2012

The risk of sexually transmitted infections and blood borne viruses for patients with severe mental illness

Katerina Lagios
University of Wollongong
UNIVERSITY OF WOLLONGONG

COPYRIGHT WARNING

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.
THE RISK OF SEXUALLY TRANSMITTED INFECTIONS AND BLOOD BORNE VIRUSES FOR PATIENTS WITH SEVERE MENTAL ILLNESS

A thesis submitted in partial fulfillment of the requirements for the award of the degree

DOCTOR OF PUBLIC HEALTH

from

UNIVERSITY OF WOLLONGONG

by

KATERINA LAGIOS
MBBS MM(SexHlth) FACHSHM

GRADUATE SCHOOL OF PUBLIC HEALTH
2012
I, Katerina Lagios, declare that this thesis, submitted in partial fulfillment of the requirements for the award of Doctor of Public Health, in the Graduate School of Public Health, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Katerina Lagios

21st October 2012
ABSTRACT

Background:
Studies from overseas, predominantly the USA, indicate that patients with severe mental illness (SMI) have elevated risks for sexually transmitted infections (STIs) and blood borne viruses (BBVs). Findings indicate a need for local research to clarify whether there are similarly elevated risk factors, STI/BBV infections and heightened risk for patients with SMI, in Western Sydney, Australia.

Objectives:
Identify the level of risk factors, prevalent STIs or BBVs, and correlates of infection based on risk factor history, as well as explore the role of an SMI diagnosis. Describe the practices and characteristics of psychiatrists caring for patients with SMI, specifically their knowledge, attitudes, and behaviours (KAB) regarding STIs and BBVs, as well as assess the determinants of STI/BBV testing behaviours to identify the potential risk for patients.

Methods:
The thesis explored the risk regarding STIs or BBVs for patients with SMI with a literature review and two studies. The systematic literature review identified potential risk factors and aided the design of the subsequent studies. Study One was based on structured interviews and biological samples from 95 participants with SMI, inpatients at a large psychiatric hospital, and referred to the study by their attending psychiatrist. The study described and compared sexual and substance use behaviours (including injecting drug use), risk partners, and other risks (such as healthcare and incarceration), as well as the prevalence of STI and BBV infections, based on self-report and/or biological sample result. Risks and infection prevalence were compared to Australian population data. In addition, serology testing and infection prevalence rates for all 1791 admitted Cumberland Hospital patients during the study period were assessed. Descriptive, bivariate, and multivariate analyses were conducted to assess predictors for infection risk. Study Two, a KAB psychometric survey with Likert scales, evaluated 35 psychiatrists working in western Sydney, regarding STIs and BBVs. Descriptive
comparisons with GPs and multivariate analyses of psychometric measures were undertaken, exploring pathways to better behaviours assessing patients’ risk for infection.

**Results:**

Study One found that patients with SMI had elevated risk factors (sexual, substance use and incarceration), STI and BBV rates, and statistically significant elevated risk compared to the Australian population, despite a small referred participant group. Patients were at risk because of their own and their partners’ involvement in risk behaviours. HIV (2.5%) was not as prominent, but self-reported STIs (49%), HCV exposure (26%) and HBV exposure (16%) were significant findings. As well, Cumberland Hospital data indicate low screening but with high overall seroprevalence for HCV (5%) and HBV exposure (6%). Infections were not new but many patients were unaware of past exposures or testing, indicating suboptimal STI/BBV healthcare. HCV risk for injecting drug users was higher than injectors from the Australian population, despite similar IDU risk activities. HCV rates and risks were elevated for patients without an IDU history when compared to the stratified Australian population. Elevated HCV risk was possibly associated with the presence of SMI. At multivariate analysis HCV exposure was predicted by “IDU ever” and “incarceration ever”. Self-reported STIs were predicted by “marijuana use ever” or “sex ever with an IDU partner”. Patients with SMI and their partners (often with SMI or met in hospital), may be a unique risk network, with frequent and riskier sexual and drug use activities within this network. SMI risk may be because of psychiatric factors, limited socialisation options and poorer access to healthcare.

Study Two, though a small KAB survey of psychiatrists, explained the poor referral to Study One and confirmed the suboptimal STI/BBV healthcare for patients. Participants were slightly older and specialist consultant psychiatrists compared to the pool of available psychiatrists. Overall psychiatrists had good knowledge and attitudes compared to general practitioners (GPs), but there was a lack of screening behaviours for STIs or BBVs, particularly for HCV. Psychiatrists “newer” to the specialty had better HCV knowledge and those “well-informed” reported better HCV screening behaviours. The psychometric multivariate predictors for HCV screening behaviours were HCV referral knowledge and attitudes to HCV patients.
Conclusion:
Patients with SMI are at risk for STIs and BBVs and are likely part of a risk SMI network with elevated risk behaviours, risk partners and STI/BBV infections. This SMI network of inpatients may be a closed network and without current new infections. The predominant risks in the network are substance use and incarceration risks by individuals and their partners, and possibly an SMI diagnosis, though this role requires further elucidation. Future studies should assess choices of IDU partners and their risk as well as young people first diagnosed with SMI, who are at risk for new STI or BBV diagnosis. Effective healthcare should include broader STI/BBV education, prevention, screening and management for patients with SMI. Of particular concern are the high HCV rates, which will add to patients’ health burden with possible liver disease. SMI creates a unique risk network, deserving consideration as a priority group and requiring targeted and holistic healthcare.
RELEVANT MANUSCRIPTS AND CONFERENCE PRESENTATIONS IN THE COURSE OF THE CANDIDATURE

Manuscripts:


Conference Presentations:
Lagios, K. and F.P. Deane, Sex at Cumberland: The Risk Of Sexually Transmitted Infections And Blood Borne Viruses For Patients With Severe Mental Illness. POSTER in: Australasian Society of Infectious Diseases, 2012, Fremantle, Australia.


Lagios, K. and F.P. Deane, Sex at Cumberland: The Risk Of Sexually Transmitted Infections And Blood Borne Viruses For Patients With Severe Mental Illness, ORAL PRESENTATION in Australian and New Zealand Psychiatry Congress 2008. Melbourne, Australia.
ACKNOWLEDGEMENTS

I would like to acknowledge with gratitude the contribution of the following people and organizations that helped me make this study possible.

I wish to express gratitude to my supervisor, Professor Frank Deane, for his guidance and support throughout my candidature, for his inspiration, critical powers and ongoing encouragement. He has been an inspiring mentor, challenging my ability and capacity to conduct research and produce academic writing.

Dr Karen Bythe-Wilson, epidemiologist, Division of Medicine, Westmead Hospital, for immense help and evaluation of my statistical calculations.

Professor Tania Sorrell from Infectious Diseases Westmead Hospital and Dr Peter Tucker and then Dr Mayur, from Cumberland Hospital, for peer support and encouragement as well as financial support for pathology testing.

I would like to acknowledge the patients and staff at Cumberland Hospital who have contributed and enabled this research project.

I wish to thank my parents Maria and Fotios Lagios, as well as my siblings Gina and Peter, for providing spiritual and emotional support.

My special thanks and dedication are to my immediate family, my children Milica, Nikolas and Hristofor who have had to endure the whole research process, and hopefully may find that this is a challenge they too can achieve and enjoy in their adult years. And lastly to my beloved husband Darko Kukic for his love, understanding, tolerance, support and encouragement and unfailing confidence in my capability, allowing completion of this thesis.
TABLE OF CONTENTS

THESIS CERTIFICATION ......................................................... i
ABSTRACT ........................................................................ ii
RELEVANT MANUSCRIPT AND CONFERENCE PRESENTATION IN THE COURSE OF THE CANDIDATURE ............................................................. v
ACKNOWLEDGEMENTS .......................................................... vi
TABLE OF CONTENTS ............................................................ vii
LIST OF APPENDICES ............................................................... xi
LIST OF TABLES ................................................................. x
LIST OF FIGURES ................................................................. x
ABBREVIATIONS ............................................................... xv

CHAPTER ONE
INTRODUCTION AND OVERVIEW OF THE RESEARCH ..................... 1

CHAPTER TWO
SEXUAL AND MENTAL HEALTH IN AUSTRALIA ................................ 5
2.1 INTRODUCTION ........................................................................ 5
2.2 SEXUAL HEALTH IN AUSTRALIA ............................................. 5
2.3 SEXUALLY TRANSMISSIBLE INFECTIONS AND BLOOD BORNE VIRUSES .............................................................. 7
2.4 RISK FACTORS FOR STIs AND BBVs ........................................ 13
  2.4.1 Risk at the Individual Level .................................................. 14
    2.4.1.1 Sexual risk behaviour .................................................. 14
    2.4.1.2 Substance use risk behaviour ....................................... 15
    2.4.1.3 “Other” risk factors .................................................. 15
  2.4.2 Risk at the Partner Level .................................................... 16
  2.4.3 Risk at the Community Level .............................................. 20
2.5 MENTAL HEALTH IN AUSTRALIA .......................................... 21
2.6 SEVERE MENTAL ILLNESS ................................................... 22
2.7 RISK FACTORS FOR SMI ........................................................... 24
2.8 RISKS FOR SMI AND RISKS FOR STIs AND BBVs ...................... 25

CHAPTER THREE
LITERATURE REVIEW: STUDIES ASSESSING STI & BBV RISKS ............ 28
3.1 INTRODUCTION ........................................................................ 28
3.2 AIMS and OBJECTIVES ............................................................ 28
3.3 REVIEW PROCEDURES ........................................................... 29
  3.3.1 Review – The risk of STI and BBVs for patients with SMI ................. 29
  3.3.2 Review - Healthcare Workers’ Assessment of STIs & BBVs ............... 31
3.4 FINDINGS THE RISK OF STI AND BBVS FOR PATIENTS WITH SMI .............................................................. 32
  3.4.1 Prevalence of STI and BBV risk factors for patients with SMI ............... 32
    3.4.1.1 Sexual risk behaviours ............................................... 33
    3.4.1.2 Sexual risk partners ................................................. 33
CHAPTER FOUR
STUDY ONE: THE RISK OF STIs & BBVs FOR INPATIENTS WITH SMI .......... 51

4.1 OVERVIEW OF STUDY ONE ............................................................. 51
4.2 AIMS, OBJECTIVES AND HYPOTHESES ..................................... 52
4.3 METHOD ....................................................................................... 53
   4.3.1 Ethical Issues ............................................................................. 54
   4.3.2 Procedure .................................................................................. 56
   4.3.3 Study Participants ..................................................................... 59
   4.3.4 Measures .................................................................................. 61
      4.3.4.1 Bias in Risk Behaviour Measurements ................................ 63
      4.3.4.2 Measuring Risk Factors ......................................................... 65
      4.3.4.3 Measuring Partners and Networks ....................................... 67
      4.3.4.4 Measuring STIs and BBVs ................................................... 68
   4.3.5 Statistical Issues ........................................................................ 69
   4.4 RESULTS ...................................................................................... 72
      4.4.1 Comparison and representativeness of study participants .......... 72
      4.4.2 Sexual Risk Behaviours ............................................................. 73
         4.4.2.1 Sexual Identity and Experience ........................................... 73
         4.4.2.2 Sexual Activities ................................................................. 75
         4.4.2.3 Number of Sexual Partners Ever ....................................... 76
         4.4.2.4 Number of Sexual Partners in the last 12 months ................. 77
         4.4.2.5 Sex after Drug or Alcohol Use ........................................... 78
         4.4.2.6 Sex and Condom Use .......................................................... 78
      4.4.3 Sexual Risk Partners ................................................................. 78
         4.4.3.1 Sex and Regular Relationship ............................................. 79
         4.4.3.2 Sex and Partner at Last Sexual Encounter ............................ 79
         4.4.3.3 Sex with Partners at Risk ....................................................... 80
         4.4.3.4 Sources of Sexual Contacts ................................................. 81
         4.4.3.5 Sex for Favours or Payment ............................................... 81
         4.4.3.6 Sexual Partner with Drug or Alcohol Issues ......................... 82
         4.4.3.7 Sexual Coercion ................................................................. 82
      4.4.4 Substance Use Risk Behaviours ................................................. 83
         4.4.4.1 Illicit Drug Use ................................................................. 83
CHAPTER FIVE
STUDY TWO: PSYCHIATRISTS’ KNOWLEDGE, ATTITUDES & BEHAVIOURS IN ASSESSMENT & MANAGEMENT OF STIs & BBVs

4.4.4.2 IDU and Blood Exposures ................................................................. 84
4.4.5 “Other” Risk Factors – Screening, Vaccinations, Tattoos and Incarceration ................................. 84
4.4.6 Prevalence of STIs and BBVs .............................................................. 85
   4.4.6.1 STI and BBV Prevalence from Self-reported STI/BBV History ....................... 85
   4.4.6.2 STI and BBV Prevalence from Biological Sample Tests .............................. 86
   4.4.6.3 STI and BBV Results of all Cumberland Hospital patients ........................... 87
4.4.7 Stratification Analysis: Risk for HCV stratified by IDU risk history ........................................ 89
4.4.8 Bivariate Analysis: Prevalence of STIs and BBVs for patients according to risk history .............. 91
4.4.9 Multivariable Analysis: Risks for HCV exposure and Self-reported STIs ................................. 95

4.5 DISCUSSION ......................................................................................... 97
4.6 OVERALL STRENGTHS AND LIMITATIONS ......................................... 99
4.7 CONCLUSION ...................................................................................... 100

CHAPTER FIVE
STUDY TWO: PSYCHIATRISTS’ KNOWLEDGE, ATTITUDES & BEHAVIOURS IN ASSESSMENT & MANAGEMENT OF STIs & BBVs

5.1 OVERVIEW OF STUDY TWO ............................................................... 101
5.2 AIMS, OBJECTIVES and HYPOTHESES ............................................ 104
5.3 METHOD ............................................................................................. 105
   5.3.1 Procedure ...................................................................................... 105
   5.3.2 Study Participants .......................................................................... 106
   5.3.3 Measures ...................................................................................... 107
      5.3.3.1 Demographics and Descriptive STI/BBV Domain ......................... 109
      5.3.3.2 Measuring Knowledge .............................................................. 109
      5.3.3.3 Measuring Attitude ................................................................. 111
      5.3.3.4 Measuring Behaviour .............................................................. 112
      5.3.3.5 Bias in KAB Surveys Assessing Doctors Psychiatrists .................. 113
   5.3.4 Statistical Issues ........................................................................... 115
5.4 RESULTS ............................................................................................. 116
   5.4.1 Descriptive STI/BBV Domain Results ............................................ 116
   5.4.2 Knowledge Domain Results ........................................................ 117
      5.4.2.1 Knowledge STI/BBVs Asymptomatic ...................................... 117
      5.4.2.2 Knowledge STI/BBVs Epidemiology ...................................... 117
      5.4.2.3 Knowledge HCV Epidemiology ............................................. 118
      5.4.2.4 Knowledge HCV Referral ..................................................... 118
      5.4.2.5 Knowledge HCV Management ............................................. 118
      5.4.2.6 Knowledge Domain Differences ......................................... 119
   5.4.3 Knowledge of Psychiatrists compared with other researched groups .................................. 119
   5.4.4 Attitudes Domain Results .............................................................. 123
      5.4.4.1 Attitude Barriers STI/BBV History ......................................... 123
      5.4.4.2 Attitude Treating Patients with HCV ...................................... 123
      5.4.4.3 Attitude Domain Differences ............................................... 124
   5.4.5 Attitudes of Psychiatrists compared with other researched groups .................................. 124
   5.4.6 Behaviour Domain Results ........................................................ 125
      5.4.6.1 Behaviour STI/BBV History Taking ...................................... 125
LIST OF APPENDICES

Appendix 1:
Study One: Ethics Approval - Risk of STIs & BBVs For Patients with SMI..................174

Appendix 2:
Study One: Participant Information Sheets & Consent Forms.....................................179

Appendix 3:
Study One: Questionnaire..........................................................................................189

Appendix 4:
Study Two: Ethics Approval - Psychiatrists’ KAB of STIs and BBVs............................197

Appendix 5:
Study Two: Participant Information Sheet.................................................................200

Appendix 6:
Study Two: Questionnaire.........................................................................................202
LIST OF TABLES

Table 2.1 Descriptions of notifiable STIs and BBVs……………………………… 12
Table 3.1 Risk Factors for patients with severe mental illness and the
general population…………………….................................................. 35
Table 3.2 Prevalence of STIs and HCV in patients with severe mental illness…… 38
Table 3.3 Prevalence of HIV infection in patients with severe mental illness……… 40
Table 3.4 Rates of HCV exposure stratified by IDU history and groups - patients with
SMI and the US population, from Rosenberg et al (2001)…………………… 41
Table 3.5 Rates of HBV exposure stratified by IDU history and groups - patients with
SMI and the US population, from Rosenberg et al (2001)………………….. 42
Table 3.6 Risk of HIV according to Risk Behaviours for patients with SMI………… 43
Table 4.1 Comparison of Sexual Identity and Experiences………………………… 73
Table 4.2 Comparison of Sexual Activities………………………………………… 75
Table 4.3 Comparison of Number of Opposite-sex partners Ever (excludes sex work). 76
Table 4.4 Comparison of Number of Opposite-sex partners in the last 12m
(excludes sex work)…………………………………………………………… 77
Table 4.5 Comparison of rates of Condom Use ........................................ 78
Table 4.6 Comparison of Regular Relationships…………………………………… 79
Table 4.7 Comparison of Partner at Last Sexual Encounter………………………… 80
Table 4.8 Description of Risk history of Sexual Contacts Ever…………………… 81
Table 4.9 Comparison of Experiences of Sex Work for Women…………………… 82
Table 4.10 Comparison of Experiences of Sexual Coercion Ever…………………… 83
Table 4.11 Description of Drug usage ever and in the last 12 months……………… 83
Table 4.12 Comparison of IDU and Sharing Activities……………………………… 84
Table 4.13 Comparison of “Other” Risk Factors – Tattoos, Body Piercing
and Incarceration……………………………………………………………… 85
Table 4.14 Comparison of Self-reported STI/BBV rates……………………………… 86
Table 4.15 Description of Biological Sample - BBV and STI rates for study sample… 87
Table 4.16 Description of BBV and STI rates for study sample compared to
Cumberland Hospital……………………………………………………………. 89
Table 4.17 Comparison of Drug Use in the last 12 months by Injecting Drug Users….. 90
Table 4.18 Comparison of HCV risk by IDU Risk Activities for Injecting Drug Users.. 90
LIST OF FIGURES

Figure 2.1:
Conceptual model of the integration of population and individual level factors in the study of epidemics of sexually transmitted infections and HIV……13

Figure 4.1:
Map Cumberland Hospital, Western Sydney, Australia…………………………56

Figure 4.2:
Participant Flow Chart for Patient Involvement in Study One………………….60

Figure 5.1:
Participant Flow Chart for Psychiatrist Involvement in Study Two……………..106
ABBREVIATIONS

AI Anal Intercourse
AIDS Acquired immuno-deficiency syndrome
AIVL Australian Injecting and Illicit Drug Users League
ASHR Australian Study of Health and Relationships: Sex in Australia
BBV Blood Borne Virus
CATI Computer assisted telephone survey
CDC Centre for Disease Control and Prevention
D & A Drug and Alcohol
GP General Practitioner
ICPMR Institute for Clinical Pathology and Medical Research
HAV Hepatitis A virus
HBV Hepatitis B virus
HCV Hepatitis C virus
HIV Human immunodeficiency virus
HPV Human papilloma virus
HSV Herpes simplex virus
Hx History
KAB Knowledge Attitude Behaviour
LSE Last Sexual Encounter
MSM Men-who-have-Sex with Men OR Male-to-Male Sex
NHMRC National Health and Medical Research Council
NSP Needle and Syringe Programme
NSW New South Wales
OI Oral Intercourse
RANZCP Royal Australian and New Zealand College of Psychiatrists
SMI Severe Mental Illness
STD Sexually Transmitted Diseases
STI Sexually Transmitted Infection
SWAHS Sydney West Area Health Service
VI Vaginal Intercourse
CHAPTER ONE

Introduction and Overview of the Research

This thesis explores the risk of sexually transmitted infections (STIs) and blood borne viruses (BBVs) for patients with severe mental illness (SMI), in an acute care psychiatric inpatient setting of western Sydney, Australia.

There is a systematic literature review and two research studies comprising this thesis. The literature review assesses the situation and sets the scene for the research. Whereas Study One is an investigation of patients’ risks and Study Two investigates the approach of doctors working in psychiatry, to this risk.

Severe mental illness is a significant health burden both directly and indirectly. An Australian study concluded that for patients with severe mental illness, there is “...a picture of excessive risks of all major physical illnesses in such a marginalised and vulnerable group of our population, and (which) raise serious questions of equity in healthcare provision for the mentally ill” (Lawrence, Holman, & Jablensky, 2001, p. 12). Severe mental illness has a serious impact on a person's ability to function effectively over a long period, and contributes to a lack of autonomy and poor socialisation. Psychiatric illness is associated with other significant physical ill health as a consequence of lifestyle choices, such as smoking, or metabolic syndrome which occurs with antipsychotic medication side effects as well as lifestyle choices (Cohn & Sernyak, 2006a).

Patients with SMI, as a vulnerable group, may experience other significant health disorders such as STI and BBV infections. Overseas studies have shown risks of infections such as human immunodeficiency virus (HIV) and hepatitis C virus (HCV) amongst people with SMI (Rosenberg, Goodman, Osher, Swartz, Essock et al., 2001). Retrospective studies suggest that patients with SMI have had higher levels of other sexually transmitted infections. Persons with SMI are at risk of acquiring infections that are blood borne or contracted through sexual contact, because of risk behaviours (Davidson et al., 2001; Lawrence et al., 2001; Thompson
et al., 1997). Potential STI or BBV epidemics amongst the severely mentally ill population can only add to their health burden (Hercus, Lubman, & Hellard, 2005; Lawrence et al., 2001).

STI or BBV infections that may add to the health burden for patients with SMI should be circumvented, with assessment and management of the potential risk. Review of the extent and types of risk that patients with mental illness have for STI and BBV infections is paramount for successful risk prevention. An appraisal and analysis of the existing literature and published reports has identified key risk factor issues, as well as provided guidance for the two research studies undertaken as part of this thesis (Eagar, Garrett, & Lin, 2001; Lambert, Velakoulis, & Pantelis, 2003). These key risk issues, such as risk behaviours, risk networks and prevalence of infections, require an understanding of the epidemiology of STIs and BBVs and associated risk factors, both globally and for Australia. The prevalence and effects of mental health disorders need to be understood to appreciate the context of mental illness for an individual and the impact the mental illness has for an individual’s risky behaviour. Some of the effects, or sequelae, of mental health disorders, such as illicit drug use, overlap with the risk factors for STIs and BBVs. There is also a need to explore the associations between risk factors and infections for patients with severe mental health disorders.

For inpatients with SMI, doctors working in psychiatry play a potentially critical role in supporting their patients’ sexual health as well as mental health. Doctors working in psychiatry are key healthcare providers in the hospital setting and a review of their knowledge, attitudes and behaviour practices regarding STIs and BBVs would help in planning better assessment, treatment and support for patients. This thesis and research stems from the researcher providing monthly sexual health clinical services to patients at a large urban psychiatric hospital, as a sexual health physician. Anecdotal observations suggested a high frequency of both risk behaviours and infections in this population and limited healthcare for such problems. Research was needed to provide data that would guide the direction of future planning of health services and prevention programmes.
Study One of this thesis, aimed to identify the risks for STIs and BBVs for inpatients with SMI. It was conducted in Australia, and is the first to explore rates of notifiable STIs and BBVs. It explored a wide range of risk factors including risk partners, as well as the prevalence of STIs and BBVs.

Study Two of this thesis, explored the knowledge, attitudes and behaviour of doctors working in psychiatry toward assessment and management of STIs and BBVs, and especially HCV. The study attempted to look at the factors involved in identification of risks, if present, for patients.

This thesis has six chapters. Chapter One (this chapter) provides the introduction and overview to the thesis and outlines the motivation and requirements for the research study. In Chapter One, each chapter is briefly described to provide guidance through the thesis.

Chapter Two, provides background information regarding sexual and mental health issues in Australia. It describes STIs, BBVs and associated risks at various levels including the role that risk factors and risk partnerings play in transmission dynamics. Current public health problems such as specific infections and risk groups may be important for patients with SMI, are described. Chapter Two, describes SMI and relevant Australian epidemiology and provides an overview of the sequelae of SMI, the environment of a psychiatric ward for patients and the role of the psychiatrist in a hospital setting (Lelliott, 2006; Quirk, Lelliott, & Seale, 2006), that may add to risk.

Chapter Three provides a literature review and analysis of prior research examining (i) the risk of STIs and BBVs in patients with SMI and (ii) healthcare workers assessment of STIs and BBVs for patients with SMI. It discusses previously investigated risk behaviours, risk partnerings and levels of infections and explores the extent of risk for an STI or BBV accompanying a diagnosis of SMI. The second part of the review identifies from Knowledge, Attitude and Behaviour (KAB) Surveys, the assessment practices of groups, such as GPs.
Chapter Four provides aims, methods, results, discussion including strengths and limitations for Study One. Study One is a cross-sectional-analytic study of risk for STIs and BBVs for inpatients with SMI. This is the first Australian study to widely assess risk factors and infection prevalence rates for patients with SMI. A comparison of the findings for this small group with SMI, with Australian population data is made for each set of results. The discussion summarises findings based on objectives and compares findings with previous research. Discrepancies are highlighted in order to help identify future recommendations in improving the health for patients with SMI.

Chapter Five covers the aims, methods, results, discussion including strengths and limitations for Study Two. This study explores the knowledge, attitudes and assessment behaviours of doctors working in psychiatry, toward their patients with respect to STI and BBV risk. There have not been prior Australian studies that explore the knowledge, attitudes and behaviour of key healthcare workers, such as psychiatrists, regarding STIs and BBVs and their perspective may be important regarding risk for patients. Here too a summary of the objectives, including a comparison of findings with other researched groups, is provided in the discussion.

Chapter Six integrates the findings across the two studies and links the aims of the study and background literature. Major patterns, trends and generalizations, including the likely mechanisms underlying these patterns are discussed. The chapter concludes with implications of the present results for other unanswered questions regarding healthcare requirements.

Chapter Seven concludes the thesis and provides recommendations regarding the potential public health impact of findings. Suggestions for future research are made, as well as applicability and extension of recommendations to psychiatric healthcare settings.
CHAPTER TWO

Sexual and Mental Health in Australia

2.1 INTRODUCTION

This chapter focuses on the sexual health disorders of sexually transmitted infections (STIs) and Blood Borne Viruses (BBVs) and the mental health disorders termed severe mental illness (SMI) in Australia. Definitions and epidemiology, including risks, for these two groups of disorders are reviewed. At the end of this chapter there is an exploration of the overlap for these two significant health problems as they may occur in the hospital setting of the psychiatric ward, providing an understanding of the ongoing risk for patients and the interest for this thesis.

2.2 SEXUAL HEALTH IN AUSTRALIA

To identify a sexual health disorder an understanding of sexual health is needed, which has been defined as

“…a state of physical, emotional, mental and social well-being related to sexuality (how people experience and express themselves as sexual beings); it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled…” (WHO, 2002, p. 5).

Sexual health is a broad concept and refers not only to “the health of reproductive organs but also to the psychological, emotional and relationship aspects of sexual behaviour” (Australian Institute of Health and Welfare (AIHW), 2000, p. 38). An individual’s ability to have safe, as well as satisfying sexual experiences can be
impacted by sexual health disorders relating to infection, sexuality, sexual function and relationships.

Sexual health disorders encompass a diverse number of pathological conditions as well as infections. This includes infections such as STIs (e.g. chlamydia) or BBVs (e.g. hepatitis C virus (HCV)) (Centers for Disease Control and Prevention, 2006b), unintended pregnancy and abortion, pregnancy complications, infertility and chronic pain or cancer resulting from STIs and BBVs. It is important to note that some infections can affect sexual health, but may not usually be deemed sexually transmitted, such as HCV (which is a BBV) and tuberculosis. One’s sexual health can also be influenced by mental health problems, acute and chronic physical illnesses, as well as psychological, social or economic problems, such as experiencing violence (WHO, 2002). The issues of sexuality, sexual functioning, gender, safety and autonomy must also be included when considering sexual health. The ability to have safe and satisfying sex is impaired in the presence of an infection, fear of acquisition of an infection, fear for safety or fear of possible complications such as infertility and chronic pain. For persons with a mental illness these fears may be compounded. Persons with mental illness have the dilemma of a chronic mental health problem adversely affecting their autonomy, safety, social skills and relationships. As well as the effects of their illness, their sexual health is affected by associated psychiatric medical therapy, with ensuing sexual health problems such as sexual dysfunction (Ross, 1999). As such some researchers have stated that sexual activity for a person with a mental illness is infrequent (Akhtar & Thomson, 1980), and impaired (Gupta, Andreason, Arndt, Flaum, Hubbard et al., 1997), and may not be a prominent activity for patients with SMI. Part of this thesis is to explore such assumptions of the level of sexuality. Although this thesis focuses on STI and BBV infections, the researchers are mindful of the full impact that infections may have on sexual health for patients with SMI.
2.3 SEXUALLY TRANSMITTED INFECTIONS and BLOOD BORNE VIRUSES

Sexually Transmitted or Transmissible Infections (STI) and Blood Borne Viruses (BBVs), are infections of human beings that can be acquired by sexual transmission, blood contact or transmitted vertically from mother to child at birth. Infections that can be sexually acquired and most often diagnosed in developed countries, such as Australia, include gonorrhoea, chlamydia, hepatitis B (HBV), HIV, herpes simplex virus (HSV), human papillomavirus (HPV) that causes genital warts, trichomoniasis, scabies, pubic lice and molluscum (Centers for Disease Control and Prevention, 2010; Sexual Health Society of Victoria, 2008). Some infections transmitted by contact with infected blood, which can occur with injecting drug-sharing situations, are categorised as BBVs and include HIV, HBV and HCV. There can be overlap in the modes of transmission and some infections are more effectively transmitted by one mechanism compared to another. STI and BBV infections may be regarded as those that are mostly derived from intimate social interactions such as sexual intercourse or injecting drug use. Wasserheit and Aral (1996) have noted in regard to STIs that “…(these) … Pathogens that have been sufficiently diabolical to link their transmission to an act that is essential to survival of the human species, sex…” making control difficult. BBV infections occurring with illicit injecting drug use are a relatively recent phenomenon of the 20th century, resulting from completely nonessential behaviours and, theoretically should be more readily controllable.

