited partner treatment use. For example, Gursahaney et al. (2011) found that longer relationship duration, identification of the partner as a main partner, recent sex with the partner, and having a child with the partner all significant predictors of non-PDPT partner notification success. These findings were for partner notification more generally, but relationship status as a romantic partner was also significantly associated with a higher patient likelihood of EPT use in another patient sample (Radovic et al., 2013). Increased time since last sex – potentially indicative of a lack of relationship closeness – was also found to significantly predict EPT refusal (Vaidya et al., 2014). In contrast, a casual partner during last sex was significantly associated with first-choice preference for EPT (Jones et al., 2013). Researchers found that the lack of relationship closeness, lack of partner trust, and fear of partner reaction and violence were all identified as important barriers to delivering patient-

delivered STI screening kits (McBride et al., 2010), and lack of partner trust was also found to be a significant barrier to EPT use (Sutcliffe et al., 2009). Ended relationships are considered a barrier for PDPT/EPT use, and casual sexual relationships also resulted in more difficulty with PDPT and EPT use among active relationships (Young et al., 2007). Thus, relationship dynamics provide an important level of understanding to partner notification and expedited partner treatment mechanism use, but may not offer potential for intervention development.

A noteworthy finding was the influence of prior STI diagnosis on PDPT and EPT outcomes, suggesting the potential implications of experiential learning that could influence knowledge, motivations, and behavioral skills within the I-B model. For instance, prior STI diagnosis was associated with less first-choice preference of simple partner referral, less willingness to bring their partner to the clinic, and more likelihood to choose PDPT or EPT as their preferred first-choice partner notification method among a sample of mostly-Latina women (Jones et al., 2013). Among mostly-Latino men, prior STI diagnosis was significantly associated with a higher likelihood of delivering PDPT despite lower first-choice preference of PDPT (Holloway et al., 2011). Prior STI was also significantly associated with PDPT and EPT acceptance and preference in some studies (Gursahaney et al., 2011; Mickiewicz et al., 2012; Ricks et al., 2015), but not among another (Radovic et al., 2013). For partner notification more generally, no significant difference in partner notification success was found based on patient STI history (Gursahaney et al., 2011). On the whole, the experience of prior STI diagnoses likely has an influence on partner notification strategy preference and acceptance. Further exploration of prior experiences attempting to notify sexual partners with PDPT or EPT is needed within more contexts, but experiential learning likely has an influence on other theoretical constructs within the hypothesized I-B model.

Inconsistent results have been reported to date on the correlation of other demographic variables and PDPT or EPT acceptance and preference. Researchers reported the correlations between EPT acceptance for chlamydia, gonorrhea, and coinfections on demographic and background variables, but found inconsistencies in significance testing for gender, race, symptoms, and number of sexual partners on EPT acceptance for the various STIs (Mickiewicz et al., 2012), perhaps the result of Type-I testing error. Women were also more likely than men to prefer EPT in one study (Gursahaney et al., 2011), but another found that women were significantly more likely to prefer partner treatment in the clinic compared to men (Howard et al., 2011). Additionally, no significant differences in PDPT or EPT preference and use by gender were observed in other studies (Radovic et al., 2013; Shivasankar et al., 2008; Vaidya et al., 2014). Higher education was found to significantly predict a higher likelihood of EPT use for one study (Radovic et al., 2013), but no significant differences in favoring PDPT or EPT were found in others (Coyne et al., 2007; Jones et al., 2013; Shivasankar et al., 2008). While older patients valued the convenience and immediacy for treatment with PDPT (Sutcliffe et al., 2009), age was not a significant predictor in most studies of expedited partner treatment mechanism use (Holloway et al., 2011; Jones et al., 2013; Gursahaney et al., 2011; Magnus, Schillinger, Fortenberry, Berman, & Kissinger, 2006; Mickiewicz et al., 2012; Shivasankar et al., 2008; Vaidya et al., 2014). Other demographic variables such as race, partner's race, ethnicity, partner's age, marital status, employment status, sexual orientation, distance from the clinic, pregnancy status, substance use, number of sexual partners, current STI, or STI symptom-status did not significantly predict relevant PDPT/EPT outcomes (e.g., acceptance & preference) in most studies (Jones et al., 2013; Gursahaney et al., 2011; Magnus et al., 2006; Radovic et al., 2013; Shivasankar et al., 2008; Vaidya et al., 2014), but symptoms at diagnosis was a significant

predictor of EPT acceptance within another study (Vaidya et al., 2014). Among all partner notification methods including PDPT, sexual risk behavior of more than one sexual partner and a new recent sexual partner significantly predicted less adherence to the partner notification strategy, but those who used a condom at last sex also had less adherence to partner notification (Magnus et al., 2006). In review, non-relationship status demographic characteristics do not have a large impact on PDPT and EPT use, but could provide some context-specific information useful for intervention planning. Nonetheless, an aforementioned finding from the review of experimental and quasi-experimental research on PDPT merits additional comment; mainly, researchers found better reinfection outcomes for STI clinic patients and Black patients when prescribed PDPT.

### **Ethical Implications of PDPT**

In the preceding sections, biomedical and behavioral evidence of PDPT and EPT effectiveness was reviewed, but many ethical implications remain important to consider for research and practice. The following sections discuss the legal status of expedited partner treatment mechanisms, potential for improper use, and the ethical considerations for PDPT delivery to MSM patients.

### **Legal Status of Expedited Partner Treatment Mechanisms**

Expedited partner treatment mechanisms of PDPT and/or EPT are currently only permissible in 40 states and the District of Columbia, potentially allowable in 8 states, and explicitly prohibited in Kentucky and West Virginia (CDC, 2016). The reviewed literature indicates that legal status of PDPT was important to STI clinic patients' and sexual partners' perceptions of this partner treatment mechanism. More specifically, a favorable legal environment increased the practice of prescribing expedited partner treatment mechanisms

(Cramer, Hogben, & Handsfield, 2013a; Cramer et al., 2013b). The positive experimental and quasi-experimental evidence reviewed indicates that expedited partner treatment mechanisms reduce harm. Given that the medications create minimal risk, PDPT should be explicitly allowable in all states and territories of the U.S. The legal status of PDPT and EPT has potential to impact STI patient reinfections, number of partners successfully treated, and community prevalence rates. Moreover, explicit legal status will remove the ambiguity for healthcare providers in states where the legal status is not entirely clear.

### **Improper Use of PDPT**

While infrequent, some patients who received PDPT did not always use it as directed. Two main concerns were identified: 1) minimal potential for self-use and 2) non-partner distribution of PDPT. Temkin et al. (2011) found that a small majority of STI clinic patients accepted PDPT with intentions for self-use or distribution to non-partners. Reasons for self-use included patient perceptions that they would be unable to abstain from sex during treatment and extra medications – intended as PDPT – could be used to clear an immediate reinfection. Beyond accepting PDPT for partners or self-use, Temkin et al. (2011) found that patients accepted PDPT for distribution to non-partners, but individuals who likely have high risk for the same infection. For example, patients accepted PDPT for other sexual network members who could have indirect exposure (e.g., PDPT distributor and acceptor had the same sexual partner) and outside-network distribution as an informal community educator of STIs. Improper uses of PDPT, such as self-use and distribution to non-network members, warrant additional attention. Although not the intended use of PDPT, distribution to non-partners within the same sexual network is an epidemiologically valid approach to reducing community STI prevalence (Fichtenberg et al., 2009a; Fichtenberg et al., 2009b). A PDPT behavioral intervention should be designed to provide

proper information about the risks and limitations of this method of PDPT distribution in an effort to promote safe and intended use.

### **PDPT for MSM**

The implications of PDPT for MSM deserve additional attention by researchers and practitioners. Current CDC guidelines do not recommend expedited partner treatment mechanisms for MSM because these individuals may be at higher risk of syphilis and HIV; it is currently recommended that their partners should be seen clinically rather than bypassing a clinical visit with PDPT (CDC, 2015; Workowski et al., 2015). However, survey responses of MSM indicate that PDPT could be a reasonable risk reduction strategy for MSM because most would seek out HIV testing after receiving PDPT, thereby lowering their risk for further STIs. Ninety-seven percent of MSM would seek care if they took PDPT after unprotected insertive anal intercourse with symptoms evident, and 84% of MSM would seek care if notified with PDPT by oral sex exposure (Kerani et al., 2013). In total, 86% of MSM would seek HIV testing after treatment with PDPT for a bacterial STI. Forty percent would be more likely to seek care for HIV and syphilis testing when given PDPT compared to other partner notification mechanisms, and only 11% of MSM said they would be less likely to seek care after PDPT (Kerani et al., 2013). As PDPT could facilitate care entry for some MSM, further study with MSM is needed to study the influence of expedited partner treatment mechanisms on HIV and syphilis testing. Hypothetical acceptance of PDPT from the partners' perspective was between 49-58% based on exposure scenario and symptom-status, and intentions to seek care for those who would not accept was high (Kerani et al., 2013). Thus, this mechanism could be used to facilitate access to care for some. While at-home syphilis testing may not be as feasible, recent expansion of over-the-counter rapid-HIV testing makes packaging PDPT with HIV test kits a

feasible approach. Further research is also needed to make certain that excluding PDPT with MSM populations does not indirectly make their sexual networks more vulnerable to HIV transmission because of the missed opportunity PDPT could have on reducing bacterial STI network prevalence. While the study of large samples of MSM or other vulnerable subpopulations (e.g., transgender patients) with PDPT is outside the scope of this dissertation research, further study is warranted.

In summary, the following recommendations are provided to advance clinical practice and research: 1) expedited partner treatment mechanisms are explicitly legal in 40 states and the District of Columbia, but should be legal in all states and territories of the U.S.; 2) PDPT delivery interventions should include information and motivation to support the proper use of PDPT; and 3) research and clinical practice guidelines for the use of PDPT with MSM should be revisited after further study.

### **Summary**

A critical and integrative review of currently published literature on expedited partner treatment mechanisms was conducted in an effort to provide key recommendations for future research and current practice. In this chapter, I reviewed experimental and quasi-experimental evidence of PDPT compared to alternative partner referral strategies, proposed an adapted theoretical model titled the Interpersonal-Behavioral model (i.e., I-B model) as a useful conceptual framework for understanding partner notification and delivery of PDPT to sexual partners, and finally discussed ethical implications of PDPT. The most critical finding of this paper was the need for a theoretically-guided behavioral intervention for delivery with PDPT, to help patients follow through with talking to their partners about the STI exposure and convincing them to take the medications given to them – both potentially challenging interpersonal tasks and

barriers to full PDPT effectiveness. Based on a review of available findings, this intervention should be developed based on the proposed I-B model or adaptation from further population-specific research; additional research is needed to substantiate the findings of this review and generalizability of prior research to STI clinic patients in Milwaukee, Wisconsin.

The results of this research will more fully support the development of a PDPT behavioral intervention for a predominately Black sample of STI clinic patients, a population at elevated risk for repeat STI infections and HIV infection. Specifically, mixed-method elicitation research is recommended to better inform a culturally-appropriate mechanism for PDPT prescription within this sample. Additional research with STI clinic patients should also investigate the potential of including rapid-HIV test kits with PDPT packs because of missed opportunities for HIV testing with current PDPT provision practice. These studies will allow us to be better informed to make clinical practice guidelines for STI clinic patients, and we will have additional evidence to support the development of a PDPT intervention strategy that includes an effective behavioral intervention to be experimentally tested in future research.

## **CHAPTER 3: METHODS**

A three-phase approach to data collection was administered in this study. First, a sample of  $N=5$  clinic patients were qualitatively interviewed using a semi-structured interview guide. Second, a survey was developed based on a literature review and findings from the initial qualitative interviews and then pretested with another sample of  $N=5$  clinic patients using a method of cognitive interviewing. Last, the full mixed-method survey was launched with the refined survey. A sample of  $N=200$  clinic patients was surveyed, and a subsample of  $N=15$  survey respondents were purposively sampled for in-depth qualitative interviewing using another semi-structured interview guide.

### **Participants**

#### **Target Population**

Participants were recruited from the largest public STI clinic in Milwaukee, Wisconsin. In 2015, 65% of clinic patients were male, 85% Black or African American, and 8% White. Age distribution of clinic patients seen in 2015 were 12% 15-19 years old, 28% 20-24 years old, 20% 25-29 years old, 13% 30-34 years old, 14% 35-44 years old, and 13% over the age of 44. More than half (51%) of clinic patients were on Medicaid, 36% uninsured, and 10% with private insurance. Forty-four percent of patients came to the clinic with symptoms of an STI, 25% for a regular screening (“checkup”), 14% for contact with someone diagnosed with an STI, and 11% for treatment after a positive STI test.

#### **Eligibility**

To be eligible for the study, clinic patients were required to: 1) be 18 years of age or older, and 2) be seen within the STI clinic within the past 14 days. Adults were the target population because individuals aged 18 or older are the primary clinic patients within the STI

clinic of interest and to whom resulting programming would be most targeted. Recent clinic attendance allowed patients to come back another day for the survey – an option used to limit clinic visit disruption and reduce participant burden. The clinic uses a first-come first-serve model of care delivery; therefore many patients wait to be seen for many hours before care is received.

## **Recruitment**

Research study staff (i.e., undergraduate research assistants) were recruited by distribution of a position announcements sent to applicable UWM class lists (e.g., Public Health 101), school programs (e.g., College of Nursing), and honor society list-servs (e.g., Psychology). Additional recruitment was made by word of mouth and referral from instructors across the UWM campus, and the Office of Undergraduate Research at UWM collected applications and interviewed qualified students. A final interview was also conducted with the PI. Undergraduate research assistants received CITI certification in responsible and ethical conduct in research, hands-on training within the clinic, and almost continuous supervision by the PI; however, undergraduate research assistants were able to work independently near the end of the project.

Recruitment of study participants occurred in the City of Milwaukee Health Department's Keenan Health Center – the largest public STI clinic in Milwaukee, Wisconsin. Survey respondents were a convenience sample, and a subset of these individuals were purposively sampled for the qualitative interviews. Clinic patients were called by their number out of the waiting room by research staff – a practice used to identify patients for confidentiality in the clinic – and were approached about their interest in participating in a brief 7-item eligibility screening survey (see *Appendix A*). Participants were told that their responses were confidential, voluntary, and completely separate from their clinical visit; patients were reminded

that they could still be seen at the clinic even if they chose not to participate. If clinic patients were interested in participating in the screening survey, they were taken to a private room and administered the survey by research staff. Research staff included the PI (i.e., S.A. John) and 4 undergraduate research assistants with proficient experience. A waiver to obtain informed consent was granted for this screening process by the Institutional Review Board at UW-Milwaukee. Screening survey respondents over the age of 18 years old were then invited to participate in the study. Eligible patients interested in participating were asked to sign a “Consent-to-Call” form that allowed us to call them in the event that they were unable to take the survey after their clinic visit, but signing this form was not required for participation. Participants were offered cash incentives to reimburse their time including \$25 for participation in any of the audiotaped sessions (Phases 1, 2, and qualitative Phase 3) and \$20 for participation in the Phase 3 survey.

A purposive sampling strategy was used to sample Phase 3 survey respondents for an additional qualitative interview. Heterogeneous, purposive sampling – a method that allows the investigator to purposefully select a diverse sample – allowed the exploration of key themes with a range of responses based on PDPT acceptability data pulled from survey responses and participant demographics. This method allowed the analysis of a diverse sample by design (Ritchie, Lewis, Elam, Tennant, & Rahim, 2013) with a roughly equal distribution of men and women recruited, which resulted in oversampling women because of the lower number of women who participated in the survey that aligns with the STI patient demographic of the clinic. Survey data was pulled from the quantitative survey on a rolling basis (see *Results, Participants, Phase 3 Full Mixed-Method Study, Qualitative Interview Recruitment* for more detailed explanation of the purposive sampling strategy). The use of the online survey mechanism of

Qualtrics allowed data to be filtered by PDPT acceptability responses and patient demographic. Study ID numbers were then selected for contact to participate in the in-person qualitative interviews.

### **Informed Consent**

All study procedures were approved by the Institutional Review Board at UW-Milwaukee (IRB #16.067; see *Appendix B*). Eligible patients enrolled in the study provided informed consent to participate, but the method of obtaining consent differed for the various phases of data collection. All informed consent procedures explained the purpose of the study, possible risks and benefits, and voluntary nature of their participation. Individuals were reminded that participation or non-participation would not disrupt their ability to be seen at the public health STI clinic where recruitment was occurring. Participants were read the consent aloud and an additional discussion occurred with participants explaining the study procedures. Participants had the opportunity to ask questions before agreeing to participate. Participants in the first  $N=5$  qualitative interviews (i.e., Phase 1) and  $N=5$  cognitive interviews (i.e., Phase 2) provided informed consent with a waiver to document informed consent granted by the IRB to safeguard against loss of confidentiality; however written informed consent was obtained from all participants in the full  $N=200$  mixed-method sample (i.e., Phase 3) to allow connection of the data between quantitative and qualitative components. All Phase 3 survey respondents were asked about their interest in participating in the Phase 3 qualitative interviews. If interested, another “Consent-to-Call” form was signed to allow phone contact for participation and a separate written informed consent was obtained prior to completion of the interview. Of the 200 survey participants, 90% ( $N=190$ ) agreed to be considered for participation in Phase 3 qualitative interviews.

## Phase 1 Qualitative Interviews

The purpose of the Phase 1 interviews was to identify potential responses and theoretical constructs to be used within the quantitative survey that may not have been identified based on a literature review alone. One-on-one qualitative interviews were conducted using a semi-structured interview guide (see *Appendix C*). Open-ended interview questions were developed based on themes identified within the literature review, but more general questions were asked to elicit potential responses not previously identified within the literature. Average interview length was 48 minutes. Written reflections of each interview were logged within 24 hours of the interview to provide greater context to the interview if needed for later review. A rough transcription and thematic notes were compiled for each interview within 48 hours of completion of the interview to expedite survey development activities. The purpose of the abbreviated review was to quickly identify themes and quotes to consider for the quantitative survey questionnaire development. Interviews were then transcribed verbatim and validated by the PI before formal analysis was conducted. An interpretive phenomenological analysis method of thematic coding was used for analysis, which is a method of thematic analysis that aims to provide a voice to the participant's experience within a conceptual framework aligned with established psychological concepts (Spencer, Ritchie, Ormston, O'Conner, & Bernard, 2013). Microsoft Excel was used to provide a framework approach to data analysis, allowing within and between participant analyses of quotations arranged by theme to more fully account for similarities and differences across interviewees. While a sample size of five qualitative interviews is generally not considered enough to provide an adequate sample size on its own, this sample was combined with participant interviews from Phase 2 and 3 to ensure an adequate sample size valid for qualitative inquiry (Ritchie et al., 2013).

## **Survey Questionnaire Development**

The initially conceptualized survey was adapted after completion of the Phase 1 interviews. Specifically, additional question statements were added to the previously conceptualized survey which included additions of questions to construct scales of individual protection beliefs, partner protection beliefs, partner reaction worry (renamed infidelity worry, embarrassment and anxiety after Phase 1 interviews), STI stigma and shame, communication skills self-efficacy, and structural factors. Additional constructs of community protection beliefs, general social support, and sexual health social support were identified within the Phase 1 qualitative interviews that are more fully described in the results section. These added theoretical findings resulted in the addition of questions aligned with their associated psychological constructs. The survey items were then imported into Qualtrics, an online survey mechanism, for use in survey pretesting and administration.

### **Phase 2 Cognitive Interviews**

The further developed survey was then pretested with  $N=5$  clinic patients using a “think aloud” approach (Collins, 2003; Willis, 2005) with accompanying cognitive interview guide (see *Appendix D*). This methodology required the participant to respond verbally with their thoughts about the question and how they formulated their responses. Scripted probing questions, as well as unscripted follow-up questions, were asked of participants periodically throughout the survey using the cognitive interview guide. To minimize participant burden, participants only received a random sample of probing questions using a block randomization procedure with each block of questions organized by theoretical construct. The randomization procedure ensured that probing questions were asked for at least 3 participants per question block. Average cognitive interview length was 99 minutes.

All cognitive interviews were audiotaped and survey responses saved. Similar to Phase 1, interviewer reflections were recorded immediately after the interviews. Interviews were listened through again taking notes about how participants verbally responded and their associated response. This method identified problematic questions for further revision. Examples of changes made during this process included the removal of redundant questions, the addition of directions to specific questions, and revision of question wording when it was identified that the participant did not understand the question or a key word in the statement. A more specific change included a complete revision of motivation-to-comply questions for partner and healthcare provider subjective norms because the participants were not reading the instructions and opening phrase; thus participants were responding in a way that elicited their own beliefs rather than perceptions of their partner or healthcare provider. Additionally, the initially constructed survey sometimes referred to “partner” and “partner(s)” randomly, which caused participants to respond differently if they had multiple partners or not; therefore all questions with the word “partner” in it were rephrased to “partner(s)” to provide a more complete conceptualization of their attitudes or opinions in reference to all partners. Partner-specific questions were not asked because of the worry of participant burden and redundancy of questions in eliciting responses based on each partner. However, outcomes remain delineated between *all*, *main*, and *non-main* sexual partnerships if required for further analysis. Lastly, construct validity was more critically evaluated by the PI resulting in the reconsideration of items for particular scales disjointed at initial conceptualization. Similarly, all cognitive interviews were then transcribed verbatim and validated by the PI prior to further analysis. The qualitative data from these interviews were used in the final analysis. The cognitive interviews resulted in the analysis of highly-structured interviews. The goal of these interviews was not to collect depth to any

particular responses, rather breadth associated with the full survey; however, some in-depth responses were also collected as participants volunteered this information or responded to brief probing questions during the interview.

### **Phase 3 Survey**

A cross-sectional, quantitative survey was administered to a convenience sample of 200 clinic patients. Survey respondents answered hypothetical partner notification questions as if they had been diagnosed with an STI at their current visit using theoretical construct measures described below (see *Assessment Measures*). All surveys were administered with Qualtrics on touchscreen tablet devices in a private room at the site clinic. This survey technology worked well for most participants. However, one participant was unable to finish the survey after refusing assistance despite visible frustration and difficulty with the touchscreen device. Surveys were automatically timed within Qualtrics, which allowed the identification of problematic survey responses when completion times were extremely short. Any survey completed in less than 18 minutes was investigated subjectively by the PI. This process occurred in real time and notes about each problematic survey were made initially on the day of their survey. Obvious satisficing (Krosnick, 1991) cases where the participant selected one response down the entire survey were excluded from analysis ( $N=2$ ), but data were included in analyses if there was any potential that the responses could be accurate reflections of their opinions.

### **Assessment Measures**

The final revised survey used in Phase 3 is provided in *Appendix E*. Further survey refinement occurred after survey launch, which included more careful attention to item construct validity. This additional review resulted in moving some questions between constructs prior to data analysis, but no questions within the survey were moved until after all 200 survey

respondents participated. Final scales used for analysis included previously validated scales and additional scales developed for this research study. Previously developed scales that demonstrated poor reliability, using Cronbach's alpha, upon first analysis were further refined using an approach that included additional qualitative review of construct validity and analytical analyses. Item-rest correlations – the correlations between the individual item and the scale created by all other items considered (Nunnally & Bernstein, 1994) – were used to guide an empirical assessment of each item in the scale. Even when the scale demonstrated good reliability upon early assessment, the shorter version was considered if it improved the reliability and retained similar construct validity. Construct validity was examined by expert opinion of the PI, and special emphasis was given to alignment with qualitative interview responses given by study participants. The purpose of this step was to provide greater contribution to the literature in providing a developed scale with good internal consistency and the least amount of items possible to reduce participant burden if replicated in further research. The removal of questions is an analytically valid approach to scale development because the reliability artificially inflates with the more questions added; thus the reduction in items improves our confidence in the psychometric properties. Descriptive statistics, distributional properties, and reliabilities including mean, standard deviation, skewness, kurtosis, number of questions, scale range, and Cronbach's alpha are presented in *Table 1* for each scale.

**Table 1:** Descriptive Statistics, Distributional Properties, and Reliabilities of Measures ( $N=197^n$ )

Scale Indicator	Mean	SD	Skewness	Kurtosis	Item Count	Range	$\alpha^a$
<b>Information</b>							
HIV-KQ-18	12.56 <sup>b</sup>	3.64	-0.89	3.62	18	0-18	.79
STI-KQ-32	15.46 <sup>b</sup>	6.78	-0.11	2.42	32	0-32	.87
PT-KQ-4	3.32 <sup>b</sup>	1.15	-1.64	4.60	4	0-4	.77
<b>Motivational Factors</b>							
Individual Protection Beliefs	4.53	0.73	-2.08	8.35	3	1-5	.62
Partner & Community Protection Beliefs	4.20	0.79	-1.11	4.18	5	1-5	.79
Infidelity Worry, Embarrassment, & Anxiety	3.29	1.09	-0.20	2.30	6	1-5	.83
STI Clinic Stigma	2.40	1.11	0.59	2.58	4	1-5	.81
STI-Related Shame	2.27	0.89	0.78	3.43	10	1-5	.88
Partner Normative Influences of the STI Clinic	2.86	1.04	0.08	2.52	3	1-5	.72
Partner Motivation-to-Comply	4.07	0.83	-0.88	3.86	3	1-5	.73
HCP <sup>c</sup> Normative Influences of PDPT	3.53	1.05	-0.41	2.68	3	1-5	.80
HCP Motivation-to-Comply	4.20	0.78	-0.98	3.78	4	1-5	.81
<b>Social Support</b>							
General Social Support	4.05	0.98	-0.87	3.02	6	1-5	.95
Sexual Health Social Support	4.02	0.98	-0.88	3.39	3	1-5	.88
<b>Behavioral Skills</b>							
Partner Notification Self-Efficacy	4.44	0.75	-1.33	4.10	6	1-5	.87
Medication Delivery Self-Efficacy	4.21	0.91	-1.17	3.90	4	1-5	.81
Communication Skills Self-Efficacy	4.38	0.76	-1.24	4.20	6	1-5	.89
<b>Structural Factors<sup>d</sup></b>							
1. Unable to contact partners	2.64	1.46	0.43	1.80	1	1-5	NA
2. Unable to pay for extra medications	3.03	1.41	0.03	1.78	1	1-5	NA
3. Relationships have ended	2.69	1.40	0.45	1.92	1	1-5	NA
4. Question how legal it is	3.31	1.33	-0.26	1.99	1	1-5	NA
5. Not interested if medications not free	2.60	1.42	0.49	1.92	1	1-5	NA
6. PDPT is convenient	3.62	1.29	-0.53	2.17	1	1-5	NA
7. Feel better if medication came in a sealed container	3.81	1.25	-0.79	2.64	1	1-5	NA
8. Feel better if medication came with a signed note from a HCP	3.98	1.20	-1.04	3.15	1	1-5	NA
9. Feel better with my test results	3.93	1.20	-0.95	2.98	1	1-5	NA
10. My partner(s) would delay treatment because of their insurance status	2.44	1.19	0.53	2.47	1	1-5	NA
11. Transportation difficulty	2.22	1.26	0.82	2.60	1	1-5	NA
12. Worry about my safety	2.61	1.41	0.37	1.83	1	1-5	NA
<b>Outcomes</b>							
PDPT Acceptability	4.06	1.08	-1.15	3.70	3	1-5	.90
PDPT Intentions	4.31	0.80	-1.15	4.08	6	1-5	.89

Notes: <sup>n</sup> largest sample size possible used for descriptive statistics, but some scales may be based on a smaller sample size due to missing data; SD = standard deviation; <sup>a</sup> reliability (Cronbach's alpha); <sup>b</sup> summation score used; <sup>c</sup> HCP = healthcare provider; <sup>d</sup> structural factor questions truncated, but full questions are listed in *Table 3* and *Appendix E*

**Demographics.** Participant demographic data collected in this study included age, sex assigned at birth, gender, race, ethnicity, relationship status, education level, employment status, insurance status, and income. Gender was excluded from the final analyses because of limited variation between sex and gender, and income was excluded due to the large amount of missing data ( $N=17$  with missing income data). Additionally, participants were asked about the reason for their current clinic visit and STI treatment history. Relationship characteristics also collected included the number of sexual partners, sexual practices, and condom use.

**Information.** Information was measured using three questionnaires specific to HIV, STI, and partner treatment knowledge. HIV knowledge was measured using the HIV-KQ-18, an 18-item scale that has demonstrated good internal consistency (Cronbach's alpha = .75-.89) and test-retest reliability ( $r_s = .76-.94$ ) in prior research (Carey & Schroder, 2002). STI knowledge was measured using an adapted version of the STD-KQ referred to here as the STI-KQ-32. The original STD-KQ was a 27-item scale with a two factor model of cause/cure and general knowledge of STIs extending beyond HIV alone with previously reported good internal consistency (Cronbach's alpha = .86) and test-retest reliability ( $r = .88$ ; Jaworski & Carey, 2007). The STD-KQ was adapted into the STI-KQ-32 by the addition of 4 questions specific to trichomoniasis, a common STI within the target clinic population, and another question about the HPV vaccine applicable since survey conception. These adaptations kept consistency across STIs included as originally developed, but changed the language of sexually transmitted diseases (STDs) to STIs for consistency across survey assessment measures in the full survey. Lastly, a 4-item partner treatment knowledge questionnaire (PT-KQ-4) was created because of a deficiency

in knowledge questions specific to partners' symptoms and risks associated with repeated exposure to untreated sexual partners. The initial 5-item questionnaire showed adequate reliability (Cronbach's alpha = .75), but it was further refined to a shorter 4-item scale because of poor item-rest correlation of the reverse-coded question. During the survey pre-test, a 6-item scale was presented to participants and the other reverse-coded question was removed after this preliminary step because of participant confusion. Verbal response mapping of the question did not align with the selected response category chosen for two of the participants; thus it is highly appropriate to remove this second reverse-coded question after observation of the correlation between this question and the scale developed from all other items. An example question from the PT-KQ-4 is *"You've received a positive test for a bacterial Sexually Transmitted Infection (STI; e.g., Chlamydia, Gonorrhea, or Trichomoniasis) and you've taken the prescribed medication as directed. Your most recent unprotected sex partner could have the same infection as you even if they are NOT showing any signs or symptoms of an STI."* For all knowledge questionnaires, participant responses were *true, false, and don't know*. Answers were then recoded as correct or incorrect, with all "don't know" responses coded as incorrect. Summation scores of knowledge questionnaires were used for data analysis. All knowledge questionnaires had good reliability within the participant sample (Cronbach's alpha = .77-.87).

**Motivational factors.** STI prevention motivation was measured with mean response scores of scale questionnaires. Motivational factors included individual protection beliefs; partner and community protection beliefs; infidelity worry, embarrassment, and anxiety; STI clinic stigma and STI-related shame; partner normative influences and motivation-to-comply; and healthcare provider normative influences and motivation-to-comply. All questions within the

motivational factors had response categories of *very untrue of what I believe* to *very true of what I believe*.

Three protection beliefs scales of individual, partner, and community were initially conceptualized and reduced to two scales after analytic review because of poor individual reliability using Cronbach's alpha of two of three scales. Individual protection beliefs were measured with a 3-item scale with less-than-ideal reliability (Cronbach's alpha = .62) but strong construct validity. This scale was created from an initial 6-item questionnaire. After unacceptable initial reliability (Cronbach's alpha = .53), the construct validity of the survey was re-evaluated. While all questions align with individual protection beliefs, two sub-themes of this construct including general sexual health beliefs and repeat infection prevention beliefs were evident. The latter construct was used for analysis because it more closely aligned to the construct validity of individual partner protection beliefs related to partner notification and PDPT delivery. An example question statement from this scale is "*I can reduce my chance of getting another STI if my partner(s) get treated.*"

Partner protection beliefs were measured with a 2-item questionnaire revised from three items initially conceptualized; additional questions in this scale were excluded from scale consideration because of construct validity concerns after survey pretesting. Similarly, one item of this scale was removed because of low correlation with the scale including all other items. The removal of this item increased the reliability of this scale from Cronbach's alpha = .57 to .66. One of the two questions in this scale is "*My partners' health is important to me.*"

Community protection beliefs were measured with a 5-item scale with good internal consistency (Cronbach's alpha = .82). This scale was developed after revision of a 7-item scale with less-than-ideal reliability (Cronbach's alpha = .67). After removal of two questions, the

final scale retained the same level of construct validity but had improved psychometric properties; thus the shorter 5-item scale was considered for analysis. An example question from this scale is “*Getting my partner(s) treated will help prevent STI transmission to others.*”

The combination of individual, partner, and community protection beliefs scales was considered after analytic review of single-scale reliabilities because of similar construct validity under protection beliefs; however protection beliefs was only reduced to two scales after factor analysis. Since community protection beliefs had five scale items compared to five total items between individual and partner protection beliefs, only three questions were used from the community protection belief scale to reduce the impact of unequal weighting between the three sub-constructs. The two questions not considered for the final scale were related to worry about STI knowledge and condom use in the community as these two items had the lowest determined construct validity. The three items retained were about STI partner treatment and partner awareness of their STI. While an 8-item partner protection beliefs questionnaire demonstrated good reliability (Cronbach’s alpha = .80), a factor analysis was conducted to ensure a single construct measurement. Principal axis factoring – a common approach that does not require a large sample size nor assume multivariate normality – with oblique promax rotation to allow factors to correlate was used for the exploratory factor analysis. A large proportion of the explained variance in the observed variables was identified [Kaiser-Meyer-Olkin sample adequacy = 0.83; Bartlett’s Test of Sphericity:  $\chi^2(28, N = 197) = 401.36, p < 0.001$ ], and a two factor model emerged after observation of the scree plot and eigenvalues (factor 1 = 3.38, factor 2 = 1.20, factor 3 = 0.78) that explained 57.20% of the total variance. The two scales used for final data analyses were: 1) individual protection beliefs (Cronbach’s alpha = .62), and 2) partner

and community protection beliefs (Cronbach's alpha = .79). The pattern matrix and results of the factor analysis can be found with the final scales in *Appendix F*.

The infidelity worry, embarrassment, and anxiety scale was created based off an initially conceptualized 10-item questionnaire. While the initial scale had adequate reliability (Cronbach's alpha = .78), the scale was reduced to a 6-item questionnaire because of improved reliability and reduced participant burden if used within replication studies. The final infidelity worry, embarrassment, and anxiety scale used for analysis had good internal consistency (Cronbach's alpha = .83) and better construct validity; the removal of questions related to perceived partner respect, care, and belief helped better align the final scale with the construct of infidelity worry, embarrassment, and anxiety. While a fourth item was removed with similar construct validity, the scale with fewer items was preferred and used for final analyses.

Two scales were developed to measure stigmatizing perceptions of STIs through an iterative process. STI-related stigma and shame measurement tools were previously validated with other samples, but further developmental work occurred to revise these scales with the current sample. Scale measures were pretested with the current sample after additional questions were added based on the initial qualitative interviews. The resulting scale development activities included revising question items based on respondent feedback during pretesting, factor analysis of all scale items into a 2-factor model, and re-evaluation of questionnaire reliabilities and construct validity.

Two previously validated scales were used as the starting framework for questionnaire development. STI-related stigma was developed as STD-related stigma to reflect expectation of isolation and adverse social judgement associated with STIs and had demonstrated good internal consistency (Cronbach's alpha = .77-.82) in prior research (Fortenberry et al., 2002; Morris et al.,

2014). STI-related shame was developed as STD-related shame in an attempt to measure perceptions of shame and contamination associated with STIs. The previously validated version had good internal consistency within other participant samples (Cronbach's alpha = .80-.88; Fortenberry et al., 2002; Morris et al., 2014).

Scale items were further refined after Phase 1 qualitative interviews and Phase 2 cognitive interviewing. Additions of questions to the survey assessment measures were necessary after initial qualitative interview responses about STI clinic embarrassment and promiscuity assumptions about people who get STIs. An example item added for measurement was "*Going to an STI clinic is embarrassing.*" Previously validated survey items in the STI-clinic stigma scale were further revised after participants could not comprehend all of the questions during pretesting. More specifically, "poor morals" was misunderstood during a qualitative interview and revised accordingly. STDs were also referred to as STIs in the final survey for consistency with the other survey measures and defined as synonymous. In an effort to reduce "yeah-saying" (Aday & Cornelius, 2006), the response categories were also changed from *strongly disagree* to *strongly agree* into *very untrue of what I believe* to *very true of what I believe*. Questions were added that aligned with the STI-related shame questionnaire after qualitative interviewing, but the added survey items did not improve the internal consistency nor change the construct validity and were thus excluded prior to factor analysis.

An exploratory factor analysis delineated two constructs within the tested sample of question items: 1) STI clinic stigma, and 2) STI-related shame. A factor analysis was considered after critical evaluation of the previously validated scales that did not delineate well into two constructs. Initially conceptualized as isolation and adverse social judgement (i.e., STI-related stigma) and perceptions of shame and contamination associated with STIs (i.e., STI-related

shame; Fortenberry et al., 2002; Morris et al., 2014), these constructs are intricately entwined. The addition of questions related to STI-clinic stigma – a more explicit extension of STI-related stigma – further suggested factor analysis to reduce the potential of two or more scales attempting to measure similar theoretical constructs. Principal axis factoring with oblique promax rotation was used to separate 14 scale items into separate components. A two factor model was evident after scree plot observation and evaluation of eigenvalues (factor 1 = 5.98, factor 2 = 1.55, factor 3 = 0.92). A three factor model was not considered because of cross-loading between scale items despite an eigenvalue near 1.0 – an often-used threshold value. The final model had a good proportion of the explained variance [Kaiser-Meyer-Olkin sample adequacy = 0.90; Bartlett’s Test of Sphericity:  $\chi^2(91, N = 197) = 1118.25, p < 0.001$ ], and the two factor model explained 53.76% of the total variance. A 4-item scale of STI clinic stigma with good reliability (Cronbach’s alpha = .81) emerged as the first factor. An example item from this scale is “*I do NOT want others to see me at the STI clinic.*” The second factor – STI-related shame – emerged as a 10-item scale also with good reliability (Cronbach’s alpha = .88). An example item from this scale is “*People with STIs should be ashamed of themselves.*” The pattern matrix and results of the factor analysis can be found with the final scales in *Appendix G*.