Notifiable STI and BBV infections in New South Wales (NSW), Australia, are chlamydia, gonorrhoea, syphilis, donovanosis (which is rare), HBV, HIV and HCV as directed by legislation (NSW Parliament, 1991). This legislation requires de-identified notification of confirmed infections to NSW Health by all pathology laboratories. In NSW, doctors report only clinical disease states of STI or BBV infections such as acute hepatitis, early syphilis and acquired immunodeficiency syndrome (AIDS). Other Australian states may have reports of confirmed infections from both laboratories and doctors. Laboratory notifications, rather than doctor notifications, overall provide a better surveillance of the epidemiology of STIs in the different states of Australia (Blogg & Trent, 1998; Staff, Lawrence, Lui, Maywood,
The notifiable STIs and BBVs are those most prevalent, easily identified from a diagnostic pathology test and notification is considered necessary for their prevention and control. As infections with public health consequences they receive greater public health attention and public funds. Surveillance of notifiable infections helps “…measure disease trends, assess the effectiveness of control and prevention measures, identify populations or geographic areas at high risk, allocate resources appropriately, formulate prevention strategies, and develop public health policies” (Centers for Disease Control and Prevention, 2011b, p. 2). There are other STIs that are not notified either because they cannot be easily identified in the laboratory, do not have an effective intervention or pose less of a public health threat, despite being prevalent (e.g. HSV, HPV and trichomoniasis infection). Study One of this thesis will examine the frequency of notifiable STIs and BBVs for patients with SMI.

The epidemiology of STIs and BBVs describes the patterns and risks for these infections and considers both the risk in acquiring and the risk in transmitting infection. Inherent in determining epidemiology is transmission dynamics – the description of how infections spread through the population influenced by risks at the individual, partner and community levels and creating unique transmission dynamics for each infection-population coupling (Garnett, 2008). Section 2.3 “Risk Factors for STIs and BBVs”, expands on risks and transmission dynamics. Many of these STI and BBV infections pose public health problems, occurring frequently and widely, with significant morbidity and mortality. There are effective prevention measures and therapies available that can minimise disease and the impact on patients and society. Prevention may be at different levels, for example primary; avoiding initial infection, such as with the use of condoms. Prevention may be secondary, with treatment and elimination of infection prior to disease or transmission, as occurs with screening. Lastly tertiary prevention, which attempts to eliminate or manage an infection causing disease, may be the only measure available. An example is HIV treatment to minimise HIV virus load and subsequent transmission risk.

In Australia, risk is unevenly distributed. Men-who-have-sex-with-men (MSM) have had higher rates of STI and BBV infections as well as persons from an Indigenous
background (Miller, Law, Torzillo, & Kaldor, 2001) (National Centre in HIV Epidemiology and Clinical Research, 2007), though in recent years declining rates have been reported for Indigenous groups (Huang, Torzillo, Hammond, S.T, & Kirby, 2008). Other key groups with high prevalence rates of infection, depending on the type of STI or BBV, include young people, injecting drug users (IDU), sex workers and some heterosexual immigrants. MSM are at risk for HIV, gonorrhoea and syphilis. Young people are at risk for chlamydia, IDUs are at risk for HCV, sex workers may be at risk of all infections and heterosexuals who are immigrants from some high prevalence countries are at risk for HIV or HBV (NSW Department of Health, 2006a, 2006b, 2007).

Infections have biological differences that add to the risk picture and consideration of the biology of the infecting organism and the immunology of the vulnerable person, infection synergy and preventative health measures is needed to assess risk. The biological risk factor of infection transmission is enhanced in the presence of another infection or impaired immunity. Mayaud et al (2001) have proposed a model explaining the relationship of STIs with HIV. HIV with immune suppression modifies the duration and severity of other infections in an individual and adds to transmission risk allowing a larger HIV inoculum to be present and transmitted and for other infections to be readily acquired (Jin, Prestage, Matthews, Zablotska, Rawstorne et al., 2010). Likewise STIs that cause ulceration and inflammation enhance HIV acquisition at the mucosal surface. An illustrative example is the extensive HIV epidemic in Sub-Saharan Africa which can be understood by the combination of communities with high STI and BBV rates, immune suppression and concurrent partnerships (Doherty, 2011). In recent years, many governments have given some priority to STIs only because of their potential interaction with enhanced transmission for HIV (Commonwealth of Australia, 2005; Renton, Whitaker, & Riddlesdell, 1998). It seems that even HCV exposure may also facilitate the spread of HIV, and both infections magnifying public health problems (Polis, Shah, Johnson, & Gupta, 2007).

For some infections, the mode of exposure plays a biological role in transmission. Though transmission dynamics of BBVs have been less studied, it has been
documented that infections such as HCV and HBV, are more efficiently transmitted by blood-to-blood contact than is HIV (MacDonald, Crofts, & Kaldor, 1996). The risk of HIV acquisition by percutaneous mode is well under 1% whereas both HBV and HCV may have a high risk of up to 30% (MacDonald et al., 1996). As HCV is more efficiently transmitted through blood contamination it has not been deemed an STI, as there is negligible transmission for penile vaginal sex and even for sexual practices among HIV negative men (Jin, Prestage, Kippax, Kaldor, G.J. et al., 2005). More recently, it has been recognised that HIV positive MSM, or contact with and HIV positive MSM, are risk factors for HCV from sexual transmission. This may be because of more traumatic, “bloody” sexual activities, a higher level of IDU and HCV, as well as immune suppression in this subgroup (Centers for Disease Control and Prevention, 2011a; Jin et al., 2010; Mahony, Donnan, Lester, Doyle, Knox et al., 2013). Study One will review whether injecting drug use or HIV MSM are prominent risks for patients with SMI.

Another biological factor determining STI epidemics are the unique population-pathogen interactions. Infections such as gonorrhoea and syphilis require multiple partnerships either concurrent or of short duration to be maintained and hence are present in unique very sexually active networks such MSM (Anderson, 1999; Garnett, 2008). Other infections, such as chlamydia, do not require as many risk partnerings and are more widely distributed in the community. Viral infections such as HIV, HBV and HCV are long lasting infections and may only require as little as two contacts over many years to maintain an epidemic (Anderson, 1999; Mann & Roberts, 2011; Mathe, Van Dooren, Lemey, Van Damme, Buntinx et al., 2008; Pybus, Cochrane, Holmes, & Simmonds, 2005).

Table 2.1 highlights the Australian situation regarding STIs and BBVs. As can be seen chlamydia and Hepatitis C infections are the most common. Each infection has a unique risk group in which prevalent infection is more likely to be diagnosed. It is recognised that for some infections diagnosed such as Hepatitis B and C that diagnoses can be of new infections or of existing infections that have only recently been recognised. Australia, like many other countries, has had the profile of STIs and
BBVs influenced by migration and travel to countries with high background STI or BBV prevalence.

Study One, of this thesis will explore if patients with SMI have elevated rates of STI or BBV infections and thus potentially at risk for other infections such as HIV. Study One will assess the sexual and substance use activities of patients with SMI that govern the extent that each infection is present in this group.
<table>
<thead>
<tr>
<th>Infection</th>
<th>Cases in 2009</th>
<th>Rate in 2009 per 100 000</th>
<th>Transmission</th>
<th>Risk of Transmission</th>
<th>Chronicity</th>
<th>Number needed to infect</th>
<th>Australian Risk groups</th>
</tr>
</thead>
</table>
| Chlamydia    | 60,000       | 272                      | sexual       | medium to high       | nil        | 1-3 q12m                 | - young people
                       |              |                          |              | high                  |            |                          | - recent partner change
| Gonorrhoea   | 8040         | 36                       | sexual       | high                 | nil        | 1-3 q6m                  | - MSM
                       |              |                          |              |                       |            |                          | - sex tourists
| Syphilis     | 1300         | 5.8                      | sexual       | high (early)         | Latent (if untreated) | 4-7 q6m                  | - early syphilis - MSM
                       |              |                          |              |                       |            |                          | - latent
                       |              |                          |              |                       |            |                          | - immigrants from high prevalence
| Hepatitis B  | 7340         | 32.9                     | newly diagnosed new infection | sexual | high | 5% Adult onset 90% Neonatal onset | 1-2 lifetime
                       | 238          | 1.2                      |               | blood non-specific   |            |                          | - IDU
                       |              |                          |               |                       |            |                          | - ATSI
                       |              |                          |               |                       |            |                          | - immigrants from high prevalence
| Hepatitis C  | 11468        | 51.9                     | newly diagnosed new infection | blood  | high | 75% | 2-4 q10y | - IDU
                       | 401          | 2                        |               | sex (HIV+ve MSM)     | low to med |                          | - immigrants from high prevalence
                       |              |                          |               |                       |            |                          | - HIV+ve MSM risk
| HIV          | 1050         | 5.7                      | sexual       | low                  | 100%       | 2 lifetime               | - MSM
                       |              |                          | blood        |                       |            |                          | - Heterosexual contact
                       |              |                          |              |                       |            |                          | - immigrants from high prevalence
2.4 RISK FACTORS FOR STIs AND BBVs

The risk of STI and BBV infection is a complex interplay at many levels of individuals’ and their partners’ characteristics and behavioural choices within a broader context of their communities. The term “risk” gauges the probability of encountering an infected partner, or the probability of acquiring infection if exposed, the probability of disease if infected, risk of transmitting disease and risk of being infected. The multiple levels of sexual risks are depicted in Figure 2.1 from Blanchard and Aral (2010).

*Figure 2.1 Conceptual model of the integration of population and individual level factors in the study of epidemics of sexually transmitted infections and HIV (Blanchard & Aral, 2010).*

Risk at the individual level is mostly determined by sexual and substance use behaviours and the biological conditions necessary for transmission or acquisition of each infection (Garnett, 2008). Risks at the partner level are determined by partner dynamics and network structures, which have been recently recognised as crucial in
understanding STI and BBV transmission. Studies that have included analysis of partner dynamics and networks have better predicted who may become infected and the extent of an infection problem for the individual and the community (Blanchard & Aral, 2010). Risks for STIs and BBVs also vary according to community level characteristics such as social, economic and cultural factors. These community factors influence the partnership dynamics and affect key areas such as condom use, sexual practices (Gorbach & Holmes, 2003) and drug practices.

2.4.1 Risk at the Individual Level

Individual level “risk factors” are often based on individual sexual and substance use behaviours. Individual level risks may also vary because of biological or “other” risk factors, such as tattooing. Information and knowledge on risk factors has been propagated because of the significant interest in HIV infection (Commonwealth of Australia, 2005). Recent population studies, such as the “Sex in Australia: Australian Study of Health and Relationships (ASHR)”, have surveyed sexual behaviour in the general population and have fine-tuned and contributed to the assessment of risk (De Visser, Smith, Rissel, Richters, & Grulich, 2003b). For example, it has been recognised that use of condoms does not confer meaningful data about risk unless condom use is specified along with type of partner, or type of sexual activity (Peterman, Lin, Newman, Kamb, Bolan et al., 2000). This thesis will assess the extent of such behaviours occurring for patients with SMI.

2.4.1.1 Sexual risk behaviour

Sexual risk behaviour ultimately is sex with one person infected and resulting acquisition or transmission of infection. As this direct risk is mostly difficult to measure, a review of surrogate sexual risk behaviours covering components such as sexual experience, levels of sexual activity, current, concurrent and lifetime number of sex partners, frequency of sexual intercourse, mode of recruitment of partners, duration of sexual unions, types of sexual activity and condom use are explored (Aral & Cates, 1989). Type of sexual activity, is an important question because risk will differ depending on anatomical site of sex, level of trauma to the mucosa and the
biological preference that each organism has in flourishing at a particular site. The most risky sexual practice is anal receptive sex and this risk is enhanced with lack of condom use or sex in a partnership with a higher background prevalence of infection.

2.4.1.2 Substantial use risk behaviour

Risk behaviours related to substance or drug use, cover both injecting and non-injecting drugs.Injecting drug use is implicated in infection with sharing of any injection equipment that may be contaminated with infected blood. All other forms of substance abuse, be it alcohol, cannabis, heroin or inappropriate use of legal drugs can place an individual at risk because of impaired decision making and impaired ability to negotiate safe or consensual sex (Carey, Carey, Maisto, Gordon, & Vanable, 2001) or safe injecting practices. Characteristics of substance use, such as frequency of use, years of drug use and types of drugs play a role in risk. Substance use and abuse creates other socio-economic risks such as involvement in sex work and crime with the possibility of incarceration (Lankenau, Clatts, Welle, Goldsamt, & Gwadz, 2005).

2.4.1.3 “Other” risk factors

“Other” risk factors to be explored as part of this thesis include healthcare risk behaviours, skin penetration practices and incarceration. These risk factors modify sexual and substance use risk behaviours. These “other” risk factors may provide new situations or communities with risk behaviours and high STI or BBV prevalence rates facilitating transmission or acquisition.

Healthcare behaviours are connected to community level risk considerations. The availability of facilities and programmes, determined by community decisions, reflect healthcare and behaviours. An individual may not seek healthcare because it may be inaccessible or unavailable due to geography. Problematic healthcare behaviours include, seeking medical attention late, non-compliance with therapy or lack of notification of sexual contacts. Healthcare behaviours can be mixed risks with patients choosing screening and treatment as means of minimising risk rather than
primary preventative behaviours such as condom use. Other healthcare behaviour may have a preventive care component such as vaccination for the prevention of a sexually transmissible infection, or HCV therapy to eradicate HCV infection. Current HCV therapy of weekly interferon injections and daily ribavirin tablets, is long and arduous and may fail despite good efforts. As such, some patients recognise the difficulty of a 24 or 48-week regime and choose not to commence therapy. At times healthcare behaviours can be altered with the introduction of new and easier regimes that allows a larger cohort to take up treatment and potentially be cured (Dore, 2012).

“Other BBV risk factors” include skin penetration practices such as the body arts of tattooing and piercings. Tattooing is a significant risk for HCV exposure, more so in the USA (Haley & Fischer, 2001), than Australia (Miller, Hellard, Bowden, Bharadwaj, & Aitken, 2009). Piercings have a potential infection risk if not performed under hygienic conditions and new body art techniques, such as “branding” (Braverman, 2006), may add to the risk picture.

Incarceration is a risk for BBV (Miller et al., 2009; NSW Department of Health, 2007) and also a risk for STI infections (Templeton, 2006). It seems that incarceration conditions create more risky behaviours, such as sex without condoms and unclean injecting equipment in a sub-network with higher background infection prevalence. Patients with SMI do have higher rates of incarceration in the USA and may be exposed to risky behaviours whilst incarcerated (Baillargeon, Binswanger, Penn, Williams, & Murray, 2009).

These particular “other” risk factors will be explored for patients with SMI, looking at the extent that patients are involved in risk situations, such as tattooing, and in preventative healthcare measures.

2.4.2 Risk at the Partner level

The essence of human existence is living in society with special connections within the social networks. The network of sexual contacts through which STIs spread is a sexual network and the contact with whom one shares drug activities is a drug
network involved in BBV transmission (Liljeros, Edling, & Nunes Amaral, 2003). Mixing between individuals is a characteristic of partnerships or contacts, which form within networks. “Partnership and network formation, and the chance of acquiring and transmitting an infection sexually are not random; they are determined by individual factors, cultural values, geography, demography, economics, health service, and political and legal structures” (Low, Broutet, Adu-Sarkodie, Barton, Hossain et al., 2006, p. 2003). Partnerings differ “by duration and sequence of partnerships” for both sexual and drug networks (Morris, Goodreau, & Moody, 2008, p. 117; Unger, Kipke, De Rosa, Hyde, Ritt-Olson et al., 2006) Networks are important in the transmission dynamics of infections at the population level and position in the network is important in the transmission and acquisition of infections at the individual level. Concepts in understanding partnerings include assessing for the number of concurrent partners and the degree of mixing between persons that determines involvement in risk networks (Gorbach, Drumright, & K.K., 2005; Gorbach & Holmes, 2003).

Persons with only one sexual or drug sharing partner at any time can still have different risks. Exclusively long-term single partner relationships may not have any risk nor be in a network. Some individuals have serial single partners, with the duration of the relationship and the “gap” length of time between partnerings important in transmission risk.

Others may have several concurrent sexual or drug sharing partners. Concurrent partnerships play a big role in infection risk. The degree of risk for different concurrent partners, who may be in different sexual networks, is based on the prevalence of infections in each network and the degree of mixing (Aral & Leichliter, 2010).

“Mixing” considers the choices of partners based on race, gender, age and other variables. Understanding “mixing” helps explain some problems such as the perpetuation of high STI and BBV rates for African Americans, despite similar or even safer behaviours than Caucasian Americans (Centers for Disease Control and Prevention, 2001). Explanation for this discrepancy is that their partner choices are
usually with other African Americans within this tight and small network with a background of high STI and BBV prevalence (Hallfors, Iritani, Miller, & Bauer, 2007). The larger Caucasian American group has a wider choice of partners, broadening the network and lessening risk of encountering an infection. African Americans choose similar partners by race, but partners are dissimilar by risk. In contrast, Caucasian Americans are much more likely to find partners that are similar by race and by risk (Laumann & Youm, 1999). Hallfors et al. (2007, p. 130), comment that “this combination of assortative (like with like) mixing by race and disassortative mixing by risk group may create a ‘perfect storm’ effect for Blacks that results in very high STD and HIV rates…” Such mixing may explain the Australian epidemiological profile of high STI and BBV rates for persons of Indigenous background. Risks are based on both the individual’s and their partners’ risk behaviours, within the context of their sexual networks.

Risks for BBV infection can vary by network and is based on the pattern of drug use and social structure of the involved drug network. In the USA, cocaine user’ networks differ from heroin user’ networks. Cocaine users are more likely to be chaotic and more likely to be both HCV and HIV positive than heroin users, who tend to be only HCV positive (De, Cox, Boivin, Platt, & Jolly, 2007).

In Australia, IDU networks have prevalent HCV exposure and not HIV. HIV from IDU activities is relatively low at 3% of all new HIV diagnoses, during 2005-2009, and at a 1% prevalence rate of all persons with an IDU history (National Centre in HIV Epidemiology and Clinical Research, 2010, p. 11). In Australia, it has been recognised that persons who have both HIV as well as HCV, are more likely to report both IDU and MSM risk behaviours, and be a unique network with sexual and drug risks (National Centre in HIV Epidemiology and Clinical Research, 2010, p. 22). MSM that also inject drugs are probably at risk because of risk sexual and substance use behaviours. Studies of blood donors (Shev, Hermodsson, Lindholm, Malm, Widell et al., 1995) and of injecting drug users (Latkin, Kuramoto, Davey-Rothwell, & Tobin, 2010), have explored this issue with findings that those part of more risky drug networks are more likely “to endorse both risky needle-sharing and sex norms” (Latkin et al., 2010, p. 1159).
Conversely, longitudinal studies have found that “over and above IDUs’ baseline characteristics, changes in their personal networks are associated with changes in individuals’ risky injection behaviours”, including reduction in drug behaviour risks if new social contacts were not involved in IDU activities (Costenbader, Astone, & Latkin, 2006, p. 1003).

Networks or subpopulations with a higher risk for STIs and BBVs based on high risk behaviours and high risk partner choices may be identified or “marked” by particular attributes. Most work defining risk networks are US based, with little work in Australia apart from examining MSM groups. Such risk networks have previously been termed “core groups”, “priority groups”, “risk markers” or “risk indicators” (Huygens, Kajura, Seeley, & Barton, 1996; Johnson, Mercer, Erens, Copas, McManus et al., 2001; Smith, Rissel, Richters, Grulich, & de Visser, 2003b). These high-risk “marked” populations act as reservoirs of infection for STIs or BBVs because they do not have symptoms, may not get treated, or, cannot always be cured despite treatment, as is the case for HIV and HCV. This core group has important variables perpetuating the risk, such as higher rates of sexual partnerships or substance abuse. In addition, risk may be because of the social consequences of marginalisation and inaccessibility to healthcare. It is argued that networks of core groups have the potential to sustain the endemic and epidemic transmission of STIs and BBVs (Thomas & Tucker, 1996). Being a member of the group is not sufficient evidence that an individual has the infection in question. For example, being a young person is a marker for STIs. The risk is not just being young because those who are not yet sexually active will not have any risk. But for other young people, their new found sexual expression and partner choices may mean experimentation and less heed for sexual safety (Aral, 2004). The level of social networking or interaction of this core group with the general population will influence the extent of transmission and the epidemiology of STIs and BBVs (Mayaud & McCormick, 2001). For sexually transmitted infections there can be significant interactions between core groups, with high rates of risk behaviour or infection and general populations, whereas blood borne virus infections tend to congregate in the core groups (Low et al., 2006).
Formally written strategies for addressing BBVs and STIs by NSW Health (NSW Department of Health, 2006a, 2006b), term core groups, “priority groups”. NSW Health defines these priority groups as; MSM, young people, persons who have ever injected drugs, have HIV, are bisexual, are a sex worker, have multiple simultaneous partners, are from an overseas country, or have ever been in gaol (NSW Department of Health, 2006a, 2007; NSW Department of Health Sydney, 2006; UNAIDS, 2009).

In the current study, it is postulated that some patients with SMI may be a unique risk group network - a core group that is important in the spread and perpetuation of infection. This thesis will explicitly explore sexual risk partners. Such partners may be part of any priority groups, as discussed in the previous paragraph. Risk partnerings may include any sex of a commercial nature, such as sex with payment, or be of a casual nature, or even coercive (Silverman, McCauley, Decker, Miller, Reed et al., 2011). This thesis will evaluate any patterns of partnerings reported by patients with SMI.

2.4.3 Risk at the Community level

Wider community and population factors contribute to the risk picture such as health programmes, travel and political and economic situations of different populations. “Social forces (can) affect the distribution of STIs through their effects on behaviour, networks, and risk of exposure to infection” (Aral, Adimora, & Fenton, 2008, p. 337). African Americans’ risk is strongly influenced by poverty and violence that create a sex ratio inequality, with fewer men than women overall, and fewer financially secure men in the community.

In developed countries, some communities of individuals may be economically forced by their circumstances to crime or prostitution (Aral & Holmes, 1999). This may be because their potential productivity is too low for them to be employable. Groups in such circumstances may be injecting drug users, new immigrants, the
homeless, long-term unemployed, those in gaol, and all of these groups may include patients with SMI (Aral & Holmes, 1999).

Community level variables have the potential to add to the risk of infection. This thesis will tentatively examine the role community level risk creates for patients with severe mental illness by starting to look at their position in various networks and community.

2.5 MENTAL HEALTH IN AUSTRALIA

Assessment of patients with severe mental illness requires an overview of mental health in Australia. Mental Health is not simply the absence of mental health disorders - be it anxiety or severe mental illness. Mental Health describes the capacity of individuals and groups to interact with one another and the environment, in ways that promote subjective well being, optimal development, use of mental abilities (cognitive, affective and relational) with achievement of individual and collective goals.

WHO (2001) defines mental health as a state of emotional and social well-being, in which the individual realises his or her own abilities, can cope with the normal stresses of life, can work productively or fruitfully and is able to make a contribution to his or her community. A person that does not have this well-being and autonomy, and lacks good mental health, is more likely to suffer in their sexual as well as social interactions (WHO, 2001). Mental health problems may be transient, or they may meet criteria to constitute a mental disorder, requiring ongoing psychological or medical care (Australian Health Ministers, 1991).

One of the main barriers to good “mental health” is having a mental health disorder. Mental disorders refer to a spectrum of cognitive, emotional and behavioural disorders that interfere with the lives and productivity of people. The more common, but less debilitating disorders, such as depression and anxiety, have been termed “high prevalence” disorders and affect 10-20% of the population (Andrews, Hall, Teesson, & Henderson, 1999; Judd, Jackson, Komiti, Murray, Hodgins et al., 2002).
The less common but more incapacitating disorders, have been called “low prevalence” and “severe mental illness” with a significant and detrimental impact for the 1-2% of the population affected (Commonwealth Department of Health and Aged Care, 2000). This thesis will study patients with severe mental illness.

2.6 SEVERE MENTAL ILLNESS

The low prevalence severe mental illnesses (SMI) are hallmarked by “psychotic disorders” with deleterious effects. The main psychotic disorders are schizophrenia spectrum disorders, bipolar disorder, severe depression with psychosis and other psychosis. Jablensky et al (1999, p. 13) describe the main symptoms of psychotic disorders; as delusions (incorrect beliefs out of keeping with the shared beliefs and values in the culture), hallucinations (perceptions without external stimuli, e.g. hearing voices), disorganised thought, speech and non-verbal communication and loss of motivation and planning ability. “Psychotic disorders affect the most basic functions that give a person a feeling of individuality, uniqueness and self-direction” (WHO, 1994, p. 13), causing severe impairment and difficulties operating in society (Lawrence et al., 2001). These conditions have been reviewed in Australia as part of the National Survey of Mental Health and Well-being Report 4 (Jablensky, McGrath, Herrman, Castle, Gureje et al., 1999). One to two percent of the general population is affected and at any one time 3 to 5 out of every 1000 adults may have a psychotic illness (Jablensky, McGrath, Herrman, & et al., 2000).

Severe mental illness is very incapacitating with a high likelihood of prolonged hospitalisation. Jablensky et al (1999) found that just over 50% of Australian patients with SMI had a hospital admission in the last 12 months, with over 70% spending more than 2 weeks in hospital, with a mean length of stay of 13 weeks (median was 6 weeks). Patients with schizophrenia had longer stays than patients with mood disorders. Despite the lower point prevalence of such problems they pose huge public health and economic costs due to the severe disability. Almost half of the group with SMI, surveyed by Jablensky (1999), was not able to work, socialise or perform daily activities. Severe mental illness is a public health problem because of the magnitude
and effect of the illness on patients and society. Schizophrenia and bipolar disorder features are briefly described exemplifying severe mental illnesses.

Schizophrenia affects about 1% of the population and begins in the young adult years (American Psychiatric Association, 1994). The incidence of new schizophrenia diagnosis is about 1 per 100,000 of the population (American Psychiatric Association, 1994). About half of all those afflicted will be disabled because of repeated episodes of illness and difficulty in treating symptoms. Most people will display a prodromal phase of altered, withdrawn and bizarre behaviour. Symptoms for persons affected with schizophrenia include perceptions of reality that are extremely different to others and usually frightening for them such as hearing voices (auditory hallucinations), believing that people can read their minds or control their thoughts. They may have disorganised speech and behaviour making them incomprehensible or frightening to others. The signs for schizophrenia may include social withdrawal, hostility or suspiciousness, deterioration of personal hygiene, flat and expressionless gaze, inappropriate laughter or crying and strange use of words or way of speaking.

Mood disorders such as bipolar and even severe depression can occur with psychosis and be severe mental illnesses. Bipolar disorder is the well known mood disorder but occurs less frequently than schizophrenia and less frequently than depression (American Psychiatric Association, 1994; Baker, 2001), with a lifetime prevalence is 0.2%-0.4% as quoted by Perälä et al (2007). Symptoms for the patient developing bipolar disorder may be feelings of hopelessness, sadness or emptiness, inability to experience pleasure, irritability, fatigue or loss of energy, physical and mental sluggishness, appetite or weight changes, concentration and memory problems, feelings of worthlessness or guilt and thoughts of death or suicide. The classic description of bipolar signs includes elevated but also labile mood, grandiosity, lack of insight, disinhibition, flight of ideas (racy) and impulsivity associated with mania – hypersexual or promiscuous behaviour (Saddock & Saddock, 2000) and other excesses such as alcohol, gambling and risky business ventures.
The natural history of SMI is of a chronic health problem with slow deterioration and frequent exacerbations. Patients develop additional medical problems along the way, particularly metabolic syndrome, a combination of medical conditions that predispose to cardiovascular disease and diabetes. Patients have a reduction in average lifespan related to the risk of suicide, smoking, diet, accidents, poverty and problems from use of both legal and illegal drugs. People with SMI may be homeless, disorientated, disorganised, have poor judgement and unable to maintain social or personal relationships (Hudson, 2005; Saddock & Saddock, 2000).

### 2.7 RISK FACTORS FOR SMI

There are many theories for the causation of mental illness but the factors contributing to the development of a mental disorder are still not fully understood. Currently it is recognised that a biological vulnerability with the interaction of psychological, social and environment influences play a significant role (Brown, 2011; van Os & Kapur, 2009).

Biological risk factors in the interplay include; genetic propensity, biochemical imbalance and perhaps infectious agents (van Os & Kapur, 2009). Psychological risks can be a person’s upbringing, emotional experiences, and relationships with others (Rutter & Sroufe, 2000). Social factors may be current life circumstances - never married, unemployment, or life events - such as migration or poverty (Goodyer, 2002; Rutter & Sroufe, 2000). Environmental factors which may be involved include the effects of seasons or exposure to substance use (Kelly, O’Callaghan, Lane, & Larkin, 2003).

Substance use, in particular, has had much written regarding its role in mental illness. It has been considered as a cause for mental illness, as a precipitate for mental illness in those predisposed, and also as a perpetuator of mental illness with a poorer prognosis for those with a dual diagnosis of mental illness and substance use (Siegfried, 1998). Batel (2000) from his review offered three hypotheses to explain the high rate of substance abuse for patients with SMI. His review described (i) the social-environmental hypothesis where drug use is linked to the social, economic and
environmental deprivations associated with mental illness, (ii) the possible shared biological vulnerability, such as common genetic determinants of schizophrenia and abuse of psycho-active drugs and (iii) self-medication, whereby patients with SMI use psycho-active substances to mediate the symptoms of their disorders.

Ultimately, risk for severe mental illness, such as schizophrenia, is complex and multi-factorial. Often patients with severe mental illness remain at risk because medical therapy fails to rehabilitate fully. Therapy does not address the biological vulnerability that causes altered brain development, or the psychological, social or environmental insults that trigger the illness. Whilst patients are on medication, symptoms are controlled but relapse usually occurs if therapy is ceased (Hilty, Brady, & Hales, 1999; van Os & Kapur, 2009). Lack of normal functioning and quality support from the community, such as accommodation and rehabilitation, may mean additional problems such as homelessness for patients with SMI (Thomas, Romme, & Hamelijnck, 1996), and the likelihood of exposure to risk activities.

2.8 RISKS FOR SMI AND RISKS FOR STIs and BBVs

Theoretically, one can see the connection between the signs and symptoms of SMI, as risk factors for STIs and BBVs. For example, impaired judgement, poor personal relationship skills, disinhibition, sense of worthlessness may mean adverse choices in sexual contacts or lead to risk behaviours such as illicit drug use. Sequelae of mental illness, such as homelessness, substance abuse, poor relationships can be “markers”, external recognisable indicators, of SMI and overlap as indicators of STI or BBV risk.

This thesis will endeavour to assess the risk of STIs and BBVs amongst inpatients in a psychiatric hospital and the extent that SMI and STI and BBV risks overlap. It may be that despite being hospitalised, patients maintain risk behaviours and risk contacts. Study One of this thesis focuses on patients and Study Two on the psychiatrists in a psychiatric inpatient ward, and it is useful to have a portrayal of life in the ward for patients with severe mental illness and the potential risks. Patients are hospitalised when unwell with behaviours that are too difficult or dangerous to be managed as
outpatients. Once in hospital, patients will interact with many healthcare professionals, the consultant psychiatrist, the ward registrars, mental healthcare nurses, clinical nurse specialists, psychologists, social workers and many others. The staff on the ward work as a team to observe, diagnose the illness, provide treatment and rehabilitation activities - even if they may be perceived as tedious by patients. The psychiatrist’s role for unwell patients in hospital settings is largely biological psychiatry (Schwartz, 1987) and to provide “care leadership” (Sims & Sims, 1993), diagnosing, treating and guiding the management for each patient to enable stability and discharge.

Psychiatric inpatient settings in Australia encourage community living and care, but this is not always possible for everyone and some patients have extended hospital stays. The standard model of care for NSW hospitalised patients is admission under the primary care of a psychiatrist. Care is provided by a multidisciplinary team, which includes mental health nurses, social workers, psychologists and junior medical staff. The psychiatrist is responsible for both mental health and physical health problems including STIs and BBVs. Current psychiatric care often consists of a “revolving door” environment with patients having short hospital stays but frequent re-admissions (Haywood, Kravitz, Grossman, Cavanaugh Jr, Davis et al., 1995), because many do not achieve sufficient wellness or control of symptoms.

An ethnographic study identified that this “revolving door” with revolution of patients and visitors meant that “admission ward environments were permeable to the adverse effects of local street life, including drug taking” (Lelliott, 2006, p. 92). The researchers found “that ward membership was temporary and changed rapidly” (patients had very short stays and staff turnover was high); patients maintained contact with the outside world during their stay; and institutional identities were blurred to the point where visitors or new patients could easily mistake staff and patients for one another (Lelliott, 2006). Permeability had both positive consequences, with a reduced risk of institutionalism, and negative consequences such as unwanted troublemakers able to enter the hospital resulting in persistence of adverse activities, such as illicit drug use, among patients.
In addition to the ward permeability, problems of the psychiatric ward, such as a lack of leisure activities, may be contributing to some risk behaviours of inpatients. Quirk et al (2006) provided the opinion that today’s psychiatric wards are inadequately designed with few therapeutic and leisure activities. This leads to inactivity, boredom, aggression (Lelliott, 2006) and even sexual activity on the wards (Warner, Pitts, Crawford, Serfaty, Prabhakaran et al., 2004). Patients may build poor social contacts based on meeting other patients in hospital and continue socialising back in their external environment. Boredom for patients coupled with ongoing contact with the external environment can lead to unfavourable risk behaviours when hospitalised.
CHAPTER THREE

Literature Review: Studies Assessing STI and BBV Risks

3.1 INTRODUCTION

Over the last two decades, there has been recognition that patients with severe mental illness (SMI), are at an increased risk of human immunodeficiency virus infection (HIV) because of high risk behaviours (Cournos & McKinnon, 1997). In 1997, Cournos and McKinnon (1997) comprehensively reviewed many of the studies, conducted up to 1995 exclusively in the USA, that had assessed this problem, and calculated an elevated weighted HIV prevalence rate of 8% for patients with SMI. The review emphasised the public health impact of such a problem and suggested that recognising and addressing HIV risks for individuals would reduce the human and economic cost of the "AIDS epidemic".

A more recent analysis of the literature looking at research exploring STI and BBV risks for patients with severe mental illness was undertaken. This literature review was necessary to provide the latest knowledge of risk factors, rates of prevalent infections, associations and methodology thus guide both Study One and Study Two.

3.2 AIMS and OBJECTIVES

The aim of this literature review was to identify published findings that specify the type and extent of risk for STIs and BBVs amongst patients with SMI. It aimed to explore whether SMI constituted a risk factor for the acquisition of STIs and BBVs. As well, the review aimed to explore the role of healthcare workers in the assessment and recognition of STIs and BBVs, specifically Knowledge, Attitudes and Behaviours as KAB surveys.

1 Parts of this chapter were published as Lagios & Deane (2007)
i. To determine the prevalence of risk factors and prevalence of STI and BBV infections, in people with SMI, in Australia and globally.

ii. To determine the extent that patients with SMI are at risk for STIs and BBVs, in Australia and globally.

iii. Describe findings from prior knowledge, attitudes and behaviour surveys on healthcare workers regarding STIs and BBVs.

### 3.3 REVIEW PROCEDURES

This literature review elaborated on the work of Cournos and McKinnon (1997) and examined publications since 1995, attempting to identify and include studies from other countries as well as epidemiological studies examining associations. The review process included updated Medline and PsycINFO searches. Identified articles were scrutinised to locate key prevalence information and organised into groupings.

The role of healthcare workers regarding STI and BBV assessment was explored descriptively. Review of the studies identified key areas for knowledge, attitudes and behaviours.

#### 3.3.1 Review – The risk of STIs and BBVs for patients with SMI

Searches of Medline and PsycINFO databases along with bibliographical review of acquired publications were conducted. Variations of the following terms were used in the search; "severe mental illness" and "HIV/BBV/STI" and "risk factors"; "severe mental illness" and "HIV/BBV/STI" and "risk markers"; "severe mental illness" and "STI/BBV" and "prevalence"; "severe mental illness" and "HIV" and "prevalence"; severe mental illness" and "HIV" and "prevalence" and "risk factors". The articles that were included presented quantitative data for risk factors and notifiable STI or BBV infections for populations with SMI and general populations. Only 51 articles met inclusion criteria including 21 cross-sectional-descriptive studies determining the prevalence of risk factors, 16 cross-sectional-descriptive studies on prevalence of STIs and BBVs, 4 epidemiological studies, which had a cross-sectional-analytical design, concurrently examining the association between risk behaviours and HIV as
an outcome, and 10 review papers helpful as background but not part of any analysis. National surveys were incorporated in the review to provide population prevalence data for comparison purposes.

The cross-sectional studies’ prevalence information as well as national survey data for the general population was grouped and presented in tables. Infection prevalence data included HIV seroprevalence rates, STI and BBVs rates. Risk factors were presented for sexual risk behaviours, risk partnerings, substance use behaviours and “other” risk factors, such as community based preventative healthcare behaviours. The tables included author, publication year, country, sample type and size, research tools, percentage with schizophrenia/psychosis, participation rates and prevalence rates.

Risk factors are depicted in Table 3.1 for patients with SMI (Carey et al., 2001; Coverdale & Turbott, 2000; Davidson, Judd, Jolley, Hocking, Thompson et al., 2001; Kalichman, Kelly, Johnson, & Bulto, 1994; Rosenberg et al., 2001; Thompson, Checkley, Hocking, Crofts, Mijch et al., 1997). For comparison Table 3.1 has Australian and US population data (Australian Institute of Health and Welfare, 2002; De Visser, Smith et al., 2003b; Grulich, de Visser, Rissel, & Richters, 2003; Grulich, de Visser, Smith, Rissel, & Richters, 2003a, 2003b; Grulich, de Visser, Smith, Rissel, & Richters, 2003c; NHSDA, 2001).

STI or HCV prevalence rate estimated by self-reported or tested STIs or HCV are reported in Table 3.2, (Banger, Olbrich, Fuchs, & Gastpar, 1995; Chang, Lin, Yen, & Wu, 1993; Cividini, Pistorio, Regazzetti, Cerino, Tinelli et al., 1997; Coverdale & Turbott, 2000; Dinwidie, Shicker, & Newman, 2003; Klinkenberg, Caslyn, Morse, Yonker, McCudden et al., 2003; Meyer, 2003; Nakamura, Koh, Miyoshi, Ida, Morikawa et al., 2004; Rosenberg et al., 2001; Said, Saleh, & Jumaian, 2001; Sitzman, Burch, Bartlett, & Urrutia, 1995).

The rate of HIV in groups with SMI are summarised in Table 3.3. Data is from 11 cross-sectional-descriptive sero-prevalence studies (Acuda & Sebit, 1996; Aday & Cornelius, 2006; Ayuso-Mateos, Montanes, Lastra, Picazo de la Garza, & Ayuso-
The extent of risk was reviewed by

i. comparison of risk factors for patients with SMI with the population data

ii. calculation and comparison of the weighted HIV mean for patients with SMI with population data

iii. comparison of HCV, HBV and HIV rates stratified by risk factor history and groups - patients with SMI and population groups

3.3.2 Review - Healthcare Workers’ Assessment of STIs & BBVs

Review of healthcare workers approach to assessing patients has been evaluated by KAB surveys exploring Knowledge, Attitudes and Behaviours. Key words used to identify articles were combinations of “general practice”, “health care workers” “STI”, “BBV”, “HCV”, “knowledge”, “attitudes” and behaviours”.

Prior KAB research had reviewed knowledge of STIs and BBVs in diverse groups, for example one group has assessed the general public (Munoz Sastre, Bacq, Mullet, & Clay Sorum, 2002) and another group of researchers, patients with SMI (Goldberg, Tapscott, C.A., & Wolfe, 2009). Medical Practitioners have been the most extensively studied (Coppola, Karakousis, Metz, Go, Mhokashi et al., 2004; Dev & Sievert, 2002; Mulvey, Temple-Smith, & Keogh, 1997; Munoz Sastre et al., 2002; Richmond, Dunning, & Desmond, 2007; Temple-Smith, Mulvey, & Keogh, 1999). Medical students (Anjum, Siddiqui, Ahmed, Rizvi, & Usman, 2005) as well as other healthcare workers including complementary therapists, dentists, nurses, pharmacists have also been researched (Richmond et al., 2007). Findings from these
studies are presented descriptively, with key knowledge, attitude and behaviour areas highlighted.

3.4 FINDINGS – THE RISK OF STIs AND BBVs FOR PATIENTS WITH SMI

The 51 included studies were predominantly conducted in the USA but other countries had researched HIV prevalence amongst their patients with SMI since the 1997 review by Cournos and McKinnon (1997). Most studies had been conducted on convenience samples of referred patients and may have had selection bias. Australia had six studies, one a HCV prevalence study (Lacey, Ellen, Devlin, Wright, & Mijch, 2007), two studies that evaluated self-reported STIs (Lacey et al., 2007; Shield, Fairbrother, & Obmann, 2005) and four studies assessing risk behaviours in samples of inpatients (Davidson et al., 2001; Lacey et al., 2007; Shield et al., 2005; Thompson et al., 1997). Studies focused predominantly on risk behaviours and HIV infection. None of the studies explicitly considered SMI as a risk and only a few studies explored the level of other STIs or BBVs in patients with SMI.

3.4.1 Prevalence of STI and BBV risk factors for patients with SMI

Cross-sectional-descriptive studies mostly addressing HIV risk, which is similar for STI and BBV acquisition, explored risk factors, particularly behaviours and partnering. Methodology between studies varied and limited comparison of the study factors. Measurement was by clinical records review or structured interview but each study used a unique interview tool. The risk behaviour questions were often broad. For example, most asked about male-to-male sex, such as Thompson et al (1997), but few asked participants specifically about receptive anal intercourse and then neglected to ask about condom usage. Lack of definitions and differences in terminology also hindered comparisons. Use of the term “sexual activity”, for example, had several definitions - vaginal sex only, vaginal and anal sex, any sexual activity with the opposite sex, or just stated as heterosexual sex. This was further complicated by variations in reporting timeframes. Such factors required some results to be recalculated in order to obtain comparable data.
Table 3.1 presents data for six, of the 21 cross-sectional-descriptive studies, that reported a wide range of risk factors over similar time-periods. Other studies, not reported in the table, had analogous patterns of findings. The last 3 columns in the table summarise results from recent US surveys, Australian drug use household surveys and the ASHR, Australia-wide telephone survey, (Australian Institute of Health and Welfare, 2002; de Visser, Smith, Rissel, Richters, & Grulich, 2003a; Grulich, de Visser, Rissel et al., 2003; Grulich, de Visser et al., 2003a, 2003b; Grulich, de Visser et al., 2003c; NHSDA, 2001). There is a wide range of risk behaviours described but none of the studies asked all possible relevant questions.

3.4.1.1 Sexual risk behaviours

Only about half of patients with SMI were having sex compared with the general population. When sex did occur, there were more occasions of risky sexual behaviour for patients with SMI. Behaviours such as having two or more sexual partners in the last 12 months and sex with casual sexual partners were reported more frequently by patients with SMI. Reports of Men-who-have-sex-with-men (MSM) were 4% in a 12 month time period (Coverdale & Turbott, 2000; Davidson et al., 2001) and 22% ever (Kalichman et al., 1994) considerably higher than the ASHR survey figure of 5% ever (Grulich, de Visser, Rissel et al., 2003). Similarly, having sex, after the use of drugs or alcohol, was also reported at seemingly high rates for patients with SMI. Positively, one protective behaviour, such as condom use at last sexual exposure, was reported more frequently by those with SMI (Kalichman et al., 1994; Thompson et al., 1997).

3.4.1.2 Sexual risk partners

Sexual contact with partners that had a risk history appeared high for patients with SMI. As reported in sexual risk behaviour, patients with SMI were more likely to have multiple partners, casual partners and choose partners with risk, such as a history of sex work or injecting drug use. Many reported sex with partners met at the psychiatric hospital, indicating sex with others that had an SMI. The various forms of
exchange for sex, such as participation in sex work or trading sex for favours had too many definitions and direct comparison between studies was not possible.

3.4.1.3 Substance use risk behaviours

Many of the substance use behaviours related to injecting and non-injecting drugs were reported as more prevalent for patients with SMI than the general population (Australian Institute of Health and Welfare, 2002; Carey et al., 2001; NHSDA, 2001). Injecting drug use (IDU) activity for patients with SMI was present in up to 17% of patients (Rosenberg et al., 2001) whereas less than 4% of the general population reported any IDU history ever (Grulich, de Visser et al., 2003a). The reporting of needle sharing compared to any of the population figures was also very high. Even drug behaviours were not easily comparable as some studies used different terms such as non-IDU or illicit drug use and some surveys described marijuana and cocaine use.

3.4.1.4 “Other” risk factors

Access to community programmes indicative of good healthcare behaviours, such as past healthcare attendance resulting in HIV testing, and possibly discussion of AIDS, appeared similar for patients with SMI and the general population in most studies, at about 40%. Few studies explored the extent of STI or BBV screening for patients. One Australian study reported HCV screening uptake at 9% (Lacey et al., 2007).
### Table 3.1: Risk Factors for patients with severe mental illness and the general population

<table>
<thead>
<tr>
<th>Author</th>
<th>Kalichman</th>
<th>Coverdale</th>
<th>Carey</th>
<th>Thompson</th>
<th>Davidson</th>
<th>Rosenberg</th>
<th>NHSDA</th>
<th>AIHW</th>
<th>ASHR</th>
</tr>
</thead>
<tbody>
<tr>
<td>N =</td>
<td>95</td>
<td>92</td>
<td>1558</td>
<td>145</td>
<td>229</td>
<td>931</td>
<td>68929</td>
<td>26744</td>
<td>18591</td>
</tr>
<tr>
<td>Interview Tool</td>
<td>Unique</td>
<td>Unique</td>
<td>AUDIT/ DAST</td>
<td>13</td>
<td>10 item</td>
<td>ARI/ DALI</td>
<td>Unique</td>
<td>Unique</td>
<td>Tel.</td>
</tr>
<tr>
<td>Schizophrenia/</td>
<td>82%</td>
<td>69%</td>
<td>19%</td>
<td>55%</td>
<td>79%</td>
<td>65%</td>
<td>Gen</td>
<td>Gen</td>
<td>Gen</td>
</tr>
<tr>
<td>Psychotic Participation rate</td>
<td>98%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>66%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>96%</td>
<td>77%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>80%&lt;sup&gt;a&lt;/sup&gt;</td>
<td>87%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>having sex last 12m</td>
<td>54%</td>
<td>49%</td>
<td>69%</td>
<td>52%</td>
<td>46%</td>
<td>52%</td>
<td>6m</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2+ partners 12m</td>
<td>53%</td>
<td>14%</td>
<td>19%</td>
<td>21%</td>
<td>17%</td>
<td>21%</td>
<td>6m</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>condom use LSE</td>
<td>24%</td>
<td>-</td>
<td>-</td>
<td>34%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>casual partners recent</td>
<td>53%</td>
<td>16%</td>
<td>-</td>
<td>-</td>
<td>23%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sex coercion</td>
<td>43%</td>
<td>5%</td>
<td>12m</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MSM</td>
<td>22%</td>
<td>ever</td>
<td>4%</td>
<td>12m</td>
<td>-</td>
<td>13%</td>
<td>10y</td>
<td>4%</td>
<td>12m</td>
</tr>
<tr>
<td>MSM anal sex</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9%</td>
<td>10y</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sex with sex worker</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>23%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sex with IDU 12m</td>
<td>8%</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sex with HIV ever</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>4%</td>
<td>&lt;1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sex with bisexual</td>
<td>7%</td>
<td>ever</td>
<td>-</td>
<td>-</td>
<td>19%</td>
<td>10y</td>
<td>1%</td>
<td>12m</td>
<td>-</td>
</tr>
<tr>
<td>sex met psych. hosp.</td>
<td>40%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sex met bar</td>
<td>48%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>sex after D &amp; A use</td>
<td>36%</td>
<td>12m</td>
<td>36%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>IDU ever</td>
<td>IDU 12m</td>
<td>share needles ever</td>
<td>share needles 12m</td>
<td>heroin ever</td>
<td>heroin 12m</td>
<td>non IDU 12m</td>
<td>illicit ever</td>
<td>alcohol use 12m</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------</td>
<td>---------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------</td>
<td>------------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td>16%</td>
<td>4%</td>
<td>-</td>
<td>-</td>
<td>16%</td>
<td>4%</td>
<td>21%</td>
<td>14%</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>14%</td>
<td>1%</td>
<td>-</td>
<td>&lt;1%</td>
<td>7%</td>
<td>1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>17%</td>
<td>-</td>
<td>8%</td>
<td>-</td>
<td>7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.5%</td>
</tr>
<tr>
<td></td>
<td>1.5%</td>
<td>-</td>
<td>7%</td>
<td>2%</td>
<td>0.2%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.2%</td>
</tr>
<tr>
<td></td>
<td>1.5%</td>
<td>0.2%</td>
<td>12%</td>
<td>0.2%</td>
<td>0.6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.2%</td>
</tr>
<tr>
<td>Notes:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘a’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AUDIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DAST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DALI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.4.2 Prevalence of STI and BBV infections in patients with SMI

Studies assessed only a few of the reportable infections for patients with SMI. As such, data are only indicative of the degree of possible problems and not conclusive. All STI, including HBV and HIV, as well as HCV exposures were reported at high rates. Prevalence rate estimates for self-reported or tested STIs or BBVs are reported in Table 3.2 and 3.3.

3.4.2.1 Prevalence of STIs and HCV

Only three studies explored the bacterial STIs of gonorrhoea, chlamydia or syphilis in patients with SMI (Table 3.2). Infection rates were based on self-reported STI history ever (Coverdale & Turbott, 2000), last 12 months medical record review (Sitzman et al., 1995) and biological specimens assessing syphilis exposure ever (Banger et al., 1995).

In the USA, Sitzman et al (1995) retrospectively reviewed the medical records of 426 patients with SMI. Half of the patients had previous STI tests with over 9% of all patients having had an STI previously diagnosed. The researchers reported markedly high rates for syphilis (9%) and gonorrhoea (32%) for those tested, and a calculated incidence rate for syphilis at 4460 per 100,000 for all patients part of the study. These rates are high compared to the cited USA population rate of 45 per 100,000 (Centres for Disease Control and Prevention, 1990) and even the high local New Orleans’ rate of 192 per 100,000 (Lutz, Webb, Doucet, & et al, 1990). The second New Zealand study interviewed 92 men (Coverdale & Turbott, 2000). Participants provided self-reported history of previous STI treatment, as 5.4% for syphilis, 20% for gonorrhoea and 8.7% for Chlamydia, statistically higher rates than their control group. However, the third study, a German sero-prevalence review for syphilis that screened 8915 patients (Banger et al., 1995), found a lower rate of syphilis (just over 1%), though this is higher than the prevalence rate of 0.03% of German blood donors (Offergeld, Ritter, Faensen, & Hamouda, 2004). Overall, self-reported STIs ever were reported by 9% to 44% of patients with SMI (see Table 3.2), and 18.5% of the Australian population survey (Grulich, de Visser et al., 2003c).
Table 3.2. Prevalence of STIs and HCV in patients with severe mental illness.

<table>
<thead>
<tr>
<th>Author</th>
<th>Sitzman</th>
<th>Coverdale</th>
<th>Banger</th>
<th>Rosenberg</th>
<th>Klinkenberg</th>
<th>Meyer</th>
<th>Nakamura</th>
<th>Chang</th>
<th>Said</th>
<th>Cividini</th>
<th>Dinwiddie</th>
<th>Lacey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>US</td>
<td>NZ</td>
<td>Germany</td>
<td>USA</td>
<td>USA</td>
<td>USA</td>
<td>Japan</td>
<td>Taiwan</td>
<td>Jordan</td>
<td>Italy</td>
<td>US</td>
<td>Aus</td>
</tr>
<tr>
<td>Interview Tool</td>
<td>records</td>
<td>self-report</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
<td>Test</td>
</tr>
<tr>
<td>Schizophrenia/</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Psychotic rate</td>
<td>33%</td>
<td>19%</td>
<td>NA</td>
<td>65%</td>
<td>53%</td>
<td>75%</td>
<td>38%</td>
<td>NA</td>
<td>100%</td>
<td>36%</td>
<td>21%</td>
<td>73%</td>
</tr>
<tr>
<td>Participation</td>
<td>50%</td>
<td>96%</td>
<td>100%</td>
<td>87%</td>
<td>86%</td>
<td>95%</td>
<td>100%</td>
<td>95%</td>
<td>100%</td>
<td>100%</td>
<td>88%</td>
<td>24%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STIs</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gonorrhoea</td>
<td>3.5%12m</td>
<td>19.6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>0.7%12m</td>
<td>8.7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Syphilis</td>
<td>4.5%12m</td>
<td>5.4%</td>
<td>1.1%</td>
<td>-</td>
<td>23.4%</td>
<td>32.4%</td>
<td>24.7%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HBV prior</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>23.4%</td>
<td>32.4%</td>
<td>-</td>
<td>24.7%</td>
<td>-</td>
<td>7.0%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HBV carrier</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9.1%</td>
<td>18.1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19.6%</td>
<td>29.8%</td>
<td>20.3%</td>
<td>6.8%</td>
<td>6.7%</td>
<td>8.5%</td>
<td>19.4%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Past STI Diagnosis</td>
<td>9.4%12m</td>
<td>40.0%</td>
<td>-</td>
<td>28.4%</td>
<td>44.0%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
HCV sero-prevalence rates often indicating chronic HCV exposure, were also elevated with rates from 6.7% in an Italian study (Cividini et al., 1997) to 20%, from the three US (Klinkenberg et al., 2003; Meyer, 2003; Rosenberg et al., 2001) and one Australian study (Lacey et al., 2007).

In comparison, Australian data reports population prevalence rates from 0.5%, by self-reported past HCV diagnosis (Grulich, de Visser et al., 2003c), to 1% (National Centre in HIV Epidemiology and Clinical Research, 2010). In the US, general population estimates for HCV are at 1.8% (Alter, Kruszon-Moran, Nainan, McQuillan, Gao et al., 1999).

### 3.4.2.2 Prevalence of HIV

In contrast to STIs and other BBVs, many studies looked at HIV prevalence using sero-prevalence data from biological specimens. Studies completed subsequent to the Cournos and McKinnon review (1997), have had large sample sizes and been conducted in other countries around the world, as well as the US. The 11 cross-sectional-descriptive sero-prevalence studies that explored the rate of HIV in groups with SMI are summarised in Table 3.3.

On average, high HIV prevalence rates were found for those with SMI, ranging from 0% to 24% dependent on geographical variations. The weighted mean for HIV prevalence was 4.0%. Compared to population base rates for similar time-periods, most of these studies reported HIV rates that were much higher for patients with SMI.

### 3.4.3 The extent that patients with SMI are at risk for STIs and BBVs

The risk for patients with SMI was explored by examination of HCV, HBV and HIV infections. These were the most prevalent infections identified as part of this review and risk was assessed according to prevalence stratified by risk factors.
Table 3.3. Prevalence of HIV infection in patients with severe mental illness

<table>
<thead>
<tr>
<th>Author</th>
<th>Naber</th>
<th>Cournos</th>
<th>Chen</th>
<th>Chandra</th>
<th>Acuda</th>
<th>Ayuso-Mateos</th>
<th>Hutchinson</th>
<th>Rosenberg</th>
<th>Tharyan</th>
<th>Klinkenberg</th>
<th>Meyer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
<td>Germany</td>
<td>USA&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Taiwan</td>
<td>India</td>
<td>Zimbabwe</td>
<td>Spain</td>
<td>Indies</td>
<td>USA&lt;sup&gt;b&lt;/sup&gt;</td>
<td>India</td>
<td>USA&lt;sup&gt;c&lt;/sup&gt;</td>
<td>USA&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>623</td>
<td>962</td>
<td>843</td>
<td>2139</td>
<td>143</td>
<td>477</td>
<td>1227</td>
<td>931</td>
<td>1160</td>
<td>204</td>
<td>535</td>
</tr>
<tr>
<td><strong>Participation rate</strong></td>
<td>5%</td>
<td>87%</td>
<td>-</td>
<td>-</td>
<td>high</td>
<td>82%</td>
<td>-</td>
<td>87%</td>
<td>80%</td>
<td>86%</td>
<td>77%</td>
</tr>
<tr>
<td><strong>Schizophrenia</strong></td>
<td>28%</td>
<td>51%</td>
<td>56%</td>
<td>12%</td>
<td>-</td>
<td>40%</td>
<td>11%</td>
<td>45%</td>
<td>25%</td>
<td>48%</td>
<td>76%</td>
</tr>
<tr>
<td><strong>Study Sample</strong></td>
<td>Inpatient</td>
<td>Inpatient</td>
<td>Inpatient</td>
<td>Inpatient</td>
<td>Inpatient</td>
<td>Inpatient</td>
<td>Inpatient</td>
<td>Inpatient</td>
<td>Outpatient</td>
<td>Outpatient</td>
<td>Homeless</td>
</tr>
<tr>
<td><strong>Drug History</strong></td>
<td>34%</td>
<td>-</td>
<td>29%</td>
<td>23.80%</td>
<td>5.10%</td>
<td>6.90%</td>
<td>3.10%</td>
<td>1.00%</td>
<td>6.20%</td>
<td>2.70%</td>
<td></td>
</tr>
<tr>
<td><strong>SMI HIV rate</strong></td>
<td>4.80%</td>
<td>5.20%</td>
<td>0.00%</td>
<td>3.40%</td>
<td>23.80%</td>
<td>5.10%</td>
<td>6.90%</td>
<td>3.10%</td>
<td>1.00%</td>
<td>6.20%</td>
<td>2.70%</td>
</tr>
<tr>
<td><strong>HIV weighted mean</strong></td>
<td>= 4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Population HIV rate** 0.1%<sup>e</sup> 1.2%<sup>f</sup> 0.0%<sup>e</sup> 0.4%<sup>e</sup> 17.4%<sup>e</sup> 0.6%<sup>e</sup> 0.9%<sup>e</sup> 0.5%<sup>e</sup> 0.7%<sup>e</sup> 0.5%<sup>e</sup> 0.5%<sup>e</sup>

Notes:

- <sup>a</sup> = New York
- <sup>b</sup> = Maryland, Connecticut, New Hampshire, North Carolina
- <sup>c</sup> = Missouri
- <sup>d</sup> = Oregon
- <sup>e</sup> = Burton & Mertens (1998)
- <sup>f</sup> = New York City Department of Health HIV Epidemiology Group & Thomas (2001)
Only one study (Rosenberg et al., 2001), provided data on HCV and HBV prevalence as well as IDU and four studies provided HIV and risk histories for IDU or MSM allowing analysis (Ayuso-Mateos et al., 1997; Cournos et al., 1994; Rosenberg et al., 2001; Susser, Valencia, & Conover, 1993).