Subjective norms were separated into their perceptions of partners and healthcare providers. Normative influences and motivations-to-comply with normative influences were asked for partners and healthcare providers separately. A 6-item questionnaire developed for partner normative influences was revised after poor reliability was evident (Cronbach’s alpha = .60). The final scale used for analysis was a partner normative influence of the STI clinic 3-item questionnaire with acceptable reliability (Cronbach’s alpha = .72). An example question from this scale is “*My partner(s) would want to avoid going to the STI clinic for treatment.*”

Motivation-to-comply with partners' beliefs were measured from a 3-item scale with acceptable reliability (Cronbach's alpha = .73) after similarly revised from a 6-item questionnaire with poor reliability (Cronbach's alpha = .44). An example item from this scale is "*I would tell my partner(s) of my STI if I thought they would want me to.*" Similarly, healthcare provider normative influences were revised from the initially constructed 6-item questionnaire with less-than-ideal reliability (Cronbach's alpha = .60) to a 3-item scale with better internal consistency (Cronbach's alpha = .80) and better construct validity about healthcare providers' normative influences about PDPT. An example measure of this scale is "*My healthcare provider believes giving me medications to deliver to my partner(s) is beneficial to my own health.*" Lastly, healthcare provider motivation-to-comply was measured with a 4-item questionnaire with good reliability (Cronbach's alpha = .81) after revision from a 5-item survey with the negatively worded question removed (Cronbach's alpha = .75). An example question from this measure is "*I would take medications to my partner(s) if my healthcare provider wanted me to.*"

In summary, the final scale items retained for analyses for each construct were created through an iterative process, which was necessary because the scales had not been used in this setting before and we hoped to improve upon their validity and reliability. Pretesting of the survey with  $N=5$  participants helped reduce problematic questionnaires. For example, both motivation-to-comply questionnaires were revised from the pretested versions for the final survey after it was identified that participants were responding about their own perceptions of the topics mentioned rather than their appraisal of their partners' or healthcare providers' opinions. Further scale development activities occurring in the pretesting phase included the removal of problematic questions that confused participants. While some reverse-phrased questions were removed or revised during this phase, the small sample of survey respondents during pretesting

did not allow the complete pretesting required for removal or revision of all problematic questions. A combined approach with greater attentiveness to construct validity and use of quantitative data capacities resulted in the further refinement of these scales. Many of the questions removed during quantitative data reduction techniques were reverse-phrased with the use of negative words (i.e., *NOT*; capitalized in survey measures). Thus, negatively worded questions could have decreased the reliability of the initially conceptualized scales if it resulted in misalignment between response mapping and answer selection because of respondent confusion.

**Social support.** Two measures of social support were used to delineate the type of support within this study. General social support was measured using a 6-item social support questionnaire (SSQ6) previously validated in a student sample with good internal consistency (Cronbach's alpha = .90-.93; Sarason, Sarason, Shearin, & Pierce, 1987). This scale had similarly good reliability in this sample (Cronbach's alpha = .95). An example question from this scale is "*I have someone who I can really count on to be dependable when I need help.*" A second measure of social support was developed specifically for this study to measure sexual health social support. The 3-item questionnaire had good internal reliability (Cronbach's alpha = .88) as initially conceptualized. An example item from this scale is "*I have someone who I can talk to about sexual health issues.*"

**Behavioral skills.** STI risk-reduction behavioral skills were measured using self-efficacy scales of partner notification, medication delivery, and sexual health communication. Self-efficacy was used as a proxy for behavioral skills and measured the participant's perceived confidence in their abilities to implement the specific behavioral skills. Responses were on 5-point scales with values ranging from *not at all confident* to *extremely confident*. It is common to

use self-efficacy as a proxy for behavioral skills in research with the Information-Motivation-Behavioral Skills model because of difficulty measuring objective ability. Partner notification self-efficacy has been previously validated with adolescent African American women using a 6-item questionnaire with good internal consistency (Cronbach's alpha = .85; Buchsbaum et al., 2014), which was adapted from the initially conceptualized 3-item scale (Fortenberry, Brizendine, Katz, & Orr, 2002). This scale had good reliability with this study sample (Cronbach's alpha = .87). An example question from this scale is "*How confident are you in your ability to tell your partner(s) of an STI?*" The previous partner notification self-efficacy scale was deficient in items related to the delivery of medications. As such, an additional scale was developed to measure medication delivery self-efficacy. The 4-item questionnaire of partner notification self-efficacy had good internal consistency (Cronbach's alpha = .81). An example question from this scale is "*How confident are you in your ability deliver medications to your partner(s) for treatment?*" Lastly, communication skills self-efficacy was developed for this study because the two other self-efficacy scales were limited; they were unable to include the measurement of *how* to conduct these behaviors. Therefore, a 6-item sexual health communication self-efficacy scale was created and demonstrated good reliability (Cronbach's alpha = .89). An example scale item is "*How confident are you in your ability to communicate with your partner(s) about sexual health issues?*"

**Structural factors.** Structural barriers and facilitators were measured as individual measures rather than as a scale. Initially conceptualized as a scale, the validity of such a scale is questionable as a single construct and it is important to consider each question item individually because of the potential for intervention with each structural factor. Additionally, scale measurement assumes individuals weigh barriers and facilitators collectively and similarly

within their decision-making process, which is a problematic assumption (i.e., one barrier could be stronger than another). Therefore, individual items were used for final analyses with similar response categories to motivational factors of *very untrue of what I believe* to *very true of what I believe*.

**Outcomes.** Three measures were the primary outcomes tested within this study. First, participants reported their first-choice method of partner notification. Participants selected only one option to notify their partner, from the following options: self-referral without medication or prescription delivery (i.e., simple partner referral), provider referral, EPT with prescription, PDPT (i.e., medication delivery), or no method (i.e., unwilling to notify any partner). Second, participants were asked if they would accept PDPT for all, main, and non-main/other sexual partners separately with response categories of *very untrue of what I believe* to *very true of what I believe*. A 3-item PDPT acceptability scale was then created with good reliability (Cronbach's alpha = .90). Last, partner notification and PDPT intentions were measured with a 6-item scale also with good reliability (Cronbach's alpha = .89). Intentions were measured by response agreement to statements about their intentions to notify sexual partners and deliver PDPT, separately, for all, main, and non-main/other partners. While willingness was initially conceptualized as an outcome measure, participants found the willingness and intentions scales redundant; therefore these scales were separated after pretesting from their adjacent location. Intentions were used as the final outcome because willingness was moved to the beginning of the survey to prompt thinking about the delivery of medications prior to eliciting attitudes and opinions of this method. However, intentions are used for the final analysis because of questionnaire location at the end of the survey. Cognitive interview respondents discussed their use of the survey items to more fully develop their opinions on the outcome measure. As STI

clinic patients would be informed about PDPT and partner notification methods during a clinical visit with a healthcare provider prior to engaging in the behavior, an informed respondent was preferred for final outcome measurement. While no answers were provided during the survey, the items probed their thoughts and opinions to make a more cognizant response.

### **Phase 3 Qualitative Interviews**

The purpose of the Phase 3 qualitative interviews was to identify potential intervention mechanisms, barriers and facilitators to PDPT delivery, and other important information for planning a randomized controlled trial. One-on-one qualitative interviews were conducted using a semi-structured interview guide (see *Appendix H*). Open-ended interview questions were developed to elicit responses about the typical standard-of-care intervention mechanism of information only, ask questions about barriers and facilitators of potential PDPT use, and questions specifically about the inclusion of a rapid HIV test. Average interview length was 46 minutes. Similar methods to Phase 1 were used, including the use of written reflections and verbatim transcription. An interpretive phenomenological analysis method of thematic coding was also used for analysis, and Microsoft Excel was used to provide a framework approach to data analysis, allowing within and between participant analyses of quotations arranged by theme.

### **Hypotheses**

This mixed-method research has the following research questions and hypotheses. First, an interpretive phenomenological analysis will answer the following questions: *Is PDPT an acceptable method of partner notification and treatment among STI clinic patients? What are STI clinic patients' barriers and facilitators to PDPT delivery? Do structural factors facilitate or hinder acceptability of PDPT? Does qualitative data provide evidence for development of a theoretical model?* Second, a quantitative analysis will test the following hypotheses: *1) Higher*

*STI and partner treatment information, motivation, social support, and behavioral skills will predict higher PDPT intentions; and 2) the I-B model will provide better model fit than the previously conceptualized Information-Motivation-Behavioral Skills model for PDPT intentions.*

### **Data Reduction & Data Analysis Techniques**

Both quantitative and qualitative data will be analyzed separately and then brought together in a mixed-method study design to identify strengths and deficiencies of the target population in administering PDPT for intervention development. Minimizing the limitations of quantitative and qualitative methods individually, this mixed-method approach is innovative by design (Creswell, 2014). The order of quantitative analysis is representative of the order of events to PDPT delivery. Patients are presented with PDPT in the clinic and first must accept it. Therefore, PDPT acceptability data is presented before PDPT intentions, which test the main components of the I-B model.

### **PDPT Acceptability**

Descriptive statistics of the full mixed-method study group and purposively sampled qualitative participants are reported for completeness. Bivariate analyses of demographics, reason for the STI clinic visit, STI treatment history, relationship characteristics, condom use, and structural factors on PDPT acceptability were conducted. Predictor variables of PDPT acceptability were retained for the final regression model when  $p < 0.10$  in bivariate analyses. PDPT acceptability was measured using a continuous scale; however results did not change when a dichotomous measure of PDPT acceptability was considered with logistic regression (data not reported). Both quantitative and qualitative data were analyzed separately and then brought together in this mixed-method design to identify the structural barriers and facilitators predictive of PDPT acceptability.

## **PDPT Intentions**

Similar to PDPT acceptability, determinants of PDPT intentions were tested by multiple linear regression. Bivariate analyses of demographics, reason for the STI clinic visit, STI treatment history, relationship characteristics, condom use, and all I-B model construct variables on PDPT intentions were conducted. Predictor variables of PDPT intentions were retained for the final regression model when  $p < 0.10$  in bivariate analyses. After analysis of the final model, the added contribution of partner and community protection beliefs and social support were tested in comparison to the rest of the model (traditional components of the Information-Motivation-Behavioral Skills model) using a likelihood ratio test in a nested-model comparison with a critical  $p$ -value  $< 0.05$ .

## **Mediation Analyses**

The I-B model posits that informational, motivational, and social support factors are mediated by behavioral skills. To test this mediation model, the Baron-Kenny approach was used to obtain direct and indirect effects (Baron & Kenny, 1986; Kenny, Kashy, & Bolger, 1998). Specifically, measures of behavioral skills significantly associated with PDPT intentions in the final model were considered for mediation analyses. Non-significant behavioral skills factors did not undergo analyses as a mediator because it is necessary for the mediator to be significantly associated with the dependent variable for mediation. Factors in the final model, excluding the final model's dependent variable of PDPT intentions, were regressed on the mediator. The Sobel Test (Sobel, 1982) was then used for significance testing of the mediation pathways with a  $p < 0.05$  threshold for determining statistical significance.

## **Innovation**

This study is highly innovative for the following reasons: 1) expansion of the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992), an often-used conceptual model in HIV prevention, has yet to be adapted to include an interpersonal, partner and community protection component of protection beliefs as proposed within the Interpersonal-Behavior model (I-B model); 2) no prior studies have attempted to maximize the effectiveness of the biomedical intervention of PDPT by coupling an adapted, behavioral health component – this research is the formative work in development of such an intervention; and 3) no prior studies have elicited the attitudes and opinions of PDPT among STI clinic patients in Milwaukee, Wisconsin, a unique sample given the top-3 national rank in prevalence of the two most common bacterial STIs in the US – chlamydia and gonorrhea (CDC, 2014).

## **CHAPTER 4: RESULTS**

As suggested by Fisher and Fisher (1992), the first stage in theory-based intervention development is to conduct elicitation research with the target population. Acceptability and feasibility of methods of expedited partner treatment have been shown with other STI clinic patients, but further research is needed to identify the generalizability of previous findings to the clinic sample in Milwaukee, Wisconsin. Previous research supported the hypothesized I-B model that emphasizes the importance of knowledge, motivations including partner and community protection beliefs, and behavioral skills. The intended outcome of further mixed-method research was to provide additional support of this model by adding illustrations of qualitative responses in conjunction with quantitative findings; thus participants' voices are used to provide additional support of the quantitative findings.

### **Participants**

#### **Phase 1 Qualitative Interviews**

Eleven clinic patients were approached to be screened for their eligibility to participate in the first phase of qualitative interviewing. One person declined to be screened, and the remaining 10 patients were screened and met the eligibility requirements. Three eligible participants declined enrollment, and two agreed but did not show up for their scheduled appointments. A final sample of  $N=5$  patients enrolled in this phase of the study, which was the target sample size for this portion of the study. A convenience sampling strategy was used and resulted in a sample that matched the clinic demographic characteristics for gender and race. Three men and two women enrolled in the study, and four of the five participants were Black or African American. Mean age of the Phase 1 sample was 30 years old, and four of five participants were 20-30 years old. Two of the participants were at the clinic on the day screened for contact with someone

diagnosed with an STI, meanwhile the other three presented for a regular STI screening (“checkup”). First-choice preference for partner notification during screening provided variability in interviewed participants with two preferring medication delivery (PDPT), one prescription delivery, one simple partner referral without medication or prescription, and one who had no interest in notifying his partner. No participants interviewed preferred the fifth option of partner notification where a member of the clinic staff called their partner.

### **Phase 2 Cognitive Interviews**

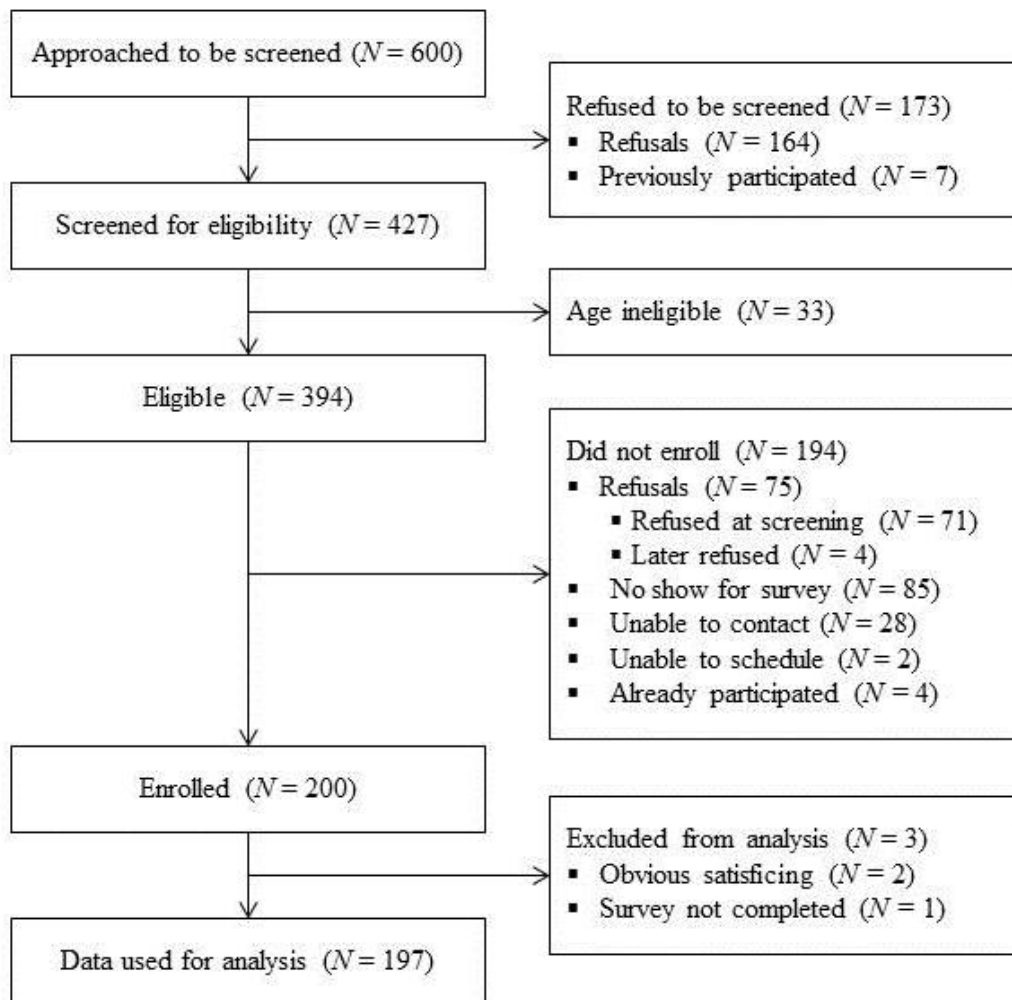
Twenty-three clinic patients were invited to participate in Phase 2 of the study. Three patients declined screening, and 20 individuals agreed, were screened, and met eligibility criteria. Post screening, eight declined to participate, one agreed then later declined, six agreed but did not attend the interview, leaving a final sample of  $N=5$  individuals participating in the cognitive interview. This recruitment strategy met the target sample size for this portion of the study. The higher no-show rate for this phase could be the result of the larger time commitment required for participation in this phase of study. Enrolled participants had a mean age of 34 years old. Four men and one woman participated, and all participants were Black or African American and one was of Hispanic/Latino ethnicity. Of the five patients enrolled in Phase 2, four of them presented at the clinic with symptoms of an STI and one for a regular STI screening (“checkup”). First-choice preference for partner notification stated during screening was medication delivery (PDPT) for one participant, prescription delivery for two, and simple partner referral without medication or prescription for the final two.

### **Phase 3 Full Mixed-Method Study**

**Survey recruitment.** Six-hundred STI clinic patients were invited to be screened for their eligibility to participate in the Phase 3 survey. Of the 600 patients approached in the clinic,

173 declined to be screened for the research study. Four-hundred and twenty-seven patients were screened for eligibility and 394 patients were eligible to participate in the survey. Of these 394 patients, 71 declined to participate in the study at the time of screening. Four declined participation after being screened, 85 did not attend the scheduled survey appointment, 30 were not available, and four were ineligible due to previous enrollment. This resulted in a final sample of  $N=200$  survey respondents. Of screened participants, no significant differences in odds of enrollment were found between those who enrolled and those who did not from the data collected; however the OR approached significance ( $p = 0.050$ ) for age. The mean age of enrolled participants was 31.34 years old, which was higher than those who did not enroll (mean age = 29.53 years old). After excluding two participant's data because of obvious satisficing (Krosnick, 1991) from simply clicking through the survey identified by time to completion and same answer choices selected throughout the survey (e.g., right-side answers selected for all questions) and incomplete data from another who was unable to finish the survey, a final sample of  $N=197$  was considered for analysis (see *Figure 2* for the full enrollment flow diagram). Demographic and background characteristics of the final sample used for analysis are presented in *Table 2*.

**Figure 2:** Enrollment Flow Diagram for Full Mixed-Method Study



**Table 2: Demographic and Background Characteristics of STI Clinic Patients**

<b>Characteristics</b>	<b>Overall n</b>	<b>%</b>
<b>Total</b>	197	--
<b>Age, mean (median)</b>	31.2 (27)	--
<b>Sex</b>		
Male	120	60.9
Female	77	39.1
<b>Race</b>		
Black or African American	180	91.4
White	10	5.1
Other Race	16	8.1
Hispanic / Latino Ethnicity	14	7.1
<b>Education</b>		
Some High School, No Diploma	32	16.2
High School Diploma or GED	82	42.6
Some College or More	81	41.1
<b>Employment Status</b>		
Full-Time	57	28.9
Part-Time	48	24.4
Unemployed	92	46.7
<b>Insurance Status/Type</b>		
Private	21	10.7
Medicare/Medicaid	107	54.3
Uninsured	55	27.9
Other, Don't Know, or Missing	14	7.1
<b>Reason for STI Clinic Visit</b>		
Symptoms of an STI	56	28.4
Contact with Someone Diagnosed with an STI	30	15.2
Regular STI Screening ("Checkup")	103	52.3
Other Reason	11	5.6
Prior STI Diagnosis	136	69.0
<b>Number of Sexual Partners (Past 90 Days)</b>		
Zero or 1 Partners	89	45.2
Two or More Partners	108	54.8
<b>Condom Use (Past 90 Days)</b>		
Every Time	21	10.7
Most of the Time	49	24.9
Sometimes	65	33.0
Never	62	31.5

**Qualitative interview recruitment.** A sample of fifteen survey respondents for qualitative interviewing to identify potential intervention mechanisms, barriers and facilitators to PDPT delivery, and other important information for planning a randomized controlled trial. A purposive sampling strategy was used to interview a diverse sample based on PDPT acceptability data pulled from survey responses and participant demographics. Of the first five participants randomly selected to participate, only three participants completed their interview. The first three interviewees were all men; therefore a purposive sample of three women were recruited and participated in the interview after a total of five randomly selected women were contacted about participation (two women were unable to be reached by telephone). After completion of this first sample of  $N=6$  interviews, quantitative survey data was accessed. PDPT acceptability data was scored as high, medium, or low based on their survey responses. High PDPT acceptors had a score of 4 or 5 (i.e., “likely” or “very likely”) on their PDPT acceptability response for accepting PDPT for all recent sex partners. Low PDPT acceptors had a score of 1 or 2 (i.e., “very unlikely” or “unlikely”), and medium PDPT acceptors had a score of 3 (i.e., “neutral”).

All of the participants selected through the first random sampling strategy (random based on PDPT acceptability data) were categorized as high PDPT acceptors; therefore the purposive strategy was adjusted to sample respondents with medium and low PDPT acceptability scores with a relatively equal representation of men and women. After three more iterations of purposive sampling, a final sample of  $N=15$  survey respondents participated in a qualitative interview after 23 participants were contacted for participation. This purposive sampling strategy resulted in the recruitment of five participants who were scored as low PDPT acceptors, four who were scored as medium PDPT acceptors, and six who were scored as high PDPT acceptors. Seven men and eight women participated in this phase of qualitative interviewing; 12

participants were Black or African American, two were White, and one described their race as Multicultural.

### **Qualitative Interview Findings**

A diverse sample of 25 clinic patients was interviewed for this study. Qualitative results from all three phases of the study are presented together, but special notes are provided in text to delineate findings when only applicable to certain phases of the study. An interpretive phenomenological analysis – a method of thematic analysis that aims to provide a voice to the participant’s experience within a conceptual framework aligned with established psychological concepts (Spencer et al., 2013) – was conducted. Each participant is labeled with their age, race (B = Black or African American; W = White; M = Multicultural), and gender (M = man; W = woman) in that order within their abbreviation. For example, a 58 year old White man is referred to as 58WM, a 21 year old Black woman is referred to as 21BW, and when two or more participants have the same demographics they are referred with a secondary numerical label to allow delineation (e.g., 25BM-1; the first 25 year old Black man interviewed). Given the extensive amount of quotations, I’ve bolded select portions of each quote deemed most important; however, the quotations were only selectively trimmed to provide the reader with a greater amount of context.

### **Interpersonal-Behavior Model Factors**

In an attempt to identify behavioral constructs important for use in a behavioral intervention for STI clinic patients, I next identified themes aligned with established psychological constructs within this interpretive phenomenological analysis. Participants provided a rich amount of data relevant for behavioral intervention planning including the importance of information; individual protection beliefs; partner and community protection

beliefs; infidelity worry, embarrassment, and anxiety; STI clinic stigma; STI-related shame; subjective norms; social support; behavioral skills; and structural and other factors on potential PDPT use. Each of these themes is explored in greater detail below.

**Information.** Each participant was presented with a scenario in which he or she was diagnosed with a bacterial STI (e.g., Chlamydia) when at the clinic. Participants were then asked what questions they had about PDPT and what information they would need to accept PDPT from a healthcare provider. In general, patients need for more information about STIs, medications, and steps to resuming sexual activity.

*You have to have the **knowledge about the STD and the medication** itself so that you're ready answer to any questions that they may have for you. (24BW)*

***How to take it** and how long do I take it? Do I take it with food? Do I take it without food? Tell me what should I do. (29BM)*

***Side effects, ... how your body is gonna react, ... steps to getting yourself cured, ... steps you need to take [to resume sexual activity, and] the warning signs** you need to pay attention to on your body so you won't pass this on to your partner or whoever else you're gonna be intimate with. (25BM-1)*

*I would want things to be very clear because ... there are people that are **allergic** to stuff, you wouldn't want to give somebody something that they're allergic to. (58WM-1)*

***I'd ask like would the disease come back, how long** would it be for the **disease to leave, how long after I take the meds could I have sex, just like little stuff like that.** (28BW)*

*Will this also work immediately for them? Will this be all that they need? **Will they have to come in?** (44BW)*

*Do you think **he need[s] to treat somebody else** if they've been having sex [with others]? (42BW)*

*I really think that **knowledge is gonna be the key thing** to help deliver those [medications to your partner]. (52WW)*

When patients were provided an informational pamphlet about PDPT, the medication, and STIs (freely available from the Wisconsin Department of Health Services; see *Appendix D*), participants provided positive feedback to receiving this information. In general, the informational pamphlet helped reduce some barriers to delivering medications to their partners.

*I think it's **pretty straightforward**. I mean, it's to the point. (35BW)*

*It lists what it is and what it got and then, I mean, **if you don't know all the answers to the [questions they may have, the] paper pretty much helps you out [with] more information you could tell your partner about it.** (19BW)*

*If [this] was being given to me, **it would have removed a lot of roadblocks for me, using the med.** (58WM-1).*

Participants still had questions even after reading through the informational pamphlet, including confusion about whether or not partners need treatment if they are not showing any symptoms of the STI and when they could safely resume sexual activity.

*So **how could you have an STD disease and you don't have no signs to it?** I just feel like you should, you'll have some type of signs like something won't be right. ... I want to know if you have sexual intercourse even though it tells you not to have sexual intercourse for seven days while you're taking the meds, seven days after you had took the meds so they can work and you can make sure you're clean, I want to know **if you have sexual intercourse, would you still be cured** even though you're using condoms. (28BW)*

Moreover, the importance of understanding the information was stressed for a number of reasons. Patients described the importance of giving their partner important information and helping them understand it. Taking responsibility for this knowledge transfer, patients would feel more comfortable delivering medications to their partners if they would be able to successfully educate their partners about this method of treatment.

***If I'm bringing this stuff home to them, they still would need advice, but maybe this would be folded up in the bag with the medications. And if they have trouble, we'll both have to go through it together to make sure that you have read and you know what you're doing when you take the medications. ... [And] I [would] need***

*to be educated more is all. ... Then I would know how to more be comfortable with this other person instead of like you don't know what you're doing either. (58WM-2)*

*[It's important] to actually know that you know what you're talking about before going to them, presenting it to them because ... they may have questions too. (44BW)*

**Individual protection beliefs.** Participants discussed the implications of partner notification and treatment within the context of protecting their own health. Participants discussed their knowledge about how a repeat infection could occur if they have sex with their untreated partner, and some understood that symptoms are not always present when one has an STI.

*We want to get rid of it and be able to be comfortable and safe and know that OK, well, if we're both clean then if we do decide to have unprotected sex we don't have to have this problem pop up [again] or anything like that. It's [also] important to take care of yourself. ... [My partner and I] need to be on the same page in order to go forward clean ... [because] these things can have long-term effects; different STDs can ... really mess with your body in different ways. I may have problems trying to have kids when I actually do want to or things like that cuz when I did have Chlamydia I didn't know, so it could have sat in my body for a long time ... I'm hoping that it didn't affect my reproductive system in any type of way or anything. (24BW)*

*You can catch it over if you are still having sex with her. So, yeah, it would be beneficial for her to take [the meds]. (48BM)*

Beyond understanding the implications of repeated exposure to an untreated partner, participants appreciated the ability to know that their partner was treated; participants did not always trust their partner to get treated through other mechanisms.

*I could take it to my partner and I could see her take the medication and know [she was treated]. Sometimes they might tell you they went and had it checked and maybe they didn't. ... If they gave me the medication, then I think that would have helped the situation that I was in ... [because] the same problem came back. If I was given the medication and took it and could watch her actually take it, then a repeated situation might not have happened. (62BM)*

Participants also considered the limitations of PDPT with their partners' partners, understanding that their partners could have other partners in need of treatment too. As their partners' partners are a part of the same sexual network, patients conceptualized the importance of treating all members of the sexual network to help them reduce their chance of a repeat infection.

*I mean **he can get treated but then he can still have multiple partners that I don't know of and they might have something.** (47BW)*

**Partner and community protection beliefs.** Participants not only cared for their own health, but for their partners' and partners' partners' health in an altruistic way.

***I needed to go and find out for myself. Not only for myself, but for my other partner.** And say if I have something, it's definitely something that I do not want to spread. And whether I spread it to one partner or if I spread it to you know five or six different partners, it's just not right. (52WW)*

***I [wouldn't want] the partner having sexual intercourse with somebody else and giving them something too. (29BM)***

*The sooner you get treated for something like this the sooner **it stops the entire circle cycle** throughout whatever the circle you are in. (52WW)*

Partner protection beliefs were present for some regardless if they thought the relationship would continue.

*It'd be **my responsibility** to tell her. (25BM-2)*

*I feel like that would be the **right thing to do.** ... I would want them to be treated whether or not we goin' to be staying together. (25BM)*

*I'm upset about the outcome of it all, [but it] would be **very selfish to not let him know** because he could be infecting somebody else and not even just a small STI it can be a deadly one. (47BW)*

However, not all participants had the same positive partner and community protection beliefs. Some felt that their partners needed to take responsibility for their health, especially in non-monogamous relationship contexts.

*I wouldn't be able to [deliver meds] because I don't fuck with them. Shit, **they probably doing they own thing**. Me, I be like man, fuck the bitch, man. That's how I be looking at it because these - because these females don't know what they want or who they want. (23BM)*

Protection beliefs were also weighed with their perceptions about PDPT. Participants worried about their partners having other STIs, which influenced their opinions of whether they believed their partner required screening before or after treatment.

*I would want them to go to a doctor and **get screened properly**. ... I'm not a doctor and I'd rather for her to go get examined properly than for me to bring some pills and be like, "Here, take these. You'll be okay." I would want her to go get tested like I got tested. (48BM)*

*I would want my partner to **personally come here [to the clinic to get screened before treatment]** and make sure that's all he got ... **just to be on the safe side**. (21BW)*

*Your partner should take the medication but still come in and be checked out **regardless**, just to make sure that there's nothing else going on and that the treatment was effective, because who knows if they've been with someone else and then now they may contracted something somewhere else other than what this partner is already telling them. (35BW)*

Some patients thought that delivering PDPT to their partner would reduce their partners' perceptions about how serious the infection was because they wouldn't need to meet with a healthcare provider prior to receiving treatment, which similarly influenced their opinion about the need for STI counseling and testing.

*I would rather for her to get treated and let her know that it's serious. **It's not just something that's a joke. It's, it's real serious, and I'd rather for you to know than for me to just be treating you or helping you out**. (22BM)*

Moreover, the implication of PDPT implementation was thought to be both good and bad for the community. While patients thought PDPT could reduce the prevalence of bacterial STIs, it was thought to result in behavioral disinhibition. Patients thought PDPT could cause community

members to engage in riskier sexual behavior because of easier access to treatment, which could expose them to greater HIV risk by enabling condomless sex.

*I guess my overall reaction to it is that it's a good thing, because it goes into an earlier intervention, which is going - well, it's just going to **cut down the spread of STIs** because of the earlier intervention. ... Well, they'll be less sexual encounters while someone's infected and not knowing rather than more sexual encounters where people are infected and not knowing, and therefore the - the rate of transmission will - would be reduced, which actually should lead to overall less need for treatment, which is probably a good thing. (58WM-1)*  
*On the other hand, it can make ... the world [worse] because everybody know like, oh, if I have sex with this person I burned they're just going to bring my medication, I don't have to go to the doctor. ... It can **turn into more AIDS** ... because then they'll just be freely to just **everybody not using condoms**. ... If I'm burned, if she feel like she got something, then she'll bring me my medication. (28BW)*

**Infidelity worry, embarrassment, and anxiety.** Participants thought critically about how their partner might respond to being notified of the STI and given medications. Mainly, participants worried about the implications of infidelity, feeling embarrassed, and anxiety over how their partner might respond to notification of the STI exposure.

*There is that obvious stigma of having that sexually transmitted disease because that means you were being **unfaithful**. (24BW)*

*Some may think that you must, you may be **cheating**, and others may ... wonder how are you getting it. ... They may presume that you'll think that they're messing around or you may end up knowing that they must be messing around and they brought it to you and so they're guilty and don't want to face that challenge. (44BW)*

*It may end in an **argument**. Well it'd most likely going to end in an argument. ... Because if someone's sleeping around on your and they come back and say they got something, you didn't know they were sleeping around, there's going to be an argument about them sleeping around and then the argument or the fact that they brought you back an STD. (19BW)*

*It's difficult to tell them because you're **afraid of their reaction**, of how they'd react or how they would think or how would they think about their self or how would they think about you. (22BM)*

*I would like basically be panicking because I would be so so much **caught up on their reaction**, their thought, their feeling of how they is, so I would kinda be paranoid and scared really. ... If you're in a relationship, it's gonna be hard because you lose a lot of things once you announce that to your partner – ... trust, honesty, faith, [and] love. (25BM-1)*

*They're basically probably just too **embarrassed** to deliver medications to their partner because say, for instance, that's not their number one partner. But they know they got it from them. And some people would deny it like a guy probably would say, 'oh, no, you didn't get it from me, so I'm not taking that.' (21BW)*

These concerns were weighed with positive perceptions about their partners' response to PDPT.

For example, delivering medications to their partner was believed to show compassion.

*[The inclusion of medications is] way better cuz you **showing that you care** at least, like ... you have some type of a feeling towards the situation. (21BM)*

The selected quotes above provide context about patients' general worry, but this worry extended to even more serious considerations to the potential of violence when notifying a partner of an STI. This theme is discussed more thoroughly in *Structural Factors* because of considerations for intimate partner violence screening by healthcare providers before a partner referral strategy is considered.

**STI clinic stigma.** When participants were asked why it might be difficult for their partner to come to the STI clinic for treatment, participants discussed the stigma associated with the STI clinic. Participants worried about being seen at the STI clinic by someone they knew, especially with materials that would suggest they were diagnosed with an STI. Patients discussed how PDPT would help their partners avoid the stigma associated with the STI clinic; PDPT was considered to be a more comfortable alternative to STI screening at a clinic.

*People come here for STD checking and probably pregnancy test[ing]. ... I think that's what makes people uncomfortable because you never know - like if you do have an STD or whatever, a yeast infection and you come out and **they give you little brown bags** and then like a person will come out with a yeast infection kit - I think **they'll be embarrassed**. (25BM-3)*

*[My partner] would probably not want to come to a health clinic because they would probably be like, 'Well, **she got something**. She - look at her, that lady. She going in there. He probably gave her something.'* (48BM)

*It's **embarrassing that I'm here**, but you got to do what you got to do man.* (23BM)

*Some people might be ashamed to come to a clinic. Because it'd be a lot of people in the clinic and then you **might see someone you know** and then they get the question and asking 'why are you here?'* (23BW)

*So it's just like I never been here. Why am I here? Everyone in this place disgusts me. I don't want to be here. Like **this is for nasty people**.* (21BW)

*If it was available for me to take the **medication** to the [partner], I feel that might actually make my partner feel **a little more comfortable**, because some people's uncomfortable about going to a clinic.* (53BM-2)

*Some **people don't like going to doctors and coming to clinics**. So if their partner taking them the medication that'll cure the disease and stuff and make it more safer and comfortable for a person.* (28BW)

Closely aligned with STI clinic stigma, participants also discussed the stigma and shame associated with STIs discussed next within STI-Related Shame.

**STI-related shame.** Stigma and shame of STIs was projected in their perceptions of others as well as self. Assumptions of promiscuity related to STIs were evident in participant interviews.

*People have a **stigmatism about STD's, STI's and stuff like that**.* (32MM)

*STDs, altogether, there's just a stigma for them. ... [The STD] just popped up, [but] **it's not like I was out sleeping with the whole city**.* (24BW)

*It only takes one partner, it's not like it takes 5 or 6 people. ... If you have unprotected sex with somebody, and ya'll not in a committed relationship ... and then you have – you catch Chlamydia or Gonorrhea or anything, you gonna feel like **that person is nasty**, cuz I know I would. I know I would. That's how I would look at it like, **they just goin' around having unprotected sex with people**.* (21BM)

Perceived stigma was then described in terms of internalizing shame.

*Was this something that's done on my end? Was this something that I received from the non-protected sex a week ago? ... **Now am I the dirty one? Am I the slutty one?** Am I the one that just fell for something stupid in the heat of the moment? (52WW)*

*I just feel just so, so **disappointed in myself** and disappointed in her for not for not letting me know what type of female she was. (29BM)*

*Getting a disease would **make you feel nasty**. ... **I ain't proud** of having no ST - STD or no STI. (23BM)*

*They would think that you could at least **have more respect for yourself** to wear protection. (25BM-2)*

A feeling of shame was described for a reason to avoid the STI clinic.

*It's basically difficult because **you don't want to hear that you have HIV**. You don't want to hear that you have **an STD**. Hearing that you have that is like, I feel myself back in this place again and I'm **hurting myself again** or I'm going down the wrong direction again, and it's not like that's what you want to do. **It's not where you want to be**. You really want to keep taking care of yourself. (22BM)*

STI stigma was discussed in the context of malicious people knowingly spreading HIV and STIs.

*And then you have **people out here who actually knows they have stuff** [/STIs], but they still continuing on to **wanna have sex and pass it on**. (25BM-1)*

*You see so many incidents where **people know they have HIV and they're passing it** around and then like they'll finally tell people they have HIV and kill themselves or something. (25BM-3)*

*Some people just wouldn't care, you know, or **they would be upset and go around and give it to other people before they get treatment**. That sounds horrible to think about but there are people that I've seen in these little magazines, these community magazines or whatever and on Facebook, I've seen where they said this person is allegedly going around spreading HIV, they're positive and they're going around giving it to other men and women because they're upset that someone gave it to them and didn't tell them. (35BW)*

STI-related shame was perceived in the context of the interaction with the healthcare provider, which resulted in thoughts of discomfort, embarrassment, and confidentiality.