3.4.3.1 Risk of HCV or HBV for patients with SMI stratified by IDU

HCV rates for patients with SMI and stratified by IDU history (Rosenberg et al., 2001) are presented in Table 3.4. This study found that SMI patients, with an IDU history, had HCV rates similar to US populations with IDU histories (Armstrong, Wasley, Simard, McQuillan, Kuhnert et al., 2006). For patients with SMI but without an IDU risk history, HCV rates were higher at 5% for patients with SMI (Rosenberg et al., 2001) whereas US general population estimates are just under 2% for HCV (Alter et al., 1999).

Table 3.4 Rates of HCV exposure stratified by IDU history and groups - patients with SMI and the US population, from Rosenberg et al (2001)

<table>
<thead>
<tr>
<th></th>
<th>SMI</th>
<th>USA population (SMI –ve)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HCV +ve %</td>
<td>62%</td>
<td>58%*</td>
</tr>
<tr>
<td>IDU +ve</td>
<td>5%</td>
<td>2%#</td>
</tr>
</tbody>
</table>


Likewise HBV rates for patients with SMI, reported by Rosenberg et al (2001), were stratified by IDU history (Table 3.5). And similarly, the rate of HBV exposure for SMI patients with an IDU history was similar to US population rates for those with an IDU history (McQuillan, Coleman, Kruszon-Moran, Moyer, Lambert et al., 1999). Patients with SMI but without an IDU risk history, had a much higher rate of 13% (Rosenberg et al., 2001) than the US general population estimates at 5% for HBV (McQuillan et al., 1999).
Table 3.5 Rates of HBV exposure stratified by IDU history and groups - patients with SMI and the US population, from Rosenberg et al (2001).

<table>
<thead>
<tr>
<th>HBV +ve %</th>
<th>SMI</th>
<th>USA population (SMI –ve)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDU +ve</td>
<td>42%</td>
<td>50-80%*</td>
</tr>
<tr>
<td>IDU -ve</td>
<td>13%</td>
<td>5%*</td>
</tr>
</tbody>
</table>

Note *McQuillan et al (1999)

It seems that SMI patients with an IDU history had similar HCV and HBV exposure prevalence rates to the others with an IDU history. The main problem identified is for SMI patients without an IDU history, who were found to have higher rates of HCV and HBV exposure than the general population without IDU histories.

3.4.3.2 Risk of HIV for patients with SMI stratified by IDU and MSM

There were four studies where it was possible to analyse the rate of HIV infection stratified by risk behaviour histories for IDU or MSM (Table 3.6), (Ayuso-Mateos et al., 1997; Cournos et al., 1994; Rosenberg et al., 2001; Susser et al., 1993). Weighted means were calculated for both risk behaviours and the outcome factor of HIV infection, as part of this analysis. The overall HIV prevalence rate was 4.6%.

A history of IDU was reported by 12% on average, and for this IDU subgroup 17% were HIV positive. US rates of HIV infection for those that report IDU is similar at 15% (Aceijas, Stimson, Hickman, & Rhodes, 2004 ; Centers for Disease Control and Prevention, 1999). Rate of MSM activity for the four studies, was close to 13% on average, and 11% were HIV positive. HIV rates for MSM, in the US, is higher, at 19% (Centers for Disease Control and Prevention, 2006a). HIV rates for patients with SMI and risk behaviour history were similar or slightly lower compared to US populations with risk behaviour histories. Of note is that risk behaviours of IDU and MSM activities, for patients with SMI were reported at elevated rates compared with population data (Table 3.6).
Table 3.6 Risk of HIV according to Risk Behaviours for patients with SMI

<table>
<thead>
<tr>
<th>Author</th>
<th>Susser</th>
<th>Cournos</th>
<th>Ayuso-Mateos</th>
<th>Rosenberg</th>
<th>Weighted Means</th>
<th>Population Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>1993</td>
<td>1994</td>
<td>1997</td>
<td>2001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>USA</td>
<td>USA</td>
<td>Spain</td>
<td>USA</td>
<td></td>
<td>N = 1944</td>
</tr>
<tr>
<td>N =</td>
<td>61</td>
<td>563</td>
<td>390</td>
<td>930</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schizophrenia Diagnosis</td>
<td>65%</td>
<td>51%</td>
<td>40%</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HIV +ve % total</th>
<th>19%</th>
<th>5%</th>
<th>5%</th>
<th>3%</th>
<th>= 4.6%</th>
<th>= 0.5-1.2%&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDU% Total</td>
<td>20%</td>
<td>10%</td>
<td>7%</td>
<td>17%</td>
<td>= 12%</td>
<td>=15&lt;sup&gt;b&lt;/sup&gt;%</td>
</tr>
<tr>
<td>IDU HIV +ve%</td>
<td>42%</td>
<td>15%</td>
<td>48%</td>
<td>9%</td>
<td>= 17%</td>
<td>= 15%&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Study p-value</td>
<td>-</td>
<td>p = 0.002*</td>
<td>p &lt; 0.000001*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability Ratio</td>
<td>RR = 2.92*</td>
<td>OR = 2.04*</td>
<td>OR = 55.2*</td>
<td>OR = 5.49*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence Interval</td>
<td>(1.12-7.61)</td>
<td>(1.31-3.17)</td>
<td>(18.6-163.7)</td>
<td>(2.89-14.58)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSM% Total</td>
<td>18%</td>
<td>7%</td>
<td>4%</td>
<td>21%</td>
<td>= 13%</td>
<td>= 2%&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>MSM HIV +ve%</td>
<td>45%</td>
<td>13%</td>
<td>38%</td>
<td>6%</td>
<td>= 11%</td>
<td>= 19%&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Study p-value</td>
<td>-</td>
<td>p = 0.04*</td>
<td>p = 0.007*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Probability Ratio</td>
<td>RR = 3.25*</td>
<td>OR = 1.76*</td>
<td>OR = 12.7*</td>
<td>OR = 2.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confidence Interval</td>
<td>(1.26-8.34)</td>
<td>(1.04-2.98)</td>
<td>(2.7-60.9)</td>
<td>(0.97-6.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population HIV rates&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.5%</td>
<td>1.2%</td>
<td>0.6%</td>
<td>0.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: * Significance p <0.05  <sup>a</sup>Burton & Mertens (1998)  <sup>b</sup>NHSDA (2001)  <sup>c</sup>CDC (1999)  <sup>d</sup>CDC (2012)  <sup>e</sup>CDC (2006a).
Some of the studies reported the HIV rates for some patients with SMI that did not report the risk factors of IDU or MSM (Ayuso-Mateos et al., 1997; Cournos et al., 1994; Rosenberg et al., 2001; Susser et al., 1993). Patients in Spain (Ayuso-Mateos et al., 1997) without a risk history, had an HIV rate similar to the community rate of 0.6%. However, US patients without risk histories, had an HIV prevalence rate of 1.8% (Cournos et al., 1994) and 0.7% (Rosenberg et al., 2001). Although this was lower than the rate for patients with risk histories, it was higher than the estimated community rate of 0.5% (Burton & Mertens, 1998), (Centers for Disease Control and Prevention, 1999).

All studies found statistically significant differences in HIV rates analysed by IDU history. Male-to-male sexual activity was statistically associated with HIV infection for all studies except one, Rosenberg et al (2001). The only study to report multiple regression data identified that IDU and “homosexual” behaviour contributed independently to the likelihood of being HIV positive (Cournos et al., 1994).

Together these findings indicate that patients with risk factor histories had prevalence rates for HIV at least double the study groups’ rate and very much higher than community rates. Findings also suggest that patients without risk history may also be at risk. Previous studies have reported elevated risk behaviours for patients with SMI. When analysis is made according to reported risk history, the rates of HIV, HCV or HBV are not too different to the general population with risk histories. Elevated rates of infection may be a problem for patients that do not report risk factor histories.

3.5 FINDINGS - HEALTHCARE WORKERS RISK ASSESSMENT OF STIs AND BBVs

The ten studies identified assessed “Knowledge” predominantly, as well as “Attitudes” and “Behaviours” regarding STIs and BBVs, by healthcare workers. Key areas of Knowledge identified were: (i) Epidemiology that covers natural history, transmission risks and referral situations (ii) Management (iii) and Clinical Symptoms. Research on Attitudes covered (i) attitudes to patients and (ii) attitudes to
history taking. Behaviour included (i) behaviour regarding aspects of history taking (ii) aspects of preparatory discussion for investigations (iii) and reported behaviours when faced with a complex clinical problem.

The studies reveal misconceptions about treatment and transmission, especially for hepatitis C. Overall medical practitioners have good knowledge generally and are more knowledgeable than other healthcare workers (Richmond et al., 2007).

Knowledge on the epidemiology of HCV covers the natural history of HCV exposure. In general, GPs overestimate the effects of HCV exposure regarding the proportion of patients with HCV that would develop cirrhosis and hepatocellular carcinoma (Dev & Sievert, 2002). In the French study, lay persons were uncertain whether HCV exposure results in carcinoma or death (Munoz Sastre et al., 2002), whereas most patients with SMI (81%) correctly reported that HCV can cause death (Goldberg et al., 2009).

Transmission risk knowledge, another component of HCV epidemiology revealed mixed findings. A study of 267 Pakistani medical students’ that assessed knowledge of BBVs, found that students overestimated risk from “sexual intercourse” and underestimated transmission risk from “sharing razors, “needle stick injuries” and “tattooing” (Anjum et al., 2005). Unfortunately, this study did not assess knowledge regarding the risk behaviour of injecting drug use. Goldberg et al (2009) found that 88% of the 236 patients with SMI they surveyed correctly identified the risk of “sharing needles” but were uncertain regarding “sharing razors” (68% correct). A French study surveyed 431 adults from the general population and 9 HCV experts (Munoz Sastre et al., 2002). The experts comprised, 6 liver disease specialists and 3 infectious diseases specialists (Munoz Sastre et al., 2002). The survey revealed that lay persons were uncertain whether injecting drug users were most at risk for HCV. Both the French laypersons and French medical experts were uncertain regarding HCV being spread by using someone else’s personal belongings, such as toothbrushes and nail clippers (possibly contaminated with blood). Laypersons generally disagreed with the statement that HCV can be spread by possibly contaminated personal belongings with a lower mean, and experts tended to agree.
HCV risk from female genital secretions was another uncertainty, with the public uncertain and the experts disagreeing that transmission occurred from infected genital secretions (Munoz Sastre et al., 2002). The authors clarified as part of their results that HCV virus may be isolated from genital secretions, “but the transmission rate is at most very low” (Munoz Sastre et al., 2002, p. 597). Of note is that the sexual HCV risk related to HIV +ve MSM was not described until about 2010 (Jin et al., 2010).

GPs did not fare well regarding knowledge of STI and BBV epidemiology, such as risks of acquisition and natural history (Anjum et al., 2005; Dev & Sievert, 2002; Mulvey et al., 1997; Munoz Sastre et al., 2002). STI and BBV Knowledge on asymptomatic/clinical disease features were well recognised by 444 GPs in the study by Mulvey et al (1997).

Knowledge regarding HCV Management by doctors was not ideal. Australian doctors (Dev & Sievert, 2002) and US Primary Care Trainees (Coppola et al., 2004) showed variable and erroneous responses regarding treatments. Although no vaccine is available for HCV, many groups, such as laypersons (Munoz Sastre et al., 2002), 75% of patients with SMI (Goldberg et al., 2009) and even 66% of doctors (Coppola et al., 2004), incorrectly believed that HCV can be prevented by vaccine. Drinking alcohol is not safe for patients with HCV which was correctly recognised by 77% of Australian GPs (Dev & Sievert, 2002) and by 70% of patients with SMI (Goldberg et al., 2009). In the French study both the lay population and medical experts were not completely certain whether alcohol enhanced the risk associated with HCV and lay persons tended toward believing that alcohol was not harmful while the medical experts tended to believe that it was harmful (Munoz Sastre et al., 2002).

A study by Richmond et al (2007) examined attitudes by healthcare workers to patients with HCV and found that some healthcare workers “displayed intolerant attitudes toward people infected with HCV” especially if they had contracted infection because of IDU activities (Richmond et al., 2007, p. 629). In contrast, 95% felt compassion when hepatitis C was acquired through a blood transfusion, compared with 63% when it was contracted through IDU.
Fewer studies have been undertaken on the behaviours relating to STI or BBV testing and all research has been by Australian research groups (Mulvey et al., 1997; Richmond et al., 2007; Temple-Smith et al., 1999). Behaviours examined included history taking, pre and post-test discussion regarding STIs and BBVs and the meaning of results, as well as level of consultation. GPs reported behaviours such as asking about safe sex, especially if the patient had a related presentation, but failed to enquire with other presentations to the GP.

3.6 DISCUSSION

This review adds to prior reports (Cournos & McKinnon, 1997; Meade & Sikkema, 2005) by identifying that patients with severe mental illness, at least in the US, continue to be at risk for HIV. The risk is particularly highlighted by comparing the prevalence rates of risk factors and infections for patients with SMI with available population data. Other STIs and BBVs, particularly HCV, are probably prevalent for patients with SMI but the evidence for this is weaker as fewer studies have been conducted.

Patients with SMI for the most part have elevated rates of risk behaviours and risk partners that explain the high infection rates. Encouragingly some protective behaviours, such as condom use at last sexual exposure, seem to be more often reported. The untested dilemma here may be that patients with SMI, more frequently report sex with casual partners at their last sexual encounter, which explains better condom use. Having a severe mental illness appears to be an identifiable risk marker or attribute indicating higher risk with higher prevalence rates for STI or BBV infections.

Australia, and many other countries in the world, lack studies examining the prevalence of STIs and BBVs for patients with SMI. In Australia, levels of risk behaviour among patients with SMI are similar to their American counterparts and warrant further evaluation. At this point in time, the Australian picture can only be approximated from the mostly North American studies reviewed. From an
epidemiological perspective, HIV infection in the general Australian population is relatively low, at 0.07%, compared to USA rates of 0.5%. In Australia most HIV infections are amongst MSM, with an HIV prevalence of 9 - 20% (Madeddu, Grulich, Richters, Ferris, Grierson et al., 2006). Australian injecting drug users have a 1-2% HIV prevalence and heterosexuals less than 0.07%. Australia has different patterns than is seen in other countries where HIV is more prevalent in IDU and heterosexual groups (Beyrer, 2007; National Centre in HIV Epidemiology and Clinical Research, 2007). These differences highlight the need for research to provide to “local” data for evaluation purposes (Hercus et al., 2005). Greater research efforts are needed to better identify why these risk factors are so elevated amongst this population with SMI.

It may be that Australia's current priority groups, are the subgroups also important in the epidemiology of STIs and BBVs for patients with SMI. For example, HIV infection may occur predominately among homosexual male patients with SMI, but HCV and chlamydia are more likely to be concerns for the majority of patients with onset of psychiatric illness in adolescence or early adulthood. These presumptions are based on high drug use by patients with SMI coupled with injecting drug use as the main vehicle for HCV transmission (Osher, Goldberg, McNary, Swartz, Essock et al., 2003). In the general population up to 70% of long term injecting drug users in Australia may have HCV whereas stated few have HIV (National Centre in HIV Epidemiology and Clinical Research, 2010). Such findings could be expected for patients with SMI and IDU histories. Likewise the “likelihood of risky behaviour” among young people is increased by psychiatric co-morbidity making infections such as chlamydia, which is more common in young people, a threat (Kosunen, Katiala-Heino, Rimpela, & Laippala, 2003; Ramrakha, Caspi, Dickson, Moffitt, & Paul, 2000).

In addition to the behaviours identified, patients with SMI are at risk because they have greater difficulty in developing and maintaining intimate sexual relationships. Sexual experiences for patients with SMI were noted to more often be casual, unprotected, involve multiple partners and often occurred in the context of alcohol and other drug use (Cooper, 2002; Kalichman et al., 1994). Alcohol is connected
with sexual risk behaviours (Cooper, 2002) and this probably a similar picture for patients with SMI. Kalichman et al. (1994) found that often patients with SMI, socialised with other patients with SMI. It was postulated that sex and drug activities (Kalichman et al., 1994) may be occurring within a subculture involving a small network or core group of other patients in the close confines of a hospital, and may add to the likelihood of sexual activity amongst patients with SMI and the related risks of STI and BBV transmission. Research outside of specific mental health contexts indicates that STIs and BBVs are often maintained by means of core groups. The core group concept needs to be more fully evaluated for patients with SMI.

There is also a need to review the extent of drug paraphernalia sharing and not just needle-sharing for patients with SMI, as this widens the transmission opportunities for BBV (Kelly & Conigrave, 2002). Preventative facets of sexual health care are important contributions to minimising the morbidity and mortality of BBV communicable infections and future research might focus on these issues, such as uptake of harm minimisation techniques.

Future research needs to improve on study methods. Better measurements, such as infection rates based on biological specimens and standardised measurement strategies for assessing risk behaviours as well as prospective cohort study design of risk behaviours and infection rates, should be considered.

Prior research on the approach of healthcare workers is not very extensive. Doctors seem well versed regarding most knowledge areas, except for aspects of management. Overall they may be more knowledge but may not be applied in the clinical assessment of patients. An understanding of this interplay will add to the recognition of risk for patients. Doctors caring for patients with SMI who are also at risk for STIs and BBVs, must recognise this risk. The doctors have a role to detect and amend this risk when possible to minimise new infections. There have been no studies that assess psychiatrists approach to STI/BBV infections, with populations that have SMI. As such, a survey assessing psychiatrists and identifying strengths, weaknesses and possible strategies to aid in detecting the potential risk to patients is needed.
3.7 CONCLUSION

The heightened risk for STIs and BBVs may be related to some of the highlighted risks factors from this review, such as injecting drug use, and need to be addressed in future research. Such issues to consider include incorporating STI and BBV research with HIV research. There is strong evidence that STIs and HCV facilitate HIV transmission and that early STI management should be part of a comprehensive HIV prevention strategy (Fleming & Wasserheit, 1999). Of importance is the possible higher risk of BBV infections for patients with SMI that do not report any risk factors. This risk is intensified because it is not readily recognised nor detected by healthcare workers. Poor attitudes to patients, as well as lack knowledge regarding STIs and BBVs may add to the lack of assessment

This thesis has two studies that attempt to progress the understanding of risks for patients with SMI. Study One attempts to provide a picture of risks and infections for Australian patients with SMI. Study Two targets the psychiatrists themselves to assess the extent that STIs and BBVs, particularly HCV, are recognised and assessed for patients.
CHAPTER FOUR

Study One: The risk of sexually transmitted infections and blood-borne viruses for patients with severe mental illness

4.1 OVERVIEW OF STUDY ONE

This thesis explores the risk of sexually transmitted infections (STI) and blood borne viruses (BBV) for inpatients with severe mental illness (SMI) in Australia. Risk is examined in the two studies that compromise this thesis and from the systematic literature review of the previous chapter identifying potential risk factors for patients with SMI. In Study One, the risk factors and rates of STIs and BBVs are presented. Issues, such as screening and assessment for STIs and BBVs, particularly HCV, by attending psychiatrists, are discussed in the next chapter, as Study Two.

Study One, as a cross-sectional-analytic study, aimed at identifying the level of risk regarding STIs and BBVs for inpatients with SMI in the western suburbs of Sydney, Australia. It is recognised that there is risk for patients with SMI regarding STI or BBV infections. In particular, US studies describe high levels of HIV, and probable HCV infection (Cournos & McKinnon, 1997; Rosenberg et al., 2001). Risk factors considered for this study had been identified from the literature and presented in Chapter 3 of this thesis. The extent that risk factors, such as unsafe sexual and drug behaviours, are present was explored as Part 1 of the study protocol, and the prevalence of STI and BBV infections as Part 2. This study attempts to elucidate the role of the many risk factors and the role a diagnosis of SMI may contribute to risk of infection.

For Study One the risk factors explored include those at the individual level; sexual behaviours, substance use behaviours and “other” risk factors, such as healthcare behaviours and incarceration. Risks at the partner level were also assessed, reviewing

2 Parts of this chapter were published as a letter - Lagios & Deane (2006)
sex with partners at risk and possible sexual networks. The primary outcome factor for Study One was the risk of an STI or BBV infection assessed by biological specimen testing, as well as self-reported STI/BBV history.

Findings reported include the sample’s descriptive statistics of: (a) study factors; demographic, medical and psychiatric variables, risk behaviours, risk partners, “other” risk factors, testing rates and (b) outcome factors; prevalence of BBV and STI infections. Statistical analyses involved (i) bivariate analysis of risk factors with STI or BBV infections; (ii) comparison and statistical analysis of risk factors and infections with the Australian population; and (iii) stratification of study participants, permitting statistical analyses of infection risk for patients with and without risk histories; and (iv) multivariate analysis predicting STI or BBV infection risk.

For this thesis the depth and breadth of risk factor identification, is extensive compared to the approach of previous studies described in the literature review in Chapter 3. Factors considered take into account an understanding of the local demographics, as the area has a large multicultural population with immigrants from countries with high STI or BBV prevalences. Another dimension is the exploration of sexual networks for patients with SMI, with assessing partner choices and the partners’ risks. Substance use risks, including drug use paraphernalia, are explored at the individual level and through the risks of their partners. Comparisons with the Australian population stratified by risk history, help define the context and the magnitude of findings.

4.2 AIMS, OBJECTIVES AND HYPOTHESES

The aims of this research were:

1. Identify the levels of risk for STIs and BBVs for inpatients with SMI in western Sydney.
2. To explore if a diagnosis of SMI could be associated with risk when compared to the Australian population.
The objectives of this research were:

1. To determine the prevalence and extent of risk factors for inpatients with SMI in Western Sydney and compare with the Australian population
2. To determine prevalence of STI/BBV infections for inpatients with SMI in Western Sydney, and compare with the Australian population
3. To assess the relationships of risk factor histories with STI/BBV infections
4. To assess the contribution of SMI diagnosis to STI/BBV infections

It was hypothesised that:

1. Patients with SMI engage in a wider range of risk behaviours (e.g., injecting drug use or unprotected sexual intercourse) and do so more frequently, than the general population.
2. Patients with risk factor histories are at a higher risk for STI and BBV acquisition compared to patients without risk factor histories.
3. Patients with SMI compared to the Australian population with comparable risk factor histories are at a higher risk for STIs and BBVs.
4. It is hypothesised that the nature of having an illness such as SMI, identifies and places patients at risk for both risk behaviours and acquiring infection.

4.3 METHOD

This section provides a descriptive overview of the method used for Study One. It presents a description of the study participants, descriptions of the measures and procedures used in the study. Measurements are discussed at length with particular attention to measuring individual risk behaviours, risk partners and networks as well as means to measure STIs and BBVs. This section also presents the ethical and potential research bias issues posed by the study.
4.3.1 Ethical Issues

The Human Ethics review committees, of the University of Wollongong and Sydney West Area Health Service (SWAHS), reviewed and approved all protocols (Appendix 1). The protocol was created with reference to ethics, privacy and legal issues given that both research on patients with psychiatric illnesses and research exploring sex and drug behaviours are highly sensitive. In preparing the ethical review, documents examined included the *Royal Australian and New Zealand College of Psychiatrists Code of Ethics* (RANZCP, 2010; RANZCP., 1998), Australian Injecting and Illicit Drug Users League (*AIVL*) *Statement on Ethical Issues for Research InvolvingInjecting/Illlicit Drug Users* (*AIVL*, 2002), NHMRC Psychiatric Research, *Human Research Ethics Handbook Commentary on the National Statement on Ethical Conduct in Research Involving Humans* (NHMRC & Commonwealth of Australia, 2001), *NSW Health Privacy Manual* (NSW Department of Health, 2005) and Public Health Act (NSW Consolidated Acts, 1991).

Consideration of issues such as respect, capacity to provide consent, confidentiality as well as potential risks and conflicts of interest must be taken into account to obtain informed consent and valid participation in research, for patients with psychiatric illness (RANZCP, 2010). Various steps were taken in the study design to minimise any pressures that may jeopardise the voluntary nature of consent and these steps were explained in the participant information sheet (See Appendix 2). Attempts to minimise coercion were addressed by ensuring the researchers were not involved in the primary care of the patient, and by having the initial approach to participate addressed only by the treating psychiatrist, who was not an investigator in the research. The study required that patients be referred to the study, and that prior to referral, assessment of rational decision-making, capacity and emotional stability be made by the participant’s attending psychiatrist. Participants’ information sheets were distributed once referred and the researcher reviewed the information package with the participant and reinforced the voluntary nature of participation and confidentiality. Once all of the above were satisfied then participants provided full informed consent.
Confidentiality and privacy for patients with psychiatric illness was very important and incorporated into the study design. Study participants were advised that all aspects of this study would be strictly confidential and only the researchers would have access to personal information. Any publication of the results from this study would use de-identified group data. Confidentiality was maintained at all levels of the study by using codes instead of participant’s names, for all non-routine data collected. Routine clinical tests for patients, utilising biological specimens, were not de-identified and used patient details, in keeping with institutional practices. This occurred for those patients who had testing completed as part of their routine care and provided permission for these results to be used as part of the research. Patients with research related biological specimen testing had de-identified coding.

Limits to confidentiality and privacy were discussed with study participants. Study participants were informed that notifiable STI and BBV infections were reported by the laboratory to NSW Health Department using a de-identified format and in accordance with the Public Health Act 1991 (NSW Parliament, 1991), (see Chapter 2, section 2.2.2). Patients were advised that any information indicating a danger to the participant or others would be referred to the treating staff. The interview questions only asked about sex between adults and about previous drug use, to minimise inadvertent disclosure of illegal activity. Study participants were counselled that information provided about illegal activities such as dealing drugs or sex with minors would need to be reported. An identified contagious STI or BBV infection would require contact tracing by the participant with the help from an appropriate healthcare worker.

Interviews were conducted in private, in a consultation room available on the ward. Copies of the interview questionnaire, with sensitive risk behaviour information, were not available in the patients' medical record but patients were advised that their attending psychiatrist would be consulted on risk behaviours that required medical or psychiatric care. Paper copies of biological specimen results, which were part of routine care and had patient names, were filed in the patients' medical record. Results of research only tests with de-identified codes were not part of the patient’s medical record.
4.3.2 Procedure

All individuals admitted as inpatients to the acute care wards of Cumberland Hospital, Western Sydney, Australia, during the study period of May 2007 to August 2008 were potentially eligible to participate in Study One. Cumberland Hospital is the largest psychiatric hospital in the region, and is about 20 kilometres west of the centre of Sydney, see Figure 4.1 (Google, 2012). During the study period there were 1791 admissions. Patients were not approached directly but were first assessed by their attending psychiatrist before being referred to the study and needed to be both clinically stable and have the capacity to provide informed consent to be recruited (see 4.3.1 Ethical Issues). Participant flow for the project is illustrated in Figure 4.1, at the end of this section, showing the total potential population admitted to Cumberland Hospital over the study period, numbers of referred, numbers deemed ineligible, numbers and reasons of excluded patients and final number of study participants included.

![Figure 4.1 Map Cumberland Hospital, Western Sydney, Australia](image)
All healthcare workers on the ward, including psychiatrists, had education regarding the study prior to commencement. Recruitment though was slow, despite weekly reminders at ward meetings and monthly update-letters to the ward staff regarding numbers recruited to the study. Given very slow recruitment, an amendment was submitted to the Human Research Ethics committees, seeking a revision to the protocol to approach potential study participants directly, however this was not approved. Recruited patients participating in this study had provided informed consent to both Part 1 and Part 2 of Study One.

Part 1 was designed to assess risk factors with information collected by a semi-structured interview questionnaire and from review of the patient medical record. Part 2 assessed BBV and STI rates, from test results of biological specimens and from history of self-reported STIs/BBVs, provided at the time of the interview. Patients, who had recent Cumberland Hospital screening tests, within the last 3 months, or who had a previous infection, were identified from the interview. If there was a history of previous testing then medical records were reviewed to allow verification and recording of results. Recent tests could have been serology for syphilis, HBV, HCV or HIV and urine or cervical specimens for gonorrhoea and/or chlamydia. Patients that had not had a particular BBV or STI test in the last 3 months were invited to provide a biological specimen for testing, as part of Study One.

Study participants had pre-test discussion and information provided for BBVs and STIs prior to provision of samples for testing. The aims of pre-test (and post-test) discussions, prior to screening, are “to provide information and support around the testing procedure, to minimise the personal impact of diagnosis, to change health-related behaviour and to reduce anxiety of the person being tested (ASHM, 2004, p. 90). SWAHS current practice was for completion of an area health service consent form for HIV antibody testing (see Appendix 2), providing evidence to the hospital venipuncture nurses of pre-test discussion. Samples of both blood and urine were processed by the hospital nurses and sent to the hospital’s laboratory for testing. Results were available within a week.
Testing for BBVs and STIs was performed at ICPMR, Westmead Hospital, which is a testing reference laboratory in New South Wales. Serology tests assessed for HCV, HIV, HBV and Syphilis exposure. Urine, or recent cervical specimens were tested for *Chlamydia trachomatis* and *Neisseria gonorrhoeae* infections. If the initial HBV test was positive then automatically the laboratory would assess for chronic HBV infection. Chronicity of HCV exposure, though more likely than for HBV, was not determined immediately if a positive HCV test occurred, as repeat venipuncture is a requirement for further assessment.

Interviews were conducted in private and took ten to twenty minutes, according to the extent of risk behaviours elucidated. A paper interview record form was used to store all information from the interview (see Appendix 3). The paper interview record form was stored separately and not available in the patients' medical record. Biological specimen results could have been from tests that were part of routine care and ordered by the attending psychiatrists, or from tests that were part of Study One. Routine care biological specimen results with patient details were filed in the patients' medical record in accordance with current medical record practice. Study test results with de-identified patient details and the paper interview forms were stored in locked filing cabinets in the researcher’s office, initially at Parramatta Sexual Health Clinic and then at Cumberland Hospital with the researcher’s relocation. Paper and electronic data are to be securely stored for a period of seven years after the study’s completion.

Data was entered into a specifically developed Microsoft Office Access database and then read into Predictive Analytics SoftWare for windows version 18 PASW Graduate Pack 18 for statistical analyses (SPSS Inc, an IBM Company, Chicago, 2000) with appropriate variable and value labels. Integrity checks were conducted on the data for inconsistencies and extreme values using the SPSS query language. The researcher provided post-test discussion to the participant and counselled regarding risk behaviours, positive test results, harm minimisation techniques, contact tracing requirements and further testing requirements at the time of result provision. Study participants had been advised that the attending psychiatrist would be consulted on risk behaviours and biological specimen results that required further
follow-up and management. The psychiatrist also organised follow-up for patients who were discharged including results being sent to the patient’s GP.

Some study participants did not respond to every item on the questionnaire and did not choose to have every STI and BBV screening test. Provision of substance use behaviour history and participation in BBV screening had the best responses. Completion of these components was the post-hoc criterion for inclusion in the study.

Cumberland patient demographic and serologic STI/BBV aggregate data was available for all patients admitted during the study period. This was used to review the extent of participation, representativeness of participant sample and to gauge the extent of STI/BBV infections for all Cumberland Hospital inpatients.

The study findings of risk factors and infection prevalence were compared to the Australian population data from the recent “Sex in Australia: Australian Study of Health and Relationships (ASHR)” (Smith et al., 2003b), with nearly 20,000 participants. The ASHR survey provided details of sexual, substance use risk and “other” risk factors such as incarceration history. It is presumed that the ASHR survey would have a negligible number of participants with SMI. The ASHR survey is broadly representative of the Australian population (Smith et al., 2003b) and it could be expected that 1% (about 200) of the ASHR telephone survey potential participants may have SMI. Patients with SMI are more likely to not have ready access to a telephone, as described by Jablensky et al (1999, p. 29), whose research project found that 12% of patients with SMI were homeless or in institutional care. The ASHR study did state that “…Households without a telephone line were outside the scope of the study” (Smith et al., 2003b, p. 109) and as such persons with SMI were probably underrepresented and few in number.

4.3.3 Study Participants

Ninety-five participants provided some data for both Part 1 and Part 2 of Study One, from the potential pool of 1791 consecutive patients with SMI, admitted to the acute
care wards of Cumberland Hospital, Sydney Australia. Patients were aged over 18 and admitted between May 2007 and August 2008. To be considered for inclusion in Study One, patients had been referred by their treating psychiatrists. This identified the 95 study participants, with the participants being a referred sample and identified at “risk sample” by the psychiatrists see Figure 4.2.

Inclusion, as discussed in the procedure section, was post-hoc based on provision of substance use behaviour history and BBV screening. The overall referral rate was low, estimated at 8% (141/1791), but the participation rate for those referred was satisfactory with 77% (108/141) participating in any part of the study, and 68% (95/141) for those participating in both Part 1 and Part 2.

Figure 4.2 Participant Flow Chart for Participant Involvement in Study One
The referred study sample of 95 had 57% (54/95) males and 43% (41/95) females. The mean age of the group was 35 years. There were more older groups of patients, with only 13% aged less than 24 years and 23% aged 25 to 29 years. The largest group at 30%, was the age group of 30-39 years and 35% were in the two age groups of 40-49 years, or older than 50 years. Most were born in Australia (72%), with the next most prevalent groups born in the Middle East (9%) and Pacific Islands (7%). Despite most being born in Australia, only 50% described their cultural background as Australian. Other cultural groups identified were Middle Eastern (11%), Pacific Islander, including New Zealand (9%), European (4%), and Indigenous (3%). The majority of study participants were single (88%). Sixty-seven percent had never been married, 16% were currently divorced or separated and only 12% were married or in a de facto relationship. Twenty three percent did not have a known or fixed address.

Diagnoses, including psychiatric diagnoses, were self-reported, and verified from medical records review. Schizophrenia was the most commonly diagnosed mental disorder (67%) then bipolar disorder (15%) and major depression (6%). Secondary diagnoses for study participants were personality disorder (20%), alcohol disorder (37%), and other drug disorders (59%). The mean number of years since diagnosis was 10.7 years with a range of 1-31 years. The mean number of admissions ever for participants was 6.4 with a range of 1-25. Other significant health problems included cardiovascular disease (6.3%), diabetes (6.3%), asthma (9.5%), epilepsy (12.6%), thyroid (2.1%) and systemic lupus erythematosus (1.1%).

4.3.4 Measures

Study One, a cross-sectional-analytic study, was also a descriptive surveillance study, aiming to simultaneously measure and describe the prevalence of risk factors as well as prevalence of STIs and BBVs for patients with SMI and assess for associations. This choice of study type was based on World Health Organisation (WHO) advice, that a surveillance study is appropriate to research the question of prevalence of health issues (Grimes & Schulz, 2002; WHO, 1999). Concerns in such studies, include considering validity and reliability of measurements and possible bias.
Measurements included risk factors, assessed in Part 1, utilising a standardised interview questionnaire, with questions compiled from previous studies. BBV or STI infection measurements in Part 2, were by self-reported STI/BBV history, as used in previous studies, and by testing biological specimens. In addition, there was analysis of demographic and serology data available for all patients admitted to Cumberland Hospital during the study period.

Measurements of Study One included:

Part 1 Standardised Interview Questions assessing Risk Factors
   a. Demographic: age, country and region of birth, cultural background, marital status.
   b. Medical History: condition and details.
   c. Psychiatric History: diagnosis, secondary diagnosis, years since diagnosis, number of admissions.
   d. Sexual Behaviours: sexual identity, sexual experiences with opposite and same sex partners, sexual activity, number of sexual partners, sex after drug or alcohol use and condom use.
   e. Sexual Risk Partners: regular relationships, last sexual encounter, sexual contact with partners at risk, sources of sexual contacts, sex for favours or payment including sex work, sex with partners with drug or alcohol issues and sexual coercion.
   f. Substance Use Behaviours: illicit drug use, IDU and behaviours associated with injecting; needle sharing, exposure to shared paraphernalia or exposure to others’ blood.
   g. “Other” Risk Factors: screening, vaccinations, tattoos, piercings and incarceration history.

Part 2 Prevalence of STIs or BBVs
   a. Self-Reported STI/BBV diagnosis.
   b. Biological Specimen Results:
      (i) Serology
         · HCV exposure - Bio-Rad Monolisa HCV Ag/Ab ULTRA assay enzyme immunoassay.
- HIV exposure - Abbott HIV Ag/Ab Combo Architect Analyser.
- HBV exposure - Abbott Anti-HBc II Architect Analyser (positive HBV core antibody results tested automatically for HBV surface antigen to identify chronic infection).

(ii) Genital Specimens - Urine or cervical swab.
- Chlamydia trachomatis and Neisseria gonorrhoeae - Roche Polymerase Chain Reaction (PCR) Cobas Amplicor assay, nucleic acid amplification tests.

Other available measures for Study One
- Cumberland patients’ demographic data for this study period
- Cumberland patients’ serology results for this study period

4.3.4.1 Bias in Risk Factor Measurements

Measurements in research studies attempt to gauge a true value and if the gauged measure of interest differs from the true value, then bias or measurement error occurs (Irwig & Cumming, 1993). Measuring behaviour is a difficult process, as Catania et al. (1990) have written, because “gold standard tests” readily identifying the true values are lacking. Bias in research can occur at any level from the literature review of the study question, to study sample selection, to data analysis and presentation of results. Measurements may be affected by selection, information or confounding bias (Fenton, Johnson, McManu, & Erens, 2001). With proper techniques and considerations regarding design, data collection and analysis, bias can be prevented or minimised.

Of particular concern for Study One is selection or sampling bias which can lead to a non-representative sample, with either underrepresentation or overrepresentation. Sampling patients with SMI is more difficult than for a general population. Inclusion of patients with SMI for research can be controversial, but overall it is feasible. It has been shown that patients with schizophrenia can elect to participate in research, that they have been evaluated as having “…strengths in the research consent process…” (Roberts, Warner, Brody, Roberts, Lauriello et al., 2002, p. 573) and that they are
keen and willing to participate (Roberts, Warner, & Brody, 2000). Patients and psychiatrist have “substantial congruence…regarding their views of research procedure risks” as both psychiatrists and patients felt that research procedures, such as questionnaires and blood tests, were less risky than the usual daily risks for patients (Roberts, Warner, Hammond, & Dunn, 2006, p. 1629). Conversely, patients with SMI may be non-participatory or be excluded because of the effects of their illness, such as lack of coherence, paranoia and poor literacy, leading to selection bias. Even if patients are included and potentially representative, non-responsiveness can still occur during the research because of their illness, or because questions are perceived as intrusive or too sensitive. Some patients can have trouble with research questions that do not have any immediate relevance, or do not provide clinical utility and thus fail to participate comprehensively leading to selection bias (Dunn, Palmer, Keehan, Jeste, & Appelbaum, 2006; Fulford & Howse, 1993). Attempts in the design phase of Study One to minimise selection bias include selecting all subjects from one hospital, widely educating all healthcare workers as well as the psychiatrists regarding referral of patients to the study, and assessment of sample representativeness with comparison, in the results section, of study participants with non-participants.

Confounding bias, occurring with confounding variables may be controlled by random selection of the study participants, or statistical methods such as stratification and multivariable analysis (McNamee, 2005). Careful consideration of questions used to attain data that are based on knowledge of the subject area, also helps to minimise confounding errors. One example is recognition that prison is a risk for HCV infection because of the confounding effects of injecting drug use activities whilst incarcerated (Butler, Boonwaat, Hailstone, Falconer, Lems et al., 2007).

Information bias, be it subject, instrument or researcher, can be addressed, to some extent, by the validity and reliability of measures. Validity generally relates to the extent that the test measures, what it is purported to measure. If it is difficult to assess validity, then a surrogate measurement reliability, the consistency of the measurement, can be used. Information bias is a significant problem with psychiatric research because of missing data, “…no matter how careful and committed the
psychiatric researcher, there invariably will be subjects with one or more missing measurements...” (Gibbons, Hedeker, Elkin, Waternaux, Kraemer et al., 1993, p. 741). The design of Study One implemented the following steps to minimise information bias: (i) “binding” of the interviewer with respect to the study hypothesis (ii) use of only one interviewer who was trained and experienced (iii) careful wording to avoid leading questions (iv) offering categorised values for subjects to select instead of requesting specific values (v) when possible checking answers against records (Vermooten, 2006).

4.3.4.2 Measuring Risk Factors

A risk factor questionnaire should consider inclusion of sexual behaviours, a past history of STIs or BBVs, as well as covering substance use and other risk factor histories (Centers for Disease Control and Prevention, 2006b; Huffam, Haber, Wallace, & Bradford, 2004). Measurements of behaviours are used as surrogates for risk of infection acquisition. Although behaviour is clearly associated with STIs and BBVs it is important to remember that acquisition requires contact with an infected person (Aral, 2004; Peterman, 2002). Thus the risk in risky behaviours such as anal intercourse without condoms or injecting of drugs with an unclean syringe is embedded in the infection status of the source, and if uninfected, there will not be transmission despite risky behaviour. When asking behaviour questions, the extent and circumstances that risk behaviours occur, affect results, as has been illustrated, with some studies finding that “people tend to have safe sex with risky partners and risky sex with safe partners” (Peterman, 2002). Thus research questions that do not explore circumstances and extent of the behaviour and partners’ risk inappropriately dilute associations.

The approach taken in Study One was to utilise previous questionnaire tools, such as the Australian Study of Health and Relationships (ASHR) questionnaire (De Visser, Smith et al., 2003b). The Australian survey used and adapted questions from large overseas British (Johnson, Wadsworth, Wellings, Bradshaw, & Field, 1992) and French studies (Anonymous, 1992a; Anonymous, 1992b). The ASHR researchers did not strictly perform their own validity tests (Smith et al., 2003b), but stated that
“..self-reports of sexual behaviour can be argued to be of sufficient reliability and validity”. They relied on comparison with other data sources to evaluate reliability and validity (Hubert, Bajos, & Sandfort, 1998; Johnson, Wadsworth, Wellings, & Field, 1994; Laumann, Gagnon, Michael, & Michaels, 1994). Use of slightly modified ASHR questionnaires by Sydney Vietnamese men (O’Connor, Wen, Rissel, & Shaw, 2007; O’Connor, Wen, Rissel, Shaw, & Quine, 2007) and NSW prisoners (Richters, Butler, Yap, Kirkwood, Grant et al., 2008) adds to the questionnaires’ validity, as well as feasibility and acceptability by participants.

There have been assessments of reliability specifically for patients with SMI. McKinnon et al (1993) wrote “high test-retest reliability was found for; number of sexual partners, frequency of (sexual) episodes, and proportions of episodes involving vaginal intercourse and use of condoms” and has been confirmed by other groups (Weinhardt, Carey, Maisto, Carey, Cohen et al., 1998). Good reliability has been described for self-reports of substance use behaviours generally (McElrath, Chitwood, Griffin, & Comerford, 1994) and for reports of substance use behaviour by patients with SMI, particularly for alcohol (Maisto, Carey, Carey, Gordon, & Gleason, 2000).

Part 1 interview questions were mostly from the published large Australian survey (ASHR) (173 items) (Smith et al., 2003b, p. 106). Some questions were from AIDS Risk Inventory (2 items) (Chawarski, Pakes, & Schottenfeld, 1998; Rosenberg et al., 2001), from the Sexual History/HIV risk assessment (6 items) (Carmen & Brady, 1990; Thompson et al., 1997) and Risk Behaviour Questions from Body and Mind Project Questionnaire (2 items) (Davidson et al., 2001; Volavka, Convit, O’Donell, Douyon, Evagelista et al., 1992). Study One’s procedure differed from the ASHR survey, as data collection involved face-to-face interviews. This was the most feasible method, as patients were currently in a hospital setting. Face-to-face interviewing allows for a good level of responses (Smith et al., 2003b, p. 109) and has similar acceptance rates as telephone surveys (Anonymous, 1992b).

The AHSR based interview schedule asked about risk factors that were “recent” in the “last 12 months”, and “ever” during the respondent’s lifetime, providing
quantitative and qualitative information. The questionnaire data variables were mostly dichotomous or categorical and set out with opening questions to enable prompt cessation of inapplicable sections (see Appendix 3). The utility and attractiveness of the ASHR questionnaire is that the interview length could be filtered and tailored to the level of activities reported. This important element enhances participant involvement and efficient risk factor measurements. The question format utilised closed ended responses with categorical answer options, providing quantitative data for most questions. Use of questions from the ASHR interview allowed some comparability, validity, reproducibility to the large Australian data available.

4.3.4.3 Measuring Partners and Networks

Partner network characteristics play a major role in sexual and substance risk behaviour, determining the progression or regression of infections. Researchers have developed methods to understand partner connections and network characteristics and their crucial role in STI and BBV epidemiology. Questions on sexual partnerings in this study, took an egocentric approach which can “obtain an in-depth characterization of the nature of individual personal networks in specific populations” (Doherty, Padian, Marlow, & Aral, 2005, p. S44). The other option is a sociometric or whole network study approach, which tries to enroll all members of a network and define interrelationships and transmission risk. Information is built up to identify all the network components. Such research uses network analysis but can be expensive and difficult to implement, especially for hospital patients (Doherty, 2011).

Egocentric surveys obtain self-reported data of recent risk activities of the participant only. Questions ascertaining sexual risk; such as number and type of partner, type of contact, protective behaviours and partners’ risk histories, attempt to identify risk in the network (Doherty, 2011). Questions that assess drug networks and risk can likewise be asked, such as the extent and details of drug sharing contacts. This approach is a conventional survey approach, cost-effective and well trialed (Doherty, 2011). As contacts do not need to be identified it is postulated that more honest
reporting of partners and their risk is possible with egocentric study design (Doherty et al., 2005). This thesis has incorporated an egocentric approach to understand network risks, particularly for sexual risks. There were 10 items, that assessed sexual risk partner contact “ever”, and 10 items that assessed for risk contacts in the “last 12 months”. Four items for risk contacts were from (Thompson et al., 1997), and the other six developed by the researchers based on current risk assessment from the literature and policies (Cooper, 2002; Kalichman et al., 1994; NSW Department of Health, 2006a, 2007; NSW Department of Health Sydney, 2006; UNAIDS, 2009).

4.3.4.4 Measuring STIs and BBVs

Study One aimed to simultaneously measure the prevalence of risk factors as well as prevalence of STIs and BBVs for patients with SMI. STI and BBV prevalence are also outcome variables, part of the analytical statistics. Tools to measure STI and BBV rates include testing of biological specimens and assessment by structured interview to gauge history of self-reported STIs/BBVs. Current concepts in assessing for STIs and BBVs, such as screening and performance measures of tests are important in understanding Study One’s measurements.

Testing of biological specimens identifies both infections that may be causing disease and infections that may be asymptomatic but present in an otherwise healthy person. Services that target early asymptomatic infection detection are part of secondary prevention measures and termed “screening” (Wald, 2001, p. 1). Screening can be a risk reduction programme at the community-level. Many people view screening as a check to prove that “no infection” is present and may participate because of such reasoning. Part of this thesis will consider how extensive screening should be for patients with SMI.

Many of the STI and BBV biological specimen tests, particularly serological tests, have excellent sensitivity and specificity (Centers for Disease Control and Prevention, 2009). Genital specimens can differ in their capabilities to truly detect infection because of sample site. For example, chlamydia infection may not be identified for women when a urine test is used for screening, instead of a cervical
swab specimen. The test performance is balanced by the fact that urine tests have better patient acceptability and cost utility (Serlin, Shafer, Tebb, Gyamfi, Moncada et al., 2002; Watson, Templeton, Russell, Paavonen, Mardh et al., 2002). In Study One, both urine and cervical specimens are used to test for chlamydia and gonorrhoea according to the clinical requirements and acceptability and choice of female patients.

The other component of STI and BBV prevalence rates is measuring STI and BBV by self-report. Though this is a less satisfactory approach it is often taken in research because most studies are unable to collect biological specimens (Dariotis, Pleck, Sonenstein, Astone, & Sifakis, 2009). Assessing rates in this manner is an underestimate of true levels (Dariotis et al., 2009; Harrington, DiClemente, Wingood, Crosby, Person et al., 2001; Van Duynhoven, Nagelkerke, & Van De Laar, 1999). Self-reports asking for all specific STIs or BBV and not as a general question provide the best responses and is the approach taken in this thesis and the approach taken by the ASHR researchers (Grulich, de Visser et al., 2003c).

4.3.5 Statistical Issues

The data collected from the study was analysed using Predictive Analytics SoftWare for windows version 18 (PASW Graduate Pack 18) for statistical analyses (SPSS Inc, an IBM Company, Chicago, 2000).

Sample size estimates and power were determined to allow comparison of this study’s findings with Australian population estimates. Calculations of sample size, were based on statistical power set at .80 and $p = .05$ (Brant, 2010; Pezzullo, 2009) and were used to estimate the required sample sizes for a range of possible outcome factors of HCV exposure, HBV exposure, chlamydia infection, as well as the self-reported STI diagnosis.

To compare HCV exposure findings of this study to the Australian population, it was calculated that a sample with 40 patients with SMI was required. Calculations were based on the Australian rate being 1.0% (National Centre in HIV Epidemiology and
Clinical Research, 2007) and the previous published rates of HCV in patients with SMI close to 20% (Lacey et al., 2007; Rosenberg et al., 2001).

Patients with SMI may have rates as high as 23% for HBV exposure (Rosenberg et al., 2001) and comparison with the Australian population with rates less than 1%, (National Centre in HIV Epidemiology and Clinical Research, 2004) (Grulich, de Visser et al., 2003c) would require 26 SMI patients to have sufficient power.

The variable, self-reported STI, incorporating all infections apart from HCV, HBV and HIV, was considered in assessing a suitable sample size, given statistical power.

If the rate of self-reported STIs, in patients with SMI, is as high as reported by Klinkenberg et al (2003) at 44%, and the Australian population rate is 19% (Grulich, de Visser et al., 2003c), then we would require at least 61 patients with SMI to be able to compare findings to the Australian population.

Calculations for assessing infections such as chlamydia would require a sample of 162 patients with SMI and infections such as gonorrhoea, HIV, or syphilis would need over 1000 participants with SMI, to be compared to the Australian population.

Demographic and STI/BBV serology testing data, as discussed, was available describing the admitted patients for the period of May 2007 to August 2008, from Cumberland Hospital medical records and from the ICPMR Laboratories Information Technology department. Demographic information was provided as summary data.

Data for BBV testing and results was available as an independent dataset. The results section covers descriptions of the Cumberland Hospital population during the study period, including total STI and BBV prevalence rates, as well as comparison of the study participant sample representativeness.

Statistical tests for Study One included univariate descriptive statistics, such as frequencies. Sexual behaviour is reported for males and females as well as overall totals. For the “other” risk factors and prevalence rates, totals are more often reported, due to low frequencies and less gender discrepancy. Bivariate analyses using chi-square statistics and ensuing odds ratios and confidence intervals were used to examine the relationship of risk factors with the prevalent STI or BBV infections
and self-reported STIs/BBVs dependent variables. Logistic regression analysis, because of categorical variables, was performed to identify the contribution of significant risk factors to prevalent infections.

Chi-square testing, with stratification by risk, was also used to statistically compare the findings from this study with the Australian population data from the “Sex in Australia: Australian Study of Health and Relationships (ASHR)” (Smith et al., 2003b) and provide a broad perspective on the extent of possible problems.

Statistically significant results were recognised when the p-value was less than the significance level α of 0.05. The Bonferroni correction method was used, to counteract the problem of multiple comparisons and minimise the risk of Type I errors, i.e. findings of false "significance", (Bland & Altman, 1995). The Bonferroni adjustment is the revised p-value, at a statistical significance level of 1/n times the number of comparisons assessed. Each group and table of analyses reported the appropriate statistically significant p-value.

Methods for handling missing data included review of representativeness of participants. For univariate analysis, case-wise deletion was undertaken to maximise the number of responses able to be included. For logistic regression analysis, pair-wise deletion, which is the default method for PASW Graduate Pack 18 (SPSS Inc, an IBM Company, Chicago, 2000) took place.
4.4 RESULTS

The results section has missing data for many of the variables. The missing data reflects that participants for this study were patients with severe mental illness, in an acute care psychiatric hospital. As previously discussed, this is a problem often seen in psychiatric research (Gibbons et al., 1993) and is due to study participants’ inability, or refusal, to provide a response to every item. All results are provided with information related to the number of total responses as the denominator.

4.4.1 Comparison and representativeness of study participants

During the study period there were 1791 patient admissions in total to Cumberland Hospital, 989 men (55%) and 802 women (45%). Demographic and BBV testing data was available describing the 1791 admitted patients for the study period. A review of the representativeness of the study participant population of 95, with the 1791 total number of Cumberland patients admitted during the study period, was undertaken. Assessment of the overall representativeness of the sample, required a comparison of the 1696 non-participating Cumberland patients (N = 1791 total minus 95 study participants) admitted during the one year study period with the study participant sample of 95, along a limited number of available characteristics. Comparisons were also undertaken with the study sample of 95 and the Australian population. The study participants had various age groups comparisons determined to match the categories used by Cumberland Hospital Medical Records and by AHSR survey.

Chi-squared analyses indicated that study participants were slightly younger, less likely to be currently in a relationship (married or defacto) and more likely to have never been married, or divorced, than either the non-participant Cumberland patient group or the Australian population (data not shown). There were no significant differences between study participants, Cumberland patient non-participants and the Australian population regarding region of birth, considered as Australia or outside Australia.
4.4.2 Sexual Risk Behaviours

Sexual behaviours explored sexual identity, experience, activity. The many different variables reflect the “complexities of human sexuality” (Smith, Rissel, Richters, Grulich, & de Visser, 2003a, p. 144). As expected from the ASHR survey (Smith et al., 2003a), the reporting of identity and experience did not match. Other sexual risk behaviours explored included number of sexual partners, sex after drug and alcohol use and condom use.

4.4.2.1 Sexual Identity and Experiences

Males mostly reported heterosexual identity whereas females reported a wider range of sexual identity but with heterosexual still the most common (Table 4.1)

Table 4.1 Comparison of Sexual Identity and Experiences

<table>
<thead>
<tr>
<th></th>
<th>Males N=49</th>
<th>SMI</th>
<th>ASHR N=9729</th>
<th>(\chi^2)</th>
<th>p-value</th>
<th>OR</th>
<th>CI lower</th>
<th>CI upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Identity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>46</td>
<td>93.9%</td>
<td>9476</td>
<td>97.40%</td>
<td>2.37</td>
<td>0.120</td>
<td>0.41</td>
<td>0.13</td>
</tr>
<tr>
<td>Homosexual</td>
<td>0</td>
<td>0.0%</td>
<td>156</td>
<td>1.60%</td>
<td>0.80</td>
<td>0.370</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bisexual</td>
<td>0</td>
<td>0.0%</td>
<td>88</td>
<td>0.90%</td>
<td>0.45</td>
<td>0.500</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Uncertain</strong></td>
<td><strong>3</strong></td>
<td><strong>6.1%</strong></td>
<td><strong>10</strong></td>
<td><strong>0.10%</strong></td>
<td><strong>133.06</strong></td>
<td><strong>0.000</strong></td>
<td>63.39</td>
<td>16.89</td>
</tr>
<tr>
<td>Sexual Experiences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with women only</td>
<td>42</td>
<td>85.7%</td>
<td>8338</td>
<td>92.90%</td>
<td>0.00</td>
<td>0.998</td>
<td>1.00</td>
<td>0.45</td>
</tr>
<tr>
<td>with men only</td>
<td>0</td>
<td>0.0%</td>
<td>58</td>
<td>0.60%</td>
<td>0.29</td>
<td>0.588</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>with men &amp; women</td>
<td>5</td>
<td>10.2%</td>
<td>992</td>
<td>6.20%</td>
<td>0.00</td>
<td>0.999</td>
<td>1.00</td>
<td>0.40</td>
</tr>
<tr>
<td>never had sex</td>
<td>2</td>
<td>4.1%</td>
<td>399</td>
<td>0.20%</td>
<td>0.00</td>
<td>0.995</td>
<td>1.00</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females N=39</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual Identity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>30</td>
<td>76.9%</td>
<td>9358</td>
<td>97.70%</td>
<td>72.15</td>
<td><strong>0.000</strong></td>
<td>0.08</td>
<td>0.04</td>
</tr>
<tr>
<td>Homosexual</td>
<td>1</td>
<td>2.6%</td>
<td>77</td>
<td>0.80%</td>
<td>1.5</td>
<td>0.220</td>
<td>3.25</td>
<td>0.44</td>
</tr>
<tr>
<td>Bisexual</td>
<td>3</td>
<td>7.7%</td>
<td>134</td>
<td>1.40%</td>
<td>10.96</td>
<td><strong>0.001</strong></td>
<td>5.87</td>
<td>1.79</td>
</tr>
<tr>
<td><strong>Uncertain</strong></td>
<td><strong>5</strong></td>
<td><strong>12.8%</strong></td>
<td><strong>10</strong></td>
<td><strong>0.10%</strong></td>
<td><strong>403.3</strong></td>
<td><strong>0.000</strong></td>
<td>140.71</td>
<td>45.68</td>
</tr>
<tr>
<td>Sexual Experiences</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with women only</td>
<td>0</td>
<td>0.0%</td>
<td>19</td>
<td>0.20%</td>
<td>0.08</td>
<td>0.780</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>with men only</td>
<td>27</td>
<td>69.2%</td>
<td>8285</td>
<td>86.50%</td>
<td>9.88</td>
<td><strong>0.000</strong></td>
<td>0.35</td>
<td>0.18</td>
</tr>
<tr>
<td>with men &amp; women</td>
<td>10</td>
<td>25.6%</td>
<td>1207</td>
<td>12.60%</td>
<td>5.98</td>
<td>0.015</td>
<td>2.39</td>
<td>1.16</td>
</tr>
<tr>
<td>never had sex</td>
<td>2</td>
<td>5.1%</td>
<td>57</td>
<td>0.60%</td>
<td>13.09</td>
<td><strong>0.000</strong></td>
<td>9.03</td>
<td>2.13</td>
</tr>
</tbody>
</table>

Notes: n = number responding N = total Number assessed *Significance p<0.003 with Bonferroni adjustment
Although identifying as heterosexual, fewer men (85.7%) and fewer women (69.2%) reported having sex exclusively with the opposite sex. No-one reported exclusive sexual experience with a same-sex partner.