*It'd probably **feel more safer getting it from your partner**, the person that gave it to you and then you would believe, you know, you have it and it would just be a more, like what am I trying to say, it would be a more comfy, **comfortable***

*environment, like where getting it from a doctor is like kind of embarrassing. ... Then it's more like you feel, you feel like nasty. If it's coming from a doctor, then you don't know what's their opinion, if they're in the back talking about you or you don't know like how they feel about it. ... What if this doctor knows somebody on the streets, tell this person, tell that person? (28BW)*

Beyond stigma and shame, patients had normative beliefs about partner notification and PDPT.

**Subjective norms.** Participants discussed their perceptions of their partners' and healthcare providers' opinions about partner notification and PDPT. Participants discussed the need for protecting their partners' health, and the patient's perceptions of their partners' opinion mattered.

*They would feel more comfortable. Like, well at least you know like, took the time and effort to get checked out and not only that, you concerned about my wellbeing too. (21BM)*

*I still would feel like that person would be more grateful to receive the medicine and the information about what they're getting treated for from their partner than a doctor, a complete stranger ... just going off of my life from a piece of paper with five minutes of information. (25BM-1)*

Interviewees had mixed beliefs about how common partner notification was in their community, where some thought it was more common than others. Reasons why individuals thought it was uncommon practice were related to the aforementioned barriers, such as worrying about their partners reaction to being notified of the STI.

*I respected the fact that I was actually notified because they didn't have to tell me, and it's a lot of malicious people out there that wouldn't even notify you and let you know that you have been exposed to it. (53BM-2)*

*I don't really think it is as common that people would notify their partners of STDs. (32MM)*

*Some people they would deliver the medications, I believe, and then it's like 50/50. The other half would just be like, no, because that guy isn't my number one partner so I don't care, I'm not going to give it to him because I'm embarrassed. (21BW)*

*Some of [the partners] won't even take the medication. (58WM-2)*

Patients discussed mixed normative behaviors about attending an STI clinic for screening. Some thought their partners would prefer to go to the clinic for screening, whereas others thought their partner would avoid a clinical visit and be ideal candidates for receiving PDPT.

*I would believe **some guys don't even go to the doctor and get checked.** ... [Men] go out of the way and just think that it can be something else when all along it could be an STD. (23BW)*

***She would rather go to the clinic herself and get tested.** (48BM)*

Participants felt that subjective norms would change over time upon implementation of a partner notification and treatment strategy.

*Maybe it's a routine thing and it starts going about, then **it will probably pick up more** and people will probably be more conscious about these things and open to speaking up and taking care of the issue and telling their partner the information they need to know. ... **Once it is implemented and people get to know more about the reasons why and are more knowledgeable about STIs,** then I think it will **become more prevalent that people** will feel more open to speak about it and **tell partners.** ... then hopefully it will decrease the episodes of having to have people deliver patient medication because they're protecting themselves. (35BW)*

The partnership type affected participants' appraisal about their partners' perceptions. In general, primary partners' opinions were more important than those of non-primary partners.

*If it was a **non-primary partner** who it was just a causal encounter of sex at a party, ... **I don't really know if those opinions that that person would have would weigh so much on me.** ... I don't think that the opinions that that person would be displayed to me at that time [when I brought them medications for the STI that I have] would be that much of a concern of mine. (52WW)*

In speaking about a non-primary partner that notified a participant of his STI:

*Well with **that person** I don't even know. She says one thing and then says another, but **I just ignore her because I feel like,** I feel like crap, like you, [she] **did me wrong.** (29BM)*

A mixture of perceptions about healthcare providers was relevant to their opinions of PDPT and motivation-to-comply with their healthcare providers' beliefs. Positive normative influences of PDPT by healthcare providers positively influenced patients' perceptions of PDPT.

*A doctor who did a lot of studying and stuff, or have been in the field, **they would probably want their client [the partner/] to come in** so that they can get checked and so that they can go through the whole procedure that is necessary. (25BM-2)*

***Why would the doctor want me to be so responsible** of helping somebody who didn't give a jack jittily about me? But I know that's being ... selfish. (47BW)*

***I'm not the kind that likes to do doctors.** (42BW)*

*I think that **they would feel** like this, **that's a good thing to do.** ... They got a good opinion on it, so **it influence mine in a positive way.** (21BM)*

***They would be telling me the right information,** what I needed to do to get better. So, yeah, **I would listen to them.** (48BM)*

***I value my doctor's opinion** in regards to being healthy and staying healthy. (32MM)*

Participants' had mixed feelings about their partners' and healthcare providers' normative beliefs and motivation-to-comply with their beliefs, and they had mixed opinions about the level of social support for general and sexual health issues discussed next.

**Social support.** The implications of positive and negative social support were discussed by participants. Participants discussed obtaining support from friends and sexual partners, and two types of support were discussed: 1) general social support, and 2) sexual health social support.

***I've got a lot of support friends.** All I have to do is call them and tell them what I'm going through and, information will be flying my way. "Hey, you'll get over it. Maybe you should try this, or -." ... You can always go to your guys and **talk to them about sexual issues and stuff.** (48BM)*

***She said that she's had it before once** and ... she said that you know it happens and it's common and you know you can get rid of it. But she wasn't really that sad for me or anything like that. ... **It kind of made me feel better because she knew***

*what I was going through and she wasn't judging me for it. ... Versus talking to another friend who hadn't had it ... [She] just was not [supportive] at all, she definitely was a little creeped out about it. She was just like 'oh my God, oh my God.' Like, that's all she kept saying, and I'm like 'why are you more worried about this than I am?' Like, I probably shouldn't have called you to talk to you about this ... (24BW)*

*Nowadays people, they like to talk or throw something back in your face ... it could be a couple years from now, months, even years, I just don't like the idea of people throwing dirt back in your face. (25BM-3)*

Sexual partners offered both positive and negative support.

*When I did have to explain to my partner that this is, this is what had happened, this is what [I] had, **the support from him was great.** Just because I think we have an open enough relationship where he would not question or there would not be a disagreement, there would not be an argument. ... **I don't know how I would deal with it if it was somebody that did not, wasn't so supportive of me and the relationship that we have.** (52WW)*

Another woman had a poor experience of support from her partner when she had a Chlamydia infection and gave her partner PDPT, which influenced her willingness to discuss non-STI sexual health related topics with him.

***I just feel like why do I need to tell you about something [/Bacterial Vaginosis/] and you have no idea about it so you can just turn your face up like 'what's that?'** (24BW)*

The connection of social support was discussed in the context of STI-related shame.

*I come from a very large Catholic family where sex was never even talked about, so to have to try to find out what an STI is at my age was an eye opener. ... I do not have personally a huge support system. **I have a very few ... close people** that you would tell everything to; except I think there is that part of us that [thinks] **'are you really gonna want to go and tell a good friend what your situation is with a sexually transmitted disease?'** (52WW)*

The connection between stigma, homophobia, and social support were apparent. Patients do not always want to share freely their experiences of STIs because of the stigma associated with them, and homophobia is a worry for some. These issues create barriers to utilizing supportive relationships when dealing with sexual health issues, such as an STI.

*There are very many more STDs out there ... and **they don't want people to know.** ... A variety of people don't want them to know that they have, that **they're bisexual or ... gay.** And so they're doing some of the things they "wouldn't" do or friends don't do or maybe still is, some people may say behind the closet, but they have these things **they want ... another person who understands** and that would be willing to talk about it if they had a problem. (44BW)*

The connection between social support and self-efficacy was made by another. The ability to discuss the STI with supportive members of their social network was thought to help increase the patients' confidence in notifying a partner of an STI.

*Just being very open and **talking to other people about it** and to have some sort of outside feedback on it and I don't think anyone would tell them like, no, don't tell them. So if they had a lot of people in their ear, like you need to tell them, then **that would kind of like boost their confidence about it.** (21BW)*

Self-efficacy (i.e., confidence to perform a specific behavior) was only one necessary behavioral skill identified by participants; others are discussed next.

**Behavioral skills.** When asked what types of skills patients would need to notify a partner and deliver medications to them, participants stated communication skills, patience, planning, and self-efficacy were necessary.

*I think delivering those medications to the other partner has got to be done in a **tactful** way. (52WW)*

*I'm gonna just say **basic communication skills.** Know how to talk to them and know how to say the right things so you won't say the wrong thing to trigger off a reaction that you're not trying to have. (25BM-1)*

*I think it's important to have **patience.** You definitely have to **have your thoughts put together** before you go into it, but that's just me thinking about it afterwards. ... I just wish I would've taken a little bit of time because that was just a lot with me getting the news and then him being mad at me about the news when I was already just like 'how did this happen?'* (24BW)

*I say knowledge, knowledge of the situation, the medicine, **knowing what you're gonna say.** Not only what you're gonna say, but how you're gonna say it. (25BM)*

*You got to **know how to use the right words** when you're talking to someone in a bad situation because if you say the wrong words, it can turn just bad just in a blink of an eye because the person already in defense mode. (28BW)*

*You gotta **be calm and collect**. ... You can't be pointing the finger, can't do that. You just be gentle of course cuz you don't know how people will take that news. (21BM)*

Participants had a varying degree of confidence in their abilities to deliver PDPT.

***I'm not a doctor**, so I would think he'd understand more if it's coming from someone who actually know what they're talking about. ... **It might be difficult** because he probably won't understand like how did we get the infection. ... You just **got to be prepared** and you **got to have confidence** in what you believe in. (23BW)*

***I feel like you got to be a super hero** [to notify your partner of an STI]. ... I'm assuming that a person will have to be confident. (32MM)*

*[You need to] build up the **confidence** of the person delivering the med. So you've got to eliminate their road blocks to feeling uncomfortable in delivering the med. So you've got to **educate them**, kind of **train them** on how to go about it, so that they understand the delivery method that's been proven to be most effective in getting a positive response to receiving the news. (58WM-1)*

***It's easy** and it makes sense. (24BW)*

*It's simple. ... **It's not that hard** to me. (21BM)*

The inclusion of medications and accurate information improved patients' perceived confidence in themselves and others.

***[Including medications]** most definitely helps. It **helps a lot**. ... I guess delivering to them and telling them it will be easier for them to do since they have the medicine with them. It'd be easier for them to talk about it and especially [with] the paper [/informational pamphlet/] would. I mean, any questions, you could just basically read it off the paper. And **the paper is really helpful**. And **I guess it would encourage them to tell their partner with the medicine**. (19BW)*

In summary, patients discussed the implications of information, motivational factors, social support, and behavioral skills on hypothetical PDPT delivery. Their responses provided great insight into the application of the I-B model and framework. An interpretive

phenomenological analysis guided by the I-B model was used. Further investigation is needed to determine if the identified psychological constructs are amenable for utility in a behavioral intervention. Other factors were identified, but considered more externally related. These “other factors” are more fully described below.

### **Other Factors**

Additional themes emerged from the interviews that did not align with psychological constructs, but are important contextual issues important for intervention planning. The two main themes included: 1) the decisional balance based on partnership type about whether or not a patient would want to deliver PDPT to them, and 2) the implications of trust.

**Decisional balance based on partnership type.** Participants discussed the barriers and facilitators of notifying their sexual partners of an STI with PDPT. An emergent theme woven throughout the interviews was the decisional balance participants had in thinking about what to do in this particular scenario based on sexual partnership type. In general, participants were more comfortable notifying primary compared to non-primary partners.

*I believe **delivering medicine to one exclusive partner would be fine. I don't even know how I would feel delivering medication to a partner that I was not exclusive with that may have just been a one-night stand or a one, one-time thing. I think at that point I would feel rather uncomfortable.** (52WW)*

Another participant discussed his opinions about giving PDPT to the non-primary partner that notified him of the STI.

***I wouldn't even do it. ... The reason why is because you know you had it and you weren't honest with me. So I feel like that you weren't honest with me, you let me engage in unprotected sex or the sex period and now that I might have a disease, I don't – I feel like I'm not obligated to deliver no medication or do none of the above because I feel like you was wrong, you shoulda kept it honest with me, and I won't do it. I won't.** (29BM)*

Participants' were also engaged in critical self-reflection within the interview. For example, the above participant discussed why he might change his mind.

*I mean, it can [be] that I don't want to or it can be the – you know what forget it. I would do it anyways. ... (Interviewer paraphrased: Why did you change your mind?) **Because it wouldn't be right**, you know? Cuz I had my mother raise me no matter what circumstance it is, it wouldn't be right, you know? But in the end I wouldn't do it though. But if I did wanted to, definitely would let a person know. But right now? No. (29BM)*

Finally the same participant stated the reason for the potential indifference about telling his main sexual partner was because he was unsure if his partner actually had the STI. He'd prefer to avoid the conversations related to STIs if she didn't have it, but giving her presumptive treatment was considered the safe thing to do.

*It would feel bad and then it feel it feel good at the same time, so **it's a good bad situation**. The **bad thing is**: delivering the pills to your partner is that **she don't know that she might have a STD**. ... The **good thing about it**: you delivering the pills to her so she can be safe even though if you didn't have sex with her when you thought... you [had] a disease, but it's a good thing to let her know. .... Even though the bad thing is the reactions of the conversation explaining to her why she gotta take the medication. (29BM)*

In discussing her previous experience using PDPT, another discussed the difficulty telling her partner. Although it was tough, she had a clear conscience because she had the conversation with her partner.

***It was a little hard to tell him**, but I mean, you have to in order to, well I mean, you really don't have to. If you really wanted to you could crush up pills and put 'em in something and give them to him, or her. But's that not what I did. I decided to be honest, to get if off my conscience. ... **A part of me is glad I told him and a part of me isn't, but at the end of the day I was honest with him**. (24BW)*

**Implications of trust.** The second main theme that emerged outside the scope of the I-B model was the implications of trust. Mainly, participants discussed trust in the context of their sexual partners, the antibiotics, and healthcare providers and the medical establishment. A participant discussed his reasoning for trusting his partner based on his appraisal of her

trustworthiness, yet others mentioned distrust of everyone including sexual partners. Even if patients delivered PDPT to their partners, they still had issues of trust about whether or not the partner took the pills.

***I'm very particular with my sex partners, so I would - if she told me that there was something that was wrong and she gave me some medication, I wouldn't really worry about it. I would trust her.*** (63BM)

***I have to come and get checked myself before I take any medication anybody would give me because I just don't trust people. That's just me.*** (28BW)

*'Cause like I said when I came here, I fooled with this young lady, and I said, 'Let me go get myself checked anyway' 'cause she started taking pills. I said, 'Man, what's going on?' So I - that's what made me go get myself checked 'cause when it comes to the streets the way it is now, **I can't trust no one**, man. Especially not a lady 'cause **there's so much stuff going on out here**. ... I don't trust women. ... Most women don't care. And I know that for a fact. That's why I don't trust 'em.* (53BM-1)

*Just because you give them to them **doesn't mean they don't swallow them**. Some people could swallow pills and make them come right back up. Or just throw it all back up. Some people know how to do the little hiding the pill on the side, side of the jaw, side of your gums and - you know? I just - **I don't trust nobody**.* (23BM)

Participants discussed distrust in the antibiotics received as PDPT. Participants worried that the medications could be something other than antibiotics for an STI, and patients had thoughts about having the medications verified by a pharmacist before they would consider taking PDPT if delivered from a partner.

*He'd probably be thinking **this like a setup** online or something. ... It's better to me if they did come to the clinic so then when they get checked and see that they did have it, then they'd be more willing to take the meds, [instead] of me just walking up to them and giving them some meds. Because it would be like, **is she trying to drug me up** or was she trying to get me because they don't know what it is.* (28BM)

*[She] would probably say I was just - you know, I got something from the Dollar Store or something like that and **it's not really the medication that I'm saying it is**.* (63BM)

*I wouldn't trust them to bring mine to me. ... I would go to a pharmacy first and have them look at this stuff and tell me what is this for what is it? I'd have like my pharmacy, they can actually look at the pill, if it's a capsule, they would open it and say, **are these really antibiotics**, you know. **I would get a secondhand opinion.** (58WM-2)*

Distrust in healthcare providers and the medical establishment was a prominent theme. Patients questioned the medications provided from doctors, especially if they took medications and did not notice any indication that the medication was working.

*The doctors, **I don't trust them either.** I trust them probably far as probably checking me over or something, but as far as giving me a shot or taking blood, you can't come in there with a needle already made up. I got to see you open it. (53BM-1)*

*[I would] basically **take that trip to the pharmacist** and make sure that I'm basically taking the right medications to get treated, **even if the health care or the doctor provided it for me**, I would rather **make sure that I'm really getting treated by the right medicines** and not being drugged up or anything. (22BM)*

*I feel like if a doctor explained to me 'these are medications you use and you're supposed to drink a certain amount of water,' **and I'll start to do that and I don't see any change**, basically **I would feel like I'm being played.** (22BM)*

The implications of trust were intricately connected to several structural factors discussed next; the appearance of the pill packaging and the documentation included with PDPT increased the trustworthiness of the medications.

## **Structural Factors**

Structural-level themes identified within the qualitative interviews identified the complexity of navigating partner treatment for their sexual partners. Factors that could impede or enable the acceptability of PDPT as a method of partner treatment that are outside the control of the patient are defined here as structural factors because they are potentially modifiable by how PDPT is distributed in the STI clinic. The main structural factors identified within the interviews that influenced potential for PDPT use included: 1) risk of violence; 2) partners' insurance status,

convenience, and transportation difficulty; 3) confidentiality and legal status; 4) inability to contact partner; and 5) implications of drug resistance.

**Risk of violence.** As a factor outside volitional control, the risk of violence is considered a structural factor. Participants – both men and women – were concerned about the potential for violence when notifying their partner of an STI.

*Ain't no telling what she might do (in heavier tone) ... The reactions can be all types of stuff. It can be - it can leads to an **argument**, it can leads to a **fight**, and also can leads to **death**. ... It can leads to ending the relationship. It can, depending on the type of person you talking to (in heavier tone), it can also land on a lot of other mess like fights and a **person might feel some type of way and kill you**. (29BM)*

*Whether it be the person has also themselves been infected or not, just the fact of not knowing and being so insecure or so uncomfortable would **possibly potentially cause arguments**, possible **fights**, maybe even some type of **jail time**. (32MM)*

*I think [intimate partner violence is] **more common than not**. I mean, I myself have had some situations in the past where I've been with someone who was kind of violent or but I've gotten away from it because that's not something that I would like to live with and that's not something I'm willing to endure. ... I've seen young people, younger people now today are getting into more domestic disputes than not. I have younger brothers and they both have been in domestic situations with their girlfriends and whatnot. ... **I see it more prevalent than not** in the younger generation like this is something that they think is okay or is something that, oh, it's just if a person doesn't, **if they don't slap you or kick you or punch you, they don't love you**. (35BW)*

The type of partnership mattered in the context of violence risk. Mainly, the risk of violence was thought to be less for more serious, long-term relationships.

***Some stranger** and we still talking, I don't think I would tell. ... I don't know the person. ... And **they could be violent** or come at you. ... But a long-term, yes, but ... a short-term, I would be less eager to do this. (58WM-2)*

Others discussed their own worries or thoughts about violence against their partner.

*It'd be so crazy cuz the results come back and they say this and they say that – all type of **thoughts runs through your head about everything**. Wanting to **hurt the person**, [wanting] to **find the person who gave it to her**, but you might not know*

*if he gave it to her or he gave it to her. It's a lot of thoughts that run through your head. You might want to **choke her up, slap her out** or – it's a disa... [/disaster/] – **it's a thought process**. But, the **only way you can fight them thoughts away is to get yourself cured** and never do it again. Like I said, everything is a lesson learned. (29BM)*

***I don't remain calm**, I go off the wagon when something **pertaining to my health** is at risk because of somebody else's carelessness. (47BW)*

*I would have wanted to [take meds] to him. ... I probably would have like physically gave it to him in the sense, **I probably would have hit him with the bottle upside his head** or something, but he would have got his treatment. (28BW)*

While these violent behaviors are volitional within the interviewees' perspective, they are not when considered within the partners' point of view. Understanding the severity of intimate partner violence, participants offered suggestions for patients and healthcare providers to address the risk of violence. These suggestions included better preparing the patient for an adverse event, allowing the patient to tell their partner with a healthcare provider present, and screening for intimate partner violence before considering a partner referral strategy.

*[Patients] have to understand the fact that [their partner] may or may not take this in any type of way that **it may go a different direction than you're thinking it will go**. (24BW)*

*[If there is a risk of violence between partners,] **call you and your partner** in but put you guys in **separate rooms** and [have a healthcare provider] **talk to each individual like a one-on-one**. (28BW)*

*If you've had a violent relationship and then you have to tell something like this, that would probably be **a question [healthcare providers should] ask** in regards when a person is coming to get treatment and you give them the medication. Okay, ask them about their relationship. **Is it a violent relationship? Are you safe in the relationship? Would you feel comfortable actually telling a person?** You know, because sometimes they may not be. And then **that way it can be handled by the healthcare provider** or the facility in order to get in contact with this person. ... You can allow us to do that. Here's how we're going to do this. We're going to give you information. **We can give you information about referrals to go to get help for domestic violence** and whatnot. (35BW)*

Yet another discussed the difficulty in telling a healthcare provider about their violent partner.

*It would be kind of hard to do because how would they know what to do, how would they know to deal with this person if the patient can't even tell the health provider to tell this person because **the person would be more or less like how did they know about me and why did you tell them about me** and about my situation. That would be kind of hard. ... I wouldn't provide his information like that. ... **If I was scared of my partner, I wouldn't have, I wouldn't give his information like that.** (44BW)*

Distrust in police was mentioned in connection with intimate partner violence, where victims of violence may not want to report an incident because they fear the police will place blame on them.

*[If it didn't go as planned,] **I might have to call the police and leave.** (19BW)  
**Scared they going to get beat up.** ... [I worry] for a lot of people. ... **[and] when I call the police, they going to tell me I'm the problem.** (42BW)*

**Partners' insurance status, convenience, and transportation difficulty.** Structural factors beyond violence were discussed, mainly in relation to insurance status, convenience of PDPT, and impact of transportation barriers. Participants' partners' insurance status mattered, especially if their partner would not be able to afford paying for the medications.

*I would be happy because it would be easy and **my partner does not have insurance.** So, I know that **he would definitely not be able to pay for medications.** (24BW)*

A lack of insurance can delay the time to treatment as well.

*She came back and told me [about the STI] and I told the other female. The female did the same thing – got treated, got tested. **I was the last one to go because I didn't have insurance;** I didn't know anywhere to go where they was gonna treat me. ... [That] **delayed it a lot** because I was really at a standstill. Like **I had either come up with the money to get treated or not get treated at all if I didn't find out about this place.** (21BM)*

In general, patients thought PDPT was convenient for their partners because it helped their partners avoid the clinic.

***They could give out medicine.** ... I think that will be nice, so **[partners] wouldn't have to come in and wait hours and hours to get treated or being seen and stuff***

*like that. ... People don't have it to wait, they uncomfortable sitting in the rooms and a lot of – with a lot of - other people. (25BM-3)*

*I'm glad that this building is here to assist me because **I would have had to go to Froedtert or somewhere else to get screened and that probably would have took like five to six hours just to get screened there. (48BM)***

Transportation difficulties were a barrier to delivering PDPT for some. Similarly, transportation difficulties were implied as a barrier to coming to the clinic for STI screening and treatment.

***Some people probably not have transportation. (23BW)***

***Providing transportation to get a partner, give it to your partner. ... some people ain't about to travel on no bus. ... So I think the transportation, like if you go to the doctor and they provide like, well, we can take you to your partner, you know and they make it more safer or they make the partner feel comfortable that you really went to the doctor and it's really meds that this person is supposed to be taking. (28BW)***

However, health department employees showing up at exposed partners' houses can cause extreme embarrassment and a breach in confidentiality for the partner, which are reduced for partners utilizing PDPT instead.

***The Milwaukee County City Health truck used to come get you. When you had gonorrhea or something, oh, they pull up to your house. ... Well, there's nothing wrong with that, but it was very embarrassing. ... I mean, at least you guys are stepping it up a little bit and you keeping it little bit more private and confidential [with PDPT]. (42BW)***

The topic of patient and partner confidentiality was discussed by participants more and presented next.

**Confidentiality and legal status.** Another theme identified within the participant interviews was related to confidentiality of their partners for some, especially compared to other methods of partner referral. Patients worried about breaching their partners' confidentiality by providing healthcare providers their partners' contact information.

***I'd feel better [about delivering medications myself] because it wasn't like they had to get a call from somebody they don't know. A doctor, could be somebody***

*[that] they do know that work in healthcare and that'd be embarrassing. To just get a random call from someone like 'hey uh were you, you had a partner and he has an STD and uh we gotta treat you.' No I feel more better if I went to them myself and be like 'you know what? We know [what] we all did and how we did it. I got a STD and I just got treated. These [are] the medications; you need to get treated too just to be on the safe side cuz ... ya'll was the last person I had sex with, so I know that we need to get this treated.'* (21BM)

Yet others thought a phone call from a healthcare provider was beneficial because it would help their partner believe them that they had an STI and the medications were for them – the partner.

*A phone call [from the provider] or whatever to the person. ... I mean, I guess it's more believable for the partner if they don't. Because, you know, some people just don't want to come to believe that they may have one. So the phone call, then the paper, it would just, you know, make them want to go get tested themselves.* (19BW)

Participants also worried about confidentiality when they considered receiving PDPT from a partner.

*I'm secretive so I do it where ain't nobody around. Cuz I don't like nobody in my business.* (29BM)

Mixed opinions were apparent about attaching the partners' name to the medication. Some patients thought it caused confidentiality issues, yet others thought it was necessary to be legal.

*They could have confidential[ity] issues [with putting your partners' name on the pill bottle because] they don't want people to know.* (25BM-3)

*I believe that's illegal to give somebody else some prescriptions that's not authorized in their name. But like if they was to give it to me in like with their name on it, then I would give it to them. But other than that, I don't feel comfortable with giving somebody else another prescription that the doctor gave me that was not prescribed to them.* (20BW)

The legal status of PDPT was questioned by many, but others were not as worried if it was given to them by a healthcare provider.

*I was wondering was this legal if I walked out the door with my prescribed medications and then I had this other dose of medications that someone else is supposed to take. Am I legally okay doing this? ... That was my main concern*

*because I thought that anything in the medical field would not allow you to go and carry medicines for somebody else. (58WM-2)*

***I don't think it's legal. ... So I still may get in trouble for it. Because even if I got the paper [copy of results], she would still have to go get her own medication, unless it's from the pharmacy and I'm just picking it up in her name. But that's the only way if I deliver it. (25BM-2)***

*So as far as me being worried about it [being legal], **I wouldn't be worried about it. ... [And as far as healthcare providers with patients,] I think that they're trying to cure this situation. And I don't think ... [they're] trying to get some legality thing against [patients] for doing that. (62BM)***

Participants vocalized feedback on how the medications should be packaged. The inclusion of a signed note from the healthcare provider was considered necessary, and the medication should come in a sealed, labeled container.

*I like the idea [if] it says this **medicine or prescription was given to your sex partner by a doctor provider to, or a medical provider, to treat you if something was given, some medicine was given to me, like with the receipt of a doctor on it and I know that those are the pills – that would be fine. (21BW)***

*Have something **documented, the medication sealed up, labeled, ... a doctor putting together a form of paperwork with the explanation and the details of the situation and also a signature presented. And that pretty much would bring comfortability and reassurance. (53BM-2)***

*[The medication] maybe in **pill bottles where you don't break the crimps on them and then you have them in their special clinic bag or whatever, paper or just from the Keenan Health Center labeled [on] it. (58WM-2)***

While participants had worries about the confidentiality and legality of delivering PDPT to their partners, others worried about whether they would be able to contact their partners.

**Inability to contact partner.** The inability to contact a partner was a barrier to potential PDPT delivery. Participants discussed it in relation to the type of partnership and whether or not they still had contact with that person.

*Other than the fact of not knowing, **not knowing that person. For instance, if it is a one-night thing or if it's a one-time deal. [In] my situation meeting at a party –***

*I would have no idea how to contact this person. I would have no idea where to find this person again. (52WW)*

*People who cut off communication. ... This most recent STI that I got, my gut feeling was that it came from one individual, so when I sent them an email to suggest that they get tested, I never heard anything went to the ether or internet. That kind of person, that - I can't help. (58WM-1)*

**Drug resistance.** Lastly, a participant discussed his concerns about antibiotic resistance resulting from presumptive treatment.

*If no one goes and gets tested, you don't know what they had or didn't have and - so - it concerns me only because there are drug-resistant STIs, in particular drug-resistant gonorrhea. (58WM-1)*

It is important to note that this participant seemed to have a larger knowledge base and awareness about STIs, particularly because he was on pre-exposure prophylaxis for HIV prevention (i.e., PrEP) and underwent regular HIV and STI counseling and testing. In further exploration of HIV prevention, participants were next asked their attitudes and opinions of offering HIV test kits to patients for delivery with PDPT. While a worry about antibiotic resistance could be considered a behavioral factor as well, it was classified as a structural factor because of its relationship to the actual type of medication received. The specific medications provided, likely outside the control of the participant, could shape their acceptability of taking the medications when presented to them if they have this higher degree of knowledge about the potential antibiotic-resistant strains of STIs, wherein a structural-level intervention mechanism could ameliorate.

### **Patients' Perspectives on Over-the-Counter, Rapid HIV Test Kits for Delivery with PDPT**

Specific to Phase 3 of the study, 15 participants were asked about their attitudes and opinions of over-the-counter, rapid HIV test kits. Specifically, participants were asked “How would you feel if an over-the-counter, rapid HIV test was provided with the medications for you

to give to your partner?” Participants discussed their opinions with the following themes: 1) “be on the safe side,” 2) positive and negative perceptions of their partners’ reaction, 3) earlier identification of an HIV-positive partner, 4) convenience, 5) empowerment, 6) knowledge, skills, and social support, 7) addressing the negative implications of STI clinic stigma, 8) worry of the quality of the test, 9) questions of how the test works, and 10) the risk of violence.

**“Be on the safe side.”** Patients thought taking a rapid HIV test to their partner would benefit their partner and them because it would allow them to be on the safe side about HIV when treating the bacterial STI with PDPT.

*[It'd make me **feel**] **happy** because I don't know if he got AIDS or not. ... You would feel **more safe and secure** with it. (42BW)*

***I would feel that would be a great addition ... We'd be covering several situations at once.** Where, being treated for this and then we able to find out and make sure that we have a visual of the rapid results from the test. (53BM-2)*

***I feel actually good** because I would be able to take, he'll be able to take it, so we'd be on the safe side to know. (20BW)*

**Positive and negative perceptions of their partners’ reaction.** Participants also discussed their perceived partners’ reaction to the rapid HIV-test kit provision with PDPT. Specifically, some thought their partner would respond positively to being given the rapid HIV test kit because it provides confidentiality to HIV testing, but others thought their partners would be suspicious about why they are delivering an HIV test kit with PDPT.

***They would love it.** ... Because it's being provided and no one knows that they had it. No one would know. **It's still private and confidential.** (44BW)*

***Just to be on the safe side,** I think they would be completely **fine with it.** (21BW)*

***They'd be highly upset.** ... She wouldn't take that well. She wouldn't taking it good, **especially if she think I have it.** I know she wouldn't take that well. (53BM-1)*

*If it was delivered to me, I'd be mad, like really mad because like why am I getting this. Like I never had a disease so why should, **why are you bringing this to me.** I would really want to know why they bringing the HIV test to me because **I don't be asking for no one.** (20BW)*

*I wouldn't give it to him ... if I find out mine is negative. ... If I ain't got it then why would I give him the test? ... I wouldn't want that result from him to start thinking like, okay, why would you give it to me if you ain't got it. (44BW)*

*[If it was delivered to me,] I would be scared. ... Because I would like **why**, I got this, **what, I may have this.** That would scare me. (44BW)*

*He would think about it more and be wondering why did I even bring a kit to the house to get tested for HIV. ... **They're going to think more than what it is.** They might think they have it. **They might think that you gave them that and in order for them to get tested, you want to see if they have it because you have it.** That's what they would think. (23BW)*

*They would be afraid of me then. It's like, **what are you, an undercover cop and you're spying, what are you, a detective?** (58WM-2)*

**Earlier identification of an HIV-positive person.** One patient also discussed the importance of earlier identification of an HIV-positive partner.

*If someone is positive for HIV, **the sooner they know, the better off that individual will be, most likely, and less potential people it will be passed onto.** (58WM-1)*

Another quote, previously referenced, highlighted the implications of including an HIV test kit with treatment for a bacterial STI. Patients worried about other STIs – including HIV – when delivering PDPT without their partner requiring a full diagnostic screening.

*I would want my partner to personally come here [to the clinic to get screened before treatment] and **make sure that's all he got** ... just to be on the safe side. (21BW)*

**Convenience.** Interviewed patients also spoke about the convenience of an at-home HIV test kit.

*It's certainly **very convenient** to not have to carve out an evening to figure out going and getting tested for an HIV test. I think that - that's a plus because people - like I said, **people are busy** and it's - it's something that is easily put off so you*

*can want to go and get a test, but inconvenient enough that you don't go. And so if someone comes to you with a test in a STD treatment kit, it just makes the process easier. (58WM-1)*

*That would be real like convenient for people. ... I think that would be nice and then it'll help a lot because it's real secretive. (28BW)*

**Empowerment.** Patients talked within the context of empowering themselves to take charge of their and their partners' health.

*[It allows them to] take their health in their own hands and be more responsible and having the options. (35BW)*

*Just this one big package where you are getting treated and you are testing yourself is basically, you doing everything yourself. You don't have to worry about healthcare provider ... [or] paying for insurance. (22BM)*

**Knowledge, skills, and social support needed.** However, participants discussed the importance of knowledge, skills, and social support within the context of delivering a rapid HIV test kit to a partner. Patients discussed the power of knowing your HIV status, yet discussed the need for knowledge, skills, and support when working with their partner in the event of a positive test.

*I would concentrate on the concept that knowledge is power and knowing is better than not knowing (58WM-1)*

*You've got some important things to think about because the sexual partner may not want to get a positive test and be alone and so then you've got some issues there where you have to think about the whole conversation about - you know, most of us get tested and we're negative, but there are the occasional person who gets an HIV test and it's positive, then there's a whole set of different reactions that can occur and the - you've got to kind of consider that when you send one of those self-kits. (58WM-1)*

*That they should call [a] number [for more assistance] is all I know. (58WM-2)*

**Removing the negative implications of STI clinic stigma.** Participants gave feedback on how an at-home HIV test would remove the negative implications of STI clinic stigma by avoiding the clinic.

*I think it's a good idea. ... They don't have to come to a clinic. ... It's just, those experiences is you feel people are talking about you. Rather if it's doctors or nurses, you feel like somebody is talking about you or you feel like somebody is going to say something about you, behind your back and it just prevent that from happening. (22BM)*

*You could do it only in the privacy of your home and stuff like that without having to go somewhere ... thinking about people wondering why you're here [at the clinic] and stuff like that. ... It might be just a personal issue that you're wondering and you don't really want anybody to see you or want anybody to know. (62BM)*

*If they need to get tested [for HIV], they don't want to go to a hospital. Some people don't want to go to a hospital or a clinic. (35BW)*

*[We] got so much stuff going around in this community. I think that will be great because for those who are embarrassed to even step foot into a clinic, that will be a great way for them to go about maybe getting tested for things. (21BW)*

**Worry about quality of test.** Participants discussed their worry about the quality of the HIV testing kit. HIV testing with over-the-counter devices was thought to have a higher risk of an incorrect test result.

*I wouldn't do that ... 'cause I prefer getting it from the doctor ... Because there's a difference from over the counter and from a doctor. (53BM-1)*

*I think I wouldn't want to take the kit. I would really want to go see my doctor and let my doctor handle it. ... No, I want my doctor to let me know. ... I would be more comfortable with my doctor telling me than receiving some email from the company or that, I don't know, I just, I don't, I'm not comfortable with at-home tests. Like it's not really that accurate. ... Like it gave you a big scare for unnecessary reason. ... (Interviewer talks about immediate results). Oh, it goes immediately? I think I'd be more hurt than waiting to see the results. ... Well, okay, so it's like instant. It's like you're going to go see if you got it and then you get the test and then it's like a pregnancy test. If I, okay, now I got it, now what I'm going to do with it. Like at least going to the doctor and talking about it and getting tested and then waiting for your results and it's either you is or you're not, but it is something you could think about instead of just getting all of it at once. It could be overwhelming. (19BW)*

**Questions of how the test works.** Respondents did not have a clear idea of how the test was administered, but talked about that influencing their opinions of it. An easier testing method

was preferred. Patients wanted to know how to do it before considering whether they would take an HIV test kit to their partner, underscoring the importance of behavioral skills in their partners' ability to take the test.

*If it's simple, I think that would be a good idea. (21BW)*

*If it's like a urine thing or something from **taking a swab**, a test with a swab or something like that [would be easy], but anything else with having to draw blood or something, you'd have to be skilled to do that. (62BM)*

*My concern would be if they would do it properly, if the testing would be done properly. There's certain little controls you do with certain at-home tests and whatnot to make sure you're doing them properly. ... But if there were **easy instructions ... [and the ability] to talk to a pharmacist or someone ... [it'd be important] to explain to them how you do that. (35BW)***

*I think that would be a good idea. ... And then I think it's a bad thing because **if it has to do anything with a needle, ... I think it's dangerous. (22BM)***

**Risk of violence.** Similar to PDPT, participants worried about the risk of violence when delivering an HIV test kit to a partner because of their partners' suspicion of them or in the event of a positive test result.