In comparison to the Australian population data from ASHR (De Visser, Rissel, Richters, & Grulich, 2003; Smith et al., 2003a), the study participants of male patients were fairly similar in their sexual experiences but differed regarding sexual identity with more patients with SMI being uncertain regarding their sexual identity, albeit with small numbers.

Women with SMI and participants of this study differed from the women in the national ASHR survey. The study women with SMI, though a small group, were less likely to be heterosexual and more likely to be bisexual or uncertain regarding their sexual identity. Women with SMI differed in their sexual experiences, as they were less likely to have sex with men only and more likely to have never had sex.
4.4.2.2 Sexual Activities

Ninety-six percent of all study participants had previously engaged in sex “ever”, rates similar to the Australian population (Table 4.2). Both men and women with SMI differed from the general population in that they were less likely to report Oral Intercourse (OI) “ever”.

Fewer males reported sex in the “last 12 months” (54%), compared to Australian males (88%). Women with SMI did not differ in their reported rates of sex in the last 12 months compared to the Australia population.

Table 4.2 Comparison of Sexual Activities

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SMI</td>
<td>ASHR</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Sex ever N=54</td>
<td>52</td>
<td>96.3%</td>
</tr>
<tr>
<td>Sex in the last 12 m N=52</td>
<td>28</td>
<td>53.8%</td>
</tr>
<tr>
<td>Sexual Activities ever N=49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI ever</td>
<td>47</td>
<td>95.9%</td>
</tr>
<tr>
<td>OI ever</td>
<td>29</td>
<td>59.2%</td>
</tr>
<tr>
<td>Anal ever</td>
<td>16</td>
<td>32.7%</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Sex ever N=41</td>
<td>40</td>
<td>97.6%</td>
</tr>
<tr>
<td>Sex in the last 12m N=40</td>
<td>33</td>
<td>82.5%</td>
</tr>
<tr>
<td>Sexual Activities ever N=39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI ever</td>
<td>37</td>
<td>94.9%</td>
</tr>
<tr>
<td>OI ever</td>
<td>16</td>
<td>41.0%</td>
</tr>
<tr>
<td>Anal ever</td>
<td>3</td>
<td>7.7%</td>
</tr>
</tbody>
</table>

Notes: VI = vaginal intercourse, OI = oral intercourse, AI = anal intercourse
n = number responding N = total Number assessed *Significance p<0.008 with Bonferroni adjustment
4.4.2.3 Number of Sexual Partners Ever

There were no differences in the number of partners “ever”, reported by men compared to the ASHR male population (see Table 4.3). Men reported a mean of 15.5 female sexual partners “ever”, slightly lower than ASHR, but with a higher median of 20 partners.

Women, despite excluding accounts of sex work, were more likely to report 50 or more partners and reported a higher mean of 9 and median of 8 than women in the Australian survey (De Visser, Rissel et al., 2003) as displayed in Table 4.3.

Table 4.3 Comparison of Number of Opposite-Sex Partners “Ever” (excludes sex work)

<table>
<thead>
<tr>
<th></th>
<th>Males SMI</th>
<th>N=44</th>
<th>ASHR</th>
<th>N=9,469</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ever</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>4.6%</td>
<td>549</td>
<td>5.8%</td>
<td>1.26</td>
<td>0.723</td>
<td>0.77</td>
<td>0.19</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>6.8%</td>
<td>975</td>
<td>10.3%</td>
<td>0.58</td>
<td>0.448</td>
<td>0.64</td>
<td>0.20</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>6.8%</td>
<td>578</td>
<td>6.1%</td>
<td>0.04</td>
<td>0.844</td>
<td>1.13</td>
<td>0.35</td>
</tr>
<tr>
<td>3 to 9</td>
<td>10</td>
<td>22.7%</td>
<td>3125</td>
<td>33.0%</td>
<td>2.09</td>
<td>0.148</td>
<td>0.60</td>
<td>0.30</td>
</tr>
<tr>
<td>10 to 49</td>
<td>23</td>
<td>52.3%</td>
<td>3627</td>
<td>38.3%</td>
<td>3.61</td>
<td>0.057</td>
<td>1.76</td>
<td>0.98</td>
</tr>
<tr>
<td>50+</td>
<td>3</td>
<td>6.8%</td>
<td>625</td>
<td>6.6%</td>
<td>0.00</td>
<td>0.954</td>
<td>1.04</td>
<td>0.32</td>
</tr>
<tr>
<td>Mean</td>
<td>15.5</td>
<td></td>
<td>16.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>20</td>
<td></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>100</td>
<td></td>
<td>3202</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Females SMI</td>
<td>N=37</td>
<td>ASHR</td>
<td>N=9,340</td>
<td>$\chi^2$</td>
<td>p-value</td>
<td>OR</td>
<td>CI</td>
</tr>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ever</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>5.4%</td>
<td>663</td>
<td>7.1%</td>
<td>0.16</td>
<td>0.689</td>
<td>0.75</td>
<td>0.18</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>10.8%</td>
<td>2186</td>
<td>23.4%</td>
<td>3.27</td>
<td>0.071</td>
<td>0.4</td>
<td>0.14</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>8.1%</td>
<td>1065</td>
<td>11.4%</td>
<td>0.4</td>
<td>0.529</td>
<td>0.69</td>
<td>0.21</td>
</tr>
<tr>
<td>3 to 9</td>
<td>11</td>
<td>29.7%</td>
<td>3727</td>
<td>39.9%</td>
<td>1.59</td>
<td>0.207</td>
<td>0.64</td>
<td>0.31</td>
</tr>
<tr>
<td>10 to 49</td>
<td>12</td>
<td>32.4%</td>
<td>1625</td>
<td>17.4%</td>
<td>5.78</td>
<td>0.016</td>
<td>2.28</td>
<td>1.14</td>
</tr>
<tr>
<td>50+</td>
<td>5</td>
<td>13.5%</td>
<td>84</td>
<td>0.9%</td>
<td>62.38</td>
<td>0.000*</td>
<td>17.22</td>
<td>6.55</td>
</tr>
<tr>
<td>Mean</td>
<td>9</td>
<td></td>
<td>6.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>8</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>40</td>
<td></td>
<td>909</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: $n$ = number responding N = total Number assessed * Significance p<0.004 with Bonferroni adjustment
4.4.2.4 Number of Sexual Partners in the last 12 months

Overall patients with SMI were more likely to report the sexual risk behaviour of >2 partners in the “last 12 months” (18.8%), $\chi^2(1, N = 89) = 29.80, p = .000$ and with an odds ratio of 3.81 and 95% CI (2.27, 6.39) than the Australian population survey (5.8%).

Men with SMI were less likely to have sex in the “last 12 months” (Table 4.4), and more likely to report zero sexual contacts. For those men that did have sex in the “last 12 months”, there was a higher rate of reporting 3 to 9 partners than Australian men.

Women with SMI were less likely to report one partner only and more likely to report “2 partners” or “10 to 49 partners” in the “last 12 months” compared to women part of the ASHR survey.

Table 4.4 Comparison of Number of Opposite-Sex Partners - “last 12m” (excludes sex work)

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>SMI n</th>
<th>N=52 %</th>
<th>ASHR n</th>
<th>N=9,469 %</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI lower</th>
<th>CI upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>24</td>
<td>46.20%</td>
<td>985</td>
<td>10.40%</td>
<td>69.77</td>
<td>0.000*</td>
<td>7.38</td>
<td>4.26</td>
<td>12.79</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>15</td>
<td>28.90%</td>
<td>7215</td>
<td>76.20%</td>
<td>63.46</td>
<td>0.000*</td>
<td>0.13</td>
<td>0.07</td>
<td>0.23</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>1.90%</td>
<td>492</td>
<td>5.20%</td>
<td>1.13</td>
<td>0.288</td>
<td>0.36</td>
<td>0.05</td>
<td>2.59</td>
<td></td>
</tr>
<tr>
<td>3 to 9</td>
<td>12</td>
<td>23.10%</td>
<td>625</td>
<td>6.60%</td>
<td>22.49</td>
<td>0.000*</td>
<td>4.25</td>
<td>2.22</td>
<td>8.13</td>
<td></td>
</tr>
<tr>
<td>10 to 49</td>
<td>0</td>
<td>0.00%</td>
<td>133</td>
<td>1.40%</td>
<td>0.74</td>
<td>0.389</td>
<td>1.01</td>
<td>1</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>50+</td>
<td>0</td>
<td>0.00%</td>
<td>9</td>
<td>0.10%</td>
<td>0.05</td>
<td>0.824</td>
<td>1.01</td>
<td>1</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>1.3</td>
<td></td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>6</td>
<td>260</td>
<td>260</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Females</td>
<td>SM n</td>
<td>N=37 %</td>
<td>ASHR n</td>
<td>N=9,340 %</td>
<td>$\chi^2$</td>
<td>p-value</td>
<td>OR</td>
<td>CI lower</td>
<td>CI upper</td>
</tr>
<tr>
<td>0</td>
<td>7</td>
<td>17.5%</td>
<td>1205</td>
<td>12.9%</td>
<td>0.75</td>
<td>0.387</td>
<td>1.43</td>
<td>0.63</td>
<td>3.24</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>22</td>
<td>55.00%</td>
<td>7491</td>
<td>80.20%</td>
<td>15.87</td>
<td>0.000*</td>
<td>0.3</td>
<td>0.16</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>15.00%</td>
<td>374</td>
<td>4.00%</td>
<td>12.39</td>
<td>0.000*</td>
<td>4.23</td>
<td>1.77</td>
<td>10.14</td>
<td></td>
</tr>
<tr>
<td>3 to 9</td>
<td>1</td>
<td>2.50%</td>
<td>262</td>
<td>2.80%</td>
<td>0.01</td>
<td>0.907</td>
<td>0.89</td>
<td>0.12</td>
<td>6.49</td>
<td></td>
</tr>
<tr>
<td>10 to 49</td>
<td>4</td>
<td>10.00%</td>
<td>9</td>
<td>0.10%</td>
<td>282.3</td>
<td>0.000*</td>
<td>115.2</td>
<td>33.93</td>
<td>391.14</td>
<td></td>
</tr>
<tr>
<td>50+</td>
<td>0</td>
<td>0.00%</td>
<td>9</td>
<td>0.10%</td>
<td>0.030</td>
<td>0.853</td>
<td>1.00</td>
<td>1.00</td>
<td>1.01</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>2.7</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum</td>
<td>25</td>
<td>102</td>
<td>102</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed * Significance p<0.004 with Bonferroni adjustment
4.4.2.5 Sex after Drug or Alcohol Use

Over 70% (46/65) patients reported being high or drunk “ever” and over a third, 35.9% (23/64), reported being high or drunk in the “last 12 months”, when they had sex. Australian population data regarding this risk behaviour, being high or drunk ever, has not been published. This behaviour for patients with SMI differed when compared to 58% of 1,234 young people aged 18-24, reporting the behaviour of drunk/high during sex “ever”, that were part of an internet survey (McFarlane, Bull, & Rietmeijer, 2002), $\chi^2 (1, N = 1299) = 4.14, p = .042$. This risk also differed when compared to only 27% of 9,515 US college students reporting being high or drunk in the “last 30 days” (Schwartz, Waterman, Vazsonyi, Zamboanga, Whitbourne et al., 2011), $\chi^2 (1, N = 9580) = 62.32, p = .000$.

4.4.2.6 Sex and Condom Use

Patients with SMI were less likely to have used condoms “ever” (Table 4.5), but reported better condom use at the last sexual encounter than the Australian population.

Table 4.5 Comparison of Rates of Condom Use with an Australian Population

<table>
<thead>
<tr>
<th>SMI</th>
<th>ASHR</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI lower</th>
<th>CI upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>no condom use ever</td>
<td>23.5% 11.14%</td>
<td>13.73 0.000*</td>
<td>2.40   1.49   3.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no condom use last12m</td>
<td>52.9% 60.90%</td>
<td>2.71 0.100</td>
<td>0.71  0.48  1.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSE condom use</td>
<td>35.8% 20.62%</td>
<td>13.25 0.000*</td>
<td>2.15   1.41   3.27</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed LSE = last sexual encounter
*Significance p<0.02 with Bonferroni adjustment

4.4.3 Sexual Risk Partners

Sexual risk partners covered review of relationships, partner choices at last sexual contact, sex with partner(s) with risk, settings for meeting sexual contacts, exchanging sex for payment (sex work) or favours, or by coercion, as well as sex with a partner with drug or alcohol risks.
Specifically sex partners with risk included; sexual contacts that had ever injected drugs, had HIV, were bisexual, were sex workers, had multiple simultaneous partners, were from an overseas country (NSW Department of Health, 2006a; NSW Department of Health Sydney, 2006; UNAIDS, 2009), or had ever been in gaol (NSW Department of Health, 2007), as described in Chapter 2. The risk of male-to-male sex had been covered in sexual experiences, section 4.4.2.1 and there had not been any disclosures. In addition, risk partners included those with postulated risks for patients with SMI, such as sex with partner(s) that also had an SMI diagnosis (Kalichman et al., 1994).

4.4.3.1 Sex and Regular Relationships

More women, than men, reported having a regular partner but rates were significantly lower than for Australians in general. Patients with SMI were less likely to be in a longer-term stable relationship compared to the Australian public and the duration of the relationship was less than one year for many (Table 4.6).

<table>
<thead>
<tr>
<th>Table 4.6 Comparison of Regular Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
</tr>
<tr>
<td>SMI N</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>regular partner 47 11</td>
</tr>
<tr>
<td>duration &lt;1 year 11 6</td>
</tr>
<tr>
<td>Females</td>
</tr>
<tr>
<td>regular partner 39 20</td>
</tr>
<tr>
<td>duration &lt;1 year 20 6</td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed * Significance p<0.01 with Bonferroni adjustment

4.4.3.2 Sex and Partner at Last Sexual Encounter

At the last sex encounter, men with SMI most frequently reported the option of sex with a regular sexual partner, though this was not always deemed a “regular relationship”. All men who reported a “regular relationship” also reported sex with a “regular partner”, but 18 men who did not report a “regular relationship” reported sex with a “regular sexual partner”. At the last sexual encounter, men and women
with SMI were more likely to have had sex with a casual partner and less likely to have sex with a regular partner, than the Australian survey (Table 4.7).

Table 4.7 Comparison of Partner at Last Sexual Encounter

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>SMI N=47</th>
<th>ASHR N=7923</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>casual</td>
<td>9</td>
<td>19.1%</td>
<td>380</td>
<td>4.8%</td>
</tr>
<tr>
<td>sex worker</td>
<td>9</td>
<td>19.1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>regular</td>
<td>29</td>
<td>61.7%</td>
<td>7471</td>
<td>94.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Females</th>
<th>SMI N=36</th>
<th>ASHR N=7698</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n+ve</td>
<td>%</td>
<td>n+ve</td>
<td>%</td>
</tr>
<tr>
<td>casual</td>
<td>16</td>
<td>44.4%</td>
<td>139</td>
<td>1.8%</td>
</tr>
<tr>
<td>regular</td>
<td>19</td>
<td>52.8%</td>
<td>7513</td>
<td>97.6%</td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed * Significance p<.01 with Bonferroni adjustment

Women with SMI more often reported sex with a casual partner at their last sexual encounter than men with SMI, (44.4%), $\chi^2$ (1, N = 36) = 5.601, p = .018. Slightly more women, than men with SMI, had sex with their regular partner, with whom they mostly also reported a regular relationship.

4.4.3.3 Sex with Partners at Risk

Most men and women reported sexual contact with partners at risk “ever” (see Table 4.8). A large number (38%), reported sexual contact with partners at risk in the “last 12 months”. Men reported more frequently, having sex “ever” with sex workers, others with SMI diagnosis, overseas contact and others with IDU history. Women had sex “ever” with partners whose risk included IDU history, incarceration history, others with SMI diagnosis and those with multiple partners.

Men with SMI were much more likely to have had sex with sex worker “ever” (60.9%), $\chi^2$ (1, N = 9381) = 70.52, p = .000, compared to ASHR reports at 15.6%. This held for risk in the “last 12 months” for men with SMI (21.7%), $\chi^2$ (1, N = 7969) = 92.28, p = .000, compared to ASHR reports at 1.9%. The ASHR survey did not provide further data regarding risk partners for comparison.
Table 4.8 Description of Risk History of Sexual Contacts “ever”

<table>
<thead>
<tr>
<th>Sex contact risk</th>
<th>Men n</th>
<th>%</th>
<th>Women n</th>
<th>%</th>
<th>Total n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner with risk history</td>
<td>37 54</td>
<td>68.5%</td>
<td>29 41</td>
<td>70.7%</td>
<td>66 95</td>
<td>69.5%</td>
</tr>
<tr>
<td>IDU History</td>
<td>15 45</td>
<td>33.3%</td>
<td>15 35</td>
<td>42.9%</td>
<td>30 80</td>
<td>37.5%</td>
</tr>
<tr>
<td>HIV positive</td>
<td>1 46</td>
<td>2.2%</td>
<td>3 34</td>
<td>8.8%</td>
<td>4 80</td>
<td>5.0%</td>
</tr>
<tr>
<td>Bisexual</td>
<td>0 46</td>
<td>0.0%</td>
<td>9 33</td>
<td>27.3%</td>
<td>9 79</td>
<td>11.4%</td>
</tr>
<tr>
<td>Sex worker</td>
<td>28 46</td>
<td>60.9%</td>
<td>0 35</td>
<td>0.0%</td>
<td>28 81</td>
<td>34.6%</td>
</tr>
<tr>
<td>Multiple partners</td>
<td>11 44</td>
<td>25.0%</td>
<td>9 29</td>
<td>31.0%</td>
<td>20 73</td>
<td>27.4%</td>
</tr>
<tr>
<td>Overseas contact</td>
<td>15 37</td>
<td>40.5%</td>
<td>4 29</td>
<td>13.8%</td>
<td>19 66</td>
<td>28.8%</td>
</tr>
<tr>
<td>Incarceration history</td>
<td>8 42</td>
<td>19.1%</td>
<td>13 31</td>
<td>41.9%</td>
<td>21 73</td>
<td>28.8%</td>
</tr>
<tr>
<td>SMI diagnosis</td>
<td>20 46</td>
<td>43.5%</td>
<td>13 35</td>
<td>37.1%</td>
<td>33 81</td>
<td>40.7%</td>
</tr>
</tbody>
</table>

Note: n = number responding  N = total Number assessed

4.4.3.4 Sources of Sexual Contacts

Patients also provided information regarding how they met the sexual contact with whom they last had sex. Most people, 43.2% of men (22/47), and 48.3% of women, (17/36) had met “socially”. The next most common means of meeting their last sexual partner was at the “hospital”, reported by 27.0% of men, (13/49) and 20.7% of women, (8/36). Other less frequent sources included police station, whilst in detention and at employment locations.

4.4.3.5 Sex for Favours or Payment

Sex for favours “ever”, was reported by 35.7% (10/28) women, and sex for favours in the “last 12 months”, by 18.8% (3/16) women. Fifteen percent of men (4/26), reported sex for favours “ever”, and 6.7% (1/15), provided sex for favours in the “last 12 months”.

Women with SMI were much more likely, than Australian women, to have been involved in sex work, i.e. sex for payment, “ever” and in the “last 12 months” (Table 4.9). None of the men reported having ever been involved in sex work.
Table 4.9 Comparison of Experiences of Sex Work for Women

<table>
<thead>
<tr>
<th></th>
<th>SMI</th>
<th>N=34</th>
<th>ASHR</th>
<th>N=9134</th>
<th>χ²</th>
<th>p-value</th>
<th>OR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sex work ever</td>
<td>17.6%</td>
<td>6</td>
<td>0.5%</td>
<td>45.67</td>
<td>176.52</td>
<td>0.000*</td>
<td>42.34</td>
<td>16.74</td>
</tr>
<tr>
<td>sex work last 12m</td>
<td>5.9%</td>
<td>2</td>
<td>0.1%</td>
<td>9.134</td>
<td>94.56</td>
<td>0.000*</td>
<td>63.37</td>
<td>13.17</td>
</tr>
</tbody>
</table>

Note: n = number responding  N = total Number assessed  * Significance p<0.008 with Bonferroni adjustment

4.4.3.6 Sexual Partner with Drug or Alcohol Issues

Over 65% (41/63) of study participants reported that their sexual partner had “ever” been “high or drunk” during sexual activity. Twenty-eight percent (17/61) of participants reported that their sexual partner had been high or drunk during sex in the “last 12 months”. Fifty-five percent (32/58) reported a partner with a drug or alcohol problem and 29.3% (17/58) reported such a partner in the “last 12 months”. Australian data was not available for comparison.

4.4.3.7 Sexual Coercion

More women (64%), than men (21%), reported being coerced into having sex “ever” (Table 4.10). Both men and women with SMI were much more likely to have experienced sexual coercion than the Australian public. There were no differences between those patients that had been coerced to have sex and the Australian public, regarding the event occurring prior to the age of 16, or on more than one occasion. Sixty-three percent of women and 30% of men had spoken to a healthcare worker regarding the assault.
Table 4.10 Comparison of Experiences of Sexual Coercion “ever”

<table>
<thead>
<tr>
<th></th>
<th>SMI</th>
<th>ASHR</th>
<th>(\chi^2)</th>
<th>p-value</th>
<th>OR</th>
<th>CI lower</th>
<th>CI upper</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sex force ever</td>
<td>20.5%</td>
<td>9</td>
<td>44</td>
<td>9373</td>
<td>450</td>
<td>4.8%</td>
<td>23.14</td>
</tr>
<tr>
<td>sex force age &lt;16</td>
<td>6.8%</td>
<td>3</td>
<td>9</td>
<td>453</td>
<td>260</td>
<td>57.3%</td>
<td>2.084</td>
</tr>
<tr>
<td>sex force &gt;2</td>
<td>16.7%</td>
<td>2</td>
<td>9</td>
<td>453</td>
<td>222</td>
<td>49.1%</td>
<td>2.535</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sex force ever</td>
<td>63.6%</td>
<td>21</td>
<td>33</td>
<td>9218</td>
<td>1945</td>
<td>21.1%</td>
<td>35.55</td>
</tr>
<tr>
<td>sex force age &lt;16</td>
<td>27.3%</td>
<td>9</td>
<td>21</td>
<td>1939</td>
<td>952</td>
<td>49.1%</td>
<td>0.324</td>
</tr>
<tr>
<td>sex force &gt;2</td>
<td>40.9%</td>
<td>9</td>
<td>21</td>
<td>1939</td>
<td>1206</td>
<td>62.2%</td>
<td>3.298</td>
</tr>
</tbody>
</table>

Note: \(n\) = number responding  \(N\) = total Number assessed * Significance \(p<0.008\) with Bonferroni adjustment

4.4.4 Substance Use Risk Behaviours

Substance use risk covers illicit drug use, injecting drug use, which included blood exposure situations such as needle sharing, other drug paraphernalia sharing, or other contact situations with “touching blood”.

4.4.4.1 Illicit drug use

All 95 patients responded to questions on illicit drug use. Many study participants reported illicit drug use (74%) and specifically IDU (31%), at some point “ever” in their life. Over 50% reported illicit drug use and 13% IDU in the “last 12 months” see Table 4.11.

Table 4.11 Description of Drug Usage “ever” and in the “last 12 months”

<table>
<thead>
<tr>
<th>Drug use</th>
<th>'ever'</th>
<th></th>
<th></th>
<th>'12months'</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>(N)</td>
<td>% of (N)</td>
<td>(n)</td>
<td>(N)</td>
<td>% of (N)</td>
</tr>
<tr>
<td>illicit - any</td>
<td>70</td>
<td>95</td>
<td>73.7%</td>
<td>52</td>
<td>95</td>
<td>54.7%</td>
</tr>
<tr>
<td>marijuana</td>
<td>63</td>
<td>89</td>
<td>70.8%</td>
<td>37</td>
<td>89</td>
<td>41.6%</td>
</tr>
<tr>
<td>amphetamine</td>
<td>47</td>
<td>90</td>
<td>52.2%</td>
<td>13</td>
<td>90</td>
<td>14.4%</td>
</tr>
<tr>
<td>heroin</td>
<td>34</td>
<td>89</td>
<td>38.2%</td>
<td>12</td>
<td>89</td>
<td>13.5%</td>
</tr>
<tr>
<td>cocaine</td>
<td>32</td>
<td>88</td>
<td>36.4%</td>
<td>7</td>
<td>88</td>
<td>8.0%</td>
</tr>
<tr>
<td>methadone</td>
<td>13</td>
<td>87</td>
<td>14.9%</td>
<td>6</td>
<td>87</td>
<td>6.9%</td>
</tr>
<tr>
<td>ecstasy</td>
<td>27</td>
<td>88</td>
<td>30.7%</td>
<td>5</td>
<td>88</td>
<td>5.7%</td>
</tr>
<tr>
<td>LSD/Hallucinogen</td>
<td>21</td>
<td>88</td>
<td>23.9%</td>
<td>2</td>
<td>88</td>
<td>2.3%</td>
</tr>
<tr>
<td>IDU</td>
<td>29</td>
<td>94</td>
<td>30.9%</td>
<td>12</td>
<td>90</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

Note: \(n\) = number responding  \(N\) = total Number assessed  IDU=injecting drug use
Study participants reported high rates of marijuana and amphetamine use “ever” and in the “last 12 months”. Comparisons were not possible with the ASHR survey.

4.4.4.2. Injecting Drug Use and Blood Exposures

Of the 31% (29/95) of patients that reported an injecting drug use history, 24 from the 29, provided information regarding needles and syringe attainment. Health settings were the most frequently reported source for injecting equipment supplies (54.1%, 13/24 respondents). Sharing of needles with needle re-use was reported by 31% of IDU “ever” respondents. Sharing of injecting paraphernalia was reported by 35% of respondents. All behaviours were more frequent for patients with SMI compared to the whole Australian population survey (Table 4.12).

The behaviour of “having touched others’ blood in sharing situations”, was reported by 13%, 12 of the whole group of 95. The twelve that reported this behaviour included 24%, (7/29), from the group that had an IDU history and 8% (5/66) from those that did not report injecting.

<table>
<thead>
<tr>
<th>Table 4.12 Comparison of IDU and Sharing Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMI</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>IDU ever</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>IDU 12m</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>shared needles ever</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>shared paraphernalia ever</td>
</tr>
<tr>
<td>N</td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed * Significance p<0.007 with Bonferroni adjustment

4.4.5 “Other” Risk Factors – Screening, Vaccinations, Tattoos and Incarceration

Many had participated in protective healthcare behaviours with 72% (57/79) reporting previous HIV testing, a rate much higher than the 40% of the Australian population survey, \( \chi^2 \) (1, N = 19032) = 73.58, \( p = .000 \). Sixty-four percent had previously been screened for the other BBVs and STIs. Vaccination for HAV was
reported by 25% (16/66), and for HBV by 38% (25/66), rates similar to the ASHR survey (Grulich, de Visser et al., 2003a).

Table 4.13 Comparison of “Other” Risk Factors – Tattoos, Body Piercing & Incarceration

<table>
<thead>
<tr>
<th></th>
<th>SMI N</th>
<th></th>
<th>ASHR N</th>
<th></th>
<th>( \chi^2 )</th>
<th>p-value</th>
<th>OR</th>
<th>CI lower</th>
<th>CI upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>tattoo ever</td>
<td>76</td>
<td>27</td>
<td>19306</td>
<td>2433</td>
<td>35.90</td>
<td>0.000*</td>
<td>3.82</td>
<td>2.38</td>
<td>6.12</td>
</tr>
<tr>
<td>body piercing ever</td>
<td>71</td>
<td>6</td>
<td>19306</td>
<td>1158</td>
<td>0.75</td>
<td>0.385</td>
<td>1.45</td>
<td>0.63</td>
<td>3.35</td>
</tr>
<tr>
<td>incarceration history</td>
<td>79</td>
<td>24</td>
<td>19306</td>
<td>425</td>
<td>276.11</td>
<td>0.000*</td>
<td>19.39</td>
<td>11.89</td>
<td>31.61</td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed * Significance p<0.02 with Bonferroni adjustment

“Other” risk factors for STIs and BBVs disclosed included previous tattoos, body piercings and incarceration (Table 4.13). More patients with SMI than the Australian population reported the risk behaviours of previous tattooing or incarceration. More men 36.2% (17/47), than women 21.9% (7/32) reported incarceration risk, but this was not significantly different.