*She gonna be highly upset [if I bring an HIV kit for her]. And I think if I would give it to her, I would have a stick on the end tied on a rope and hand it to her just like this here. She be like, 'What you want?' **She might want to kill me or something by saying, 'I ain't got nothing.'** ... I don't think she would take that well. Uh-uh. I'd have to have somebody call her and talk to her about that one. Serious. 'Cause she know I ain't got it, but she still gonna say, 'Why is you giving me this?' **Man she'd probably jump on me.** She wouldn't take that well, though. (53BM-1)*

*[If I tested positive with the at-home kit,] **I would be very furious.** I would be very upset. And it might turn into, okay, so it's my partner, so **it might turn into some violence. (28BW)***

In general, patients had mixed feelings about the inclusion of a rapid HIV test kit with PDPT. They worried about the quality of the test and how it worked, but also discussed its

benefits, including convenience, earlier identification of HIV positive partners, and minimizing the barriers to getting HIV tested created by STI clinic stigma.

### **Intervention Planning**

Participants identified potential intervention mechanisms within interviews. Specifically, participants discussed the PDPT documentation and materials they envisioned to be included, the need for counseling, the use of peer health educators and support groups, the need for alternative partner referral mechanisms when there is a risk of violence, and structural changes to the STI clinic.

**PDPT documentation and materials.** Participants discussed what they envisioned the documents and materials provided with PDPT to look like, which they thought should be self-explanatory in a kit with directions.

*[PDPT materials] would be **organized so it would like come in a delivery kit** and it would **scripted** because I think a lot of people, they might be like well sure I'll deliver it to so and so, but I'm not really sure what I'm supposed to do when I'm actually giving it to them. Do I talk about it in great detail? Do I talk about it a little bit? I don't really want to talk to them at all but I'd like to drop it at their door, so it **needs to be self-explanatory**. (58WM-1)*

The need for a self-explanatory kit was also implied within one participant's response about delivering PDPT to a partner he thought would refuse it, as he discussed dropping the kit off without discussing it with his partner.

*[If thought partner would refuse,] **I'd politely put [the kit] on the door ... tape it on the door with a letter right next to it or put it in the mailbox and leave a voice mail**. (23BM)*

To increase their partners' believability, participants spoke about the legitimacy of the medication container and the need for their test results.

*When I receive any kind of information [from the clinic], **I'm willing to share with my partner**. ... I like to bring in paperwork to show briefly about what actually happened and what went on in order for us to get like we are. (47BW)*

*The test results ... [and] the informationals [on] the STD ... because they'd deny it. (21BM)*

*[An STI and PDPT would] be unbelievable, but when I show her the paper, then she'll believe me. (25BM-2)*

*Well, just a bottle, a pill bottle with what's on there and how to take it and stuff because I think a couple times they just give me some pills in a little manila envelope ... or [a] notari[z]ation on the bottle would be better. (62BM)*

While the information included with PDPT and other associated materials were important, participants discussed the need for more support.

**Counseling.** Beyond information, participants requested an updated counseling session provided to patients who receive PDPT for their partners' treatment.

*I just feel like so maybe possibly some type of counseling or **updated counseling by a medical professional** would possibly assist in that. ... How to go about that circumstance outside of just [giving] prescription information and antibiotics, ... [but rather discussing how] this is just the **most appropriate [way] to go about it** other than being slammed with some papers, take this to your partner, antibiotics and pills. ... [The session would need to be] **something interactive**. ... Maybe like if there was a chance that a medical professional will be **presenting of a tutorial**. (32MM)*

Another participant discussed the potential of patients counseling their partners when they deliver PDPT to them.

*(In response to questions statement: "My partner would miss out on counseling if I gave him or her treatment myself.) That would be true but then **you could also counsel them yourself**. (25BM-3)*

Participants identified information as one specific counseling component to be included, yet the importance of attitude, demeanor, and compassion of the healthcare provider administering the counseling was stressed.

*The healthcare provider can **make sure I'm understanding what I read** before I let them read it too and read it with them. (58WM-2)*

*Attitude is everything. Just being, making the patient feel welcome and **making them feel as if you're human** just like I am. So we can get through this. (21BW)*

*[Patients] don't want to receive **the lecture of not being more careful.** (58WM-1)*

***Not being so aggressive** about it. ... The best way a healthcare worker should [discuss] telling me about going to tell my partner [is to **stress**] **the importance of it** like how important it is and if you don't take care of it now, how bad it will lead to and it's just something you have to do now. (19BW)*

***Being supportive.** ... providing a support system for that moment to kind of let them know that, hey, you're here, we're here to help you. ... Making them feel that they're in a place of support, that **they're in a safe place.** ... **Providing emotional support** ... **Avoid causing any type of blame.** (35BW)*

Furthermore, the importance of building behavioral skills, including communication skills and confidence, was mentioned.

***Prepare you,** just basically have a **one-on-one talk** with you and try to understand how you're feeling and everything. (28BW)*

*Actually **give people the proper guidance** on how to go about approaching people that's been infected. Because a lot of people might not even know how to go and deal and express that and talk to them. So, pretty much more, **more consultation with the proper instructions and guidance.** (53BM-2)*

***Telling you a way how you should be able to tell them** that you got a disease or if they was to have one, they should go get tested, just **giving you different options of ways you could do that.** (20BW)*

***Mention successful experience from other people** perhaps. ... Just talk about, I guess, the benefits of it instead of like, oh, don't be shy, you know, you have to do it. So just talk about all the good outcomes of it. **Explain further information.** (21BW)*

The inclusion of a signed behavioral contract was identified as important as a method to encourage adherence to delivering the medications to their partners.

*You have to **sign this paper saying that you're gonna definitely watch the person take the medication** so you can know it is applied for that situation. ... [They'd be] more likely [to deliver the meds]. The **signing of the form is just a prerequisite** of what's - the intentions of what's supposed to get done. (62BM)*

Despite some issues of confidentiality mentioned previously, some participants found it helpful for a healthcare provider to call their partner in advance of them delivering medications. While PDPT is designed to help the partner avoid contact with a healthcare provider, the option of using the healthcare provider, if desired, was important.

*It would be more helpful if they like have some type of **documentation** and/or do a **brief call before I go drop off the meds.** (28BW)*

***The healthcare provide might just give them a phone call themselves ... like a conference call, like I'm going to give her the meds for you because she got tested positive for an STI and so forth. Just for like clarification because some people are like, 'oh no, you're lying.'** (21BW)*

*She will give me the medicine or **I will ask her to talk to my partner so that he would believe me.** I will ask her, I just got those two for now. (23BW)*

Offering a place for more information for partners, including additional follow-up counseling, was thought to be helpful.

*Some form of **detailed instruction on what the other party needs to do** because I don't know if there's a way for it to be given via recording or if there's **a certain website that can be provided that they should go to.** ... A lot of times now people do everything computerized, so give them a website to go to showing them on how to use whatever product ... [the clinic and partner are] sending them to use so that they will know exactly what to do. (44BW)*

*Calling to **follow-up with this person maybe two weeks later** to see how they're doing. (35BW)*

*If they did a **follow-up** on that, then **they could check if the medication is actually working** or doing anything for you. (62BM)*

While individual counseling was one intervention foreseen by patients, others discussed the potential of using peer health educators and peer support groups.

**Peer health educators and peer support groups.** Participants discussed the desire for more support through a lay health advisor and support group.

*A liaison in the office and talk to people in **between the healthcare provider and the patient**, to let them know, hey, you know, I was in this situation. To let them know you're not alone. (35BW)*

*Peer groups. ... They usually listen to people who are there and also if the healthcare provider is backing the information up. ... Just providing your emotional experience with having **experienced a situation with contracting an STI and having to go through the treatment and telling your partner**. (35BW)*

*Form of a group that actually allows people to come and **talk about certain things under confidentiality**. I think that'd be a great start. ... A lot of people, it's easier for them to follow what other people are doing, **to make them feel more comfortable**. (53BM-2)*

*They could give us a little **seminar**, get a **group of us together** and then we can be a little more trained on how to go about this. ... So we can all **ask each other questions** mainly. (58WM-2)*

*I think those [peer] groups are very helpful. (19BW)*

While the aforementioned interventions addressed methods to help patients be successful in notifying their partners of an STI and delivering PDPT, neither addressed the specific risk of violence discussed next.

**Consideration of alternative partner referral mechanisms when there is a risk of violence.** One patient gave some thought on mechanisms to handle situations in which violence between partners could be evident. Triageing patients based on risk of intimate partner violence was considered a potential mechanism for identifying patients who shouldn't receive PDPT, but could benefit from alternative methods of partner referral.

*[If there is a risk of violence,] they should have that person get that person's name or telephone number. ... **[The clinic] would contact them totally anonymous**, not tell them that you told us, but ... [the clinic would tell them that they] need to come to this such and such health place and [to get] treatment. ... Maybe **if they felt safer doing it in the actual clinic, maybe calling that person and having them meet them there**. (35BW)*

**Structural changes to the STI clinic.** When discussing the potential for interventions, participants discussed mechanisms to reduce the stigma of the STI clinic. Participants provided

recommendations to offer better patient privacy, mainly the use of private rooms instead of the public waiting room.

*If [the clinic] can get some **confidential rooms** in here. ... If you want to come in, **you don't have to sit in a room with the public.** (42BW)*

*Maybe if it was like individually, maybe like if [the clinic had] **separate rooms so that you could respect people privacy** or people not looking at one another. Because it's not like it's a doctor's office. It's a clinic. (23BW)*

### **Adverse outcomes of PDPT**

Participants thought that PDPT would result in some unintended consequences, some of which could result in an adverse outcome. For instance, one participant discussed the potential of someone keeping the medications to take again at a later date.

*I don't think you should send it [/PDPT/] out because there is no real reason or no proof that a person's giving it to that person, **they could be taking the doses again** or something. ... Most people would do the right thing but at the same time, I don't think they would, if they had the opportunity to do it. Probably take their own self or just probably like **keep it in case** - or you know, keep it, like I was saying, once they get over the seven-day period, they'll probably have intercourse, probably take that doses the doctor gave them again and then probably - you know, but **their spouse not even know what's going on.** (25BM-3)*

Other participants discussed – sometimes in potentially less serious language – the potential of giving the medications to the partner without the partners' knowledge.

*You just thought your partner was faithful and you get – you just have a STD and your partner just thinks that you're unfaithful. I mean, how are you going to tell them? ... That's like a big secret and **what you're going to do, sneak him his medicine in his food?** (19BW)*

*[The non-supportive friend she talked about the STI and PDPT with] was the one that said 'I wouldn't have told him, **I would have crushed it up** and put in a cup or **put it in some yogurt** and gave it to him, **I wouldn't have said anything.**' (24BW)*

Another discussed the potential of some wanting to sell the antibiotics.

*Somebody can take the medication and **want to sell the medication.** (53BM-2)*

While potential adverse events were rarely reported in participant interviews, their indication provides evidence of the potential concern associated with them.

In summary, participants vocalized their feedback about potential intervention mechanisms to improve PDPT as a method of partner treatment, including the use of counseling, peer health educators, and peer support groups. Participants discussed their opinions about how to best handle a situation in which a patient would feel unsafe delivering PDPT to their partner, suggesting the need for triaging patients based on their perceived risk. Patients also gave feedback on how to best improve the STI clinic layout to increase patient privacy, and they discussed the potential for adverse outcomes of PDPT distribution that included unintended uses of PDPT. Results of the interview data are considered in context with quantitative findings of this mixed-method study presented next.

### **Quantitative Data Results**

Quantitative data on factors influencing PDPT acceptability in the clinic are discussed first. The order of data presentation matters because patients must first accept PDPT in the clinic before they can decide how to navigate partner notification and PDPT delivery. Therefore, the primary findings guiding this research with the I-B model are discussed after presentation of the effects of structural factors influencing PDPT acceptability.

#### **Predictors of PDPT Acceptability**

Multiple linear regression was used to test the influence of demographic, background, and structural factors on PDPT acceptability. Healthcare provider normative influences were included as a structural factor despite also being tested within the behavioral constructs on PDPT intentions. Because healthcare providers are an important structural component of the STI clinic, this variable was chosen for consideration because of the potential for structural-level

interventions. Bivariate analyses of predictor variables on PDPT acceptability are presented in *Table 3*. All factors with  $p < 0.10$  in bivariate analyses were retained for inclusion in the final model, and the final regression model is presented in *Table 4*. The final model had a significant omnibus F-test ( $F_{(28,166)} = 4.08, p < 0.001$ ), and  $\alpha = 0.05$  was used for significance testing of individual predictor variables in the final regression model. While not statistically significant within the bivariate analyses predicting PDPT acceptability, nearly 29% of patients responded “true-” or “very true of what I believe” in response to the question statement asking if patients worried about their safety when notifying a partner of an STI. More specifically, 34% of women and 26% of men reported some degree of worry about risk of violence.

**Table 3:** Bivariate Linear Regression Coefficients of Model Predictors on PDPT Acceptability among a Sample of STI Clinic Patients ( $N = 196$ )

Predictor	Coefficient (SE)	p-value
Age	0.004 (0.007)	0.576
<b>Sex</b>		
Male	Reference	--
Female	0.067 (0.158)	0.671
<b>Race</b>		
Black or African American	0.636 (0.279)	0.024**
White	-0.532 (0.368)	0.150
Other Race	-0.477 (0.281)	0.091*
Hispanic / Latino Ethnicity	0.368 (0.299)	0.220
<b>Relationship Status</b>		
Never Married, Not Living with Significant Other	-0.182 (0.289)	0.529
Never Married, Living with Significant Other	-0.236 (0.314)	0.453
Married	-0.324 (0.453)	0.475
Divorced or Widowed	Reference	--
<b>Education</b>		
Some High School, No Diploma	0.186 (0.218)	0.397
High School Diploma or GED	Reference	--
Some College or More	0.586 (0.164)	0.000***
<b>Employment Status</b>		
Full-Time	0.074 (0.182)	0.686
Part-Time	0.309 (0.193)	0.112
Unemployed	Reference	--

<b>Insurance Status/Type</b>		
Private	0.079 (0.279)	0.776
Medicare/Medicaid	0.110 (0.181)	0.543
Uninsured	Reference	--
Other, Don't Know, or Missing	-0.071 (0.326)	0.827
<b>Reason for STI Clinic Visit</b>		
Symptoms of an STI	-0.264 (0.171)	0.124
Contact with Someone Diagnosed with an STI	-0.022 (0.215)	0.919
Regular STI Screening ("Checkup")	0.106 (0.155)	0.494
Other Reason	0.351 (0.335)	0.297
Prior STI Diagnosis	-0.075 (0.167)	0.653
<b>Number of Sexual Partners</b>		
Zero or 1 Partners	Reference	--
Two or More Partners	0.149 (0.155)	0.340
Condom Use	-0.052 (0.078)	0.512
Healthcare Provider Normative Influences of PDPT	0.365 (0.069)	0.000***
<b>Structural Factors</b>		
1. I would be unable to contact all of my recent sexual partners (last 3 months).	0.018 (0.053)	0.736
2. I would be unable to pay for extra medications to give to my partner(s).	-0.029 (0.055)	0.594
3. I would NOT be able to deliver medications to all of my sexual partners because some of my relationships have ended.	-0.027 (0.056) <sup>a</sup>	0.631
4. I question how legal it is for me to deliver medications to my partner(s) directly.	0.030 (0.058)	0.611
5. I would NOT take extra medications for my partner(s) if I had to pay for them.	-0.083 (0.054)	0.127
6. Giving medications to me to take to my partner(s) is convenient.	0.296 (0.056)	0.000***
7. I would feel better about delivering medications to my partner(s) if the medication came in a sealed container.	0.283 (0.059) <sup>a</sup>	0.000***
8. I would feel better about delivering medications to my partner(s) if the medication came with a signed note from a healthcare provider.	0.386 (0.058)	0.000***
9. I would feel better about delivering medications to my partner(s) if I received a paper copy of my test results.	0.353 (0.059)	0.000***
10. My partner(s) would delay treatment because of their insurance status.	-0.034 (0.065)	0.600
11. I would NOT be able to deliver medications to my partner(s) because of transportation difficulty.	-0.058 (0.061)	0.344
12. I worry about my safety notifying my partner(s) of an STI.	-0.018 (0.055)	0.749

Notes: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ ; <sup>a</sup> missing data for 1 respondent ( $N = 195$ )

In the final linear regression model, several factors were found to be significantly associated with PDPT acceptability. Patients with educational attainment of some college or more were significantly more likely to accept PDPT compared to those with a high school

education or equivalent ( $p < 0.01$ ). When the reference category was changed, patients with some college or more were also significantly more likely to accept PDPT compared to those with less than a high school education ( $p < 0.05$ ; data not reported). Patients who presented at the STI clinic with symptoms of an STI were significantly more likely to accept PDPT ( $p < 0.05$ ), and higher patient perceptions of healthcare providers' normative influences of PDPT were also significantly associated with higher PDPT acceptability ( $p < 0.05$ ). Moreover, the materials provided with PDPT significantly influenced patients' acceptability of PDPT. The inclusion of a signed note from a healthcare provider and a paper copy of the test results significantly increased the acceptability of PDPT among patients ( $p < 0.01$  and  $p < 0.05$ , respectively).

**Table 4:** Linear Regression Coefficients of the Final Model Predicting PDPT Acceptability among a Sample of STI Clinic Patients ( $N = 195$ )

Predictor	Coefficient (SE)	<i>p</i> -value
<b>Age</b>	0.007 (0.007)	0.297
<b>Sex</b>		
Male	Reference	--
Female	-0.005 (0.150)	0.974
<b>Race</b>		
Black or African American	0.229 (0.449)	0.611
White	-0.486 (0.479)	0.312
Other Race	-0.287 (0.352)	0.415
Hispanic / Latino Ethnicity	0.368 (0.283)	0.196
<b>Relationship Status</b>		
Never Married, Not Living with Significant Other	-0.042 (0.286)	0.884
Never Married, Living with Significant Other	-0.003 (0.309)	0.993
Married	-0.257 (0.405)	0.527
Divorced or Widowed	Reference	--
<b>Education</b>		
Some High School, No Diploma	0.059 (0.197)	0.763
High School Diploma or GED	Reference	--
Some College or More	0.531 (0.157)	0.001**
<b>Employment Status</b>		
Full-Time	0.271 (0.178)	0.131
Part-Time	0.138 (0.179)	0.443
Unemployed	Reference	--
<b>Insurance Status/Type</b>		

<b>Private</b>	-0.213 (0.260)	0.414
<b>Medicare/Medicaid</b>	0.213 (0.176)	0.229
<b>Uninsured</b>	Reference	--
<b>Other, Don't Know, or Missing</b>	0.266 (0.294)	0.367
<b>Reason for STI Clinic Visit</b>		
<b>Symptoms of an STI</b>	-0.531 (0.261)	0.044*
<b>Contact with Someone Diagnosed with an STI</b>	-0.531 (0.261)	0.066
<b>Regular STI Screening ("Checkup")</b>	-0.315 (0.244)	0.198
<b>Other Reason</b>	-0.081 (0.362)	0.824
<b>Prior STI Diagnosis</b>	-0.068 (0.157)	0.665
<b>Number of Sexual Partners</b>		
<b>Zero or 1 Partners</b>	Reference	--
<b>Two or More Partners</b>	0.254 (0.149)	0.091
<b>Condom Use</b>	-0.074 (0.075)	0.325
<b>Healthcare Provider Normative Influences of PDPT</b>	0.175 (0.077)	0.024*
<b>Structural Factors</b>		
<b>Giving medications to me to take to my partner(s) is convenient.</b>	0.039 (0.061)	0.521
<b>I would feel better about delivering medications to my partner(s) if the medication came in a sealed container.</b>	-0.038 (0.072)	0.597
<b>I would feel better about delivering medications to my partner(s) if the medication came with a signed note from a healthcare provider.</b>	0.260 (0.076)	0.001**
<b>I would feel better about delivering medications to my partner(s) if I received a paper copy of my test results.</b>	0.197 (0.076)	0.010*
<b>Intercept</b>	1.270 (0.764)	0.098
<b>Model Statistics</b>		
<b>Omnibus F-test (df)</b>	4.08 (28, 166)	
<b>R<sup>2</sup></b>	0.408	
<b>Adjusted-R<sup>2</sup></b>	0.308	
<b>N</b>	195	

Notes: \*  $p < 0.05$ ; \*\*  $p < 0.01$

### **I-B Model Predictors of PDPT Intentions**

Multiple linear regression was used to test the influence of demographic, background, and I-B model factors on PDPT intentions. Bivariate analyses of predictor variables on PDPT intentions are presented in *Table 5*. All factors with  $p < 0.10$  were retained for inclusion in the final model, and the final regression model is presented in *Table 6*. The final model had a significant omnibus F-test ( $F_{(35,159)} = 6.42, p < 0.001$ ), and alpha = 0.05 was used for significance testing of individual predictor variables in the final regression model.

**Table 5:** Bivariate Linear Regression Coefficients of Model Predictors on PDPT Intentions among a Sample of STI Clinic Patients ( $N = 197$ )

Predictor	Coefficient (SE)	<i>p</i> -value
<b>Age</b>	0.004 (0.005)	0.411
<b>Sex</b>		
Male	Reference	--
Female	0.056 (0.118)	0.634
<b>Race</b>		
Black or African American	0.406 (0.202)	0.046**
White	-0.259 (0.261)	0.323
Other Race	-0.362 (0.209)	0.084*
Hispanic / Latino Ethnicity	0.138 (0.223)	0.537
<b>Relationship Status</b>		
Never Married, Not Living with Significant Other	0.085 (0.118)	0.473
Never Married, Living with Significant Other	-0.013 (0.134)	0.921
Married	-0.017 (0.275)	0.952
Divorced or Widowed	Reference	--
<b>Education</b>		
Some High School, No Diploma	-0.211 (0.155)	0.175
High School Diploma or GED	Reference	--
Some College or More	0.172 (0.116)	0.139
<b>Employment Status</b>		
Full-Time	0.026 (0.127)	0.840
Part-Time	0.115 (0.133)	0.389
Unemployed	Reference	--
<b>Insurance Status/Type</b>		
Private	0.015 (0.186)	0.937
Medicare/Medicaid	-0.097 (0.115)	0.401
Uninsured	Reference	--
Other, Don't Know, or Missing	-0.144 (0.223)	0.520
<b>Reason for STI Clinic Visit</b>		
Symptoms of an STI	-0.228 (0.126)	0.072*
Contact with Someone Diagnosed with an STI	0.222 (0.159)	0.165
Regular STI Screening ("Checkup")	0.048 (0.115)	0.678
Other Reason	0.263 (0.249)	0.293
Prior STI Diagnosis	-0.066 (0.124)	0.594
<b>Number of Sexual Partners</b>		
Zero or 1 Partners	Reference	--
Two or More Partners	0.187 (0.115)	0.105
<b>Condom Use</b>		
HIV-KQ-18	0.027 (0.015) <sup>b</sup>	0.084*
STD-KQ-32	0.007 (0.008) <sup>b</sup>	0.389
PT-KQ-4	0.207 (0.048)	0.000***

<b>Individual Protection Beliefs</b>	0.327 (0.075)	0.000***
<b>Partner &amp; Community Protection Beliefs</b>	0.465 (0.065)	0.000***
<b>Infidelity Worry, Embarrassment, &amp; Anxiety</b>	0.004 (0.053)	0.937
<b>STI Clinic Stigma</b>	-0.053 (0.052)	0.303
<b>STI-Related Shame</b>	-0.082 (0.064)	0.205
<b>Partner Normative Influences of the STI Clinic</b>	0.005 (0.055)	0.931
<b>Partner Motivation-to-Comply</b>	0.440 (0.062)	0.000***
<b>HCP<sup>a</sup> Normative Influences of PDPT</b>	0.192 (0.053)	0.000***
<b>HCP Motivation-to-Comply</b>	0.516 (0.064)	0.000***
<b>General Social Support</b>	0.251 (0.045) <sup>b</sup>	0.000***
<b>Sexual Health Social Support</b>	0.260 (0.056)	0.000***
<b>Partner Notification Self-Efficacy</b>	0.495 (0.067) <sup>b</sup>	0.000***
<b>Medication Delivery Self-Efficacy</b>	0.419 (0.055) <sup>b</sup>	0.000***
<b>Communication Skills Self-Efficacy</b>	0.526 (0.064) <sup>b</sup>	0.000***

Notes: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ ; <sup>a</sup> HCP = healthcare provider; <sup>b</sup> missing data present ( $N = 194-196$ )

In the final multiple regression model, several demographic and I-B model constructs significantly predicted PDPT intentions. Patients with higher age had significantly higher intentions to deliver PDPT to their sexual partners ( $p < 0.01$ ), and patients with Hispanic or Latino ethnicity had significantly higher PDPT intentions ( $p < 0.01$ ). Private insurance holders had significantly less PDPT intentions compared to those without insurance ( $p < 0.01$ ). Patients with two or more sexual partners had significantly higher PDPT intentions compared to those with less than two partners ( $p < 0.05$ ), and higher condom use significantly predicted higher PDPT intentions ( $p < 0.05$ ). From the information construct, higher partner treatment knowledge significantly predicted higher intentions to deliver PDPT to sexual partners ( $p < 0.05$ ). A higher score on the partner and community protection beliefs' scale from the motivational construct was associated with higher PDPT intentions among patients ( $p < 0.06$ ); however, the final  $p$ -value did not reach significance at the pre-determined cutoff value of  $\alpha = 0.05$ . When partner and community protection beliefs were tested in a multiple regression model with less non-significant predictors, a significant finding was found suggestive of power limitations of the

current analysis ( $p < 0.05$ ; see *Table 7*). Higher motivation-to-comply with healthcare providers' influences also significantly predicted higher PDPT intentions ( $p < 0.01$ ). From the social support construct, higher general social support significantly predicted higher PDPT intentions ( $p < 0.01$ ). Medication delivery self-efficacy within the behavioral skills construct significantly predicted PDPT intentions; specifically, higher medication delivery self-efficacy significantly predicted higher PDPT intentions ( $p < 0.05$ ). Lastly, the importance of each significant or noteworthy I-B model factor in the final model was interpreted using standardized, beta coefficients. Healthcare provider motivation-to-comply had the greatest influence on PDPT intentions ( $\beta = 0.337$ ), followed by social support ( $\beta = 0.222$ ), medication delivery self-efficacy ( $\beta = 0.191$ ), partner treatment knowledge ( $\beta = 0.148$ ), and partner and community protection beliefs ( $\beta = 0.146$ ) in order of standardized effect size.

A nested model comparison between the final regression model testing I-B model constructs and the significant factors of the Information-Motivation-Behavioral Skills model was conducted, and the I-B model was found to have significantly better model fit. Specifically, the added contribution of patient and community protection beliefs and social support was tested against the reduced model without these added contributors theorized in the I-B model. The likelihood-ratio test between the I-B model and the reduced model (i.e., Information-Motivation-Behavioral Skills model) resulted in rejection of the null hypothesis ( $LR \chi^2 (2) = 12.81, p = 0.002$ ), which suggests the additional construct components of the I-B model significantly improved the overall model fit in comparison to the reduced model.

**Table 6:** Linear Regression Coefficients of the Final Model Predicting PDPT Intentions among a Sample of STI Clinic Patients ( $N = 195$ )

Predictor	Coefficient (SE)	<i>p</i> -value
Age	0.013 (0.004)	0.003**
<b>Sex</b>		
Male	Reference	--
Female	-0.011 (0.096)	0.908
<b>Race</b>		
Black or African American	0.193 (0.288)	0.503
White	0.106 (0.305)	0.729
Other Race	-0.066 (0.231)	0.777
Hispanic / Latino Ethnicity	0.550 (0.183)	0.003**
<b>Relationship Status</b>		
Never Married, Not Living with Significant Other	0.240 (0.182)	0.190
Never Married, Living with Significant Other	0.335 (0.188)	0.078
Married	0.368 (0.251)	0.145
Divorced or Widowed	Reference	--
<b>Education</b>		
Some High School, No Diploma	-0.042 (0.127)	0.741
High School Diploma or GED	Reference	--
Some College or More	0.030 (0.100)	0.766
<b>Employment Status</b>		
Full-Time	0.204 (0.114)	0.073
Part-Time	0.172 (0.114)	0.135
Unemployed	Reference	--
<b>Insurance Status/Type</b>		
Private	-0.593 (0.167)	0.001**
Medicare/Medicaid	-0.107 (0.111)	0.340
Uninsured	Reference	--
Other, Don't Know, or Missing	-0.267 (0.187)	0.155
<b>Reason for STI Clinic Visit</b>		
Symptoms of an STI	-0.020 (0.168)	0.907
Contact with Someone Diagnosed with an STI	0.191 (0.185)	0.304
Regular STI Screening ("Checkup")	0.055 (0.158)	0.727
Other Reason	0.038 (0.227)	0.867
Prior STI Diagnosis	-0.020 (0.100)	0.839
<b>Number of Sexual Partners</b>		
Zero or 1 Partners	Reference	--
Two or More Partners	0.198 (0.093)	0.035*
Condom Use	0.104 (0.049)	0.037*
HIV-KQ-18	-0.008 (0.014)	0.553
PT-KQ-4	0.101 (0.043)	0.021*
Individual Protection Beliefs	0.029 (0.069)	0.676

<b>Partner &amp; Community Protection Beliefs</b>	0.147 (0.077)	0.059
<b>Partner Motivation-to-Comply</b>	0.036 (0.073)	0.623
<b>HCP<sup>a</sup> Normative Influences of PDPT</b>	-0.055 (0.050)	0.269
<b>HCP Motivation-to-Comply</b>	0.338 (0.074)	0.000**
<b>General Social Support</b>	0.151 (0.056)	0.007**
<b>Sexual Health Social Support</b>	-0.109 (0.072)	0.132
<b>Partner Notification Self-Efficacy</b>	0.022 (0.104)	0.830
<b>Medication Delivery Self-Efficacy</b>	0.166 (0.077)	0.033*
<b>Communication Skills Self-Efficacy</b>	0.167 (0.107)	0.119
<b>Intercept</b>	-0.926 (0.600)	0.125
<b>Model Statistics</b>		
<b>Omnibus F-test (df)</b>	6.42 (35,159)	
<b>R<sup>2</sup></b>	0.586	
<b>Adjusted-R<sup>2</sup></b>	0.494	
<b>N</b>	195	

Notes: \*  $p < 0.05$ ; \*\*  $p < 0.01$

### Mediation Analysis

A mediation analysis of informational, motivational, and social support factors was conducted on medication delivery self-efficacy and PDPT intentions. Other behavioral skills factors were excluded from this model to reduce the effects of multicollinearity; these factors are expected to be highly correlated with medication delivery self-efficacy, which reduces the power of mediation analyses. The fully-adjusted multiple regression analyses of the behavioral factors on medication delivery self-efficacy and PDPT intentions are presented in *Table 7*. These regression models had significant omnibus F-tests ( $F_{(32,162)} = 2.72, p < 0.001$ ;  $F_{(33,161)} = 6.59, p < 0.001$ ). Motivation-to-comply with partner normative influences was significantly associated with medication delivery self-efficacy ( $p < 0.05$ ). No other behavioral factors were significantly associated with medication delivery self-efficacy; thus only one factor underwent significance testing for mediation using the Sobel Test. The effect of partner motivation-to-comply on PDPT intentions was completely mediated by medication delivery self-efficacy (Sobel test statistic =

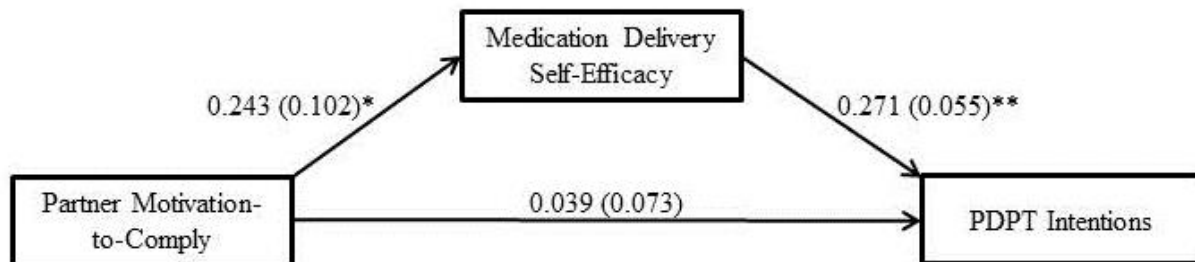
2.139, SE = 0.031,  $p = 0.032$ ). The mediation path diagram for partner motivation-to-comply on medication delivery self-efficacy and PDPT intentions is presented in *Figure 3*.

**Table 7:** Linear Regression Coefficients of the Fully-Adjusted Models Predicting Medication Delivery Self-Efficacy and PDPT Intentions among a Sample of STI Clinic Patients ( $N = 195$ )

Predictor <sup>a</sup>	Coefficient (SE)	<i>p</i> -value	Coefficient (SE)	<i>p</i> -value
<b>Information</b>				
HIV-KQ-18	0.019 (0.019)	0.323	-0.010 (0.014)	0.462
PT-KQ-4	-0.008 (0.060)	0.896	0.113 (0.042)	0.009**
<b>Motivation</b>				
Individual Protection Beliefs	0.021 (0.099)	0.834	0.029 (0.070)	0.676
Partner & Community Protection Beliefs	-0.070 (0.110)	0.523	0.162 (0.077)	0.037*
Partner Motivation-to-Comply	0.243 (0.102)	0.019*	0.039 (0.073)	0.595
HCP <sup>a</sup> Normative Influences of PDPT	0.108 (0.069)	0.122	-0.072 (0.049)	0.145
HCP Motivation-to-Comply	0.152 (0.104)	0.148	0.342 (0.074)	0.000**
<b>Social Support</b>				
General Social Support	0.032 (0.079)	0.684	0.160 (0.056)	0.005**
Sexual Health Social Support	0.084 (0.102)	0.409	-0.084 (0.072)	0.241
<b>Behavioral Skills</b>				
Medication Delivery Self-Efficacy	--	--	0.271 (0.055)	0.000**
<b>Model Statistics</b>		<b>Mediator as Outcome</b>		<b>Full Model</b>
Omnibus F-test (df)	2.72 (32,162)		6.59 (33,161)	
$R^2$	0.349		0.575	
Adjusted- $R^2$	0.221		0.488	
<i>N</i>	195		195	

Notes: <sup>a</sup> demographic factors excluded from reporting in this table to minimize redundancy; \*  $p < 0.05$ ; \*\*  $p < 0.01$

**Figure 3:** Path Diagram of Partner Motivation-to-Comply on Medication Delivery Self-Efficacy and PDPT Intentions



Notes: Sobel test statistic = 2.139 (SE = 0.031),  $p = 0.032$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

## **Chapter 5: Discussion & Conclusion**

### **Discussion**

Research staff of this mixed-method study approached over 600 STI clinic patients, which resulted in a total of 210 unique patients enrolling in one of the three phases of this study. Ten clinic patients were recruited into the preliminary phases of the project, which included survey development activities of semi-structured qualitative and cognitive interviews. Through the iterative phases of survey development activities, this study successfully developed or revised multiple scales for measurement of behavioral constructs that demonstrated good reliability. The final, mixed-method study recruited 200 participants, and a subset of 15 survey respondents also participated in qualitative interviews to identify potential intervention mechanisms, barriers and facilitators to PDPT delivery, and other important information for planning a randomized controlled trial. Thus, a sample of 25 interviewees and 200 survey respondents provided data used for analysis prior to data cleaning. Research and analyses of this study were guided by the conceptualized I-B model. While the I-B model is central to this research, I start first by discussing the implications of structural factors on PDPT. Patients must first accept PDPT at the clinic, and then the patients must figure out how to effectively deliver PDPT to their partner. Therefore, the I-B behavioral components on patients' intentions to deliver PDPT to their partner are discussed next, followed by the implications of violence, potential for rapid HIV test kits distributed with PDPT, and suggestions for interventions to be evaluated in future research.

#### **PDPT Acceptability and the Influence of Structural Factors**

This study adds to a growing body of literature supporting the acceptability of PDPT as a method of partner treatment. Patients surveyed expressed high levels of acceptability as a whole,

with the average score on the PDPT acceptability scale of 4.06 on a scale of 1-5. On average, patients responded “likely” on a scale of very unlikely to very likely on their acceptability of PDPT after removal of survey responses with obvious satisficing and other data cleaning. Despite mixed effects of education on favorability or likelihood of PDPT use in prior research (Coyne et al., 2007; Jones et al., 2013; Radovic et al., 2013; Shivasankar et al., 2008), patients surveyed with higher education had significantly higher acceptability of PDPT. Moreover, patients who presented to the clinic with symptoms of an STI found PDPT more acceptable than those presenting for other reasons (e.g., regular STI screening), which is consistent with some research that found partners were more likely to take the PDPT medications if they had symptoms (Coyne et al., 2007). It is plausible that presenting with symptoms resulted in a higher perceived seriousness of the infection, which positively influenced their acceptability of PDPT. Participants thought their partners would not believe them when telling their partners of the STI. Perceptions could potentially change when the patient is presenting with symptoms of an STI, especially if their partners were aware of these symptoms.

The influence of structural factors on PDPT acceptability was evident. Structural factors are defined here as influences outside the control of the patient that could impede or enable the acceptability of PDPT as a method of partner treatment, yet modifiable or addressed by reconsideration of how PDPT is distributed in the STI clinic. After adjusting for demographic and other background variables, the influence of healthcare providers’ normative influences of PDPT and materials distributed with the medications significantly predicted PDPT acceptability. The healthcare provider normative beliefs scale measured perceptions about what the patient thought the healthcare provider would want them to do with the medications and the benefits to both the individual’s and partners’ health. These data indicated that more positive perceptions of

healthcare providers' beliefs about PDPT were indicative of higher acceptability of PDPT among the survey respondents. From a structural level, this finding highlights the healthcare providers' important influence on patients' perceptions, including providers' support and positive beliefs about PDPT. Similarly, the perception of positive PDPT normative support by healthcare providers was previously shown to facilitate PDPT acceptance in patients (Goldsworthy & Fortenberry, 2009), and this research provides additional evidence in support of the important role healthcare providers have in influencing patients' appraisal of this method of partner treatment. Participants expressed mixed feelings about their perceptions of healthcare providers' opinions during qualitative interviews, and their normative beliefs of healthcare providers' opinion of PDPT were significantly associated with their acceptability of PDPT. Given the influence healthcare providers have on patients' perceptions and the acceptability of their care, addressing normative support of PDPT among clinic staff is a priority to increase patient acceptability of PDPT upon implementation within STI clinics.

A body of evidence is growing regarding how PDPT should be packaged and distributed to patients, and this research adds evidence for the need for a signed note from the healthcare provider and a paper copy of the patient's test results. Endorsing beliefs for the need for these materials was a significant predictor of higher PDPT acceptability in the fully-adjusted regression model. Participants discussed the importance of including documentation with the medications, including a receipt from a doctor and the presence of a signature. This was thought to bring reassurance to the partner when delivering the medications. Participants worried about their partner not believing they – the patient – had an STI, and paperwork was discussed as one mechanism to improve the believability of the STI and medications. Researchers previously found that having official packaging of PDPT and a signed note from the healthcare provider

improved the acceptability of it (Goldsworthy & Fortenberry, 2009; McBride et al., 2009), which similarly suggests the importance of legitimacy perceptions among patients for uptake. Although not significant within the final regression model, participants discussed the importance of a sealed container for the medications. One participant discussed his previous experiences receiving medications in a simple manila envelope as insufficient, and he and others recommended the use of more traditional pill bottles as a necessary improvement for PDPT.

A common theme identified within the qualitative interviews that merits additional discussion was the legal status of PDPT. Worry about the legal status of PDPT was not significant in the regression model, but many interviewed patients still had questions about this method of partner treatment. Some participants worried about getting in trouble for distributing medications to their partners, and others worried about consequences for healthcare providers if medications were distributed to patients for their partners. Perhaps the aforementioned considerations of including a signed note and official packaging would remove some of these worries for patients. As PDPT is implemented within clinical settings, another participant spoke about how it would become routine for patients and thus could further reduce this worry if PDPT is regularly used by the clinic. Since the legal status of PDPT is not an issue in Wisconsin (CDC, 2016), clinic patients and their partners should be reassured that this specific mechanism of medication delivery is allowed and encouraged when necessary.

Participants discussed several other structural issues with getting partners treated, including the influence of insurance status, convenience, and transportation difficulty. Significant effects were not present in the bivariate or final regression models for these factors, but their influence could be minimal or specific to a very small proportion of STI clinic patients, thus reducing the overall effect sizes for each predictor tested. One participant discussed his

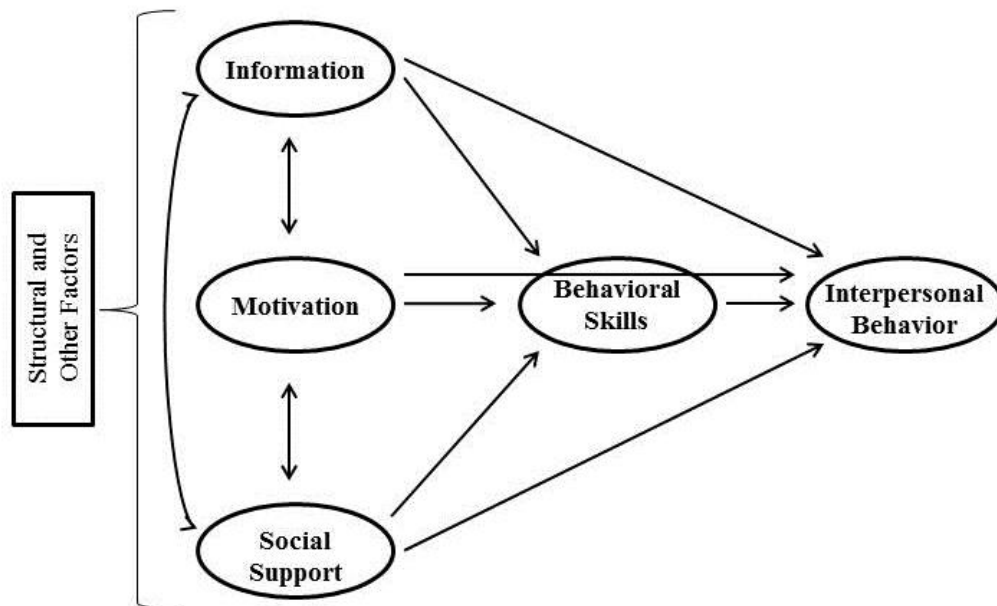
difficulty attempting to find a place to get treatment after he was notified by a sexual partner of an exposure, and that delayed the time until he was treated. Another participant discussed the convenience of PDPT for her very busy sexual partner, and another spoke about the convenience of immediate treatment in comparison to waiting multiple hours in a clinic. Issues with transportation were brought up by some, but it was discussed in the context that others – not the patient – had these issues. Patients did not discuss having transportation difficulties themselves, which could provide reasoning for the lack of significance within the regression model for the variable that measured the respondent’s perception of transportation difficulty. These issues could be more highly salient than measured because study participants were able to find transportation to the clinic for their clinical visit and interview appointments. If PDPT was withheld, patients’ sexual partners would need to navigate transportation to obtain STI screening and treatment. These contextual considerations are important to consider when deciding the method of partner referral given to patients and the potential it could have on reducing community prevalence and repeat infection rates, as found in other studies (Golden et al., 2015; Schumacher & Ghanem, 2013).

### **Interpersonal-Behavioral (I-B) Model Factors on PDPT Intentions**

Supporting evidence of the I-B model was found within this study, based on findings from the quantitative and qualitative data collected. Specifically, the influences of information, motivational factors, and behavioral skills on PDPT intentions were apparent in both qualitative and quantitative data. Refinement of the I-B model occurred after qualitative interviews and subsequent empirical data supported the inclusion of social support to the model. Thus, the I-B model proposed based on the literature review was further refined as a result of data analyses, and the revised version of the model is illustrated in *Figure 4*. While the proposed model

includes intentions as a motivational factor, the testing of behavioral constructs in the model required using intentions as an outcome variable because of the cross-sectional study design. Nonetheless, the validity of the model is supported by testing the influence of intentions central in the model’s conceptual framework, as all studied factors are expected to correlate with intentions in the motivational construct. Given limited findings of the mediation analyses later discussed, the influence of behavioral skills as a central mediator will require further research despite its plausibility (see *Medication Delivery Self-Efficacy as a Mediator*). To increase the generalizability of this model beyond the PDPT outcomes studied here, the sub-constructs of each factor are not illustrated.

**Figure 4:** Interpersonal-Behavioral Model Revised



**Information.** The implications of knowledge about the need for partner treatment and information about STIs and PDPT medications were evident in this patient sample. Specifically, participants discussed the importance of knowledge in persuading their partner of the need for treatment. Knowledge about the STI, the medications and their effects, and future precautions

were all identified by participants. The role of partner treatment knowledge was significant in predicting PDPT intentions; higher knowledge was associated with higher PDPT intentions. More general knowledge about STIs and HIV were tested within the models, but their influence was not significant. Given the specific knowledge captured in the short PT-KQ-4 questionnaire about need for partner treatment in various scenarios and the risks associated with re-exposure to an untreated partner, this type of information is likely the most influential in predicting PDPT delivery to their partner. Most importantly, a lack of understanding could result in lower PDPT intentions among STI clinic patients that results in greater risk of repeat infection if sexual activity is resumed with an untreated partner. However, other information is still important for the patient to successfully counsel his or her partner and persuade him or her to receive treatment or pursue STI screening. These findings are consistent with prior research, as misunderstandings about STIs and transmission concepts were common in another urban STI clinic patient sample (McBride et al., 2009). Further, the clinic patients studied still had many questions about STIs and the medications even after reading through an informational pamphlet about PDPT during the interview, with some also receiving STI treatment counseling during their clinical visit. These findings corroborate the important influence of knowledge on PDPT delivery, and clinicians providing PDPT to their patients should understand the importance of providing the information needed to ensure PDPT delivery to their partner.

**Motivation.** In this study, multiple motivational factors were regressed on PDPT intentions because of their presence in qualitative interviews, including individual protection beliefs; partner and community protection beliefs; infidelity worry, embarrassment, and anxiety; STI clinic stigma; STI-related shame; partner normative influences of the STI clinic; partner motivation-to comply; healthcare provider normative influences of PDPT; and healthcare

provider motivation-to-comply. However, the influence of motivation-to-comply with healthcare providers' opinions emerged as most influential in the quantitative data analysis. Participants who stated they would do what their healthcare provider thinks they should do, including notifying their partner of an STI and delivering medications, had higher PDPT intentions in the fully-adjusted regression model. Higher normative influences of healthcare providers were found to correlate with higher PDPT acceptance in this study, but the motivation-to-comply with healthcare providers was the determining factor of intentions. Thus, patients make a decision about whether or not to accept PDPT based on the normative beliefs of their healthcare provider, but their intentions to deliver PDPT are based on their appraisal of compliance with their healthcare providers' beliefs and opinions. Some patients mentioned listening to and valuing the opinions of healthcare providers within participant interviews, and this influenced their own opinions. Researchers previously found that higher healthcare provider normative influences of PDPT predicted higher PDPT uptake (Goldsworthy & Fortenberry, 2009), consistent with findings on PDPT acceptability in this study. Findings specific to the motivation-to-comply with healthcare providers are noteworthy because no prior research has identified this influence.

Findings in this study provide reasoning for the difference between patients' first-choice preference of PDPT and their willingness to use the intervention mechanism, a discrepancy found in prior research. Specifically, Black women sampled in an STI clinic sample did not prefer PDPT or EPT over other forms of partner notification, but nearly all of the women would give the medication or prescription to their partner if provided (Buchsbaum et al., 2014). Researchers working with other patient populations found similar results (Holloway et al., 2011; Jones et al., 2013), suggesting the importance of patient compliance. Patients may not favor a particular intervention, but they might be compliant to healthcare providers' suggestions to the

method of partner treatment. Patient compliance likely has an impact on the use of the medications by partners as well, especially with feedback provided from patients requesting a signed note from a healthcare provider. Given the prominent theme about potential intimate partner violence that emerged in the interviews and the findings about patient compliance, healthcare providers must be aware of their patients' risk of violence – perpetrated or received – to avoid putting others or their patient at risk of harm. This issue is discussed more thoroughly in another section below (see *The Risk of Violence*).

The influence of partner and community protection beliefs on PDPT intentions was present in the data. A non-significant finding was found in multiple regression testing these beliefs on PDPT intentions, but the  $p$ -value approached significance with  $p < 0.06$ . Plausibility of the important contribution of partner and community protection beliefs on PDPT intentions was found. Mainly, participants discussed their responsibility to notify their partner of the STI, doing the right thing, and not being selfish to help prevent the cycle of STI transmission to others. Some participants had more negative views of their partners as well, which influenced their opinions about protecting their partners' health. One potential mechanism for a lack of agreement between the qualitative and quantitative findings could be the result of a mixed interpretation PDPT has on protecting their partners' health. Participants discussed a lower willingness to use PDPT despite a high degree of caring for their partners' health in some instances. Participants discussed wanting their partner to get screened themselves to be treated in the more traditional method, and the partners' screening was sometimes considered the safer mechanism. Meanwhile, another described their positive beliefs about a combined strategy of PDPT with additional follow-up screening to make sure the treatment is working and nothing

else is wrong. Thus, the mixing beliefs about what is safer for their partners' health could have influenced the strength of the relationship between protection beliefs and PDPT intentions.

Researchers working with other patient samples identified the altruism of patients, which was similarly present in this study. Patients had an unselfish desire to protect their partners' health, which positively influenced their willingness to use PDPT in prior studies (McBride et al., 2009; McBride et al., 2010; Ricks et al., 2015; Temkin et al., 2011). These findings provide additional support and plausibility of findings in this study. Moreover, earlier interviews conducted during survey development phases provided evidence of the potential impact of community protection beliefs, which was then added as a measured construct of the study. After further survey development work, partner and community protection beliefs were found to represent a single construct rather than two. Therefore, it may be helpful for patient counseling to employ a motivational interviewing strategy, which focuses both on the partners' and community's health given their similar relationship. In summary, the evidence is robust in support of the importance of patients' perceptions of their partners' health on PDPT delivery intentions.

Other motivational construct themes such as individual protection beliefs, subjective norms of their partners, STI clinic stigma, and STI-related shame were also salient within participant interviews, but not significant in our regression analyses on PDPT intentions. Nonetheless, these factors still have implications for patient care. An understanding and desire to protect their own health was present when participants discussed the importance of ensuring their partner is treated to help prevent reinfection, and others identified the limitations of this method of partner treatment when partners have other sexual partners. These factors support general risk reduction counseling for patients, especially if the patient is unsure of their partners' risk

behavior. The implications of subjective norms of partners and STI clinic stigma are useful findings for helping patients choose which method of partner notification would be best for them in regular clinical practice. For instance, patients who feel their partners would prefer a clinic visit for testing and treatment would not be ideal candidates for PDPT under clinical guidelines, which do not encourage PDPT use if the partner is believed to follow through with regular diagnostic screening. Patient perceptions of STI clinic stigma offer potential insight into the patient experience, which could be addressed if patient feedback is incorporated into a redesign of the STI clinic's patient waiting room. Briefly, patients worried about others seeing them at the STI clinic and the perceived judgement they thought others would project on them. Patients also discussed the shame related to STIs, which is a reminder for clinicians about the need for a level of understanding and compassion when treating patients with STIs. Patients respect and expect confidentiality because of the stigma and shame associated with STIs.

**Social support.** The added contribution of social support to the I-B model was made after survey development activities, because social support emerged as a potential theme within participant interviews. One participant who had prior experience using PDPT discussed her friends' role in supporting her, but that this support was not always positive. She experienced a highly supportive friend who offered emotional support, but she experienced a negative experience with another partner that made her question her decisions. Others discussed the benefits of a positive social support system, but some worried about being judged at a later time or their unwillingness to want to talk about issues related to STIs. In our fully-adjusted multiple regression model, higher social support significantly correlated with higher PDPT intentions. Thus, social support was an important contribution to the I-B model. In prior research, patients found the use of social network members useful, but that support was only described as useful

when members notify or deliver medications for them (Ricks et al., 2015; Temkin et al., 2011). Therefore, this research provides introductory knowledge into the importance of other forms of support, especially emotional support in connection to findings about STI-related shame.

**Behavioral skills.** Lastly, the importance of behavioral skills was another salient theme within qualitative interviews and an important contributor to PDPT intentions within regression models. The earlier conceptualized I-B model included the influence of both objective ability and self-efficacy as behavioral skill components. We were unable to measure objective ability in this study, yet patients discussed the importance of communication skills when notifying a partner of their STI. Communication skills were a prominent theme because participants felt notifying their partner had to be done in a tactful way, and saying the right thing was important to prevent a negative response from their partner. Since we were unable to measure objective ability of communication skills, communication skills self-efficacy was used to test the influence of this factor on PDPT intentions. A non-significant result was found for communication skills self-efficacy on PDPT intentions, which is consistent with prior research measuring the effects of communication skills self-efficacy on PDPT acceptance (Ricks et al., 2015). Nonetheless, the use of self-efficacy as a proxy for objective ability is a limitation of this construct's measurement, suggesting a more heavily emphasis on the qualitative evidence. Our interview findings support additional literature and other researchers' claims suggesting the necessity of communication skills in fostering successful PDPT delivery of patients. Researchers studying other STI clinic samples found patients stressed the need for communication skills for PDPT delivery (Young et al., 2007), and patients requested the need for more coaching and transcripts for discussing the STI with their partner (Temkin et al., 2011). Nonetheless, a more direct and less limited measure

of self-efficacy on PDPT intentions – the measurement of medication delivery self-efficacy – is discussed next.

Patients with a higher degree of confidence in delivering the medications were more likely to have higher PDPT intentions than those with less confidence. Thus, activities to support the development of self-efficacy in delivering medication to sexual partners are important for preparing patients to notify their partner using PDPT. While partner notification self-efficacy was not significant in the final regression model, these results could be the result of some partners having high intentions to notify a sexual partner but low intentions to use PDPT to do so, thereby reducing their overall PDPT intentions score despite a positive outcome. These findings about medication delivery self-efficacy support prior research findings. Mainly, higher self-efficacy to partner notification was found to influence successful partner notification in studies measuring partner notification more broadly (i.e., without PDPT) and also with PDPT and/or EPT (Buchsbaum et al., 2014; Radovic et al., 2013). Thus, increasing patient confidence is a priority in any behavioral intervention developed for patients using PDPT.

**Fitting the constructs together.** The conceptual framework of the I-B model was supported by patient interviews for PDPT delivery, but the model was not tested longitudinally to provide better empirical support for causal inference. Nonetheless, the role of intentions as a motivational factor as previously conceptualized in the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992) provided the ability to test the association between each behavioral factor because of its central location in the model. Specifically, sub-constructs of each of the main construct were significant within the multiple regression analysis, and interview data support the connectedness posited. Specifically, participants discussed the importance of being adequately informed, and a general understanding of transmission concepts provided motivation

for them to want to protect their partners' health. It is also plausible that a higher motivation-to-comply with healthcare providers' normative beliefs would influence knowledge retention of important information provided during a patient's clinical visit. Patients discussed the role of social support in relation to other behavioral constructs. One patient described talking to a friend and feeling relieved after the receipt of informational support (i.e., comments about how the STI is treatable) and emotional support (i.e., "she wasn't judging me"), which could improve compliance with healthcare providers' normative influence of PDPT. Patients mentioned the role of social support boosting their confidence to deliver PDPT to their partners, and patients discussed feeling more confident if they were adequately informed or had appropriate informational materials to help them out when delivering the medication to a partner. Moreover, the complexity in notifying a partner of an STI with medications would suggest the importance of having adequate behavioral skills to enact the behavior; thus a highly informed, motivated, and supported individual would only be able to enact the behavior with sufficient abilities and confidence.

**Medication delivery self-efficacy as a mediator.** The construct of behavioral skills is a mediator in the posited I-B model, but only one motivational component was mediated by a measured behavioral skill. The association between partner motivation-to-comply and PDPT intentions was completely mediated by medication delivery self-efficacy in the mediation analysis. Patients are willing to deliver PDPT to their partner if they thought their partners would want them to, but patients only intend on delivering PDPT if they have the confidence to do so. Thus, the importance of confidence remains a crucial behavioral skill for patients to deliver PDPT to their partners. Medication deliver self-efficacy was not found to mediate any other associations between information, motivation, and social support constructs with PDPT

intentions. The cross-sectional study design is a significant barrier to successfully testing the mediation pathways. Several measures predicted PDPT intentions, but this is not a direct measure of behavior. Further research is needed to test mediating pathways using a longitudinal study design because behavioral skills could be largest predictor of PDPT delivery success, thus facilitating behavioral action among well informed, motivated, and supported patients. Lack of agreement in mediation pathways between constructs – particularly information, motivation, and behavioral skills – remains an emerging issue in literature using the I-B model antecedent of the Information-Motivation-Behavioral Skills model (Fisher & Fisher, 1992). For example, behavioral skills completely mediated the association between information and sexual behavior in some studies (e.g., Harmon & Amico, 2009; John, Walsh, & Weinhardt, 2016), but only a direct or no relationship between information and behavior was found in others (e.g., Cai et al., 2013; Pitpitan et al., 2015). Similarly, researchers found behavioral skills to partially mediate the association between motivational components and sexual behavior in some studies (e.g., Walsh, Senn, Scott-Sheldon, Vanable, & Carey, 2011), but a completely mediated pathway was found in others (e.g., Bazargan, Stein, Bazargan-Hejazi, & Hindman, 2010). Therefore, further research is needed to more fully understand the connections between behavioral constructs, but the posited I-B model is plausible based on an assessment of all mixed-method data in this study.

### **The Risk of Violence**

The fear of violence when notifying a partner of an STI was a salient theme among both men and women in this patient sample. Patients discussed their worry about potential of arguments, fights, and murder when notifying partners of an STI. Nearly 29% of the surveyed patients had some degree of worry about their safety when notifying a partner. Participants discussed in detail how situations can escalate quickly, and implications about infidelity and

responsibility or blame were associated with triggering violent situations. While participants worried about their partner being violent, some discussed their own struggle to handle their emotions. One man discussed his internal monologue about wanting to potentially hurt his partner or the person that gave her the STI, but he discussed his thoughts about trying to fight these thoughts away. Another discussed her worries about her inability to remain calm with issues pertaining to her health are evident.

The findings in this study support prior research about the potential for violence, yet no known previous studies have given significant attention to this risk associated with PDPT. When studying the potential of patient-delivered STI screening kits, fear of a partner's reaction was an important barrier to delivering the screening kit; however risk of violence was only mentioned by a very small sample of women (McBride et al., 2010). In another STI clinic sample, one participant reported a violent reaction upon providing his partner the medications, which resulted in verbal and physical assault (Temkin et al., 2011). Prior research supported the claim that the provision of the physical medications results in an appraisal of "reality" (McBride et al., 2009; Young et al., 2007), which the previously discussed assaulted man mentioned (Temkin et al., 2011). Despite 6% of women reporting the worry about violence within one randomized controlled trial of PDPT, no adverse events were reported by study completion (Schillinger et al., 2003). Nonetheless, nearly 29% of participants within the studied clinic sample and over one in three women surveyed had some degree worry, suggesting the importance of identifying patients at risk of violence before recommending any partner referral mechanism that could result in harm for the patient or their partner. Much work is needed because preliminary evidence from one study found nearly a third of healthcare providers did not consider a link between interpersonal violence and STIs (Rosenfeld et al., 2015).

## **The Potential for Including HIV Test Kits with PDPT**

The potential of providing over-the-counter, rapid HIV test kits with PDPT kits was explored with STI clinic patients. Previous literature is limited on the potential of rapid HIV test kits among U.S. patient samples, and no prior research has explored the potential of including a rapid HIV test kit with PDPT packs. Surmounting evidence about the perceived limitations of a missed opportunity for HIV testing among healthcare providers and partners has emerged (Jotblad et al., 2012; McBride et al., 2010; Pavlin et al., 2010), and FDA approval of an over-the-counter, rapid HIV test kit offers one potential mechanism to address this concern.

Among the STI clinic patients with interview questions specifically targeting the potential of HIV test kit provision ( $N = 15$ ), several prominent themes emerged within the interviews. Participants had mixed reactions about including an HIV test kit with PDPT. While some participants appreciated the opportunity to give the test kit with the medications, others were apprehensive because of questions about the necessity and potential response of their partner. Meanwhile, patients thought their partners would like the opportunity to test themselves in a confidential and private setting, yet others discussed being upset, scared, or suspicious. Participants did think the tests were convenient, and it empowered them to take ownership for their health when used with PDPT.

Patients discussed the difficulty approaching their partner with an HIV test kit. One person worried about being considered promiscuous by her partner, yet others thought critically about what happens if a positive test was found. Nonetheless, participants thought the provision of HIV test kits helped address the negative implications of STI clinic stigma. The privacy of taking a test without needing to go to a hospital or clinic was mentioned, especially for individuals too embarrassed to step into the clinic.

Interview respondents worried about the quality of the test and had questions about how it worked. Specifically, some patients perceived a difference in quality between tests they can administer themselves purchasable over-the-counter compared to those administered by a doctor. Another made a comparison to at-home pregnancy test kits, and she worried about the overwhelming feeling of receiving the results all at once. Participants also discussed the importance of making sure the test was easy to use. If the test only required a simple swab, the test was perceived to be better than if a needle or blood draw was required.

The potential for violence was a theme identified in association with HIV test kits as well. Specifically, patients discussed their partners' disapproval of the HIV test, which could trigger a violent reaction. When patients thought about receiving the tests themselves, one patient discussed her own risk of becoming violent with her partner if the test was positive. Thus, additional attention is needed in response to the potential for violence associated with the added contribution of HIV test kits with PDPT, already a risky option for some.

A critical finding from the patient interviews about HIV test kit provision with PDPT was that patients need to be prepared similarly for approaching a partner with PDPT only, but the inclusion of a rapid HIV test required some additional knowledge and skills. Mainly, participants discussed the importance of needing to be able to counsel their partner and address the potential of a possible HIV test and the implications associated with that.

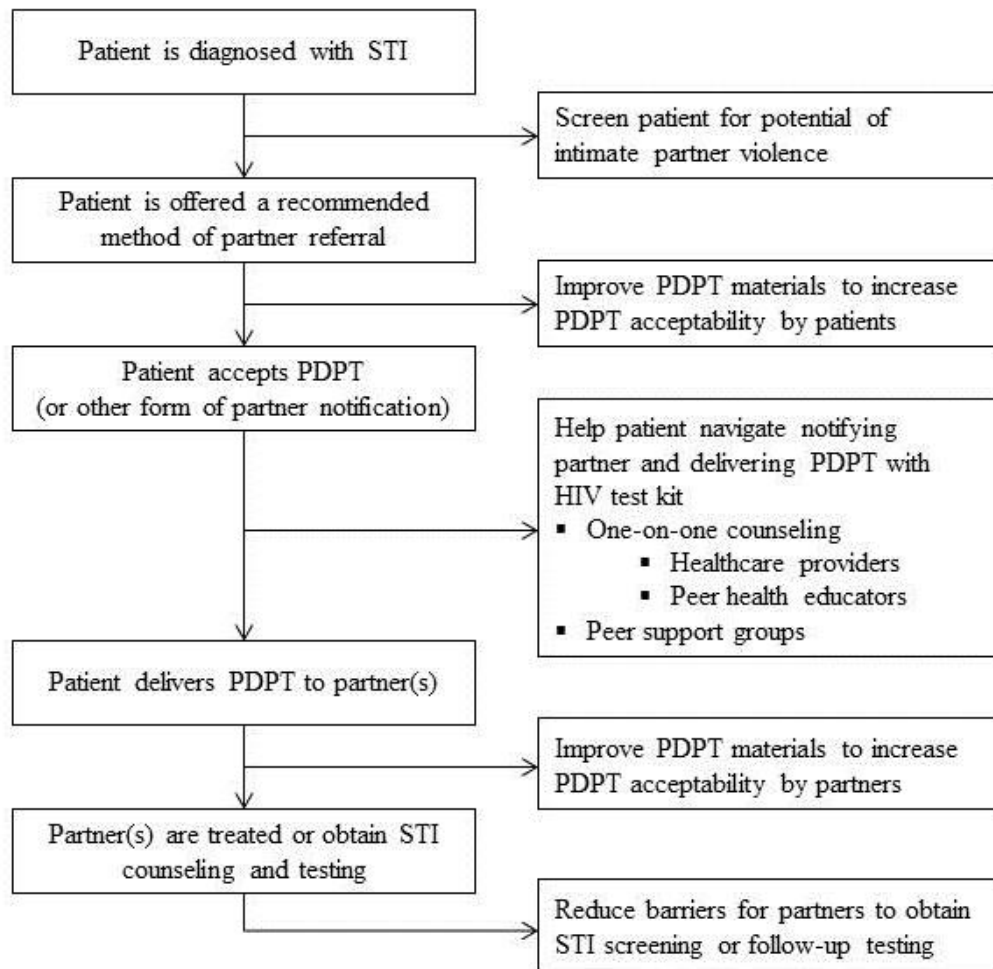
Findings from this study support a growing body of evidence about at-home HIV testing. STI clinic patients in South Africa similarly discussed the convenience and privacy of at-home HIV testing, yet also worried about the distress associated with HIV testing without a trained counselor (Kelvin et al., 2016). Similarly, a U.K. sample of users requesting at-home HIV test kits via an online mechanism found the tests convenient and private, but also discussed their

evasions of needle-based testing in the clinic and the required face-to-face consultation with a healthcare provider (Ahmed-Little et al., 2015). A sample of MSM in Los Angeles had preferences for free, at-home HIV testing with immediate results over other mechanisms including paying for the test kit, taking the test at a clinic, and needing to wait for the results (Lee, Brooks, Bolan, & Flynn, 2013), which potentially align with patient preferences of this clinic sample who discussed privacy associated with the at-home HIV test for their partners. Regardless, further efforts are needed to prepare patients and partners for at-home testing given the enormity of an HIV-positive test result and the necessity for follow-up testing and treatment.

### **Intervention Planning**

The overall goal of this research was to foster the development of a behavioral intervention for STI clinic patients, and I was successfully able to gather mixed-method data and participant feedback to support potentially effective interventions to be experimentally tested in future research. Input into the triaging of patients at risk of intimate partner violence, PDPT packaging and materials distributed with PDPT, counseling, the use of peer health educators and support groups, and structural changes were all suggested by participants. I-B model components are highly applicable to the counseling and social support building interventions suggested by patients. A flow diagram highlighting how each of these interventions could fit together is presented in *Figure 5*. Strategies for incorporating the distribution of rapid HIV test kits for at-home testing for partners were suggested, further increasing the novelty of any future intervention trial.

**Figure 5:** Flow Diagram of PDPT Intervention Mechanisms



**The need for triaging patients at risk of intimate partner violence.** As a salient theme in interviews and a highly prevalent worry among survey respondents, addressing the risk of violence is an utmost priority. Triaging patients at risk of intimate partner violence was one mechanism identified by a participant to address this issue. This would require healthcare providers to have conversations with each patient to identify any potential risk of harm to the patient or their partner. If a patient felt unsafe notifying the partner themselves, a requirement of PDPT, an alternative partner referral mechanism must be considered such as provider referral. An alternative to having a healthcare provider call the partner directly was to have the partner

come to the clinic where the patient or healthcare provider could tell the partner in a safer environment, but neither of these alternatives reduces the risk of violence after the clinic visit without additional intervention. More generally, further research and outreach is needed targeting healthcare providers in an effort to increase their awareness of the potential for intimate partner violence when a patient notifies a partner of an STI and/or delivers PDPT.

**PDPT packaging and materials.** Participants discussed the necessary packaging of PDPT to foster the highest potential uptake. A signed note from the healthcare provider, their test results, the inclusion of an informational pamphlet, and a protected pill bottle were all identified as important pieces of the PDPT kit. In conjunction with a counseling session, participants discussed the inclusion of a scripted way to talk to their partner about the STI. While some would deliver the kit directly to their partner, the kit needed to be self-explanatory as some mentioned leaving the kit for them without a face-to-face interaction. The PDPT packaging and materials are important considerations to improve the trustworthiness of the medications. Participants mentioned their worry about partners not trusting the medications delivered to them by the PDPT mechanism. In general, distrust was a prominent theme in the qualitative interviews, but participants thought the packaging would help increase the trustworthiness of the medications. The materials provided are important for patients' acceptance, but also a determinant of their partners' acceptability.

**Counseling.** Participants explicitly requested the use of a more updated, one-on-one counseling session by a medical professional, perhaps referring to a trained professional at the clinic such as a Disease Intervention Specialist. This counseling was not only thought to be important for them, but for their planning to counsel their partner. Specific counseling components suggested include addressing each of the constructs of the I-B model. Patients

wanted to be adequately informed so that they could answer their partners' questions. Moreover, increasing patients' motivation to deliver PDPT while building rapport could improve patient adherence to the healthcare provider's recommendations, and increasing patients' partner and community protection beliefs could further improve their PDPT delivery intentions. Participants discussed the importance of social support within this study, and participants considered the healthcare providers' role in providing emotional support for the patient. Addressing deficiencies in communication skills were apparent, and efforts to increase patients' confidence to deliver medications to their partner should be considered.

Role-playing the conversation with their partner could be one possible avenue to increase behavioral skills, especially after a motivational interviewing session that addressed both information and motivation components. One participant discussed the explicit consideration of a signed behavioral contract, where patients would sign a form indicating their intentions to deliver the medications. Participants discussed the desire to have a healthcare provider call the partner before the patient is given the medications to take to their partner, but others were apprehensive of this strategy because of the potential confidentiality implications. Given the mixed opinions about a clinician calling a partner, this could be considered an optional component when desired by the patient. After the patient leaves the clinic with PDPT, participants discussed the potential supporting role of healthcare providers giving follow-up phone calls to patients about two weeks after their clinic visit. Lastly, participants reported the potential for use of PDPT in unintended ways, which highlights the importance of additional counseling to support safe use as intended. In summary, the data collected within this study and the feedback provided from patients allowed us to make a strong recommendation for a behavioral counseling session provided with PDPT to be experimentally tested in future research.

**Peer health educators and peer support groups.** Further addressing the importance of social support indicated by clinic patients, some suggested the use of peer health educators and peer support groups. The use of a peer health educator was suggested to be a connection between the healthcare provider and patient. One way to use a peer health educator model is to train members of the community with prior experience with STIs and/or PDPT to provide the counseling provided to patients. While a healthcare provider would still be used to provide the medications and answer questions specifically relevant to the medications, a lay health advisor could be used for the rest of the intervention session. Consideration for this mechanism should be made because it could make it more feasible than having more highly trained – and more highly paid – professionals deliver the full intervention within public STI clinics with resource limitations. Participants also discussed the potential of peer support groups to offer another mechanism of social support. Patients appreciate the ability to ask questions of others to help them navigate partner notification and PDPT delivery.

Future research could include both of these options, as well as counseling provided solely by a healthcare professional and experimentally tested in comparison to various intervention combinations. For example, a randomized controlled trial could compare a counseling session provided by the healthcare provider to one conducted in part by a peer health educator, and half of the members of each of these two mechanisms could also participate in peer support groups. An information-only control group would be necessary, and a sixth arm of the study could compare the added contributions of the peer support group to the information-only control. While a 6-arm randomized controlled trial may not be feasible, several studies over time could be used to test the various intervention mechanisms.

**Structural changes to the STI clinic.** Lastly, participants discussed issues of STI clinic stigma, and they offered suggestions to improve the patient experience. The issues presented are not directly relevant to PDPT other than the layout of the clinic may be a barrier for some who would otherwise come seek testing and treatment at the clinic, but may be reluctant to do so now. Getting patients in the door and diagnosed is the first step of PDPT, so it is important to recognize these barriers. Making the clinic more appealing is also important for partners who would prefer to obtain their own testing before treatment, even if they received PDPT from their partner.

Patients specifically worried about issues of confidentiality and privacy, worrying about other people seeing them at the clinic. The clinic is currently set up with a waiting room where only patients being seen at the clinic are allowed to sit. Participants discussed improving the structural layout of the clinic, suggesting the incorporation of confidential rooms where patients are not required to sit with others. Private rooms are currently used for counseling and testing services, but patients felt it would be beneficial to have a private room, or cubicle, for waiting or the entire visit so that their privacy was protected.

### **Limitations**

Several limitations of this research study merit mention. First, the cross-sectional study design limits my ability to make strong causal inferences. Participants were interviewed and surveyed under hypothetical scenarios and were required to respond with their immediate perceptions and opinions. I was able to test for structural and I-B model predictors on PDPT acceptability and intentions, but was unable to measure actual subsequent PDPT uptake or delivery outcomes. Second, this study had limited statistical power with a sample size of less than 200 for analysis. While this is a reasonable sample size, a fully powered test of the

conceptualized theoretical model requires advanced empirical modelling in future research with a larger sample size and perhaps a longitudinal design. For example, the sample size needed to test a model as complex as the I-B model using structural equation modelling would require a sample size over 400 participants to achieve power of 0.80 (e.g., a model with 20 degrees of freedom would require  $N = 421$  for 0.80 power to test for exact fit; Lee, Cai, & MacCallum, 2012). Thus, less advanced statistical procedures were used to test the models' constructs and to compare it with a previously conceptualized theoretical framework. Last, all data were self-reported. While we used a self-administered survey assessment procedure, and took steps to minimize demand effects and maximize honest responses, the potential for response bias cannot be ruled out. Despite the aforementioned weaknesses, this study was the first to conceptualize a framework for understanding PDPT outcomes and was the formative work in development of behavioral interventions for future experimental research.

### **Conclusion**

This mixed-method study resulted in the collection of qualitative interview and quantitative survey data in support of the I-B model, and recommendations for behavioral interventions to be experimentally tested with STI clinic patients in future research to improve PDPT outcomes were provided. PDPT was found to be an acceptable method of partner treatment for patients, and several structural-level factors were associated with PDPT acceptability, including the normative influences of healthcare providers and the packaging and materials of PDPT kits that could be ameliorated in future research and clinical practice. When I-B model indicators were regressed on PDPT intentions, factors from primary constructs of information, motivation, social support, and behavioral skills were found to be significantly associated with higher PDPT intentions. Moreover, the I-B model was found to have

significantly better model fit than the previously published Information-Motivation-Behavioral Skills model in predicting PDPT intentions. Ample evidence was reported to foster the development of behavioral interventions to be experimentally tested in future research to improve PDPT delivery, including the potential for distributing rapid HIV test kits with PDPT for delivery to their sexual partners. Participants suggested intervention mechanisms for clinic patients, including the need for an updated one-on-one counseling strategy, the use of peer health educators in the clinic, offering peer support groups, and redesigning the STI clinic structure. Important findings related to the potential for intimate partner violence were found, which could prevent full implementation of PDPT within STI clinic settings. Encouraging communication between healthcare providers and their patients about the potential for intimate partner violence could facilitate patient triaging that results in the consideration of alternative partner referral mechanisms for patients or partners at risk of harm, and better outcomes for patients and their partners.