4.4.6 Prevalence of STIs and BBVs

Part 2 results describe the prevalence of STIs and BBVs, assessed by testing of biological specimens and by self-reported STI/BBV history. In this section, results of all serological tests for all patients at Cumberland Hospital during the study period are also presented and compared, providing a context for the whole population of SMI inpatients at Cumberland Hospital.

4.4.6.1 STI and BBV Prevalence from Self-reported STI/BBV History

Results displayed followed the Australian survey style (Grulich, de Visser et al., 2003c). Many advised of having a self-reported STI or BBV and nearly 50% reported a previous STI/HBV (which included HBV but not candidiasis), and 46% reported a previous STI (excluding HCV, HBV and candidiasis) see Table 4.14, (Grulich, de Visser et al., 2003c, p. 236). Self-reported STI or BBVs were more frequent for patients with SMI. Patients with SMI were more likely to report HCV, genital warts, chlamydia and herpes compared to the Australian population survey.
Table 4.14 Comparison of Self-reported STI/BBV rates

<table>
<thead>
<tr>
<th></th>
<th>SMI N</th>
<th>ASHR N=19307</th>
<th>χ²</th>
<th>p-value</th>
<th>OR</th>
<th>CI lower</th>
<th>CI upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>self-reported STI or BBV#</td>
<td>85</td>
<td>50</td>
<td>58.8%</td>
<td>3681</td>
<td>19.1%</td>
<td>86.09</td>
<td>0.000*</td>
</tr>
<tr>
<td>self-reported STI/BBV#</td>
<td>85</td>
<td>42</td>
<td>49.4%</td>
<td>3584</td>
<td>18.6%</td>
<td>52.98</td>
<td>0.000*</td>
</tr>
<tr>
<td>self-reported STI#</td>
<td>85</td>
<td>39</td>
<td>45.9%</td>
<td>3449</td>
<td>17.9%</td>
<td>45.04</td>
<td>0.000*</td>
</tr>
<tr>
<td>self-reported HCV</td>
<td>84</td>
<td>15</td>
<td>17.9%</td>
<td>97</td>
<td>0.5%</td>
<td>438.66</td>
<td>0.000*</td>
</tr>
<tr>
<td>self-reported HBV</td>
<td>83</td>
<td>3</td>
<td>3.6%</td>
<td>135</td>
<td>0.7%</td>
<td>9.94</td>
<td>0.002*</td>
</tr>
<tr>
<td>self-reported HIV</td>
<td>93</td>
<td>2</td>
<td>2.2%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>self-reported chlamydia</td>
<td>82</td>
<td>6</td>
<td>7.3%</td>
<td>462</td>
<td>2.5%</td>
<td>8.41</td>
<td>0.004*</td>
</tr>
<tr>
<td>self-reported gonorrhoea</td>
<td>84</td>
<td>1</td>
<td>1.2%</td>
<td>272</td>
<td>1.5%</td>
<td>0.03</td>
<td>0.865</td>
</tr>
<tr>
<td>self-reported syphilis</td>
<td>84</td>
<td>1</td>
<td>1.2%</td>
<td>71</td>
<td>0.4%</td>
<td>1.53</td>
<td>0.216</td>
</tr>
<tr>
<td>self-reported genital herpes</td>
<td>83</td>
<td>6</td>
<td>7.2%</td>
<td>444</td>
<td>2.4%</td>
<td>8.86</td>
<td>0.003*</td>
</tr>
<tr>
<td>self-reported genital warts</td>
<td>84</td>
<td>14</td>
<td>16.7%</td>
<td>811</td>
<td>4.4%</td>
<td>31.91</td>
<td>0.000*</td>
</tr>
<tr>
<td>self-reported pubic lice</td>
<td>85</td>
<td>7</td>
<td>8.2%</td>
<td>1356</td>
<td>7.3%</td>
<td>0.19</td>
<td>0.663</td>
</tr>
<tr>
<td>self-reported candidiasis</td>
<td>84</td>
<td>18</td>
<td>21.4%</td>
<td>6159</td>
<td>31.9%</td>
<td>4.23</td>
<td>0.040</td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed *Significance p<0.004 with Bonferroni adjustment

# less Candida

4.4.6.2 STI and BBV Prevalence from Biological Sample Tests

All study participants had provided at least one biological sample to be tested for STI or BBV infections, with this study or previously, as part of screening when newly admitted. Table 4.15 shows results for STIs and BBVs by males, females and total number. The uptake rates for testing were high for the 95 participating in the study, with 95.8%, (91) participants assessed for HCV, 94.7% (90) assessed for HBV, 85.3% (81) for HIV, 82.1% (78) for Syphilis, 61.1% (58) for Chlamydia and 60.0% (57) for Gonorrhoea.

Of all the STIs and BBVs assessed, BBV infections were the most prevalent for this group. HCV antibody was present for 26.4%. Sixteen percent had been exposed to HBV (with one person, 1.1% identified as chronically infected). Only 2.5% were HIV positive and all were male. Current STI infections were uncommon and only one person of 58 tested (1.7%), was diagnosed with chlamydia and no-one had syphilis or gonorrhoea.
Table 4.15 Description of Biological Sample - BBV and STI rates for study sample

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th></th>
<th>Females</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>n</td>
<td>%</td>
<td>N</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>HCV</td>
<td>53</td>
<td>9</td>
<td>17.0%</td>
<td>38</td>
<td>15</td>
<td>39.5%</td>
</tr>
<tr>
<td>HBV</td>
<td>52</td>
<td>7</td>
<td>13.5%</td>
<td>38</td>
<td>7</td>
<td>18.4%</td>
</tr>
<tr>
<td>HIV</td>
<td>43</td>
<td>2</td>
<td>4.7%</td>
<td>38</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Syphilis</td>
<td>46</td>
<td>0</td>
<td>0.0%</td>
<td>32</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>31</td>
<td>0</td>
<td>0.0%</td>
<td>27</td>
<td>1</td>
<td>3.7%</td>
</tr>
<tr>
<td>Gonorrhoea</td>
<td>30</td>
<td>0</td>
<td>0.0%</td>
<td>27</td>
<td>0</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Note: n = number testing positive N = total Number tested

Six percent (5/90) patients had both HCV and HBV exposure. One person from 76 (1.7%) was positive for both HIV and HBV exposure and no-one had both HIV and HCV positive results. Females were more likely to be HCV positive than males, \( \chi^2 \) (1, N = 91) = 5.77, \( p = .02 \), odds ratio = 3.2, CI 95% (1.2, 8.4).

Biological testing indicates that self-reported STIs or BBVs may be underestimates. Of this group, all were aware of a previous diagnosis of HIV, 63% knew of their HCV results (15/24), but only 21% (3/14) were aware of previous HBV exposure.

### 4.4.6.3 STI and BBV results of all Cumberland Hospital Patients

Data regarding STI/BBV serology results was available for all Cumberland Hospital patients admitted during the study period allowing an assessment of overall STI and BBV prevalence and representative rates. Five-hundred and thirty patients of the total Cumberland Hospital population of 1791 had BBV or STI assessment involving 2397 tests during the study period.

Overall HCV antibody positive prevalence, for all 1791 Cumberland hospital patients, was 4.6%, see Table 4.16. HCV testing occurred for 25% (456/1791) of all patients, with 18% (83/456) of those testing HCV antibody positive. HBV exposure prevalence was 5.8% for all patients. HBV was assessed for 28% (504/1791) and 20% of those patients (103/504) tested positive. Of those 103 positive, 3% (13/103) had chronic HBV infection. HIV antibody prevalence was low at 0.2%. HIV testing occurred for only 4% (78/1791) of all inpatients, with 4% (4/78) of those tested, having a positive result. Syphilis positivity overall was also low at 0.3%. Syphilis
testing occurred for 18% of patients (320/1791) with less than 2% (5/320) having positive results and none were acute infections.

A review was done to identify if Study One serology results were representative of Cumberland Hospital serology results. The review compared non-participant Cumberland Hospital patients that had screening tests as inpatients only, with the results of patients participating in Study One. From the 530 Cumberland patients and 2397 tests, it could be determined that 54 patients had HCV and HBV testing as inpatients and as participants for Study One. Dual HIV testing occurred for 31 patients and dual syphilis testing for 34 patients. From all 530 Cumberland patients, the number of patient tests performed only as non-participant Cumberland hospital patients, and thus non-participating for Study One, included 402 HCV tests (= 456 - 54), 450 HBV tests (= 504 - 54), 47 HIV tests (= 78 - 31) and 286 syphilis tests (= 320 - 34).

From the group that had both testing as an inpatient as part of Cumberland screening, and as a study participant part of Study One, 14.8% (8/54) were positive for HCV, 13.0% (7/54) positive for HBV exposure and 3.2% positive for HIV (1/31).

Analysis of test results of patients that had testing only done as non-participant Cumberland patients, with the test results of Study One participants was undertaken, see Table 4.16. There was no significant difference in the prevalence of any positive test result for the study participants when compared to the positive results for non-participant Cumberland patients: HCV $\chi^2$ (1, N = 402) = 2.75, $p = .10$; HBV $\chi^2$ (1, N = 450) = 1.54 $p = .21$; HIV $\chi^2$ (1, N = 47) = 1.21, $p = .27$; syphilis $\chi^2$ (1, N = 286) = 1.38 $p = .24$. 
Table 4.16 Description of BBV and STI rates for study sample compared to Cumberland Hospital

<table>
<thead>
<tr>
<th>All Tests</th>
<th>Cumberland nonparticipants</th>
<th>SMI Study Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% +ve tested</td>
<td>% +ve N=1791</td>
</tr>
<tr>
<td>HCV</td>
<td>n</td>
<td>N=1791</td>
</tr>
<tr>
<td>HBV</td>
<td>103</td>
<td>504</td>
</tr>
<tr>
<td>HIV</td>
<td>4</td>
<td>78</td>
</tr>
<tr>
<td>Syphilis</td>
<td>5</td>
<td>320</td>
</tr>
</tbody>
</table>

n = number tested positive N = total Number tested

All patient groups with SMI were more likely to be HCV positive than the Australian population (Grulich, de Visser et al., 2003c). This held with comparison of HCV exposure serology for all 1791 patients at Cumberland Hospital, and for the non-participant Cumberland Hospital patients, and for SMI study participants, based on comparison of self-reported HCV (data not shown).

4.4.7 Stratification Analysis: Risk for HCV stratified by IDU risk history

To assess the possible role that SMI plays in HCV exposure, stratification by injecting drug use history was undertaken comparing the study sample with the Australian population (see section 4.3.2 Procedure).

Comparisons of the whole SMI study participant group, with the ASHR general Australian population, reveals that in general both “IDU ever” and HCV exposure rates are higher for patients with SMI. Thirty-one percent of patients with SMI reported, having injected “ever” compared to 3.4% of the Australian population survey. HCV was identified for patients with SMI at 26% by biological testing and 18% by self-reported HCV history, whereas the population rates are significantly lower at 0.5% (Grulich, de Visser et al., 2003c) and up to 1.4% (National Centre in HIV Epidemiology and Clinical Research, 2010).

Some initial assessments to review the role of IDU included looking at injecting drug use of only those that had ever injected (both patients with SMI and the Australian
population). We see that patients differed only in their use of heroin and methadone in the last 12 months (Table 4.17).

Table 4.17 Comparison of Drug Use in the “last 12 months” by Injecting Drug Users

<table>
<thead>
<tr>
<th>Substance Use Behaviour</th>
<th>SMI N</th>
<th>ASHR N</th>
<th>( \chi^2 )</th>
<th>p value</th>
<th>OR lower</th>
<th>OR upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>heroin 12m</td>
<td>12</td>
<td>11</td>
<td>32.4%</td>
<td>17.04</td>
<td>0.000*</td>
<td>23.02</td>
</tr>
<tr>
<td>methadone 12m</td>
<td>12</td>
<td>6</td>
<td>6.6%</td>
<td>24.55</td>
<td>0.000*</td>
<td>14.18</td>
</tr>
<tr>
<td>amphetamine 12m</td>
<td>12</td>
<td>11</td>
<td>31.1%</td>
<td>3.75</td>
<td>0.053</td>
<td>3.10</td>
</tr>
<tr>
<td>cocaine 12m</td>
<td>12</td>
<td>7</td>
<td>15.0%</td>
<td>0.03</td>
<td>0.874</td>
<td>1.14</td>
</tr>
<tr>
<td>LSD 12m</td>
<td>12</td>
<td>2</td>
<td>32.3%</td>
<td>0.44</td>
<td>0.507</td>
<td>1.50</td>
</tr>
<tr>
<td>ecstasy 12m</td>
<td>12</td>
<td>5</td>
<td>31.8%</td>
<td>0.44</td>
<td>0.507</td>
<td>1.50</td>
</tr>
</tbody>
</table>

Note: \( n = \) number responding \( N = \) total Number assessed * Significance \( p < 0.008 \) with Bonferroni adjustment

As previously described, comparison of patients with SMI with the whole Australian population showed that patients were much more likely to report the risks of injecting and sharing. When this analysis was restricted to SMI patients and Australians with IDU histories we see that there is no difference regarding recent injecting or sharing risks (Table 4.18).

Table 4.18 Comparison of HCV risk by IDU Risk Activities for Injecting Drug Users

<table>
<thead>
<tr>
<th>Injecting Drug Users</th>
<th>SMI N</th>
<th>ASHR N</th>
<th>( \chi^2 )</th>
<th>p-value</th>
<th>OR lower</th>
<th>OR upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDU 12m</td>
<td>29</td>
<td>12</td>
<td>29.2%</td>
<td>1.941</td>
<td>0.164</td>
<td>1.71</td>
</tr>
<tr>
<td>shared needles ever</td>
<td>29</td>
<td>9</td>
<td>32.0%</td>
<td>0.013</td>
<td>0.909</td>
<td>0.95</td>
</tr>
<tr>
<td>shared paraphernalia</td>
<td>29</td>
<td>10</td>
<td>51.1%</td>
<td>3.063</td>
<td>0.080</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Note: \( n = \) number responding \( N = \) total Number assessed * Significance \( p < .02 \) with Bonferroni adjustment

Continuing analysis controlling for IDU history, showed that of SMI patients with IDU history, 50% provided a self-report of HCV and 69% had positive HCV test results, whereas only 11% of the general Australian population with IDU history stated that they had HCV (see Table 4.19). A crosstabs review with Pearson’s chi-square test of contingencies, (with \( \alpha = .05 \)), showed that the difference in proportions was statistically significant, with SMI patients being more likely to have HCV exposure.
Even patients with SMI that did not report IDU risk histories had a higher risk for HCV exposure than the general population without IDU risk history. A crosstabs review with Pearson’s chi-square test of contingencies, (with $\alpha = .05$), was undertaken and showed a statistically significant difference for SMI patients without an injecting history with 3% self-report for HCV or 9% positive HCV tests compared to only 0.2% of the Australian population. Patients with SMI were 50 times more likely than the Australian population to have HCV exposure despite not providing an injecting history.

Table 4.19 Risk for HCV stratified by IDU History and SMI

<table>
<thead>
<tr>
<th></th>
<th>SMI N</th>
<th>% HCV +ve</th>
<th>ASHR N</th>
<th>% HCV test +ve</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI lower</th>
<th>CI upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDU +ve</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCV test</td>
<td>26</td>
<td>18</td>
<td>69.2%</td>
<td>562</td>
<td>63</td>
<td>11.2%</td>
<td>70.43</td>
<td>0.000*</td>
<td>17.82</td>
</tr>
<tr>
<td>self-report</td>
<td>26</td>
<td>13</td>
<td>50.0%</td>
<td>562</td>
<td>63</td>
<td>11.2%</td>
<td>33.22</td>
<td>0.000*</td>
<td>33.22</td>
</tr>
<tr>
<td>IDU -ve</td>
<td>64</td>
<td>6</td>
<td>9.4%</td>
<td>18534</td>
<td>38</td>
<td>0.2%</td>
<td>227.23</td>
<td>0.000*</td>
<td>50.35</td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed * Significance $p <0.05$

4.4.8 Bivariate Analysis: Prevalence of STIs and BBVs for patients according to risk history

In order to determine if risk factors and STI/BBV infections are associated, bivariate analysis was undertaken. This was accomplished by comparing the prevalence rates of the three frequently occurring outcome factors: (i) HCV exposure by biological testing (ii) HBV exposure by biological testing and of (iii) self-reported STI with risk factors from Study One. Specifically a subgroup of 25 risk factors for patients with SMI that had been previously described from published research (Lagios & Deane, 2007), were included in the analyses. The bivariate associations were explored using chi-square analyses and the results displayed in tables. A Bonferroni adjusted p-value of .002 was used to control for the multiple comparisons.
HCV exposure is explored in Table 4.20. HCV exposure was statistically associated with lifetime “ever” use of heroin, methadone, IDU and a history of incarceration.

Table 4.20 Bivariate Associations between HCV rates and Risk Factors

<table>
<thead>
<tr>
<th>Substance Use Risk Behaviour</th>
<th>n/N</th>
<th>HCV %</th>
<th>(\chi^2)</th>
<th>p-value</th>
<th>OR</th>
<th>CI</th>
<th>Upper</th>
<th>Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>illicit ever</td>
<td>21/66</td>
<td>32.8%</td>
<td>3.67</td>
<td>0.550</td>
<td>3.42</td>
<td>0.92</td>
<td>12.72</td>
<td></td>
</tr>
<tr>
<td>heroin ever</td>
<td>15/32</td>
<td>46.9%</td>
<td>10.21</td>
<td>0.001*</td>
<td>4.96</td>
<td>1.78</td>
<td>13.80</td>
<td></td>
</tr>
<tr>
<td>methadone ever</td>
<td>10/12</td>
<td>83.3%</td>
<td>23.26</td>
<td>0.000*</td>
<td>24.58</td>
<td>4.77</td>
<td>126.75</td>
<td></td>
</tr>
<tr>
<td>amphetamine ever</td>
<td>17/44</td>
<td>38.6%</td>
<td>5.16</td>
<td>0.023</td>
<td>3.15</td>
<td>1.14</td>
<td>8.67</td>
<td></td>
</tr>
<tr>
<td>marijuana ever</td>
<td>19/60</td>
<td>31.7%</td>
<td>2.20</td>
<td>0.139</td>
<td>0.92</td>
<td>0.73</td>
<td>8.08</td>
<td></td>
</tr>
<tr>
<td>cocaine ever</td>
<td>11/31</td>
<td>35.5%</td>
<td>2.20</td>
<td>0.138</td>
<td>2.10</td>
<td>0.78</td>
<td>5.66</td>
<td></td>
</tr>
<tr>
<td>alcohol current</td>
<td>8/50</td>
<td>16.0%</td>
<td>7.07</td>
<td>0.008</td>
<td>0.23</td>
<td>0.07</td>
<td>0.71</td>
<td></td>
</tr>
<tr>
<td>IDU ever</td>
<td>18/26</td>
<td>69.2%</td>
<td>33.87</td>
<td>0.000*</td>
<td>21.75</td>
<td>6.66</td>
<td>71.01</td>
<td></td>
</tr>
<tr>
<td>Sexual Risk Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>having sex last 12m</td>
<td>15/54</td>
<td>27.8%</td>
<td>0.50</td>
<td>0.479</td>
<td>0.68</td>
<td>0.23</td>
<td>1.99</td>
<td></td>
</tr>
<tr>
<td>condom use last sexual encounter</td>
<td>6/24</td>
<td>25.0%</td>
<td>0.00</td>
<td>1.000</td>
<td>1.00</td>
<td>0.27</td>
<td>3.69</td>
<td></td>
</tr>
<tr>
<td>sex after drug and alcohol use ever</td>
<td>15/45</td>
<td>33.3%</td>
<td>0.97</td>
<td>0.326</td>
<td>1.88</td>
<td>0.53</td>
<td>6.64</td>
<td></td>
</tr>
<tr>
<td>Sexual Risk Partners</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2+ partners 12m</td>
<td>2/16</td>
<td>12.5%</td>
<td>1.79</td>
<td>0.181</td>
<td>0.35</td>
<td>0.07</td>
<td>1.71</td>
<td></td>
</tr>
<tr>
<td>casual partners recent</td>
<td>7/33</td>
<td>21.2%</td>
<td>0.84</td>
<td>0.360</td>
<td>0.62</td>
<td>0.22</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>sex for payment</td>
<td>9/28</td>
<td>32.1%</td>
<td>5.35</td>
<td>0.020</td>
<td>10.56</td>
<td>1.07</td>
<td>104.1</td>
<td></td>
</tr>
<tr>
<td>sex forcing</td>
<td>8/28</td>
<td>28.6%</td>
<td>0.01</td>
<td>0.911</td>
<td>0.94</td>
<td>0.34</td>
<td>2.64</td>
<td></td>
</tr>
<tr>
<td>sex with sex worker</td>
<td>3/29</td>
<td>10.3%</td>
<td>6.72</td>
<td>0.010</td>
<td>0.19</td>
<td>0.05</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>sex with IDU ever</td>
<td>12/29</td>
<td>41.4%</td>
<td>4.67</td>
<td>0.031</td>
<td>3.06</td>
<td>1.09</td>
<td>8.61</td>
<td></td>
</tr>
<tr>
<td>sex with bisexual</td>
<td>5/14</td>
<td>35.7%</td>
<td>0.55</td>
<td>0.460</td>
<td>1.59</td>
<td>0.46</td>
<td>5.51</td>
<td></td>
</tr>
<tr>
<td>sex with multi-partnered</td>
<td>6/19</td>
<td>31.6%</td>
<td>0.12</td>
<td>0.734</td>
<td>1.22</td>
<td>0.39</td>
<td>3.84</td>
<td></td>
</tr>
<tr>
<td>sex with SMI</td>
<td>7/31</td>
<td>22.6%</td>
<td>0.80</td>
<td>0.370</td>
<td>0.62</td>
<td>0.22</td>
<td>1.76</td>
<td></td>
</tr>
<tr>
<td>sex with overseas contact</td>
<td>4/23</td>
<td>17.4%</td>
<td>1.26</td>
<td>0.262</td>
<td>0.50</td>
<td>0.15</td>
<td>1.70</td>
<td></td>
</tr>
<tr>
<td>sex with incarceration history</td>
<td>8/20</td>
<td>40.0%</td>
<td>2.99</td>
<td>0.084</td>
<td>2.67</td>
<td>0.86</td>
<td>8.27</td>
<td></td>
</tr>
<tr>
<td>Other Risk Factors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STI screen</td>
<td>14/44</td>
<td>31.8%</td>
<td>5.40</td>
<td>0.020</td>
<td>5.60</td>
<td>1.16</td>
<td>27.08</td>
<td></td>
</tr>
<tr>
<td>past HIV tests ever</td>
<td>17/54</td>
<td>31.5%</td>
<td>6.28</td>
<td>0.012</td>
<td>9.65</td>
<td>1.20</td>
<td>77.75</td>
<td></td>
</tr>
<tr>
<td>tattoo</td>
<td>12/27</td>
<td>44.4%</td>
<td>6.82</td>
<td>0.009</td>
<td>4.00</td>
<td>1.37</td>
<td>11.70</td>
<td></td>
</tr>
<tr>
<td>incarceration</td>
<td>13/24</td>
<td>54.2%</td>
<td>13.08</td>
<td>0.000*</td>
<td>6.80</td>
<td>2.26</td>
<td>20.40</td>
<td></td>
</tr>
</tbody>
</table>

Note: n = number responding  N = total Number assessed  *Significance p < .002 with Bonferroni adjustment
Table 4.21 assesses the associations between HBV status and risk factors. A history of cocaine use, injecting drug use and recent casual partners were the most prominent associations for HBV exposure but did not achieve statistical significance with the Bonferroni adjustment.

Table 4.21 Bivariate Associations between HBV rates and Risk Factors

<table>
<thead>
<tr>
<th>Substance Use Risk Behaviour</th>
<th>n/N</th>
<th>HBV %</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI</th>
<th>Upper</th>
<th>Lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>illicit ever</td>
<td>12/65</td>
<td>18.5%</td>
<td>1.50</td>
<td>0.220</td>
<td>2.60</td>
<td>0.54</td>
<td>12.58</td>
<td></td>
</tr>
<tr>
<td>heroin ever</td>
<td>8/32</td>
<td>25.0%</td>
<td>3.58</td>
<td>0.058</td>
<td>3.13</td>
<td>0.92</td>
<td>10.62</td>
<td></td>
</tr>
<tr>
<td>methadone ever</td>
<td>4/12</td>
<td>33.3%</td>
<td>3.22</td>
<td>0.073</td>
<td>3.39</td>
<td>0.85</td>
<td>13.60</td>
<td></td>
</tr>
<tr>
<td>amphetamine ever</td>
<td>9/43</td>
<td>20.9%</td>
<td>2.13</td>
<td>0.144</td>
<td>2.52</td>
<td>0.71</td>
<td>8.91</td>
<td></td>
</tr>
<tr>
<td>marijuana ever</td>
<td>12/59</td>
<td>20.3%</td>
<td>3.58</td>
<td>0.058</td>
<td>6.13</td>
<td>0.75</td>
<td>49.96</td>
<td></td>
</tr>
<tr>
<td>cocaine ever</td>
<td>8/31</td>
<td>25.8%</td>
<td>3.85</td>
<td>0.050</td>
<td>3.27</td>
<td>0.96</td>
<td>11.12</td>
<td></td>
</tr>
<tr>
<td>alcohol current</td>
<td>9/50</td>
<td>18.0%</td>
<td>0.94</td>
<td>0.333</td>
<td>2.20</td>
<td>0.43</td>
<td>11.12</td>
<td></td>
</tr>
<tr>
<td>IDU ever</td>
<td>7/25</td>
<td>28.0%</td>
<td>3.95</td>
<td>0.047</td>
<td>3.17</td>
<td>0.98</td>
<td>10.24</td>
<td></td>
</tr>
</tbody>
</table>

Sexual Risk Behaviour

| having sex last 12m                           | 7/54 | 13.0% | 0.99    | 0.320  | 1.83 | 0.55   | 6.09  |
| condom use last sexual encounter             | 4/24 | 16.7% | 2.01    | 0.156  | 4.60 | 0.47   | 44.60 |
| sex after drug and alcohol use ever          | 11/45 | 24.4% | 6.61    | 0.018  | 1.32 | 1.12   | 1.56  |

Sexual Risk Partners

| 2+ partners 12m                              | 0/16 | 0.0%  | 3.47    | 0.063  | 0.82 | 0.73   | 0.92  |
| casual partners recent                       | 2/33 | 6.1%  | 3.82    | 0.051  | 0.23 | 0.05   | 1.11  |
| sex for payment                              | 5/28 | 17.9% | .005    | 0.950  | 0.92 | 0.09   | 9.69  |
| sex forcing                                  | 6/28 | 21.4% | 0.90    | 0.343  | 1.82 | 0.52   | 6.32  |
| sex with sex worker                          | 5/29 | 17.2% | 0.00    | 0.980  | 1.02 | 0.30   | 3.47  |
| sex with IDU ever                            | 7/29 | 24.1% | 2.46    | 0.117  | 2.67 | 0.76   | 0.94  |
| sex with IDU 12m                             | 2/14 | 14.3% | 0.01    | 0.927  | 0.93 | 0.18   | 4.85  |
| sex with HIV ever                            | 0/3  | 0.0%  | 0.59    | 0.444  | 0.84 | 0.75   | 0.93  |
| sex with bisexual                            | 3/14 | 21.4% | 0.47    | 0.493  | 1.67 | 0.38   | 7.33  |
| sex with multi                               | 3/19 | 15.8% | 0.00    | 0.983  | 0.98 | 0.23   | 4.18  |
| sex with SMI                                 | 3/31 | 9.7%  | 1.92    | 0.166  | 3.86 | 0.10   | 1.54  |
| sex with overseas contact                    | 4/23 | 17.4% | 0.00    | 0.965  | 1.03 | 0.28   | 3.76  |
| sex with incarceration history                | 5/19 | 26.3% | 2.96    | 0.085  | 3.21 | 0.81   | 12.74 |

Other Risk Factors

| STI screen                                   | 9/43 | 20.9% | 2.12    | 0.145  | 3.18 | 0.63   | 16.03 |
| past HIV tests ever                          | 11/53 | 20.8% | 1.48    | 0.224  | 2.62 | 0.53   | 12.95 |
| tattoo                                      | 6/26 | 23.1% | 2.14    | 0.144  | 2.58 | 0.70   | 9.47  |
| incarceration                                | 6/23 | 26.1% | 2.75    | 0.097  | 2.82 | 0.80   | 9.95  |

Note: n = number responding N = total Number assessed *Significance p < .002 with Bonferroni adjustment
Table 4.22 provides the associations for self-reported STIs (excluding HCV, HBV and candidiasis) and risk factors and was related to illicit drug use “ever”, marijuana “ever”, sex with a partner that had an IDU history ever, sex with a partner that had an SMI diagnosis and sex after drug or alcohol use ever.