## References

- Aday, L. A., & Cornelius, L. J. 2006 Designing and Conducting Health Surveys: A Comprehensive Guide. 3<sup>rd</sup> ed. San Francisco, CA: Jossey-Bass.
- Ahmed-Little, Y., Bothra, V., Cordwell, D., Freeman Powell, D., Ellis, D., Klapper, P., ... Vivancos, R. (2015). Attitudes towards HIV testing via home-sampling kits ordered online (RUClear pilots 2011-12). *Journal of Public Health (Oxford, England)*, Advance online publication. doi:10.1093/pubmed/fdv075
- Alcaide, M. L., Feaster, D. J., Duan, R., Cohen, S., Diaz, C., Castro, J. G., . . . Metsch, L. R. (2015). The incidence of trichomonas vaginalis infection in women attending nine sexually transmitted diseases clinics in the USA. *Sexually Transmitted Infections*, doi:sextrans-2015-052010
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Bazargan, M., Stein, J. A., Bazargan-Hejazi, S., & Hindman, D. W. (2010). Using the Information-Motivation Behavioral model to predict sexual behavior among underserved minority youth. *The Journal of School Health*, 80(6), 287-295. doi: 10.1111/j.1746-1561.2010.00503.x
- Buchsbaum, A., Gallo, M. F., Whiteman, M. K., Cwiak, C., Goedken, P., Kraft, J. M., . . . Kottke, M. (2014). Sexually transmitted disease partner notification among African-American, adolescent women. *Infectious Diseases in Obstetrics and Gynecology*, 619632. doi:10.1155/2014/619632
- Cai, Y., Wang, Y., Zheng, Z., Wang, J., Yao, W., & Ma, J. (2013a). Predictors of reducing sexual and reproductive risk behaviors based on the Information-Motivation-Behavioral Skills (IMB) model among unmarried rural-to-urban female migrants in Shanghai, China. *PloS One*, 8(4), e62787. doi: 10.1371/journal.pone.0062787
- Cameron, S. T., Glasier, A., Muir, A., Scott, G., Johnstone, A., Quarrell, H., . . . Todd, G. (2010). Expedited partner therapy for chlamydia trachomatis at the community pharmacy. *BJOG: An International Journal of Obstetrics and Gynaecology*, 117(9), 1074-1079. doi:10.1111/j.1471-0528.2010.02573.x
- Cameron, S. T., Glasier, A., Scott, G., Young, H., Melvin, L., Johnstone, A., & Elton, R. (2009). Novel interventions to reduce re-infection in women with chlamydia: A randomized controlled trial. *Human Reproduction*, 24(4), 888-895. doi:10.1093/humrep/den475
- Carey, M. P., & Schroder, K. E. E. (2002). Development and psychometric evaluation of the brief HIV knowledge questionnaire. *AIDS Education & Prevention*, 14(2), 172.
- Centers for Disease Control and Prevention (CDC). (1998). HIV prevention through early detection and treatment of other sexually transmitted diseases--United States recommendations of the advisory committee for HIV and STD prevention. *MMWR.Recommendations and Reports: MMWR*, 47(RR-12), 1-24.
- Centers for Disease Control and Prevention (CDC). (2014). Sexually transmitted disease surveillance 2013. Retrieved July 22, 2015, from <http://www.cdc.gov/std/stats13/surv2013-print.pdf>
- Centers for Disease Control and Prevention (CDC). (2015). Sexually transmitted diseases: Expedited partner therapy. Retrieved July 14, 2015, from <http://www.cdc.gov/std/ept/default.htm>

- Centers for Disease Control and Prevention (CDC). (2016). Sexually transmitted diseases: Legal status of expedited partner therapy. Retrieved July 21, 2016, from <http://www.cdc.gov/std/ept/legal/>
- Collins, D. (2003). Pre-testing survey instruments: An overview of cognitive methods. *Quality of Life Research, 12*(3), 229–238. doi: 10.1023/A:1023254226592.
- Coyne, K. M., Cohen, C. E., Smith, N. A., Mandalia, S., & Barton, S. (2007). Patient-delivered partner medication in the UK: An unlawful but popular choice. *International Journal of STD & AIDS, 18*(12), 829-831. doi:10.1258/095646207782716956
- Cramer, R., Hogben, M., & Handsfield, H. H. (2013a). A historical note on the association between the legal status of expedited partner therapy and physician practice. *Sexually Transmitted Diseases, 40*(5), 349-351. doi:10.1097/OLQ.0b013e3182853c61
- Cramer, R., Leichter, J. S., Stenger, M. R., Loosier, P. S., Slive, L., & SSuN Working Group. (2013b). The legal aspects of expedited partner therapy practice: Do state laws and policies really matter? *Sexually Transmitted Diseases, 40*(8), 657-662. doi:10.1097/01.OLQ.0000431358.18959.d4
- Creswell, J. W. (Ed.). (2014). Mixed Method Procedures. In Creswell, J. W. (Ed.), *Research Design: Qualitative, quantitative, and mixed methods approaches* (4<sup>th</sup> ed.) (pp. 215). Thousand Oaks, CA: SAGE Publications Inc.
- DiClemente, R. J., Davis, T. L., Swartzendruber, A., Fasula, A. M., Boyce, L., Gelaude, D., . . . Staples-Horne, M. (2014). Efficacy of an HIV/STI sexual risk-reduction intervention for African American adolescent girls in juvenile detention centers: A randomized controlled trial. *Women & Health, 54*(8), 726-749. doi:10.1080/03630242.2014.932893
- Doe-Simkins, M., Walley, A. Y., Epstein, A., & Moyer, P. (2009). Saved by the nose: Bystander-administered intranasal naloxone hydrochloride for opioid overdose. *American Journal of Public Health, 99*(5), 788-791. doi:10.2105/AJPH.2008.146647; 10.2105/AJPH.2008.146647
- Estcourt, C. S., Sutcliffe, L. J., Copas, A., Mercer, C. H., Roberts, T. E., Jackson, L. J., . . . Cassell, J. A. (2015). Developing and testing accelerated partner therapy for partner notification for people with genital chlamydia trachomatis diagnosed in primary care: A pilot randomised controlled trial. *Sexually Transmitted Infections*. doi:sextrans-2014-051994
- Estcourt, C., Sutcliffe, L., Cassell, J., Mercer, C. H., Copas, A., James, L., . . . Johnson, A. M. (2012). Can we improve partner notification rates through expedited partner therapy in the UK? Findings from an exploratory trial of accelerated partner therapy (APT). *Sexually Transmitted Infections, 88*(1), 21-26. doi:10.1136/sti.2010.047258
- Ferreira, A., Young, T., Mathews, C., Zunza, M., & Low, N. (2013). Strategies for partner notification for sexually transmitted infections, including HIV. *Cochrane Database of Systematic Reviews, 10*, CD002843. doi:10.1002/14651858.CD002843.pub2; 10.1002/14651858.CD002843.pub2
- Fichtenberg, C. M., Muth, S. Q., Brown, B., Padian, N. S., Glass, T. A., & Ellen, J. M. (2009a). Sexual network structure among a household sample of urban African American adolescents in an endemic sexually transmitted infection setting. *Sexually Transmitted Diseases, 36*(1), 41-48. doi:10.1097/OLQ.0b013e3181860711
- Fichtenberg, C. M., Muth, S. Q., Brown, B., Padian, N. S., Glass, T. A., & Ellen, J. M. (2009b). Sexual network position and risk of sexually transmitted infections. *Sexually Transmitted Infections, 85*(7), 493-498. doi:10.1136/sti.2009.036681

- Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological Bulletin*, *111*(3), 455-474.
- Fisher, J. D., Fisher, W. A., & Shuper, P.A. (2009). The Information-Motivation-Behavioral Skills model of HIV preventive behavior. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging Theories in Health Promotion Practice and Research* (pp. 22-63). San Francisco, CA: John Wiley & Sons, Inc.
- Fisher, J. D., Fisher, W. A., Bryan, A. D., & Misovich, S. J. (2002). Information-motivation-behavioral skills model-based HIV risk behavior change intervention for inner-city high school youth. *Health Psychology*, *21*(2), 177-186. doi:10.1037/0278-6133.21.2.177
- Fisher, J. D., Fisher, W. A., Misovich, S. J., Kimble, D. L., & Malloy, T. E. (1996). Changing AIDS risk behavior: Effects of an intervention emphasizing AIDS risk reduction information, motivation, and behavioral skills in a college student population. *Health Psychology*, *15*(2), 114-123. doi:10.1037/0278-6133.15.2.114
- Fortenberry, J. D., McFarlane, M., Bleakley, A., Bull, S., Fishbein, M., Grimley, D. M., . . . Stoner, B. P. (2002). Relationships of stigma and shame to gonorrhea and HIV screening. *American Journal of Public Health*, *92*(3), 378-381.
- Fung, M., Scott, K. C., Kent, C. K., & Klausner, J. D. (2007). Chlamydial and gonococcal reinfection among men: A systematic review of data to evaluate the need for retesting. *Sexually Transmitted Infections*, *83*(4), 304-309. doi:10.1136/sti.2006.024059
- Golden, M. R., Hughes, J. P., Brewer, D. D., Holmes, K. K., Whittington, W. L., Hogben, M., . . . Handsfield, H. H. (2007). Evaluation of a population-based program of expedited partner therapy for gonorrhea and chlamydial infection. *Sexually Transmitted Diseases*, *34*(8), 598-603. doi:10.1097/01.olq.0000258319.54316.06
- Golden, M. R., Kerani, R. P., Stenger, M., Hughes, J. P., Aubin, M., Malinski, C., & Holmes, K. K. (2015). Uptake and population-level impact of expedited partner therapy (EPT) on chlamydia trachomatis and neisseria gonorrhoeae: The Washington state community-level randomized trial of EPT. *PLoS Medicine*, *12*(1), e1001777. doi:10.1371/journal.pmed.1001777
- Golden, M. R., Whittington, W. L., Handsfield, H. H., Hughes, J. P., Stamm, W. E., Hogben, M., . . . Holmes, K. K. (2005). Effect of expedited treatment of sex partners on recurrent or persistent gonorrhea or chlamydial infection. *The New England Journal of Medicine*, *352*(7), 676-685. doi:10.1056/NEJMoa041681
- Goldsworthy, R. C. & Fortenberry, D. J. (2009). Patterns and determinants of patient-delivered therapy uptake among healthcare consumers. *Sexually Transmitted Diseases*, *36*(1), 25-32. doi:10.1097/OLQ.0b013e318186011d
- Gursahaney, P. R., Jeong, K., Dixon, B. W., & Wiesenfeld, H. C. (2011). Partner notification of sexually transmitted diseases: Practices and preferences. *Sexually Transmitted Diseases*, *38*(9), 821-827. doi:10.1097/OLQ.0b013e31821c390b
- Harman, J. J., & Amico, K. R. (2009). The Relationship-Oriented Information-Motivation-Behavioral Skills model: A multilevel structural equation model among dyads. *AIDS and Behavior*, *13*(2), 173-184. doi: 10.1007/s10461-007-9350-4
- Healthy People 2020. (2015). Sexually transmitted diseases. Retrieved July 22, 2015, from <http://www.healthypeople.gov/2020/topics-objectives/topic/sexually-transmitted-diseases>
- Heaney, C. A. & Israel, B. A. (2008). Social networks and social support. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health Behavior and Health Education: Theory, Research, and Practice* (pp. 189-210). 4<sup>th</sup> ed. San Francisco, CA: Jossey-Bass.

- Holloway, I. W., Jones, H. E., Bell, D. L., & Westhoff, C. L. (2011). Men's preferences for sexually transmitted infection care services in a low-income community clinic setting in New York City. *American Journal of Men's Health*, 5(3), 208-215. doi:10.1177/1557988310370359
- Hosenfeld, C. B., Workowski, K. A., Berman, S., Zaidi, A., Dyson, J., Mosure, D., ... Bauer, H. M. (2009). Repeat infection with chlamydia and gonorrhea among females: A systematic review of the literature. *Sexually Transmitted Diseases*, 36(8), 478-489. doi:10.1097/OLQ.0b013e3181a2a933
- Howard, E. J., Xu, F., Taylor, S. N., Stoner, B. P., Mena, L., Nsuami, M. J., ... Martin, D. H. (2011). Patient preference for patient-delivered partner therapy: Exploratory findings from three sexually transmitted disease clinics. *Sexually Transmitted Diseases*, 38(2), 148-149. doi:10.1097/OLQ.0b013e3182036d45
- Jaworski, B. C., & Carey, M. P. (2007). Development and psychometric evaluation of a self-administered questionnaire to measure knowledge of sexually transmitted diseases. *AIDS and Behavior*, 11(4), 557-574. doi:10.1007/s10461-006-9168-5
- John, S. A., Walsh, J. L., & Weinhardt, L. S. (2016). The Information–Motivation–Behavioral Skills model revisited: A network-perspective structural equation model within a public sexually transmitted infection clinic sample of hazardous alcohol users. *AIDS and Behavior*, Advance online publication. doi: 10.1007/s10461-016-1446-2
- Jones, H. E., Holloway, I. W., Pressman, E., Meier, J., & Westhoff, C. L. (2013). Women's preferences for testing and management of sexually transmitted infections among low-income New York City family planning clients. *International Journal of STD & AIDS*, 24(6), 455-460. doi:10.1177/0956462412473888
- Jotblad, S., Park, I. U., Bauer, H. M., Barandas, A., Deal, M., & Amey, A. (2012). Patient-delivered partner therapy for chlamydial infections: Practices, attitudes, and knowledge of California family planning providers. *Sexually Transmitted Diseases*, 39(2), 122-127. doi:10.1097/OLQ.0b013e318237b723
- Kamb, M. L., Fishbein, M., Douglas, J. M., Jr, Rhodes, F., Rogers, J., Bolan, G., ... Peterman, T. A. (1998). Efficacy of risk-reduction counseling to prevent human immunodeficiency virus and sexually transmitted diseases: A randomized controlled trial. Project RESPECT study group. *JAMA: The Journal of the American Medical Association*, 280(13), 1161-1167.
- Kelvin, E. A., Cheruvillil, S., Christian, S., Mantell, J. E., Milford, C. Rambally-Greener, L., ... Smit, J. A. (2016). Choice in HIV testing: The acceptability and anticipated use of a self-administered at-home oral HIV test among South Africans. *African Journal of AIDS Research*, 15(2), 99-108. doi: 10.2989/16085906.2016.1189442.
- Kenny, D. A., Kashy, D. A., & Bolger, N. (1998). Data analysis in social psychology. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology*, 1(4th ed., pp. 233-265). Boston, MA: McGraw-Hill.
- Kerani, R. P., Fleming, M., & Golden, M. R. (2013). Acceptability and intention to seek medical care after hypothetical receipt of patient-delivered partner therapy or electronic partner notification postcards among men who have sex with men: The partner's perspective. *Sexually Transmitted Diseases*, 40(2), 179-185. doi:10.1097/OLQ.0b013e31827adc06
- Kerani, R. P., Fleming, M., DeYoung, B., & Golden, M. R. (2011). A randomized, controlled trial of inSPOT and patient-delivered partner therapy for gonorrhea and chlamydial

- infection among men who have sex with men. *Sexually Transmitted Diseases*, 38(10), 941-946. doi:10.1097/OLQ.0b013e318223fcbc
- Kerns, J. L., Jones, H. E., Pressman, E. J., Fratarelli, L. A., Garth, J., & Westhoff, C. L. (2011). Implementation of expedited partner therapy among women with chlamydia infection at an urban family planning clinic. *Sexually Transmitted Diseases*, 38(8), 722-726. doi:10.1097/OLQ.0b013e318214bb83
- Kissinger, P., Brown, R., Reed, K., Salifou, J., Drake, A., Farley, T. A., & Martin, D. H. (1998). Effectiveness of patient delivered partner medication for preventing recurrent chlamydia trachomatis. *Sexually Transmitted Infections*, 74(5), 331-333.
- Kissinger, P., Mohammed, H., Richardson-Alston, G., Leichter, J. S., Taylor, S. N., Martin, D. H., & Farley, T. A. (2005). Patient-delivered partner treatment for male urethritis: A randomized, controlled trial. *Clinical Infectious Diseases*, 41(5), 623-629. doi:10.1086/432476
- Kissinger, P., Schmidt, N., Mohammed, H., Leichter, J. S., Gift, T. L., Meadors, B., ... Farley, T. A. (2006). Patient-delivered partner treatment for trichomonas vaginalis infection: A randomized controlled trial. *Sexually Transmitted Diseases*, 33(7), 445-450. doi:10.1097/01.olq.0000204511.84485.4c
- Krosnick, J. A. (1991). Response strategies for coping with the cognitive demands of attitude measures in surveys. *Applied cognitive psychology*, 5(3), 213-236.
- Lee, S. J., Brooks, R., Bolan, R. K., & Flynn, R. (2013). Assessing willingness to test for HIV among men who have sex with men using conjoint analysis, evidence for uptake of the FDA-approved at-home HIV test. *AIDS Care*, 25(12), 1592-1598. doi: 10.1080/09540121.2013.793272
- Lee, T., Cai, L., MacCallum, R. C. (2012). Power analysis for tests of structural equation models. In Hoyle, R. H. (Ed.), *Handbook of Structural Equation Modeling* (pp. 181). New York: The Guilford Press.
- Leichter, J. S., Ellen, J. M., & Gunn, R. A. (2007). STD repeaters: Implications for individual and STD transmission in a population. In S. O. Aral, & J. M. Douglas Jr (Eds.), *Behavioral interventions for prevention and control of sexually transmitted diseases* (pp. 354). New York, NY: Springer Science+Business Media, LLC.
- Low, N., Heijne, J. C., Herzog, S. A., & Althaus, C. L. (2014). Reinfection by untreated partners of people treated for chlamydia trachomatis and neisseria gonorrhoeae: Mathematical modelling study. *Sexually Transmitted Infections*, 90(3), 254-256. doi:10.1136/sextrans-2013-051279
- Low, N., McCarthy, A., Roberts, T. E., Huengsberg, M., Sanford, E., Sterne, J. A., ... Egger, M. (2006). Partner notification of chlamydia infection in primary care: Randomized controlled trial and analysis of resource use. *BMJ (Clinical Research Ed.)*, 332(7532), 14-19. doi:10.1136/bmj.38678.405370.7C
- Magnus, M., Schillinger, J. A., Fortenberry, J. D., Berman, S. M., & Kissinger, P. (2006). Partner age not associated with recurrent chlamydia trachomatis infection, condom use, or partner treatment and referral among adolescent women. *The Journal of Adolescent Health*, 39(3), 396-403. doi:S1054-139X(06)00019-X
- Mansoor, L. E., Karim, Q. A., Werner, L., Madlala, B., Ngcobo, N., Cornman, D. H., ... Karim, S. S. (2014). Impact of an adherence intervention on the effectiveness of tenofovir gel in the CAPRISA 004 trial. *AIDS and Behavior*, 18(5), 841-848

- McBride, K. R., Goldsworthy, R. C., & Fortenberry, J. D. (2010). Patient and partner perspectives on patient-delivered partner screening: Acceptability, benefits, and barriers. *AIDS Patient Care and STDs*, 24(10), 631-637. doi:10.1089/apc.2010.0109
- McBride, K., Goldsworthy, R. C., & Fortenberry, J. D. (2009). Formative design and evaluation of patient-delivered partner therapy informational materials and packaging. *Sexually Transmitted Infections*, 85(2), 150-155. doi:10.1136/sti.2008.033746
- McNutt, L. A., Davis, C. F., Bednarczyk, R. A., Fischer, A., Zeolla, M., & Coles, B. F. (2009). Alternative approaches to partner notification, diagnosis, and treatment: Pharmacists' perspectives on proposed patient delivered partner therapy in New York State, 2007. *Sexually Transmitted Diseases*, 36(3), 178-184. doi:10.1097/OLQ.0b013e31818eb73c
- Melvin, L., Cameron, S. T., Glasier, A., Scott, G., Johnstone, A., & Elton, R. (2009). Preferred strategies of men and women for managing chlamydial infection. *BJOG: An International Journal of Obstetrics and Gynaecology*, 116(3), 357-365. doi:10.1111/j.1471-0528.2008.01977.x
- Mickiewicz, T., Al-Tayyib, A., Thrun, M., & Rietmeijer, C. (2012). Implementation and effectiveness of an expedited partner therapy program in an urban clinic. *Sexually Transmitted Diseases*, 39(12), 923-929. doi:10.1097/OLQ.0b013e3182756f20
- Mohammed, H., Leichter, J. S., Schmidt, N., Farley, T. A., & Kissinger, P. (2010). Does patient-delivered partner treatment improve disclosure for treatable sexually transmitted diseases? *AIDS Patient Care and STDs*, 24(3), 183-188. doi:10.1089/apc.2009.0237
- Montano, D. E. & Kasprzyk, D. (2008). Theory of Reasoned Action, Theory of Planned Behavior, and the Integrated Behavioral Model. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health Behavior and Health Education: Theory, Research, and Practice* (pp. 68-96). 4<sup>th</sup> ed. San Francisco, CA: Jossey-Bass.
- Morris, J. L., Lippman, S. A., Philip, S., Bernstein, K., Neilands, T. B., & Lightfoot, M. (2014). Sexually transmitted infection related stigma and shame among African American male youth: Implications for testing practices, partner notification, and treatment. *AIDS Patient Care and STDs*, 28(9), 499-506. doi:10.1089/apc.2013.0316
- Newman, L. M., Warner, L., & Weinstock, H. S. (2006). Predicting subsequent infection in patients attending sexually transmitted disease clinics. *Sexually Transmitted Diseases*, 33(12), 737-742. doi:10.1097/01.olq.0000218865.37084.f6
- Nunnally, J. C. & Bernstein, I. H. (1994). *Psychometric Theory*. 3rd ed. New York: McGraw-Hill.
- Nusbaum, M. R., Wallace, R. R., Slatt, L. M., & Kondrad, E. C. (2004). Sexually transmitted infections and increased risk of co-infection with human immunodeficiency virus. *The Journal of the American Osteopathic Association*, 104(12), 527-535.
- Nuwaha, F., Kambugu, F., Nsubuga, P. S., Hojer, B., & Faxelid, E. (2001). Efficacy of patient-delivered partner medication in the treatment of sexual partners in Uganda. *Sexually Transmitted Diseases*, 28(2), 105-110.
- Owusu-Edusei, K., Jr, Chesson, H. W., Gift, T. L., Tao, G., Mahajan, R., Ocfemia, M. C., & Kent, C. K. (2013). The estimated direct medical cost of selected sexually transmitted infections in the United States, 2008. *Sexually Transmitted Diseases*, 40(3), 197-201. doi:10.1097/OLQ.0b013e318285c6d2
- Pavlin, N. L., Parker, R. M., Piggan, A. K., Hopkins, C. A., Temple-Smith, M. J., Fairley, C. K., . . . Chen, M. Y. (2010). Better than nothing? Patient-delivered partner therapy and partner

- notification for chlamydia: The views of Australian general practitioners. *BMC Infectious Diseases*, 10, 274-2334-10-274. doi:10.1186/1471-2334-10-274
- Pitpitan, E. V., Kalichman, S. C., Garcia, R. L., Cain, D., Eaton, L. A., & Simbayi, L. C. (2015). Mediators of behavior change resulting from a sexual risk reduction intervention for STI patients, Cape Town, South Africa. *Journal of Behavioral Medicine*, 38(2), 194-203. doi: 10.1007/s10865-014-9591-4
- Radovic, A., Burstein, G. R., Marshal, M. P., Murray, P. J., Miller, E., & Sucato, G. S. (2013). Adolescents' attitudes toward expedited partner therapy for sexually transmitted infections. *Sexually Transmitted Diseases*, 40(11), 894-897. doi:10.1097/OLQ.0000000000000034
- Ricks, J. M., Swartzendruber, A. L., Sales, J. M., Boyce, L. S., DiClemente, R. J., & Rose, E. (2015). Acceptance of and experiences utilising expedited partner therapy among African-American juvenile girls. *Sexual Health*, doi:10.1071/SH15050
- Ritchie, J., Lewis, J., Elam, G., Tennant, R., & Rahim, N. (2013). Designing and Selecting Samples. In J. Ritchie, J. Lewis, C. M. Nicholls, & R. Ormston (Eds.), *Qualitative research practice* (2<sup>nd</sup> ed.) (pp. 111). Thousand Oaks, CA: SAGE Publications Inc.
- Rosenfeld, E. A., Marx, J., Terry, M. A., Stall, R., Pallatino, C., Borrero, S., & Millwer, E. (2015). Intimate partner violence, partner notification, and expedited partner therapy: A qualitative study. *International Journal of STD and AIDS*, 27(8), 656-661. doi: 10.1177/0956462415591938
- Schillinger, J. A., Kissinger, P., Calvet, H., Whittington, W. L., Ransom, R. L., Sternberg, M. R., ... Fortenberry, J. D. (2003). Patient-delivered partner treatment with azithromycin to prevent repeated chlamydia trachomatis infection among women: A randomized, controlled trial. *Sexually Transmitted Diseases*, 30(1), 49-56.
- Schumacher, C. M., & Ghanem, K. G. (2013). Retreatment rates for uncomplicated gonorrhea infection: Comparing ceftriaxone and azithromycin versus ceftriaxone and doxycycline. *Sexually Transmitted Diseases*, 40(7), 539-545. doi:10.1097/OLQ.0b013e3182941325
- Schwebke, J. R. & Desmond, R. A. (2010). A randomized controlled trial of partner notification methods for prevention of trichomoniasis in women. *Sexually Transmitted Diseases*, 37(6), 392-396. doi:10.1097/OLQ.0b013e3181dd1691
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Belmont, CA: Wadsworth
- Shiely, F., Hayes, K., Thomas, K. K., Kerani, R. P., Hughes, J. P., Whittington, W. L., . . . Golden, M. R. (2010). Expedited partner therapy: A robust intervention. *Sexually Transmitted Diseases*, 37(10), 602-607. doi:10.1097/OLQ.0b013e3181e1a296
- Shivasankar, S., Challenor, R., & Ekanayaka, R. (2008). Patient-delivered partner therapy in the UK: What do patients think? *International Journal of STD & AIDS*, 19(7), 433-436. doi:10.1258/ijsa.2008.008004
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological Methodology*, 13 (pp. 290-312). Washington DC: American Sociological Association.
- Spencer, L., Ritchie, J. Ormston, R., O'Conner, W. & Barnard, M. (2013). Analysis: Principles and Processes. In J. Ritchie, J. Lewis, C. M. Nicholls, & R. Ormston (Eds.), *Qualitative research practice* (2<sup>nd</sup> ed.) (pp. 269). Thousand Oaks, CA: SAGE Publications Inc.

- Steen, R., Wi, T. E., Kamali, A., & Ndowa, F. (2009). Control of sexually transmitted infections and prevention of HIV transmission: Mending a fractured paradigm. *Bulletin of the World Health Organization*, 87(11), 858-865.
- Stephens, S. C., Bernstein, K. T., Katz, M. H., Philip, S. S., & Klausner, J. D. (2010). The effectiveness of patient-delivered partner therapy and chlamydial and gonococcal reinfection in San Francisco. *Sexually Transmitted Diseases*, 37(8), 525-529. doi:10.1097/OLQ.0b013e3181d8920f
- Sutcliffe, L., Brook, M. G., Chapman, J. L., Cassell, J. M., & Estcourt, C. S. (2009). Is accelerated partner therapy a feasible and acceptable strategy for rapid partner notification in the UK?: A qualitative study of genitourinary medicine clinic attenders. *International Journal of STD & AIDS*, 20(9), 603-606. doi:10.1258/ijsa.2009.009036
- Sutton, M., Sternberg, M., Koumans, E. H., McQuillan, G., Berman, S., & Markowitz, L. (2007). The prevalence of trichomonas vaginalis infection among reproductive-age women in the United States, 2001-2004. *Clinical Infectious Diseases*, 45(10), 1319-1326. doi:CID51020
- Taylor, M. M., Reilley, B., Yellowman, M., Anderson, L., de Ravello, L., & Tulloch, S. (2013). Use of expedited partner therapy among chlamydia cases diagnosed at an urban Indian health centre, Arizona. *International Journal of STD & AIDS*, 24(5), 371-374. doi:10.1177/0956462412472825
- Temkin, E., Klassen, A. C., Mmari, K., & Gillespie, D. G. (2011). A qualitative study of patients' use of expedited partner therapy. *Sexually Transmitted Diseases*, 38(7), 651-656. doi:10.1097/OLQ.0b013e31820cb206
- Tomnay, J. E., Pitts, M. K., Kuo, T. C., & Fairley, C. K. (2006). Does the internet assist clients to carry out contact tracing? A randomized controlled trial using web-based information. *International Journal of STD & AIDS*, 17(6), 391-394. doi:10.1258/095646206777323391
- Vaidya, S., Johnson, K., Rogers, M., Nash, D., & Schillinger, J. A. (2014). Predictors of index patient acceptance of expedited partner therapy for chlamydia trachomatis infection and reasons for refusal, sexually transmitted disease clinics, New York City, 2011 to 2012. *Sexually Transmitted Diseases*, 41(11), 690-694. doi:10.1097/OLQ.
- Walsh, J. L., Senn, T. E., Scott-Sheldon, L. A., Vanable, P. A., & Carey, M. P. (2011). Predicting condom use using the Information-Motivation-Behavioral Skills (IMB) model: A multivariate latent growth curve analysis. *Annals of Behavioral Medicine*, 42(2), 235-244. doi: 10.1007/s12160-011-9284-y
- Wasserheit, J. N. (1992). Epidemiological synergy. interrelationships between human immunodeficiency virus infection and other sexually transmitted diseases. *Sexually Transmitted Diseases*, 19(2), 61-77.
- Wildsmith E, Schelar, E, Peterson, K, Manlove, J. (2010). Sexually transmitted diseases among youth adults: Prevalence, perceived risk, and risk-taking behaviors. *Child Trends*, Publication #2010-10. <http://www.childtrends.org/wp-content/uploads/2013/06/2010-10SexuallyTransmittedDisease.pdf>
- Willis, G. B. (2005). Cognitive interviewing: A tool for improving questionnaire design. New York, NY: SAGE.
- Wilson, T. E., Hogben, M., Malka, E. S., Liddon, N., McCormack, W. M., Rubin, S. R., & Augenbraun, M. A. (2009). A randomized controlled trial for reducing risks for sexually transmitted infections through enhanced patient-based partner notification. *American*

- Journal of Public Health*, 99 Suppl 1, S104-10. doi:10.2105/AJPH.2007.112128;  
10.2105/AJPH.2007.112128
- Workowski, K. A., Bolan, G. A., & Centers for Disease Control and Prevention (CDC). (2015). Sexually transmitted diseases treatment guidelines, 2015. *MMWR: Morbidity and Mortality Weekly Report.*, 64(RR-03), 1-137. doi:rr6403a1
- Young, T., de Kock, A., Jones, H., Altini, L., Ferguson, T., & van de Wijgert, J. (2007). A comparison of two methods of partner notification for sexually transmitted infections in South Africa: Patient-delivered partner medication and patient-based partner referral. *International Journal of STD & AIDS*, 18(5), 338-340. doi:10.1258/095646207780749781

## Appendix A: Clinic Demographic Screening Form

**Directions:** Complete this screening form in a private location of the STI clinic. Remind participants that this survey is completely voluntary, all of their responses are confidential, and that participation is not required to be seen at the clinic. If they agree to participate, continue with the questions below. If the participant is concerned about the confidentiality of their responses, they may choose not to answer one or more of the questions. To be recruited for the study, participants must at least respond that they are 18 years of age or older.

1. What is your **age**?  
 \_\_\_\_\_ (#)
2. What **sex** were you assigned at birth on your original birth certificate?  
 Male (1)  
 Intersex (2)  
 Female (3)
3. Which of the following best describes your **gender**?  
 Man (1)  
 Woman (0)  
 Other (please specify): \_\_\_\_\_ (7)
4. Which of the following best describes your **race**? (*select all that apply*)  
 Alaskan Native / American Indian (1)  
 Asian (2)  
 Black / African American (3)  
 Native Hawaiian / Pacific Islander (4)  
 White / Caucasian (5)  
 Other (please specify): \_\_\_\_\_ (7)
5. Are you of Hispanic / Latino **ethnicity**?  
 Yes (1)  
 No (0)
6. What brought you in to the STI clinic **today**? (*select only one option*)  
 Symptoms of an STI (1)  
 Contact with someone who had an STI (2)  
 Treatment after receiving a positive test for an STI (3)  
 Regular STI screening (“checkup”) (4)  
 Other (please specify): \_\_\_\_\_ (7)
7. If you had a positive test for an STI today, what would be your **first-choice preference** for notifying a partner? (*select only one option*)  
 Have a member of clinic staff call your partner(s) (1)  
 Deliver medications to your partner(s) yourself (2)  
 Deliver a prescription for medications to your partner(s) yourself (3)  
 Tell your partners yourself without medications or prescription (4)  
 None of the above – you are not willing to notify any of your partners by any method (5)

**Research study eligibility:** *Participant is 18 years of age or older.*

**Is this participant eligible?**

- Yes (1)
- No (0)

**If eligible,**

1. Request to have the participant to sign a “Consent to Call” form.
2. Schedule participant survey/interview.

**Scheduled Survey/Interview:**

Date: \_\_\_\_\_

Time: \_\_\_\_\_ or  Post-clinic visit

**Reason for refusal (if applicable):**

---

---

**Completed study?**

- Yes (1)
- No (0)

**Reason for not completing study? (select all that apply)**

- No Show (1)
- Phone Disconnected / Unable to Contact (2)
- Later Refusal (3)
- Other (please specify below) (7)

---

---

## Appendix B: IRB Approval Letter



Melody Harries

Engelmann 270  
PP. O. Box 413  
Milwaukee, WI 53201-0413

(414) 229-3182 *phone*  
(414) 229-6729 *fax*

Department of University Safety & Assurances

### **Modification/Amendment - IRB Expedited Approval**

<http://www.irb.uwm.edu>  
[harries@uwm.edu](mailto:harries@uwm.edu)

**Date:** March 1, 2016

**To:** Lance Weinhardt, PhD

**Dept:** Zilber School of Public Health

**Cc:** Steven John

**IRB#:** 16.067

**Title:** Patient-Delivered Partner Therapy: Elicitation Research Using a Convergent, Parallel Mixed-Method Study Design to Support the Development of a Behavioral Intervention for Sexually Transmitted Infection Clinic Patients

After review of your research protocol by the University of Wisconsin – Milwaukee Institutional Review Board, your protocol has received modification/amendment approval for:

- Title change
- Inclusion of preparatory qualitative interviews
- Inclusion of a survey pre-test with cognitive interviews
- Removal of the pilot randomized controlled trial
- Updates to data collection instruments

IRB approval will expire on **September 29, 2016**. If you plan to continue any research related activities (e.g., enrollment of subjects, study interventions, data analysis, etc.) past the date of IRB expiration, a Continuation for IRB Approval must be filed by the submission deadline. If the study is closed or completed before the IRB expiration date, please notify the IRB by completing and submitting the Continuing Review form in IRBManager.

Any proposed changes to the protocol must be reviewed by the IRB before implementation, unless the change is specifically necessary to eliminate apparent immediate hazards to the subjects. The principal investigator is responsible for adhering to the policies and guidelines set forth by the UWM IRB, maintaining proper documentation of study records and promptly reporting to the IRB any adverse

events which require reporting. The principal investigator is also responsible for ensuring that all study staff receive appropriate training in the ethical guidelines of conducting human subjects research.

As Principal Investigator, it is also your responsibility to adhere to UWM and UW System Policies, and any applicable state and federal laws governing activities which are independent of IRB review/approval (e.g., [FERPA](#), [Radiation Safety](#), [UWM Data Security](#), [UW System policy on Prizes, Awards and Gifts](#), state gambling laws, etc.). When conducting research at institutions outside of UWM, be sure to obtain permission and/or approval as required by their policies.

Contact the IRB office if you have any further questions. Thank you for your cooperation, and best wishes for a successful project.

Respectfully,

Melody Harries  
IRB Administrator

## Appendix C: Phase 1 Qualitative Interview Guide

### Qualitative Interview Guide – Survey Development (N=5)

*Note: This interview guide is used as a framework for mapping the participant interview. This interview is intended to last 90 minutes. The goal of this interview is to elicit potential responses to survey measures that may not be captured based on a literature review alone.*

#### **Introduction**

1. Introduce yourself and the interview to the participant:
  - a. *“We’ll talk together for about 90 minutes. This session will be audio recorded. To protect your confidentiality, this audio recording will only be identified by a study ID number assigned to you.”*
  - b. *“I’d like to remind you that everything we talk about today is confidential.”*
  - c. *“Any questions before we begin?”*
2. Begin audio recording and open with a verbal timestamp:
  - a. *Today’s date is \_\_\_\_\_ (date). The interview is starting at \_\_\_\_\_ (time).”*
3. Opening statement:
  - a. *“The **purpose** of this interview is to learn about your opinions of patient-delivered partner therapy, which is a method of partner treatment where you deliver medications to your sexual partners for treatment of a sexually transmitted infection. For instance, imagine you had a positive test for chlamydia when screened at the clinic. Clinic nurses would give you antibiotics for you to take in the clinic, but you would also be given extra medications to take to your sexual partners for their treatment as well.”*

#### **Knowledge**

1. Information needed by patients
  - a. *“If you had any **immediate questions** that came to mind about this method of partner treatment, what are they?”*
  - b. *“What [other] types of **information** would be important for you to feel comfortable delivering medications to your sexual partners for their treatment”*
2. Additional information not known by patients
  - a. *“[Beyond what you have already told me...]. What are some **questions** you might ask a healthcare provider before considering if you would deliver medications to your sexual partners?”*

## Attitudes

1. Protection beliefs (individual and partner)
  - a. *“If you had the ability to deliver medications to your sexual partners, how would that make you **feel**?”*
  - b. *“What are some reasons why getting your **sexual partners treated** is **important to you**?”*
2. Attitudinal barriers
  - a. *“What are some reasons why **telling** a sexual partner of an STI might be **difficult**?”*
  - b. *“How does the inclusion of **medication** for your partner **affect your feelings** about notifying him or her about the sexually transmitted infection or STD?”*
3. STI shame and stigma
  - a. *“If you had a positive test for a **bacterial STI** such as chlamydia, how would that make you **feel**?”*
  - b. *“What do you **think of other people** who get **STIs**?”*

## Subjective Norms

1. Partners
  - a. *“How do you think your **partner(s)** would **feel** about this method of receiving treatment?”*
    - i. *“How do you think your partner’s opinion of this method **influences your own**?”*
      1. *“If you thought your partner would have a negative view of this method, how might you use this method in a way to **help get him/her treatment**?”*
    - ii. *“In what ways could your **partner’s support be improved**?”*
2. Healthcare providers
  - a. *“How do you think your clinic **healthcare provider** would feel about this method of partner treatment?”*
    - i. *“How do you think your **healthcare provider’s opinion** of this method **influences your own**?”*

## Behavioral Skills

1. *“What **skills** do you think are important for you to have to **notify** your sexual partner(s)?”*
  - a. *“Describe how these **skills** you just described **match** with your own right now?”*
2. *“How do you feel adding **medications** for you to deliver to your partners affects the necessary **skills needed** to be successful in getting your partner treated?”*
  - a. *“Describe how these **skills** you just described **match** your own right now?”*

## **Barriers/Facilitators**

*“We are now nearing the end of this interview – just a few more questions.”*

1. *“[Beyond what you’ve already told me...]. What might **get in the way** of you being able to deliver medications for you to treat your sexual partner(s)?”*
2. *“What do you think could **help you** deliver medications to your sexual partner(s)?”*
3. *“What other types of things **need to happen** in order for you to be able to deliver medications to your sexual partner(s)?”*

## **Conclusion**

*“Before we conclude the interview, is there anything you’d like to tell me about the types of things we discussed that you hadn’t had the chance to before?”*

--

*“This is the end of the interview. I’d just like to say **thank you** for your participation. The time is \_\_\_\_\_ (time).”* Turn the audio recorder off.

## Appendix D: Cognitive Interview Guide

### **Survey Cognitive Interview**

*Note: The facilitation of this cognitive interview will follow a think-aloud protocol with scripted and unscripted probing questions. The purpose of these cognitive interviews is to pretest the quantitative survey, identify problematic questions, and help determine construct validity. The survey will be administered using Qualtrics, an online survey-friendly format and page setup, but the participant will conduct this survey with an interviewer asking additional questions. Scripted probing questions are listed in bold.*

#### **Instructions:**

1. “We’ll talk together for about 2 hours. This session will be audio recorded. To protect your confidentiality, this audio recording will only be identified by a study ID number assigned to you.”
2. “I’d like to remind you that everything we talk about today is confidential.”
3. “We are interested in what you think about as you answer some questions on this computerized survey. In order to do this, I am going to ask you to **THINK ALOUD**. What I mean by think aloud is that I want you to tell me everything you are thinking from the time you first read the question until you give an answer. In this process, I would also like you to read the question aloud to me. I don’t want you to plan out what you are saying or try to explain your answers to me. Just act as if you are alone in the room speaking to yourself. It is important that you keep talking. If you are silent for any long period of time, I will ask you to speak.”
4. “Any questions before we begin?”

#### **Sample Unscripted Questions:**

1. What were you thinking about?
2. How did you come up with your answer?
3. What do you think the term \_\_\_\_\_ means?
4. Tell me in your own words what this question means.
5. Tell me more why you chose the answer that you did.

## **Background**

*Please answer each of the following questions about you.*

1. Have you **ever** been diagnosed with an **STI**? (*STI = sexually transmitted infection*).
  - a. **How do you define STI?**
    - i. [If no to #1, skip] How many of your prior sex partners (90 days before infection) did you **notify** of their possibility of having an STI after your most recent STI diagnosis?
      1. **How do you define sex partner?**
      2. **How did you recall the 90 days prior to your last STI?**
2. What brought you to the STI clinic on the day of your clinic visit? (*select all that apply*)
  - a. **How do you define check-up?**
3. Imagine you were diagnosed with an STI today. Which of the following **methods** of partner notification would you be **willing** to use? (*select all that apply*)
  - a. **How did you come up with that answer?**
4. What is your **first-choice preference** for partner notification? (*select only one option*)
  - a. **What questions do you have about the response categories?**

## **Relationship Characteristics**

*Please answer each of the following questions about you.*

1. How many sexual partners have you had in the past 90 days?
  - a. **Would you tell me in your own words what this question means?**
    - i. [If zero above, skip]: How many of these sexual partners would you classify as “main” sexual partners?
      1. **Tell me how you would describe a main sexual partner?**
2. Which of the following describes your sexual practices in the past 90 days?
  - a. **When you answered this question, did you think about the past 90 days or 3 months?**
3. On average, how frequently did you use a condom during sex (vaginal, oral, and anal) in the past 90 days?
  - a. **Did you think about each of these sexual acts – vaginal, oral, and anal – together or separately to come to your answer?**

## **HIV Knowledge Questionnaire (HIV-KQ-18)**

*For each statement below, please respond true (T), false (F), or I don't know (DK). If you don't know, please do not guess; instead, please circle DK.*

*HIV = human immunodeficiency virus; AIDS = acquired immunodeficiency syndrome*

*[Response categories: Yes; No; I Don't Know]*

1. Coughing and sneezing DO NOT spread HIV.
2. A person can get HIV by sharing a glass of water with someone who has HIV.
3. Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex.
4. A woman can get HIV if she has anal sex with a man.
5. Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV.
6. All pregnant women infected with HIV will have babies born with AIDS.
7. People who have been infected with HIV quickly show serious signs of being infected.
8. There is a vaccine that can stop adults from getting HIV.
9. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.
10. A woman cannot get HIV if she has sex during her period.
11. There is a female condom that can help decrease a woman's chance of getting HIV.
12. A natural skin condom works better against HIV than does a latex condom.
13. A person will NOT get HIV if she or he is taking antibiotics.
14. Having sex with more than one partner can increase a person's chance of being infected with HIV.
15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV.
16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.
17. A person can get HIV from oral sex.
18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV.

**Were there any particular statements that you thought were confusing?**

**Do you feel you answered any question with a *true* or *false* response when you think you could have answered *I don't know* instead?**

### **STD-KQ-32 (Adapted STD-KQ)**

*For each statement below, please respond true (T), false (F), or I don't know (DK). If you don't know, please do not guess; instead, please circle DK.*

*STI = Sexually Transmitted Infection*

1. Genital Herpes is caused by the same virus as HIV.
2. Frequent urinary infections can cause Chlamydia.
3. There is a cure for Gonorrhea.
4. It is easier to get HIV if a person has another Sexually Transmitted Infection (STI).
5. Human Papillomavirus (HPV) is caused by the same virus that causes HIV.
6. Having anal sex increases a person's risk of getting Hepatitis B.
7. Soon after infection with HIV a person develops open sores on his or her genitals (penis or vagina).
8. There is a cure for Chlamydia.
9. A woman who has Genital Herpes can pass the infection to her baby during childbirth.
10. A woman can look at her body and tell if she has Gonorrhea.
11. The same virus causes all of the STIs.
12. Human Papillomavirus (HPV) can cause Genital Warts.
13. Using a natural skin (lambskin) condom can protect a person from getting HIV.
14. Human Papillomavirus (HPV) can lead to cancer in women.
15. A man must have vaginal sex to get Genital Warts.
16. STIs can lead to health problems that are usually more serious for men than women.
17. A woman can tell that she has Chlamydia if she has a bad smelling odor from her vagina.
18. If a person tests positive for HIV the test can tell how sick the person will become.
19. There is a vaccine available to prevent a person from getting Gonorrhea.
20. A woman can tell by the way her body feels if she has an STI.
21. A person who has Genital Herpes must have open sores to give the infection to his or her sexual partner.
22. There is a vaccine that prevents a person from getting Chlamydia.
23. A man can tell by the way his body feels if he has Hepatitis B.
24. If a person had Gonorrhea in the past he or she is immune (protected) from getting it again.
25. Human Papillomavirus (HPV) can cause HIV.
26. A man can protect himself from getting Genital Warts by washing his genitals after sex.
27. There is a vaccine that can protect a person from getting Hepatitis B.
28. There is a cure for Trichomoniasis.
29. A man can look at his body and tell if he has Trichomoniasis.
30. There is a vaccine that prevents a person from getting Trichomoniasis.
31. If a person had Trichomoniasis in the past he or she is immune (protected) from getting it again.

32. There is a vaccine that prevents a person from getting Human Papillomavirus (HPV).

**Were there any particular statements that you thought were confusing?**

**Do you feel you answered any question with a *true or false* response when you think you could have answered *I don't know* instead?**

**Partner Treatment Knowledge Questionnaire (PT-KQ-6)**

*For each statement below, please respond true (T), false (F), or I don't know (DK). If you don't know, please do not guess; instead, please circle DK.*

*[Response categories: True; False; I Don't Know]*

You've received a positive test for a bacterial Sexually Transmitted Infection (STI; e.g., chlamydia, gonorrhea, or trichomoniasis) and you've taken the prescribed medication as directed.

1. ... It is not possible for your most recent unprotected sex partner to have the same infection as you because he or she isn't showing any signs or symptoms of an STI.
2. ... Having unprotected sex with the same partner as before who hasn't been tested or treated increases your risk of getting that STI again.
3. ... Your same partner as before isn't showing any signs or symptoms of an infection and doesn't get tested. Having unprotected sex with this partner increases your risk of getting that STI again.
4. ... Your same partner as before gets treated at the same time as you, but you're not sure if your partner has any other sex partners besides you. Having unprotected sex with this partner increases your risk of getting that STI again.
5. ... Not having sex with your previous partner decreases your risk of getting that STI again.
6. ... You cannot get the same STI again if you have unprotected sex with a new partner.

**Were there any particular statements that you thought were confusing?**

**Do you feel you answered any question with a *true or false* response when you think you could have answered *I don't know* instead?**

## **Attitudes**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

### **Individual Protection Beliefs**

1. I can reduce my chance of getting another STI if my partner gets treated.
  - a. **Describe what you think *reduce your chance* means.**
2. I do not want to have unprotected sex with my partner until he or she receives treatment.
  - a. **What does *unprotected sex* mean to you? What type of sexual activities?**
3. My sexual health is not important to me.
  - a. **What does it mean to protect your *sexual health*?**
4. I want to avoid getting another STI.
  - a. **Tell me more why you chose the answer that you did.**
5. I worry about the risks of unsafe sex.
  - a. **What are some *risks of unsafe sex*?**
6. I would NOT be worried if I had unprotected sex with someone who tested positive for an STI.
  - a. **Tell me more why you chose the answer that you did.**

### **Infidelity Worry, Embarrassment & Anxiety**

1. I would be embarrassed to tell my partner that I have an STI.
  - a. **What does *embarrass* mean to you?**
2. It would be easy to tell my partner about my STI diagnosis.
  - a. **Who would you consider your *partner*?**
3. I am worried my partner might think I have been unfaithful if I am diagnosed with an STI.
  - a. **How did you come up with that answer?**
4. I worry what my partner will think if I tell them I have an STI.
  - a. **What types of things do you (not) *worry* about?**
5. Telling my partner about my STI would be stressful.
  - a. **Tell me more why you chose the answer that you did.**
6. I worry my partner won’t believe I have tested positive for an STI.
  - a. **How did you come up with that answer?**
7. I believe my partner will respect me more for telling them that I have an STI.
  - a. **What does *respect* mean to you in this instance?**
8. Telling my partner about my STI would be awkward.
  - a. **Tell me more why you chose that answer.**
9. Telling my partner about my STI would cause an argument.
  - a. **How did you come up with that answer?**
10. My partner would think I care about their health if I told them about my STI diagnosis.

- a. Describe what you think *their health* means in this instance?

### **STI Stigma**

1. I would feel dirty if a doctor examined me for STIs.
  - a. What does *dirty* mean to you in this question?
2. Getting an STI would make me feel lonely.
  - a. How did you come up with that answer?
3. Getting examined for STI makes people think I have poor morals.
  - a. Describe what you think *poor morals* means.
4. Most people I know think that an STI is a sign of a weak character.
  - a. What does *character* mean to you?
5. Getting an STI means I have poor morals.
  - a. Tell me how you came up with that answer.
6. I don't want others to see me at the STI clinic.
  - a. Which *STI clinic* are you referring to?
7. Going to an STI clinic is embarrassing.
  - a. Why did you select the answer that you did?
8. I feel very comfortable getting an STI screening.
  - a. What does *comfortable* mean to you in this question?
9. Only people with multiple sex partners get STIs.
  - a. Tell me how you came up with that answer.
10. Normal people get STIs.
  - a. Who are *normal people*?

### **STI Shame**

1. People with STIs have been hanging with the wrong crowd.
  - a. Tell me in your own words what this statement means.
2. Getting an STI means I don't keep myself clean.
  - a. Describe what you think *clean* means?
3. People with STIs should be ashamed of themselves.
  - a. Who are you thinking about when you read *people*?
4. Getting an STI means a person is dirty.
  - a. What does *dirty* mean to you?
5. Getting an STI means I don't take care of myself.
  - a. Tell me more how you came up with that answer.
6. Getting examined for an STI means I'm not clean.
  - a. Again, tell me in your own words what this statement means.
7. STIs are nothing out of the ordinary.
  - a. What does *ordinary* mean to you?
8. I would be crushed if I was diagnosed with an STI.
  - a. Tell me why you selected the answer that you did.
9. I would NOT blame myself if I was diagnosed with an STI.
  - a. Describe how you came up with your answer.
10. I would feel comfortable talking to a good friend about my STI diagnosis.

**a. How would you define a *good friend* in this instance?**

**PDPT Partner Protection Beliefs**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- Very untrue of what I believe to 5- Very true of what I believe]*

1. I could be sure my partner was treated if I gave him or her medications myself.
  - a. **What does *treated* mean to you?**
2. It would be easier to get my partner treated if they didn’t have to come to a clinic for treatment.
  - a. **Who is *partner* in this context to you?**
3. I am not responsible for making sure my partner gets treated.
  - a. **How did you come up with that answer?**
4. Only healthcare providers should give medications to my partners for treatment.
  - a. **Who is a *healthcare provider* to you?**
5. I do not feel qualified to deliver medications to my partners.
  - a. **What does *qualified* mean to you?**
6. It would be easier to tell my partner of my STI if could give him or her medications myself.
  - a. **What are the medications for in the context of this question?**
7. Partner treatment is not needed with condom use.
  - a. **Tell me more why you selected the answer that you did.**
8. My partner would miss out on counseling if I gave him or her treatment myself.
  - a. **What do you think *counseling* is within this context?**
9. It is safer for my partner to get tested before given treatment.
  - a. **Tell me in your own words what you think this statement means.**
10. My partner’s health is important to me.
  - a. **What component of your *partner’s health* are you referring to in your response?**
11. Delivering medications to my partner for treatment will make them respect me more.
  - a. **What does *respect* mean to you?**
12. Not informing my partner of the STI diagnosis is wrong.
  - a. **Tell me why you selected the answer that you did.**
13. Notifying my partner of an STI diagnosis is selfish.
  - a. **What do you think *selfish* means in this context?**

## **Community Protection Beliefs**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. Getting my partner treated will NOT stop the rate of STIs in my community.
  - a. **Describe the *community* you are referring to in this question.**
2. Getting my partner treated will disrupt STI transmission to others.
  - a. **Who do think *others* is referring to in this question?**
3. Partner treatment is important because no one is aware of their STI in my community.
  - a. **Tell me how you came up with that answer.**
4. I worry that my partner would give the STI to others if I didn’t make sure they were treated.
  - a. **Describe who you are referring to in *others* for this question.**
5. I would be worried if there was NOT enough accurate STI information in my community.
  - a. **How did you come up with your answer?**
6. I worry people in my community are not using condoms enough.
  - a. **Tell me in your own words what you think this question means.**
7. I would NOT worry if the rate of STIs was high in my community.
  - a. **Describe what you think a *high rate of STIs* is.**

## **Social Support**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- Very untrue of what I believe to 5- Very true of what I believe]*

1. I have someone who I can really count on to be dependable when I need help.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **Tell me how you came up with that answer.**
2. I have someone who I can really count on to help me feel more relaxed when I am under pressure or tense.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **Tell me how you came up with that answer.**
3. I have someone who accepts me totally, including both my worst and best points.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **Tell me how you came up with that answer.**
4. I have someone who I can really count on to care about me, regardless of what is happening to me.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **Tell me how you came up with that answer.**
5. I have someone who I can really count on to help me feel better when I am feeling generally down-in-the dumps.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **Tell me how you came up with that answer.**
6. I have someone who I can really count on to console me when I am very upset.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **What does the word *console* mean to you?**
7. I have someone who I can talk to about sexual health issues.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **What are *sexual health issues* to you?**
8. I have someone who I could talk to about an STI diagnosis without them judging me.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **Tell me how you came up with that answer.**
9. I have someone who would help me figure out how to notify a sexual partner if I had an STI.
  - a. **In a relationship description, who is this *someone* you are referring to?**
  - b. **Tell me how you came up with that answer.**

### **Subjective Norms (Partners)**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

### **Partner Normative Influences**

1. My partner would refuse treatment if I gave him or her medications myself.
  - a. **What do you think *refuse treatment* means?**
2. My partner would want me to bring him or her medications for treatment myself if I could.
  - a. **How did you come up with that answer?**
3. My partner would want to avoid going to the STI clinic for treatment.
  - a. **What is the *STI clinic* to you?**
4. My partner would think going to the STI clinic for treatment is embarrassing.
  - a. **Why did you select the answer that you did?**
5. My partner would want to avoid the stigma of the STI clinic.
  - a. **What does *stigma* mean to you?**
6. My partner would want to come to the STI clinic for treatment.
  - a. **How did you come up with the answer that you did?**

### **Partner Motivation to Comply**

If I knew my partner would want that,

1. ... I would deliver medications for treatment even if I think my partner would refuse.
2. ... I would bring treatment to my partner if I could.
3. ... I would help my partner avoid going to the STI clinic for treatment if I could.
4. ... I would help my partner avoid the embarrassment of the STI clinic if I could.
5. ... I would protect my partner against the stigma of the STI clinic if I could.
6. ... I would avoid bringing my partner medications if he or she wanted to come to the STI clinic for treatment.

**Only described by your relationship, who is the *partner* you were considering in this series of questions?**

**How did you answer if you have *more than one* partner?**

## **Subjective Norms (Healthcare Providers)**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- Very untrue of what I believe to 5- Very true of what I believe]*

### **Healthcare Provider Normative Influences**

1. My healthcare provider would want me to tell my partner of my STI so that they would get treatment.
  - a. **What type of *partner* do you think this question is referring to?**
2. My healthcare provider would want me to take medications to my partner if he or she gave them for me to do so.
  - a. **What do you think *medications* are referring to in this question?**
3. My healthcare provider only thinks treatment should be given to patients that come into the clinic for testing and treatment.
  - a. **Tell me more why you selected the answer that you did.**
4. My healthcare provider believes giving me medications to deliver to my partner is beneficial to my own health.
  - a. **How did you come up with that answer?**
5. My healthcare provider worries about giving me extra medications to deliver to my partners for fear of missing an opportunity to counsel my partner.
  - a. **What do you think *counsel* means in this context?**
6. My healthcare provider believes giving me medications to deliver to my partner is beneficial to my partner’s health.
  - a. **How do you think medications affect your *partner’s health*?**

### **Healthcare Provider Motivation to Comply**

If I knew my healthcare provider would want that,

1. ... I would tell my partner of my STI so that they would get treatment.
2. ... I would take medications to my partner if he or she gave them for me to do so.
3. ... I would NOT take medications to deliver to my partner if offered because I know he or she really wants my partner to come in for testing and treatment.
4. ... I would take medications to deliver to my partner because I know he or she thinks it is beneficial to my own health.
5. ... I would NOT take medications to deliver to my partner if offered because he or she is afraid of missing an opportunity to counsel my partner.
6. ... I would take medications to deliver to my partner because he or she thinks it is beneficial to my partner’s health.

**Who is the *healthcare provider* you were considering in this series of questions?**

**Did any of these previous questions confuse you? If so, which ones and why?**

## **Behavioral Skills**

### **Partner Notification Self-Efficacy**

How confident are you in your ability to

*[Response categories: 1- Not at all confident to 5- Extremely confident]*

1. ... Tell your partner of an STI?
  - a. **What does *confident* mean to you?**
2. ... Ask your partner to get STI testing?
  - a. **Tell me more why you selected the answer that you did.**
3. ... Ask your partner to get STI treatment?
  - a. **[If not previously asked] Define STI for me.**
4. ... Abstain from sex with your partner until he or she obtained STI treatment?
  - a. **What does *abstain from sex* mean to you?**
5. ... Ask your partner whether he or she was tested?
  - a. **Tell me in your own words what you think this question means.**
6. ... Ask your partner whether he or she was treated?
  - a. **What is the difference between *testing* and *treatment* to you?**
7. ... Deliver medications to your partner for treatment?
  - a. **Tell me more why you selected the answer that you did.**
8. ... Ask your partner to take medications for treatment delivered by you?
  - a. **Only described by your relationship, who is the *partner* you were considering in this series of questions?**

## PDPT Communication Skills Self-Efficacy

How confident are you in your ability to

*[Response categories: 1- Not at all confident to 5- Extremely confident]*

1. ... Communicate with your partner about sexual health issues?
  - a. **What types of *sexual health issues* come to mind when responding to this question?**
2. ... Know what to say when telling your partner about an STI?
  - a. **Tell me in your own words what you think this question means.**
3. ... Use familiar terms and avoid medical jargon when informing your partner about an STI?
  - a. **What is *medical jargon* to you?**
4. ... Avoid blame when telling your partner about an STI?
  - a. **Describe what you think *avoid blame* means to you?**
5. ... Place a positive spin on the situation of an STI?
  - a. **What does *placing a positive spin* mean to you?**
6. ... Tell your partner about an STI using your preferred method of communication?
  - a. **What is your *preferred method of communication*?**
7. ... Describe medical information you received at the STI clinic to your partner?
  - a. **Tell me more why you selected the answer that you did.**
8. ... Warn your partner of the risks of an untreated STI?
  - a. **Again, tell me in your own words what you think this question means.**
9. ... Be respectful of your partner's feelings?
  - a. **Tell me how you came up with that answer.**
10. ... Remain calm when telling your partner about an STI?
  - a. **Again, tell me how you came up with that answer.**

## **PDPT Barriers/Facilitators**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. I would be unable to contact all of my recent sexual partners (last 3 months).
  - a. **What methods of contact are you considering?**
2. I would be unable to pay for extra medications to give to my partner.
  - a. **At what cost do you think you would need to pay?**
3. My partner would refuse to take medications even if I delivered treatment to him or her myself.
  - a. **Tell me more why you selected the answer that you did.**
4. My partner would refuse to go to the clinic to receive testing and treatment.
  - a. **Tell me in your own words what this question means.**
5. I would not be able to deliver medications to all of my sexual partners because some of my relationships have ended.
  - a. **How do you define a relationship that has ended?**
6. I question how legal it is for me to deliver medications to my partners directly.
  - a. **Tell me what you think legal means in your own words.**
7. I would not take extra medications for my partners if I had to pay for them.
  - a. **Tell me more why you selected the answer that you did.**
8. Giving medications to me to take to my partner is convenient.
  - a. **Describe what you think convenient means.**
9. I would feel better about delivering medications to my partners if the medication came in a sealed container.
  - a. **What do you imagine this sealed container looks like?**
10. I would feel better about delivering medications to my partners if the medication came with a signed note from a healthcare provider.
  - a. **What do you imagine this signed note looks like?**
11. I would feel better about delivering medications to my partners if I received a paper copy of the test results.
  - a. **What do you imagine this paper copy of test results looks like?**
12. My partner would delay treatment because of their insurance status.
  - a. **Tell me more why you selected the answer that you did.**
13. I would not be able to deliver medications to my partner because of transportation difficulty.
  - a. **Tell me more why you selected the answer that you did.**
14. I worry about my safety notifying a partner of an STI.
  - a. **Tell me what you think this question means in your own words.**

## PDPT Acceptance, Willingness, and Behavioral Intentions

### Acceptance

*“It’s not uncommon for people to find some of the following treatment options unacceptable for their care. Don’t feel pressured to say that you would find something acceptable when you would not.”*

Imagine you were diagnosed with an STI **today**. How likely would you be to

*[Response categories: 1- Very unlikely to 5- Very likely]*

1. ... Accept medications to deliver to **all** of your recent sex partners (last 3 months) for treatment if provided from my healthcare provider?
  - a. **What does *accept medications* mean to you?**
2. ... Accept medications to deliver to your **main** recent sex partners (last 3 months) for treatment if provided from my healthcare provider?
  - a. **How do you define a *main recent sex partner*?**
3. ... Accept medications to deliver to your non-main/**other** recent sex partners (last 3 months) for treatment if provided from my healthcare provider?
  - a. **What type of person would you consider a *non-main/other recent sex partner*?**
  - b. **When you think of the *last 3 months*, how did you think about this time period?**

### Willingness

*“It’s not uncommon for people to be unwilling to do some of the following actions. Don’t feel pressured to say that you would be willing when you would not.”*

Imagine you were diagnosed with an STI **today**. How *willing* would you be to

*[Response categories: 1- Not at all willing to 5- Extremely willing]*

1. ... Notify **all** of your recent sex partners (last 3 months) so that they would receive testing and treatment?
  - a. **What does *notify* mean to you in this context?**
2. ... Give **all** of your recent sex partners (last 3 months) medications for treatment if provided from your healthcare provider?
  - a. **How did you come up with your answer?**
3. ... Notify your **main** recent sex partners (last 3 months) so that they would receive testing and treatment?
  - a. **[If not asked previously] When you think of the *last 3 months*, how did you think about this time period?**
4. ... Give your **main** recent sex partners (last 3 months) medications for treatment if provided from your healthcare provider?
  - a. **What does *willing* mean to you?**

5. ... Notify your non-main/**other** recent sex partners (last 3 months) so that they would receive testing and treatment?
  - a. **Do you consider *non-main and other recent sex partners to be one in the same*?**
6. ... Give your non-main/**other** recent sex partners (last 3 months) medications for treatment if provided from your healthcare provider?
  - a. **Tell me more why you selected the answer that you did.**

### **Behavioral Intentions**

*“It is common for people to disagree with some of the following statements. Don’t feel pressured to say that you would find something true when you would not.”*

Imagine you were diagnosed with an STI **today**.

State whether the following are true or not of what you believe:

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. I *would definitely* notify **all** of my recent sex partners (last 3 months) so that they would receive testing and treatment.
2. I *would definitely* give **all** of my recent sex partners (last 3 months) medications for treatment if provided from my healthcare provider.
3. I *would definitely* notify my **main** recent sex partners (last 3 months) so that they would receive testing and treatment.
4. I *would definitely* give my **main** recent sex partners (last 3 months) medications for treatment if provided from my healthcare provider.
5. I *would definitely* notify non-main/**other** recent sex partners (last 3 months) so that they would receive testing and treatment.
6. I *would definitely* give non-main/**other** recent sex partners (last 3 months) medications for treatment if provided from my healthcare provider.

**What does *would definitely* mean to you?**

**[If not asked previously] When you think of the *last 3 months*, how did you think about this time period?**

### **Demographics**

1. What is your **age**?
  - a. \_\_\_\_\_
2. Which of the following best describes your **sex** (i.e., the sex you were at birth)?
  - a. Male
  - b. Intersex
  - c. Female
3. Which of the following best describes your **gender**?

- a. Man
  - b. Woman
  - c. Other (please specify): \_\_\_\_\_
4. Which of the following best describes your **race**? Select all that apply.
- a. Alaskan Native / American Indian
  - b. Asian
  - c. Black / African American
  - d. Native Hawaiian / Pacific Islander
  - e. White / Caucasian
  - f. Other (please specify): \_\_\_\_\_
5. Are you of Hispanic / Latino **ethnicity**?
- a. Yes
  - b. No
6. What is your current **marital status**?
- a. Never married, not living with significant other
  - b. Never married, living with significant other
  - c. Married
  - d. Divorced
  - e. Widowed
7. What is the highest level of **education** you received?
- a. Some high school, no diploma
  - b. High school diploma or GED
  - c. Some college, no degree
  - d. 2-year college degree
  - e. 4-year college degree or more
8. What is your current **employment** status?
- a. Full-time employed
  - b. Part-time employed
  - c. Unemployed
9. What is your monthly household **income**?
- a. \_\_\_\_\_
10. What type of health **insurance** does your family have?
- a. Private insurance
  - b. Medicare and/or Medicaid
  - c. No insurance
  - d. Other (please specify): \_\_\_\_\_

**Debriefing Questions:**

1. What are your general impressions – good or bad – about the survey?
2. What is your opinion of the length of the survey?
3. Do recall any particular questions that you thought were confusing or wanted to tell us more about? If so, describe.
4. Describe why you would or would not recommend a friend to participate in this survey.
5. Do you have any last feedback you would like us to know? If so, describe.

## Appendix E: Final Survey

### Quantitative Survey

*Note: Survey will be administered using Qualtrics, an online survey-friendly format and page setup.*

#### Instructions:

- This is a reminder that all of your responses in this survey are confidential.*
- This is meant to be a comfortable and private setting. If there is anything that you need, please let the Survey Administrator know.*
- You have as much time as you need to complete the survey.*
- The Survey Administrator is here to answer any questions you may have.*
- Lastly, it is important that you respond honestly to the survey questions. There are no right or wrong answers.*

*When you are ready, click the button in the corner to begin the survey. A set of practice questions will be asked first to help you get familiar with this survey device.*

#### Background

*Please answer each of the following questions about you.*

1. Have you **ever** been diagnosed with an **STI**? (*STI = sexually transmitted infection; also called STD; for example, Chlamydia, Gonorrhea, Trichomoniasis, etc.*)
  - a. Yes; No
    - i. [If no to # 1, skip] How many times have you been diagnosed with an **STI** in the past **2 years**?
      1. \_\_\_\_\_
    - ii. [If no to #1, skip] How many of your prior sex partners (90 days before infection) did you **notify** of their possibility of having an STI after your most recent STI diagnosis?
      1. All partners notified
      2. Most partners notified
      3. Some partners notified
      4. No partners notified
2. What brought you to the STI clinic on the day of your clinic visit? (*select all that apply*)
  - a. Symptoms of an STI
  - b. Contact with someone who had an STI
  - c. Treatment after receiving a positive test for an STI
  - d. Regular STI screening (“checkup”)
  - e. Other (please specify): \_\_\_\_\_

3. Imagine you were diagnosed with an STI today. Which of the following **methods** of partner notification would you be **willing** to use? (*select all that apply*)
  - a. Tell my partners myself
  - b. Have a member of clinic staff call my partner(s)
  - c. Deliver medications to my partner(s) myself
  - d. Deliver a prescription for medications to my partner(s) myself
  - e. None of the above
4. What is your **first-choice preference** for partner notification? (*select only one option*)
  - a. Have a member of clinic staff call my partner(s)
  - b. Deliver medications to my partner(s) myself
  - c. Deliver a prescription for medications to my partner(s) myself
  - d. Tell my partners myself without medications or prescription
  - e. None of the above – I am not willing to notify any of my partners by any method

### **Relationship Characteristics**

*Please answer each of the following questions about you.*

1. How many sexual partners have you had in the past 90 days?
  - a. \_\_\_\_\_
    - i. [If zero above, skip]: How many of these sexual partners would you classify as “main” sexual partners?
      1. \_\_\_\_\_
2. Which of the following describes your sexual practices in the past 90 days?
  - a. Sex with women only
  - b. Sex with men only
  - c. Sex with men and women
  - d. I have not had sex in the past 90 days
3. On average, how frequently did you use a condom during sex (vaginal, oral, and anal) in the past 90 days?
  - a. Every time
  - b. Most of the time
  - c. Sometimes
  - d. Never
  - e. I have not had sex in the past 90 days.

## **HIV Knowledge Questionnaire (HIV-KQ-18)**

*For each statement below, please respond true (T), false (F), or I don't know (DK). If you don't know, please do not guess; instead, please circle DK.*

*HIV = human immunodeficiency virus; AIDS = acquired immunodeficiency syndrome*

*[Response categories: Yes; No; I Don't Know]*

1. Coughing and sneezing DO NOT spread HIV.
2. A person can get HIV by sharing a glass of water with someone who has HIV.
3. Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex.
4. A woman can get HIV if she has anal sex with a man.
5. Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV.
6. All pregnant women infected with HIV will have babies born with AIDS.
7. People who have been infected with HIV quickly show serious signs of being infected.
8. There is a vaccine that can stop adults from getting HIV.
9. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV.
10. A woman cannot get HIV if she has sex during her period.
11. There is a female condom that can help decrease a woman's chance of getting HIV.
12. A natural skin condom works better against HIV than does a latex condom.
13. A person will NOT get HIV if she or he is taking antibiotics.
14. Having sex with more than one partner can increase a person's chance of being infected with HIV.
15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV.
16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.
17. A person can get HIV from oral sex.
18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV.

### **STD-KQ-32 (Adapted STD-KQ)**

*For each statement below, please respond true (T), false (F), or I don't know (DK). If you don't know, please do not guess; instead, please circle DK.*

*STI = Sexually Transmitted Infection*

1. Genital Herpes is caused by the same virus as HIV.
2. Frequent urinary infections can cause Chlamydia.
3. There is a cure for Gonorrhea.
4. It is easier to get HIV if a person has another Sexually Transmitted Infection (STI).
5. Human Papillomavirus (HPV) is caused by the same virus that causes HIV.
6. Having anal sex increases a person's risk of getting Hepatitis B.
7. Soon after infection with HIV a person develops open sores on his or her genitals (penis or vagina).
8. There is a cure for Chlamydia.
9. A woman who has Genital Herpes can pass the infection to her baby during childbirth.
10. A woman can look at her body and tell if she has Gonorrhea.
11. The same virus causes all of the STIs.
12. Human Papillomavirus (HPV) can cause Genital Warts.
13. Using a natural skin (lambskin) condom can protect a person from getting HIV.
14. Human Papillomavirus (HPV) can lead to cancer in women.
15. A man must have vaginal sex to get Genital Warts.
16. STIs can lead to health problems that are usually more serious for men than women.
17. A woman can tell that she has Chlamydia if she has a bad smelling odor from her vagina.
18. If a person tests positive for HIV the test can tell how sick the person will become.
19. There is a vaccine available to prevent a person from getting Gonorrhea.
20. A woman can tell by the way her body feels if she has an STI.
21. A person who has Genital Herpes must have open sores to give the infection to his or her sexual partner.
22. There is a vaccine that prevents a person from getting Chlamydia.
23. A man can tell by the way his body feels if he has Hepatitis B.
24. If a person had Gonorrhea in the past he or she is immune (protected) from getting it again.
25. Human Papillomavirus (HPV) can cause HIV.
26. A man can protect himself from getting Genital Warts by washing his genitals after sex.
27. There is a vaccine that can protect a person from getting Hepatitis B.
28. There is a cure for Trichomoniasis.
29. A man can look at his body and tell if he has Trichomoniasis.
30. There is a vaccine that prevents a person from getting Trichomoniasis.
31. If a person had Trichomoniasis in the past he or she is immune (protected) from getting it again.

32. There is a vaccine that prevents a person from getting Human Papillomavirus (HPV).

### **Partner Treatment Knowledge Questionnaire (PT-KQ-6)**

*For each statement below, please respond true (T), false (F), or I don't know (DK). If you don't know, please do not guess; instead, please circle DK.*

*[Response categories: True; False; I Don't Know]*

You've received a positive test for a bacterial Sexually Transmitted Infection (STI; e.g., Chlamydia, Gonorrhea, or Trichomoniasis) and you've taken the prescribed medication as directed.

1. ... Your most recent unprotected sex partner could have the same infection as you even if they are NOT showing any signs or symptoms of an STI.
2. ... Having unprotected sex with the same partner as before who has NOT been tested or treated increases your risk of getting that STI again.
3. ... Your same partner as before is NOT showing any signs or symptoms of an infection and does NOT get tested. Having unprotected sex with this partner increases your risk of getting that STI again.
4. ... Your same partner as before gets treated at the same time as you, but you're NOT sure if your partner has any other sex partners besides you. Having unprotected sex with this partner increases your risk of getting that STI again.
5. ... You can NOT get the same STI again if you have unprotected sex with a new partner.

### **Attitudes**

*"It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not."*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- Very untrue of what I believe to 5- Very true of what I believe]*

### **Individual Protection Beliefs**

1. I can reduce my chance of getting another STI if my partner(s) get treated.
2. I do NOT want to have unprotected sex with my partner(s) until they receive treatment.
3. My sexual health is NOT important to me.
4. I want to avoid getting another STI.
5. I worry about the risks of unsafe sex.

6. I would NOT be worried if I had unprotected sex with someone who tested positive for an STI.

### **Infidelity Worry, Embarrassment & Anxiety**

1. I would be embarrassed to tell my partner(s) that I have an STI.
2. It would be easy to tell my partner(s) that I tested positive for an STI.
3. I am worried my partner(s) might think I have been unfaithful if I am diagnosed with an STI.
4. I worry what my partner(s) will think if I tell them I have an STI.
5. Telling my partner(s) about my STI would be stressful.
6. I worry my partner(s) won't believe I have tested positive for an STI.
7. I believe my partner(s) will respect me more for telling them that I have an STI.
8. Telling my partner(s) about my STI would be awkward.
9. Telling my partner(s) about my STI would cause an argument.
10. My partner(s) would think I care about their health if I told them about my STI diagnosis.

### **STI Stigma**

1. I would feel dirty if a doctor examined me for STIs.
2. Getting an STI would make me feel lonely.
3. Getting examined for an STI makes people think less of me.
4. Most people I know think that an STI is a sign of a weak character.
5. Getting an STI means I have poor values.
6. I do NOT want others to see me at the STI clinic.
7. Going to an STI clinic is embarrassing.
8. I feel very comfortable getting an STI screening.
9. Only people with multiple sex partners get STIs.
10. Normal people get STIs.

### **STI Shame**

1. People with STIs have been hanging with the wrong crowd.
2. Getting an STI means I do NOT keep myself clean.
3. People with STIs should be ashamed of themselves.
4. Getting an STI means a person is dirty.
5. Getting an STI means I do NOT take care of myself.
6. Getting examined for an STI means I'm NOT clean.
7. STIs are a common thing.
8. I would be crushed if I was diagnosed with an STI.
9. I would NOT blame myself if I was diagnosed with an STI.
10. I would feel comfortable talking to a good friend about my STI diagnosis.

### **PDPT Partner Protection Beliefs**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. I could be sure my partner(s) were treated if I gave them medications myself.
2. It would be easier to get my partner(s) treated if they didn't have to come to a clinic for treatment.
3. I am NOT responsible for making sure my partner(s) get treated.
4. Only healthcare providers should give medications to my partner(s) for treatment.
5. I do NOT feel qualified to deliver medications to my partner(s).
6. It would be easier to tell my partner(s) of my STI if I could give them medications myself.
7. Getting my partner(s) treated is NOT important if I plan to use condoms with them.
8. I worry my partner(s) would miss out on STI counseling if I gave them treatment myself.
9. My partners' health is important to me.
10. Delivering medications to my partner(s) for treatment will make them respect me more.
11. NOT informing my partner(s) of my STI diagnosis is wrong.

### **Community Protection Beliefs**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. Getting my partner(s) treated will NOT stop the rate of STIs in my community.
2. Getting my partner(s) treated will help prevent STI transmission to others.
3. I would be worried if people in my community are NOT aware of their STI.
4. I worry that my partner(s) would give the STI to others if I didn't make sure they were treated.
5. I would be worried if there was NOT enough accurate STI information in my community.
6. I would be worried if people in my community are NOT using condoms.
7. I would NOT worry if the rate of STIs was high in my community.

## **Social Support**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. I have someone who I can really count on to be dependable when I need help.
2. I have someone who I can really count on to help me feel more relaxed when I am under pressure or tense.
3. I have someone who accepts me totally, including both my worst and best points.
4. I have someone who I can really count on to care about me, regardless of what is happening to me.
5. I have someone who I can really count on to help me feel better when I am feeling generally down-in-the dumps.
6. I have someone who I can really count on to console me when I am very upset.
7. I have someone who I can talk to about sexual health issues.
8. I have someone who I could talk to about an STI diagnosis without them judging me.
9. I have someone who would help me figure out how to notify a sexual partner if I had an STI.

### **Subjective Norms (Partners)**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

#### **Partner Normative Influences**

1. My partner(s) would refuse treatment if I gave them medications myself.
2. My partner(s) would want me to bring them medications for their treatment if I could.
3. My partner(s) would want to avoid going to the STI clinic for treatment.
4. My partner(s) would think going to the STI clinic for treatment is embarrassing.
5. My partner(s) would NOT want other people to know that they went to an STI clinic.
6. My partner(s) would want to come to the STI clinic for treatment.

#### **Partner Motivation to Comply**

1. Concerning my sexual health, in general, I want to do what my partner(s) think I should do.
2. I would tell my partner(s) of my STI if I thought they would want me to.
3. I would take medications to my partner(s) if I thought they would want me to.
4. I do NOT value my partners’ opinion on sexual health matters.
5. My partners’ beliefs are important to me.
6. I would help my partner(s) avoid the STI clinic if I thought they would want me to.

### **Subjective Norms (Healthcare Providers)**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

#### **Healthcare Provider Normative Influences**

1. My healthcare provider would want me to tell my partner(s) of my STI so that they would get treatment.
2. My healthcare provider would want me to take medications to my partner(s) if he or she gave them for me to do so.
3. My healthcare provider only thinks treatment should be given to patients that come into the clinic for testing and treatment.
4. My healthcare provider believes giving me medications to deliver to my partner(s) is beneficial to my own health.

5. My healthcare provider worries about giving me extra medications to deliver to my partner(s) for fear of missing an opportunity to counsel my partner(s).
6. My healthcare provider believes giving me medications to deliver to my partner(s) is beneficial to my partners' health.

### **Healthcare Provider Motivation to Comply**

1. Concerning my sexual health, in general, I want to do what my healthcare provider thinks I should do.
2. I would tell my partner(s) of my STI if my healthcare provider wanted me to.
3. I would take medications to my partner(s) if my healthcare provider wanted me to.
4. I do NOT value my healthcare provider's opinion.
5. My healthcare provider's beliefs are important to me.

### **PDPT Acceptance, Willingness, and Behavioral Intentions**

#### **Acceptance**

*“It’s not uncommon for people to find some of the following treatment options unacceptable for their care. Do not feel pressured to say that you would find something acceptable when you would not.”*

Imagine you were diagnosed with an STI **today**. How likely would you be to

*[Response categories: 1- Very unlikely to 5- Very likely]*

1. ... Accept medications to deliver to **all** of your recent sex partners (last 3 months) for treatment if provided from my healthcare provider?
2. ... Accept medications to deliver to your **main** recent sex partners (last 3 months) for treatment if provided from my healthcare provider?
3. ... Accept medications to deliver to a **non-main/other** recent sex partners (last 3 months) for treatment if provided from my healthcare provider? *[If you do not have a **non-main/other** recent sex partner, imagine that you did to answer this question].*

#### **Willingness**

*“It’s not uncommon for people to be unwilling to do some of the following actions. Do not feel pressured to say that you would be willing when you would not.”*

Imagine you were diagnosed with an STI **today**. How *willing* would you be to

*[Response categories: 1- Not at all willing to 5- Extremely willing]*

1. ... Notify **all** of your recent sex partners (last 3 months) so that they would receive testing and treatment?
2. ... Give **all** of your recent sex partners (last 3 months) medications for treatment if provided from your healthcare provider?

3. ... Notify your **main** recent sex partners (last 3 months) so that they would receive testing and treatment?
4. ... Give your **main** recent sex partners (last 3 months) medications for treatment if provided from your healthcare provider?
5. ... Notify a **non-main/other** recent sex partners (last 3 months) so that they would receive testing and treatment? [*If you do not have a **non-main/other** recent sex partner, imagine that you did to answer this question*].
6. ... Give a **non-main/other** recent sex partners (last 3 months) medications for treatment if provided from your healthcare provider? [*If you do not have a **non-main/other** recent sex partner, imagine that you did to answer this question*].

### **Behavioral Intentions**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

Imagine you were diagnosed with an STI **today**.

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. I *would definitely* notify **all** of my recent sex partners (last 3 months) so that they would receive testing and treatment.
2. I *would definitely* give **all** of my recent sex partners (last 3 months) medications for treatment if provided from my healthcare provider.
3. I *would definitely* notify my **main** recent sex partners (last 3 months) so that they would receive testing and treatment.
4. I *would definitely* give my **main** recent sex partners (last 3 months) medications for treatment if provided from my healthcare provider.
5. I *would definitely* notify a **non-main/other** recent sex partners (last 3 months) so that they would receive testing and treatment. [*If you do not have a **non-main/other** recent sex partner, imagine that you did to answer this question*].
6. I *would definitely* give a **non-main/other** recent sex partners (last 3 months) medications for treatment if provided from my healthcare provider. [*If you do not have a **non-main/other** recent sex partner, imagine that you did to answer this question*].

## **Behavioral Skills**

### **Partner Notification Self-Efficacy**

How confident are you in your ability to

*[Response categories: 1- Not at all confident to 5- Extremely confident]*

1. ... Tell your partner(s) of an STI?
2. ... Ask your partner(s) to get STI testing?
3. ... Ask your partner(s) to get STI treatment?
4. ... Abstain from sex with your partner(s) until they obtain STI treatment?
5. ... Ask your partner(s) whether they were tested?
6. ... Ask your partner(s) whether they were treated?
7. ... Deliver medications to your partner(s) for treatment?
8. ... Ask your partner(s) to take medications for treatment delivered by you?

### **PDPT Communication Skills Self-Efficacy**

How confident are you in your ability to

*[Response categories: 1- Not at all confident to 5- Extremely confident]*

1. ... Communicate with your partner(s) about sexual health issues?
2. ... Know what to say when telling your partner(s) about an STI?
3. ... Use familiar terms about medical information when informing your partner(s) about an STI?
4. ... Avoid blame when telling your partner(s) about an STI?
5. ... Tell your partner(s) about an STI using your preferred method of communication?
6. ... Describe medical information you received at the STI clinic to your partner(s)?
7. ... Warn your partner(s) of the risks of an untreated STI?
8. ... Be respectful of your partners' feelings?
9. ... Remain calm when telling your partner(s) about an STI?

## **PDPT Barriers/Facilitators**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

1. I would be unable to contact all of my recent sexual partners (last 3 months).
2. I would be unable to pay for extra medications to give to my partner(s).
3. I would NOT be able to deliver medications to all of my sexual partners because some of my relationships have ended.
4. I question how legal it is for me to deliver medications to my partner(s) directly.
5. I would NOT take extra medications for my partner(s) if I had to pay for them.
6. Giving medications to me to take to my partner(s) is convenient.
7. I would feel better about delivering medications to my partner(s) if the medication came in a sealed container.
8. I would feel better about delivering medications to my partner(s) if the medication came with a signed note from a healthcare provider.
9. I would feel better about delivering medications to my partner(s) if I received a paper copy of my test results.
10. My partner(s) would delay treatment because of their insurance status.
11. I would NOT be able to deliver medications to my partner(s) because of transportation difficulty.
12. I worry about my safety notifying my partner(s) of an STI.
13. I believe it is safer for my partner(s) to get tested before given treatment for an STI.

## **Demographics**

1. What is your **age**?
  - a. \_\_\_\_\_
2. What **sex** were you assigned at birth on your original birth certificate?
  - a. Male
  - b. Intersex
  - c. Female
3. Which of the following best describes your **gender**?
  - a. Man
  - b. Woman
  - c. Other (please specify): \_\_\_\_\_
4. Which of the following best describes your **race**? Select all that apply.
  - a. Alaskan Native / American Indian
  - b. Asian

- c. Black / African American
  - d. Native Hawaiian / Pacific Islander
  - e. White / Caucasian
  - f. Other (please specify): \_\_\_\_\_
5. Are you of Hispanic / Latino **ethnicity**?
- a. Yes
  - b. No
6. What is your current **marital status**?
- a. Never married, not living with significant other
  - b. Never married, living with significant other
  - c. Married
  - d. Divorced
  - e. Widowed
7. What is the highest level of **education** you received?
- a. Some high school, no diploma
  - b. High school diploma or GED
  - c. Some college, no degree
  - d. 2-year college degree
  - e. 4-year college degree or more
8. What is your current **employment** status?
- a. Full-time employed
  - b. Part-time employed
  - c. Unemployed
9. What is your monthly household **income**?
- a. \_\_\_\_\_
10. What type of health **insurance** does your family have?
- a. Private insurance
  - b. Medicare and/or Medicaid
  - c. No insurance
  - d. Other (please specify): \_\_\_\_\_

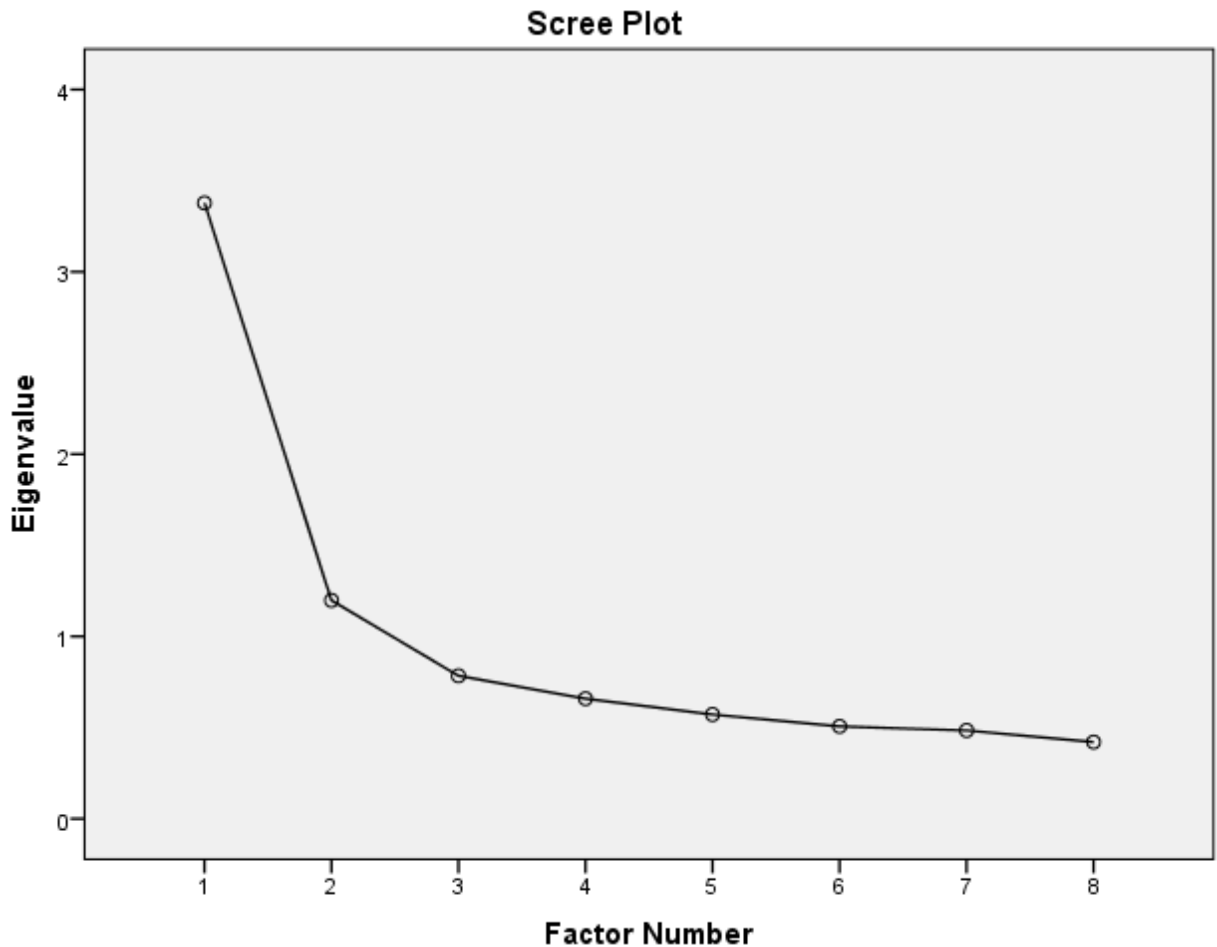
Appendix F: Partner and Community Protection Beliefs Factor Analysis

**Table 1:** Correlation Matrix of Survey Measures Used in the Factor Analysis of Protection Beliefs

Measure	IPB1	IPB2	IPB4	PPB9	PPB11	CPB2	CPB3	CPB4
Item 1 (IPB1 <sup>a</sup> )	1.000	.387	.322	.277	.223	.398	.237	.315
Item 2 (IPB2)	.387	1.000	.444	.365	.245	.293	.195	.187
Item 3 (IPB4)	.322	.444	1.000	.319	.194	.199	.192	.232
Item 4 (PPB9 <sup>b</sup> )	.277	.365	.319	1.000	.500	.457	.382	.376
Item 5 (PPB11)	.223	.245	.194	.500	1.000	.409	.436	.420
Item 6 (CPB2 <sup>c</sup> )	.398	.293	.199	.457	.409	1.000	.491	.439
Item 7 (CPB3)	.237	.195	.192	.382	.436	.491	1.000	.465
Item 8 (CPB4)	.315	.187	.232	.376	.420	.439	.465	1.000

Notes: <sup>a</sup> IPB = individual protection beliefs; <sup>b</sup> PPB = partner protection beliefs; <sup>c</sup> CPB = community protection beliefs

**Figure 1:** Scree Plot of Factor Analysis of Protection Beliefs



**Table 2:** Pattern Matrix of Survey Measures Used in the Factor Analysis of Protection Beliefs

Measure	Factor 1	Factor 2
Item 1 (IPB1 <sup>a</sup> )	.189	.423
Item 2 (IPB2)	-.089	.802
Item 3 (IPB4)	-.014	.601
Item 4 (PPB9 <sup>b</sup> )	.509	.226
Item 5 (PPB11)	.654	-.008
Item 6 (CPB2 <sup>c</sup> )	.653	.074
Item 7 (CPB3)	.744	-.110
Item 8 (CPB4)	.664	-.025

Notes: <sup>a</sup> IPB = individual protection beliefs; <sup>b</sup> PPB = partner protection beliefs; <sup>c</sup> CPB = community protection beliefs

### **Final Scales after EFA**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

#### **Individual Protection Beliefs**

1. I can reduce my chance of getting another STI if my partner(s) get treated.
2. I do NOT want to have unprotected sex with my partner(s) until they receive treatment.
3. I want to avoid getting another STI.

#### **Partner & Community Protection Beliefs**

1. My partners' health is important to me.
2. NOT informing my partner(s) of my STI diagnosis is wrong.
3. Getting my partner(s) treated will help prevent STI transmission to others.
4. I would be worried if people in my community are NOT aware of their STI.
5. I worry that my partner(s) would give the STI to others if I didn't make sure they were treated.

Appendix G: STI Clinic Stigma and STI-Related Shame Factor Analysis

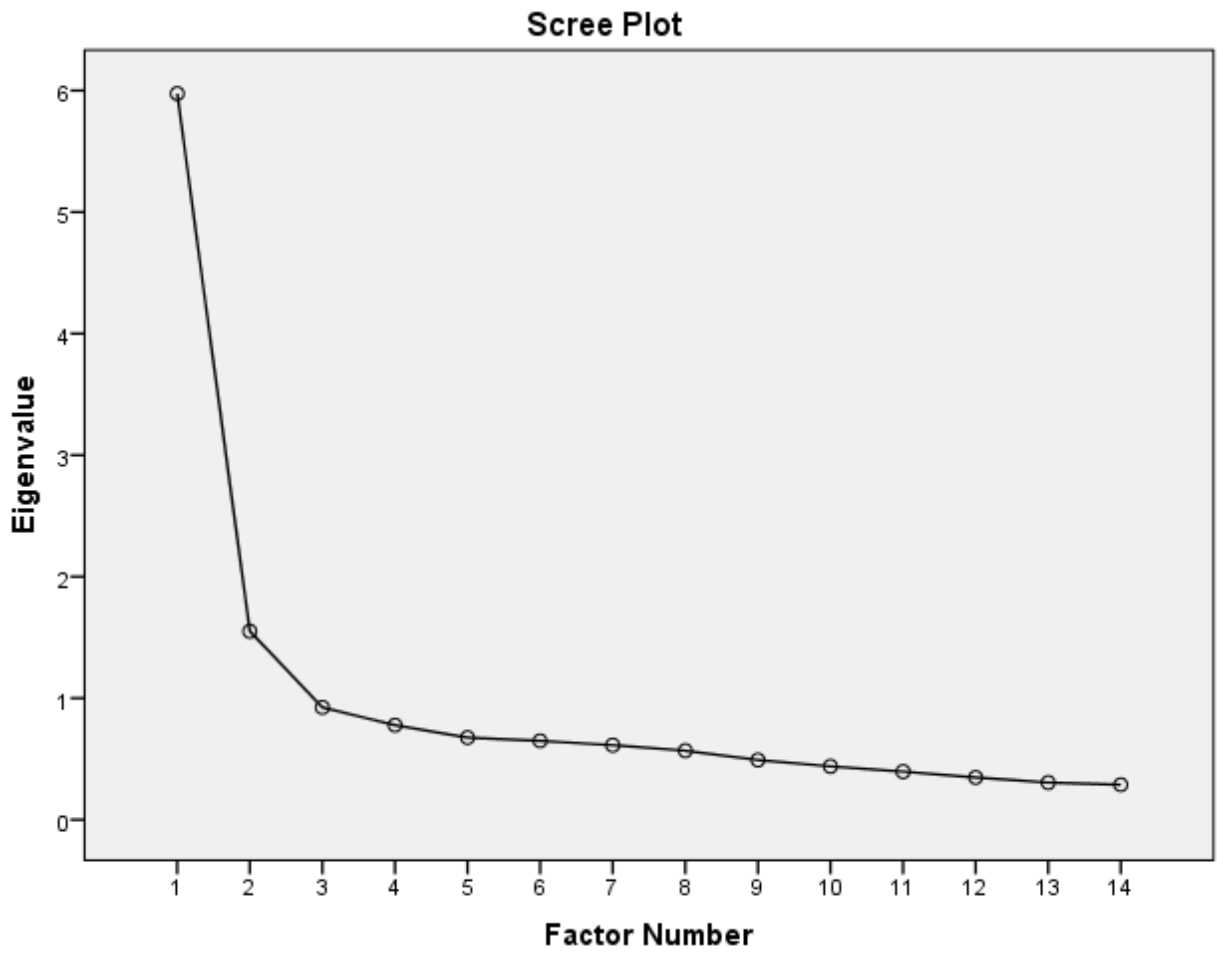
**Table 1:** Correlation Matrix of Survey Measures Used in the Factor Analysis of STI Clinic Stigma and STI-Related Shame

Measure	Stigma 1	Stigma 2	Stigma 3	Stigma 4	Stigma 5	Stigma 6
Stigma 1	1.000	.408	.573	.370	.362	.440
Stigma 2	.408	1.000	.497	.395	.561	.321
Stigma 3	.573	.497	1.000	.435	.479	.474
Stigma 4	.370	.395	.435	1.000	.498	.250
Stigma 5	.362	.561	.479	.498	1.000	.296
Stigma 6	.440	.321	.474	.250	.296	1.000
Shame 1	.341	.357	.374	.355	.493	.116
Shame 2	.316	.367	.350	.307	.396	.196
Shame 3	.365	.459	.378	.335	.348	.354
Shame 4	.341	.376	.386	.406	.454	.192
Shame 5	.398	.399	.422	.417	.417	.219
Shame 6	.331	.330	.397	.366	.356	.319
Stigma 7	.446	.367	.464	.259	.359	.643
Stigma 9	.325	.349	.382	.284	.388	.275

Note: Correlation matrix truncated because of size; matrix continues in next table below.

Measure	Shame 1	Shame 2	Shame 3	Shame 4	Shame 5	Shame 6	Stigma 7	Stigma 8
Stigma 1	.341	.316	.365	.341	.398	.331	.446	.325
Stigma 2	.357	.367	.459	.376	.399	.330	.367	.349
Stigma 3	.374	.350	.378	.386	.422	.397	.464	.382
Stigma 4	.355	.307	.335	.406	.417	.366	.259	.284
Stigma 5	.493	.396	.348	.454	.417	.356	.359	.388
Stigma 6	.116	.196	.354	.192	.219	.319	.643	.275
Shame 1	1.000	.482	.354	.484	.460	.396	.203	.306
Shame 2	.482	1.000	.464	.486	.538	.600	.157	.334
Shame 3	.354	.464	1.000	.439	.473	.380	.426	.388
Shame 4	.484	.486	.439	1.000	.523	.579	.254	.367
Shame 5	.460	.538	.473	.523	1.000	.476	.179	.284
Shame 6	.396	.600	.380	.579	.476	1.000	.262	.320
Stigma 7	.203	.157	.426	.254	.179	.262	1.000	.337
Stigma 9	.306	.334	.388	.367	.284	.320	.337	1.000

**Figure 1:** Scree Plot of Factor Analysis of STI Clinic Stigma and STI-Related Shame



**Table 2:** Pattern Matrix of Survey Measures Used in the Factor Analysis of STI Clinic Stigma and STI-Related Shame

<b>Measure</b>	<b>Factor 1</b>	<b>Factor 2</b>
<b>Stigma 1</b>	.234	.492
<b>Stigma 2</b>	.402	.324
<b>Stigma 3</b>	.294	.521
<b>Stigma 4</b>	.466	.170
<b>Stigma 5</b>	.518	.224
<b>Stigma 6</b>	-.163	.834
<b>Shame 1</b>	.705	-.085
<b>Shame 2</b>	.807	-.153
<b>Shame 3</b>	.443	.267
<b>Shame 4</b>	.766	-.065
<b>Shame 5</b>	.756	-.064
<b>Shame 6</b>	.668	.011
<b>Stigma 7</b>	-.173	.890
<b>Stigma 9</b>	.336	.261

### **Final Scales after EFA**

*“It is common for people to disagree with some of the following statements. Do not feel pressured to say that you would find something true when you would not.”*

*State whether the following are true or not of what you believe:*

*[Response categories: 1- **Very untrue** of what I believe to 5- **Very true** of what I believe]*

#### **STI Clinic Stigma**

1. I would feel dirty if a doctor examined me for STIs.
2. Getting examined for an STI makes people think less of me.
3. I do NOT want others to see me at the STI clinic.
4. Going to an STI clinic is embarrassing.

#### **STI-Related Shame**

1. Getting an STI would make me feel lonely.
2. Most people I know think that an STI is a sign of a weak character.
3. Getting an STI means I have poor values.
4. Only people with multiple sex partners get STIs.
5. People with STIs have been hanging with the wrong crowd.
6. Getting an STI means I do NOT keep myself clean.
7. People with STIs should be ashamed of themselves.
8. Getting an STI means a person is dirty.
9. Getting an STI means I do NOT take care of myself.
10. Getting examined for an STI means I'm NOT clean.

## Appendix H: Phase 3 Qualitative Interview Guide

### **Qualitative Interview Guide (N=15; Mixed-Method Component)**

*Note: This interview guide is used as a framework for mapping the participant interview. This interview is intended to last 1 hour. The goal of this interview is to elicit additional information not captured by the quantitative survey. Specifically, this interview guide is used to identify potential intervention mechanisms, barriers and facilitators to PDPT delivery, and other important information for planning a randomized controlled trial.*

#### **Introduction**

4. Introduce yourself and the interview to the participant:
  - a. *“We’ll talk together for about 1 hour. This session will be audio recorded. To protect your confidentiality, this audio recording will only be identified by a study ID number assigned to you.”*
  - b. *“I’d like to remind you that everything we talk about today is confidential.”*
  - c. *“Any questions before we begin?”*
5. Begin audio recording and open with a verbal timestamp:
  - a. *Today’s date is \_\_\_\_\_ (date). The interview is starting at \_\_\_\_\_ (time).”*

#### **Patient-Delivered Partner Therapy – Barriers, Facilitators, & Intervention Planning**

*“I’d like to start by giving a background of why we are conducting this interview. The clinic is planning to implement a program called patient-delivered partner therapy, which is a method of partner treatment where you deliver medications to your sexual partners for treatment of a sexually transmitted infection. For instance, imagine you had a positive test for chlamydia when screened at the clinic. Clinic nurses would give you antibiotics for you to take in the clinic, but you would also be given extra medications to take to your sexual partners for their treatment as well. The purpose of this interview is to gain some information from you to help us improve this type of partner treatment for patients.”*

1. *“If you had any immediate questions that came to mind about this method of partner treatment, what would they be?”*

#### **Standard-of-care**

*“Current practice for healthcare providers to give you medications for you to deliver to your partners is to provide you with information like this.” [Show participant information]*

1. *“As you look through this information, tell me your immediate thoughts that come to mind.”*
  - a. *“Is there any information missing that you might find important?”*
  - b. *“How could this information be improved?”*

## Intervention

*“We would like to develop an **intervention** that would make patients feel more comfortable in their ability to notify their sexual partners of an STI and deliver medications to them for treatment.”*

1. *“What types of things might a healthcare provider do to **help you** be able to give your **partner** this **treatment**?”*
2. *“What types of things might a healthcare provider do to help **others** be successful with this method of partner treatment?”*
3. *“What might **stand in the way of your success** in providing medications for you to give to your sexual partner(s)?”*
4. *“There are potentially many ways a healthcare provider could help you be successful in delivery medications to your sexual partner(s), but it is not uncommon for patients to **disagree** with healthcare providers’ recommendations or clinical interactions with them. With this in mind, what are some things a healthcare provider should **avoid** in attempting to help you?”*
5. *“If we offered an intervention to help you be successful with this type of partner treatment as part of a research study, would you be **willing to participate**?”*
  - a. *“Describe your reasoning for **choosing (not) to participate**?”*
  - b. *“What could we do to help make **participation more appealing** for you and others?”*

*“We are now nearing the end of this interview – just a few more questions.”*

6. *“How would **you** feel if an over-the-counter, **rapid HIV test** was provided with the medications for you to give to your partner?”*
  - a. *“How do you think your **partner** would respond to being given **medications with an HIV test** as well?”*

## Conclusion

*“Before we conclude the interview, is there anything you’d like to tell me about the types of things we discussed that you hadn’t had the chance to before?”*

--

*“This is the end of the interview. I’d just like to say thank you for your participation. The time is \_\_\_\_\_ (time).”*

Turn the audio recorder off.



**WISCONSIN DEPARTMENT OF HEALTH SERVICES**

**URGENT HEALTH MATTER – PRIVATE AND CONFIDENTIAL**

Chlamydia Treatment Information Sheet

Important Information About *Your* Health

(This Treatment Information Sheet is intended for sex partners of persons with Chlamydia)

Your sex partner has been treated for Chlamydia, a curable sexually transmitted disease (STD) that you can get from having oral, vaginal or anal sex with a person who has a Chlamydia infection. You may have been exposed to Chlamydia. Chlamydia infection is easily treated with the medicine azithromycin (also known as Zithromax). People with Chlamydia infection may not know they have it because they have no signs or symptoms. Your sex partner has given you azithromycin (pills) medicine or a prescription for azithromycin medicine. This medicine or prescription was given to your sex partner by a doctor or other medical provider to treat YOU.

It is very important for you to see your own doctor or medical provider as soon as possible to be examined and tested for this infection. If you cannot have an exam in the next several days, you should take the pill(s) that were provided to you, or have the prescription that was given to you filled at your local pharmacy, and take the medication as instructed by the pharmacist or medical provider. It is very important to see a doctor or medical provider as soon as possible to get examined and tested for this and other STDs. People can have more than one STD at the same time. This medicine will not cure other STDs. Having STDs can increase your risk of getting human immunodeficiency virus (HIV). You may also want to get a test for HIV.

**WHAT IS CHLAMYDIA?**

Chlamydia is a sexually transmitted disease (STD) caused by a bacteria (germ) called *Chlamydia trachomatis*. It is the most commonly reported disease in Wisconsin. Chlamydia infection is a curable sexually transmitted disease (STD) that you can get from having sex with a person who already has it. Many people with Chlamydia infection do not know they have it because they have no symptoms and feel fine. Some people may notice symptoms:

**SYMPTOMS OF CHLAMYDIA**

ALL – Most people DO NOT experience or notice any signs or symptoms at all.

MEN – may notice a discharge (drip) from the penis, pain or discomfort while urinating (peeing), or pain or swelling in their testicles.

WOMEN – may notice an unusual vaginal discharge, or pain or burning when urinating (peeing) and increased need to urinate (pee); pain during sex, bleeding between periods or after sex, lower abdominal (belly), or pelvic (hip) pain or cramps or. Women can become infertile (unable to have children) if they don't get treated (medicine).

**BEFORE TAKING THE MEDICINE, PLEASE READ THE FOLLOWING:**

Azithromycin is a very safe antibiotic. However, **DO NOT take it if any of the following are true:**

- You are female and have lower belly pain, pain during sex, vomiting or fever.
- You are male and have pain or swelling in the testicles or fever.
- You have had a bad reaction, rash, breathing problems, or allergic reaction after taking azithromycin, or other antibiotics. People who are allergic to some antibiotics may also be allergic to other types. If you do have allergies to antibiotics, you should be examined by your medical provider before taking this medicine.
- You have a serious long-term illness, such as kidney, heart or liver disease.
- If you are currently taking another prescription medication, including medicine for diabetes, consult your pharmacist before taking the medication to ask about drug interactions.
- If any of these circumstances exist, or if you are not sure, do not take the azithromycin. Instead, you should talk to your doctor or medical provider as soon as possible. Your doctor or medical provider will find the best treatment for you.

**WARNINGS:**

- If you do not take medicine to cure Chlamydia infection, you can get very sick. If you are a woman, you may get chronic (long-term) pelvic pain and might not be able to have children.
- If you are pregnant, seek medical evaluation before taking the medicine.

**DIRECTIONS FOR TAKING AZITHROMYCIN**

DO take all the pills given to you at the same time by mouth with a full glass of water and with food. By taking the pills with food, you are less likely to get an upset stomach or vomit, and the medicine will work better in your body. You need to take all of the medicine you were given to be cured.

DO NOT take antacids (such as Tums, Rolaids, or Maalox) for one hour before or two hours after taking the azithromycin pills.

DO NOT give this medicine to others. It is intended for sex partners of persons who have Chlamydia infection.

#### SIDE EFFECTS:

Possible side effects of taking this medication include:

- Slightly upset stomach
- Vomiting
- Diarrhea
- Dizziness
- Vaginal yeast infection

These are well-known side effects and are not serious. Very few people experience any of these problems.

#### ALLERGIC REACTIONS:

Allergic reactions are rare. If you have ever had a bad allergic reaction, rash, breathing problems or other allergic reactions with azithromycin or other antibiotics, consult your doctor, medical provider or pharmacist before taking this medicine.

Possible serious allergic reactions include:

- Difficulty breathing/tightness in the chest
- Closing of your throat
- Swelling of your lips or tongue
- Hives (bumps or welts on your skin that itch intensely)

**\*\*If you experience any of these allergic reactions, call 911 or go to the nearest emergency room immediately!\*\***

#### RESUMING SEXUAL ACTIVITY

STOP having sex with others until you take the medicine, and DO NOT have sex for the next 7 days after taking the medicine. It takes 7 days for the medicine to work in your body and cure Chlamydia infection. If you have sex without a condom during the 7 days after taking the medicine, you could still pass the infection to your sex partners, even if you have no symptoms.



## Curriculum Vitae

Steven A. John, MPH

### Education

2016	Ph.D.	<b>Public Health</b> School of Public Health, UW-Milwaukee
2013	M.P.H.	<b>Community and Behavioral Health Promotion</b> School of Public Health, UW-Milwaukee
2010	B.S.	<b>Major: Biology</b> , UW-Madison

### Positions & Employment

2016-	<b>Post-Doctoral Research Fellow</b> at Hunter College, CUNY
2014-2016	<b>Research Assistant</b> at UW-Milwaukee School of Public Health
2011-2014	<b>Project Assistant</b> at UW-Milwaukee School of Public Health

### Academic & Professional Honors

2016	<i>Dean's Travel Award</i> School of Public Health at UW-Milwaukee
2015	<i>Public Health Doctoral Student Award</i> School of Public Health at UW-Milwaukee
2015	<i>Graduate Student Travel Award</i> Graduate School at UW-Milwaukee
2014	<i>Wisconsin's Leadership in Public Health Series Training</i> School of Public Health at UW-Milwaukee
2014	<i>Best Poster Presentation</i> School of Public Health Graduate Student Research Symposium
2013	<i>Featured Graduate Student of the Month – May 2013</i> Graduate School at UW-Milwaukee
2012	<i>Chancellor's Award Scholarship Recipient</i> Graduate School at UW-Milwaukee

### Peer-Reviewed Research Papers

**John, S. A.**, Walsh, J. L., & Weinhardt, L. S. (2016). The Information-Motivation-Behavioral Skills Model Revisited: A Network-Perspective Structural Equation Model within a Public Sexually Transmitted Infection Clinic Sample of Hazardous Alcohol Users. *AIDS & Behavior*, Advance online publication. doi: 10.1007/s10461-016-1446-2. Available online at <http://link.springer.com/article/10.1007/s10461-016-1446-2>

<sup>+</sup>**John, S. A.**, Dressel, A., & Koepsel, B. (2015). The Westlawn Partnership for a Healthier Environment: Evaluation of the Healthy Homes Project. *e.Polis*, 7, 28-43. Available online at <https://www4.uwm.edu/letsci/urbanstudies/epolis/current/upload/e-polis-Johnrevised28-43.pdf>

Dressel, A. & **John, S. A.** (2014). Community-Action for a Renewed Environment: Improving the Environment and Health by Empowering Local Communities. *Health and the Environment Journal*, 5(2), 1-10. Available online at <http://hej.kk.usm.my/pdf/HEJVol.5No.2/Article01.pdf>

<sup>+</sup>*This is a student peer-reviewed publication within my doctoral institution's journal of urban studies.*

### **Abstracts**

- John, S. A.,** Kalkbrenner, A. E., & Weinhardt, L. S. (2016). Examining racial disparities in bacterial sexually transmitted infections using sexual network position. Accepted poster presentation, American Public Health Association, Denver, CO. October 29 – November 2, 2016
- John, S. A.** (2016). Barriers and Facilitators for Potential Use of Patient-Delivered Partner Therapy: Understanding the Patients' Perspective to Navigate Partner Treatment within a Public Health STI Clinic. Accepted poster presentation, Wisconsin Public Health Association, Appleton, WI. May 24-26, 2016.
- John, S. A.** & Hunter, P. H. (2016). Expedited Partner Therapy: The What, When, Why, and How for Healthcare Professionals. Accepted workshop presentation, Safe Healthy Strong, Regional Conference – Sponsored by Planned Parenthood of Wisconsin, Milwaukee, WI. March 17-18, 2016.
- John, S. A.,** Walsh, J. L., & Weinhardt, L. S. (2015). Information-Motivation-Behavioral Skills Model Revisited: A Network-Perspective Structural Equation Model within a Public Sexually Transmitted Infection Clinic Sample of Hazardous Alcohol Users. Accepted roundtable paper presentation, American Public Health Association Annual Meeting, Chicago, IL. October 31 - November 4, 2015.
- John, S. A.** (2014). Westlawn Partnership for a Healthier Environment: Process and Methods from an Evaluation of the Healthy Homes Project. Accepted poster presentation, Zilber School of Public Health Graduate Student Research Symposium, Milwaukee, WI. January 31, 2014.

### **Professional Presentations**

- John, S. A.** (2016). The Information-Motivation-Behavioral Skills Model Revisited: A Network-Perspective Structural Equation Model within a Public Sexually Transmitted Infection Clinic Sample of Hazardous Alcohol Users – Translating Research to Practice. Oral presentation at the Keenan Health Center, Milwaukee, WI. July 19, 2016
- John, S. A.** (2014). Evaluation of the Healthy Homes Project. Oral presentation at the Westlawn Partnership for a Healthier Environment Community Meeting, Milwaukee, WI. February 6, 2014.
- John, S. A.** (2013). Synergistic STI and Alcohol Risk-Reduction Intervention: Sexual Risk Behavior Results from a Randomized Control Trial. Oral presentation at the School of Public Health Master's Capstone Presentation Session, Milwaukee, WI. December 12, 2013.
- John, S. A.** (2013). Sexual Risk Behavior Results from a Randomized Control Trial: Research to Practice. Oral presentation at the Keenan Health Center, Milwaukee, WI. December 9, 2013.

### **Memberships in Professional Societies**

American Public Health Association  
Wisconsin Public Health Association

**Grant Support**  
2015-2016

Title: Patient-Delivered Partner Therapy:  
Biomedical and Behavioral Science Intervention for a  
Community-Based Public Health STI Clinic  
Individual Predoctoral National Research Service Award (F31)  
Submission to: National Institute of Mental Health  
Score: 31.0 percentile (28 impact score)  
Submission outcome: Not awarded  
Additional support: Public Health Graduate Student Award (\$2,000)