Table 4.22  Bivariate Associations between self-report STI Rates and Risk Factors

<table>
<thead>
<tr>
<th>Substance Use Risk Behaviour</th>
<th>n/N</th>
<th>Self-report STI %</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI Upper</th>
<th>CI lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>illicit ever</td>
<td>36/65</td>
<td>55.4%</td>
<td>19.22</td>
<td>0.000*</td>
<td>2.24</td>
<td>1.71</td>
<td>2.94</td>
</tr>
<tr>
<td>heroin ever</td>
<td>19/33</td>
<td>57.6%</td>
<td>4.50</td>
<td>0.034</td>
<td>2.63</td>
<td>1.07</td>
<td>6.51</td>
</tr>
<tr>
<td>methadone ever</td>
<td>6/13</td>
<td>46.2%</td>
<td>0.05</td>
<td>0.826</td>
<td>1.14</td>
<td>0.35</td>
<td>3.57</td>
</tr>
<tr>
<td>amphetamine ever</td>
<td>26/44</td>
<td>59.1%</td>
<td>9.94</td>
<td>0.003</td>
<td>4.33</td>
<td>1.70</td>
<td>11.03</td>
</tr>
<tr>
<td>marijuana ever</td>
<td>34/58</td>
<td>58.6%</td>
<td>17.43</td>
<td>0.000*</td>
<td>15.583</td>
<td>3.34</td>
<td>72.61</td>
</tr>
<tr>
<td>cocaine ever</td>
<td>18/32</td>
<td>56.3%</td>
<td>3.52</td>
<td>0.061</td>
<td>2.36</td>
<td>0.95</td>
<td>5.82</td>
</tr>
<tr>
<td>alcohol current</td>
<td>25/51</td>
<td>49.0%</td>
<td>1.847</td>
<td>0.174</td>
<td>2.06</td>
<td>0.72</td>
<td>5.90</td>
</tr>
<tr>
<td>IDU ever</td>
<td>16/27</td>
<td>59.3%</td>
<td>4.63</td>
<td>0.031</td>
<td>2.76</td>
<td>1.08</td>
<td>7.07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sexual Risk Behaviour</th>
<th>n/N</th>
<th>Self-report STI %</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI Upper</th>
<th>CI lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>having sex last 12m</td>
<td>28/56</td>
<td>50.0%</td>
<td>2.27</td>
<td>0.132</td>
<td>0.47</td>
<td>0.18</td>
<td>1.27</td>
</tr>
<tr>
<td>condom use LSE</td>
<td>14/24</td>
<td>58.3%</td>
<td>2.83</td>
<td>0.093</td>
<td>2.64</td>
<td>0.84</td>
<td>8.31</td>
</tr>
<tr>
<td>MSM</td>
<td>4/5</td>
<td>80.0%</td>
<td>2.72</td>
<td>0.099</td>
<td>5.75</td>
<td>0.59</td>
<td>56.35</td>
</tr>
<tr>
<td>sex after drug and alcohol use ever</td>
<td>26/45</td>
<td>57.8%</td>
<td>12.12</td>
<td>0.000*</td>
<td>11.63</td>
<td>2.40</td>
<td>56.48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sexual Risk Partners</th>
<th>n/N</th>
<th>Self-report STI %</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI Upper</th>
<th>CI lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>2+ partners 12m</td>
<td>5/16</td>
<td>31.3%</td>
<td>1.16</td>
<td>0.281</td>
<td>0.53</td>
<td>0.17</td>
<td>1.70</td>
</tr>
<tr>
<td>casual partners recent</td>
<td>20/33</td>
<td>60.6%</td>
<td>5.17</td>
<td>0.023</td>
<td>2.89</td>
<td>1.14</td>
<td>7.28</td>
</tr>
<tr>
<td>sex for payment (women)</td>
<td>8/28</td>
<td>28.6%</td>
<td>6.28</td>
<td>0.012</td>
<td>12.50</td>
<td>1.26</td>
<td>124.5</td>
</tr>
<tr>
<td>sex coercion</td>
<td>19/30</td>
<td>63.3%</td>
<td>5.96</td>
<td>0.015</td>
<td>3.24</td>
<td>1.24</td>
<td>8.45</td>
</tr>
<tr>
<td>sex with sex worker</td>
<td>19/30</td>
<td>63.3%</td>
<td>7.73</td>
<td>0.005</td>
<td>3.80</td>
<td>1.45</td>
<td>9.94</td>
</tr>
<tr>
<td>sex with IDU ever</td>
<td>20/30</td>
<td>66.7%</td>
<td>12.76</td>
<td>0.000*</td>
<td>5.83</td>
<td>2.14</td>
<td>15.91</td>
</tr>
<tr>
<td>sex with IDU 12m</td>
<td>9/14</td>
<td>64.3%</td>
<td>3.56</td>
<td>0.059</td>
<td>3.11</td>
<td>0.93</td>
<td>10.46</td>
</tr>
<tr>
<td>sex with HIV ever</td>
<td>2/4</td>
<td>50.0%</td>
<td>0.09</td>
<td>0.767</td>
<td>1.36</td>
<td>0.18</td>
<td>10.15</td>
</tr>
<tr>
<td>sex with bisexual</td>
<td>10/15</td>
<td>66.7%</td>
<td>4.31</td>
<td>0.038</td>
<td>3.43</td>
<td>1.08</td>
<td>11.39</td>
</tr>
<tr>
<td>sex with multi</td>
<td>13/20</td>
<td>65.0%</td>
<td>5.90</td>
<td>0.015</td>
<td>3.71</td>
<td>1.25</td>
<td>11.02</td>
</tr>
<tr>
<td>sex with SMI</td>
<td>21/32</td>
<td>65.6%</td>
<td>9.45</td>
<td>0.002*</td>
<td>4.36</td>
<td>1.67</td>
<td>11.43</td>
</tr>
<tr>
<td>sex with overseas contact</td>
<td>13/24</td>
<td>1.8%</td>
<td>1.82</td>
<td>0.18</td>
<td>1.950</td>
<td>0.74</td>
<td>5.18</td>
</tr>
<tr>
<td>sex with incarceration history</td>
<td>13/21</td>
<td>61.9%</td>
<td>6.30</td>
<td>0.012</td>
<td>3.79</td>
<td>1.30</td>
<td>11.04</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Risk Factors</th>
<th>n/N</th>
<th>Self-report STI %</th>
<th>$\chi^2$</th>
<th>p-value</th>
<th>OR</th>
<th>CI Upper</th>
<th>CI lower</th>
</tr>
</thead>
<tbody>
<tr>
<td>STI screen</td>
<td>23/46</td>
<td>50.0%</td>
<td>4.06</td>
<td>0.044</td>
<td>3.00</td>
<td>1.10</td>
<td>8.92</td>
</tr>
<tr>
<td>past HIV tests ever</td>
<td>28/55</td>
<td>50.9%</td>
<td>3.07</td>
<td>0.080</td>
<td>2.59</td>
<td>0.88</td>
<td>7.67</td>
</tr>
<tr>
<td>tattoo</td>
<td>14/27</td>
<td>51.9%</td>
<td>1.28</td>
<td>0.257</td>
<td>1.74</td>
<td>0.67</td>
<td>4.52</td>
</tr>
<tr>
<td>incarceration</td>
<td>14/23</td>
<td>39.1%</td>
<td>0.25</td>
<td>0.619</td>
<td>0.78</td>
<td>0.29</td>
<td>2.11</td>
</tr>
</tbody>
</table>

Note: n = number responding N = total Number assessed *Significance p < .002 with Bonferroni adjustment
4.4.9 Multivariable Analysis: Risks for HCV exposure and Self-reported STIs

In order to clarify the degree of associations between the prevalence of HCV exposure and self-reported STIs with risk factors, a multivariable analysis was conducted, by logistic regression. Potential predictors included in the regression were those that were significant risk factors and contributed to HCV or self-reported STIs for patients with SMI.

HCV risk was assessed with the variables “incarceration history” and “injecting drug use (IDU) ever”. “IDU ever” had the highest chi-square value of all potential predictors and was chosen because it subsumes the risk behaviours of heroin and methadone use and the small sample size allowed only a limited number of instrumental variables. Table 4.23 provides information that the variable “IDU ever” and “incarceration history” significantly predicted the outcome of HCV exposure.

Table 4.23 Logistic Regression To Assess Predictors of HCV exposure (n=78)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>(SE)</th>
<th>Wald</th>
<th>p-value</th>
<th>OR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.34</td>
<td>(0.59)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDU ever</td>
<td>2.55</td>
<td>(0.66)</td>
<td>15.17</td>
<td>0.000*</td>
<td>12.85</td>
<td>3.56</td>
</tr>
<tr>
<td>Incarceration history</td>
<td>1.34</td>
<td>(0.66)</td>
<td>4.11</td>
<td>0.043*</td>
<td>3.81</td>
<td>1.05</td>
</tr>
</tbody>
</table>

Note: * Significance p<0.05 B = Unstandardised regression co-efficient – indicates strength of the relationship for predicting the dependent variable from the independent variable, in log-odds units, SE = Standard error of B, Wald = test statistic to interpret significance of B, OR = Odds Ratio

A test of the full model against a constant only model was statistically significant indicating that the predictors as a set reliably distinguished risk of HCV exposure (chi-square = 29.26, p < .000 with df = 2). Nagelkerke’s R² of .455 indicated a moderate relationship between prediction and grouping. Prediction success overall was 83% (87.7% for predicting HCV negative and 71.4% for HCV exposure positive). The Wald criterion demonstrated that “IDU ever” made a significant contribution to prediction (p = .000) and “incarceration history” was also a significant predictor (p = .043). The Odds Ratio (SE) value, indicates that when “IDU ever” is raised by one unit (one person), patients with SMI are 13 times more likely and for “incarceration history”, 4 times more likely to have been exposed to HCV.
To estimate the proportion of self-reported STIs, that can be accounted for by the risk behaviours of: (i) “marijuana use ever”, (ii) “sexual contact with IDU ever”, (iii) “sexual contact with SMI ever” and (iv) “sex after drug and alcohol (D & A) use ever”, a standard logistic regression analysis was performed. The variable “illicit drug use ever” was not included, as this variable was captured by “marijuana use ever” with 92% of “illicit drug use ever” also reporting “marijuana use ever”.

“Marijuana use ever”, also had a higher identification of risk with a higher odds ratio. It can be seen that the variables, “marijuana use ever” by the study participant and “sex with IDU ever”, that is sex with a person that had an IDU risk history, significantly predicted the outcome variable of self-reported STI (Table 4.24).

Table 4.24 Logistic Regression to Assess Predictors Of Self-reported STI History (n=59)

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>(SE)</th>
<th>Wald</th>
<th>p-value</th>
<th>OR</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>2.969</td>
<td>-1</td>
<td></td>
<td></td>
<td>9.47</td>
<td>1.55 57.92</td>
</tr>
<tr>
<td>Marijuana ever</td>
<td>2.252</td>
<td>-0.92</td>
<td>5.92</td>
<td>0.015*</td>
<td>4.12</td>
<td>1.09 16.35</td>
</tr>
<tr>
<td>Sex with IDU ever</td>
<td>1.44</td>
<td>-0.69</td>
<td>4.32</td>
<td>0.038*</td>
<td>4.32</td>
<td>1.23 16.35</td>
</tr>
<tr>
<td>Sex with SMI ever</td>
<td>0.29</td>
<td>-0.71</td>
<td>0.16</td>
<td>0.689</td>
<td>1.33</td>
<td>0.33 5.39</td>
</tr>
<tr>
<td>Sex after D &amp; A ever</td>
<td>0.66</td>
<td>-0.89</td>
<td>0.55</td>
<td>0.458</td>
<td>1.93</td>
<td>0.34 10.92</td>
</tr>
</tbody>
</table>

Note: * Significance p<0.05 B = Unstandardised regression coefficient – indicates strength of relationship for predicting the dependent variable from the independent variable, in log-odds units, SE = Standard error of B, Wald = test statistic to interpret significance of B, OR = Odds Ratio

The model was statistically significant indicating that the predictors as a set reliably distinguished risk of self-reported STI history (chi-square = 22.456 p < .000 with df = 4). Nagelkerke’s $R^2$ of .422 indicated a moderate relationship between prediction and grouping. Prediction success overall was 73% (75.9% for predicting negative self-reported STI history and 70.0% for predicting provision of a self-reported STI history). The Wald criterion demonstrated that “marijuana ever” made a significant contribution to prediction (p = .015) and that “sex with IDU ever” partner was also a significant predictor (p = .038). The Odds Ratio (SE), value indicate that when “marijuana use ever” is raised by one unit (one person) the odds ratio indicates that patients with SMI are 9 times more likely, and for “sex with IDU ever” risk partner, 4 times more likely to provide a self-reported STI history.
4.5 DISCUSSION

Study One explored if patients with SMI, in western Sydney, Australia, are at risk for STIs and BBVs, as has been the situation in the USA and overseas. The results show that Australian patients with SMI have elevated rates of risk factors, elevated rates of infections and elevated risk for STIs and BBVs, and particularly HCV. This risk was significantly higher when compared to the Australian population, even when analysis was controlled for the associated risk factors.

Just about all risks (except for male-to-male sexual activity), for this risk network of patients with SMI, were reported very frequently when compared to similar patient groups with SMI (see literature review of Chapter 3, and with the Australian population (Davidson et al., 2001; Kalichman et al., 1994; Rosenberg et al., 2001; Thompson et al., 1997). Risks occurred for the individuals and for their reported partners.

Sexual behaviour was risky. Women especially reported a wider repertoire of sexual identity, experiences and more partners. Both males and females reported less condom use “ever”. Even some positively reported behaviours, such as condom use at last sexual contact, were not safe enough, as their last sexual contact was more likely to have been with a casual partner. Patients proved the previous findings that they “tend to have safe sex with risky partners and risky sex with safe partners” (Peterman, 2002), but sex with safe partners happens less often. Substance use, including injecting drug use, was elevated compared to the Australian population. Of note, when only injecting drug users were compared, patients with SMI were more likely to report heroin and methadone use but have similar rates of needle or other paraphernalia risk activities, compared to IDU of part of the Australian population. The other significant risk activity reported was a history of incarceration.

Patients had risk related to sex, substance use and incarceration but additional risks were at the partner level. Patients with SMI reported sexual contact with others that had sexual risks, such as multi-partnered, substance risk, particularly IDU, and their own incarceration history.
Study One found high rates of HCV and HBV from biological sample testing, as well as past self-reported STIs. These infection rates were significantly higher when compared to the Australian population. HIV infection was not as prominent in contrast to overseas findings. Nearly half of this group of patients with SMI provided self-reported STI histories, as well as the high rates of HCV and HBV, which is an important finding when contrasted with other groups. Findings indicated that infections were mostly not recently acquired. The one positive chlamydia was present for a young female, in keeping with infection being more prominent in young persons.

The salient issue for patients with SMI is HCV exposure and infection. Over a quarter of the participants had evidence of HCV exposure, comparable to other research (Lacey et al., 2007; Rosenberg et al., 2001). Study One also identified a high HCV rate for all patients tested at Cumberland Hospital with an overall elevated HCV exposure prevalence of 5%, probably an underestimate, but much higher than community values at around 1%. HCV risk for patients with SMI that injected was higher than for the injecting general population. This research also found that the risk for HCV was higher for patients with SMI that did not inject compared to the Australian population that did not inject.

Risk factor histories did predict STI and BBV infections. Many risk behaviours were associated with HCV, HBV or self-reported STIs. Multiple regression analysis identified that HCV exposure was predicted by a history of “IDU ever” and “incarceration ever”. Self-reported STIs were predicted, by “marijuana use ever” and “sex ever with IDU risk partner”.

Patients with SMI have a greater risk for STI and BBV infections than the general population. Risk is evident from the more pronounced risk factors, infection rates, and higher likelihood of infection. As mentioned above patients seem to have risk over and above what would be expected from a risk history. It may be that patients with SMI have a heightened risk because of their severe mental illness. A diagnosis of SMI does mark higher risk or a risk network, as seen by higher HCV rates for patients compared to the Australian public when stratified by IDU risk history.
4.6 OVERALL STRENGTHS AND LIMITATIONS

This is the first comprehensive review of risks and infections for patients with SMI undertaken in Australia. It is unique in describing the sexual, substance use behaviours and sexual partner choices for patients with SMI. It is unique in recognising that patients with SMI are a unique network or risk group deserving consideration as a priority group. Its strengths include information recognising high rates of STIs or BBVs. HCV exposure in particular is a risk for all patients with SMI, as seen with the over a quarter of the study group positive as well as the overall Cumberland seroprevalence at five percent.

The study’s conclusions are valid as the required sample size was achieved with results having statistical power support, even if the sample size was smaller than anticipated. Findings hold for this patient population group, but may not be applicable to all persons with SMI. Patient acceptance was very good as there was 93% participation rate for those patients referred and available and a final 83% participation rate for those enrolled to both parts of Study One.

As such, the chief limitations included the failure to achieve a very large sample size and the non-responsiveness of study participants to many of the questions, limiting statistical power to assess for all the variables. Recruitment could have been broader but was limited because of the reliance on psychiatrists to refer patients to the study. Referral rates may have been low because psychiatrists were too busy, worried about confidentiality or did not see the value of the research project, as assessed by other groups (VanGeest, Johnson, & Welch, 2007), or did not believe that they had patients at risk. Research projects, with direct recruitment of participants, have a better participation rate than studies requiring referral by other healthcare providers (Sullivan-Bolyai, Bova, Deatrick, Knafl, Grey et al., 2007).

The results may be limited by not attaining a large sample and selection bias may have occurred. Specifically overrepresentation of persons at risk for STIs and BBVs, if psychiatrists were more likely to refer those perceived at risk. This selection bias is well known when hospitalised patients are researched and was described by Berkson...
(1946). Anecdotally some psychiatrists felt that this study should have patients referred at risk for STIs and BBVs, or those patients that requested referral. Selection bias has to be considered because some results, such as IDU activity at 31%, were double the prevalence reported by some previous researchers for patients with SMI (Davidson et al., 2001; Rosenberg et al., 2001; Thompson et al., 1997) but lower than a recent survey of patients with SMI and 50% lifetime injection drug use (Lacey et al., 2007). Balancing this potential problem is that the high rate of 26% for HCV exposure though is similar to other groups that have examined HCV risk (Klinkenberg et al., 2003; Lacey et al., 2007; Meyer, 2003; Rosenberg et al., 2001). It may also be that the ASHR survey tool used in this study was better at eliciting an injecting drug use history than tools used by previous researchers.

This study potentially suffered from other biases in addition to sampling. Information bias, with missing data because of non-responsiveness and inaccurate recall occurred. Poor response by patients with SMI may be an element of their illness with an inability, or unwillingness, to focus on a lengthy questionnaire, requiring ten to twenty minutes. Attempts were made minimise bias in the design process, but bias may still have occurred. For example, the ASHR questionnaire was chosen because it can be tailored to skip inapplicable sections. Study participants disclosed many risk behaviours that led to a lengthier interview than anticipated.

4.7 CONCLUSION

Study One has identified that a patients diagnosed with SMI, appear to have unique risks and vulnerable to risk activities and STI/BBV infections, in particular HCV exposure. Risks for patients with SMI particularly involve substance use activities and incarceration histories, as well as unsafe sexual behaviour. This study’s finding has important implications for the content of harm reduction strategies, future research and suggests that patients with SMI should be considered a priority, or risk group or network.
CHAPTER FIVE

Study Two: Psychiatrists’ knowledge, attitudes and behaviours in assessment and management of STIs and BBVs for patients with severe mental illness

5.1 OVERVIEW OF STUDY TWO

A key finding from Study One of this thesis was that patients with severe mental illness (SMI) were at a higher risk than the general community for sexually transmitted infections (STIs) and blood borne viruses (BBVs), in keeping with findings from the systematic literature review. Risk and rates of Hepatitis C virus (HCV) for patients with SMI were particularly high, with HCV prevalence at 26%, though HIV is less of an issue for Australian patients. Other researchers have identified similarly high HCV rates ranging from 9% in Greece (Kakisi, Grammatikos, Karageorgopoulos, Athanasoulia, Papadopoulou et al., 2009) to 19% in Australia (Lacey et al., 2007) and 20% in the USA (Rosenberg et al., 2001). Community rates of HCV antibody positivity are around only 1% (Grulich, de Visser et al., 2003c; National Centre in HIV Epidemiology and Clinical Research, 2010). This HCV risk for patients with SMI is related to injecting drug use (IDU) activities and has been well-documented, particularly in the USA (Rosenberg et al., 2001). Despite the prevalence of risk factors and infection for patients with SMI, the referral of patients by psychiatrists into Study One, was extremely low. This raised questions about the characteristics that may contribute to low assessment and referral rates, not just in relation to Study One, but in general sexual health and medical care for patients with SMI.

With HCV exposure a significant issue for patients, it was postulated that one reason for the low referral rates may be psychiatrists’ low levels of awareness or knowledge regarding the relative risk and implications for HCV amongst those with SMI.

3 Parts of this chapter were published as Lagios & Deane (2011)
Thus, Study Two explores the self-reported Knowledge, Attitude and Behaviour Practices (KAB) of psychiatrists in screening, assessment and management of patients for STIs and BBVs, particularly HCV. The cross-sectional assessment of KAB amongst psychiatrists was chosen as this has been a helpful format to guide health programmes and is based on research indicating that behaviour is influenced by attitudes (Ajzen, 1991, 2000) and to some extent knowledge (Kennedy, Regehr, Rosenfield, Roberts, & Lingard, 2004). Inherent in screening is that healthcare workers need knowledge to recognise risk factors and to conduct appropriate assessments. Healthcare workers need positive attitudes that support and facilitate behaviours, such as assessment for STIs and BBVs, and not negative attitudes toward patients who may engage in risk behaviours, such as injecting drug use (Ampt, Amoroso, Harris, McKenzie, Rose et al., 2009; O'Brien, Day, Black, & Dolan, 2008).

When assessing with a KAB survey the extent should be broad, (see Chapter 3). From the review, KAB areas were categorised based on findings from a diverse group of researched participants, such as doctors, medical students, patients with SMI (Anjum et al., 2005; Coppola et al., 2004; Dev & Sievert, 2002; Goldberg et al., 2009; Mulvey et al., 1997; Munoz Sastre et al., 2002; Richmond et al., 2007; Temple-Smith et al., 1999). Knowledge of STIs and BBVs should cover epidemiology, clinical features, such asymptomatic infection and management. In Australia, GPs have available specialised guidance indicating that their knowledge should include an understanding of the infective organism, natural history, transmission, assessment, clinical presentations, treatment options and general management such as vaccinations and lifestyle issues (ASHM, 2008). Attitudes regarding STIs and BBVs may differ according to different healthcare situations. Attitudes may be assessed in the approach or attitude to a health problem, or patient, by a healthcare worker. Attitudes can also be assessed in acknowledgement of discrimination issues for patients (ASHM, 2008). Behaviours regarding STIs and BBVs can be explored in the extent that healthcare assessments or management occurs, expanding on the behaviours of clinicians such as history taking, examination and arranging investigative procedures.
Other studies have attempted to examine different components that affect care such as doctor characteristics associated with assessment for STIs and BBVs. Some have found that younger, newly trained doctors fare better regarding STI knowledge (Mulvey et al., 1997) and risk history elicitation (Haley, Maheux, Rivard, & Gervais, 2002). Whereas another study by Dev and Sievert (2002) reported that “years in general practice” did not correlate with HCV knowledge. Study Two considers this aspect to help understand psychiatrists approach to HCV.

Patients with SMI should ideally have a GP. The GP is best situated to provide holistic patient care including screening for BBVs and STIs. Unfortunately, some patients with SMI may not have a regular GP and most of their consistent healthcare occurs once admitted to a psychiatric hospital (Millar, 2008). Many patients with SMI spend a considerable amount of time in hospital as measured by frequency and duration of admissions (Jablensky, McGrath, Herrman et al., 1999) which may contribute to the lack of a GP and the need for psychiatrists to provide broader healthcare.

It has been recognised that patients with SMI have an increased risk for many physical health co-morbidities, including cardiovascular disease, diabetes and chronic respiratory illnesses (Marder, Essock, Miller, & Buchanan, 2004; Millar, 2008; Osborn, Wright, Levy, King, Deo et al., 2008). As yet it is not widely appreciated amongst medical practitioners that HCV exposure, and ensuing morbidities, are also a significant problem for their patients with SMI (Lacey et al., 2007) hence the need for any healthcare worker to provide broader healthcare.

Study Two was undertaken to explore reasons that might explain the low frequency of screening found both in Study One and by other researchers in general (Goldberg et al., 2009; Hercus et al., 2005; Lacey et al., 2007). Psychiatrists, particularly those working in inpatient settings, are in a critical position to screen and assess the risk of STIs, BBVs and especially HCV for patients, given their medical training and leadership role in mental health treatment teams (Sims & Sims, 1993). Previous studies’ findings related to STI and BBV screening have been based on GPs caring for the general population and not samples with mental illness (Dev & Sievert, 2002;
Mulvey et al., 1997; Richmond et al., 2007). As yet there have not been Australian studies that explore the knowledge, attitudes and behaviour-practices of psychiatrists, regarding STIs and BBVs, and the role of psychiatrists in screening assessment and treatment for patients with SMI. If GPs, medical students and even HCV experts lack knowledge on key areas of HCV, it may be that psychiatrists would have similar challenges.

5.2 AIMS, OBJECTIVES AND HYPOTHESES

The aim of this research was to assess the knowledge, attitudes, and self-reported behaviours of doctors working in psychiatry and caring for patients with SMI, regarding STIs, BBVs and particularly HCV.

Specifically:

1. To describe the demographic and work situation characteristics of doctors working in psychiatry and caring for inpatients with SMI.
2. To ascertain levels of knowledge, attitudes and self-reported behaviours regarding STIs, BBVs and more specifically for HCV.
3. To compare the knowledge, attitudes and self-reported behaviours of doctors working in psychiatry with other researched groups, such as GPs.
4. To determine the effect of doctor characteristics on knowledge, attitudes and self-reported behaviours.
5. To determine the relationship of knowledge and attitude to behaviour with regard to STIs and BBVs.

It was hypothesised that:

1. Medical officers, particularly older doctors, will have lower levels of knowledge regarding risk behaviours, risk groups, and management of STIs, BBVs and HCV.
2. Knowledge will be correlated with attitudes and behaviours, such that better knowledge will be related to more appropriate attitudes and behaviours.
3. Knowledge and attitudes will predict self-reported behaviour practices such as referral and screening.

4. Psychiatrists would have poorer knowledge than General Practitioners.

5.3 METHOD

The method section outlines procedure, study participants, measures and statistical issues. As well the method section covers the issues considered in preparation for KAB study assessing psychiatrists, such as bias and KAB design processes.

5.3.1 Procedure

An invitation to participate was extended to all doctors working in psychiatry in the western Sydney region, called Sydney West Area Health Service (SWAHS). This occurred in conjunction with an invitation to attend a planned “in-service education session on sexual health” during 2007. For this study the terms “doctors working in psychiatry” and “psychiatrists” are used interchangeably. Potential participants were those who chose to attend the weekly education session that was advertised as “Sex at Cumberland”. Cumberland Hospital is well-known as the largest psychiatric hospital in the region and this session involved presenting data from Study One, which had been conducted at Cumberland Hospital. Thus, it is likely to have attracted personnel who had an interest in the content of the advertised session. All doctors attending were invited to participate in the study at the beginning of the session and attendees did not have prior knowledge that recruitment for research participation would occur at these sessions.

All protocols had been reviewed and approved by the University of Wollongong and the SWAHS Human Ethics review committees (Appendix 4). The information sheet and questionnaire were supplied and collected immediately before the start of the education talk. This was so that presentation of results from Study One did not influence responses. The questionnaire was self-report and took approximately 15 minutes to complete. Participation was voluntary and informed consent was implied by completion of the questionnaire. Identifying information was not collected, so that the identity of each participant’s responses remained anonymous. The self-completed
questionnaire data was entered into PASW 18 (SPSS IBM, 2009). The questionnaires were then stored in locked filing cabinets in an office of the researcher at Cumberland Hospital.

5.3.2 Study Participants

All 97 medical practitioners working in SWAHS Mental Health Care Services were potential participants. This potential pool comprised 35% (34/97) senior consultant psychiatrists and 65% (63/97) junior medical officers, of whom 46% (45/97) were registrars and 19% (18/97), were career medical officers. However, only 52% (50/97) of the potential pool attended the targeted weekly education sessions held at three sites. Of the 50 attending the education sessions 35 completed and returned questionnaires representing a response rate of 70% and the remaining 15 attendees chose not to participate in the research (Figure 5.1).

---

**Figure 5.1** Participant Flow Chart for Psychiatrist Involvement in Study Two

---

<table>
<thead>
<tr>
<th>Psychiatrist Population SWAHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>( n = 97 )</td>
</tr>
<tr>
<td>Senior Staff = 34</td>
</tr>
<tr>
<td>Junior Staff = 63</td>
</tr>
<tr>
<td>- Registrars = 45</td>
</tr>
<tr>
<td>- CMOs = 18</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number attending Education meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>( n = 50 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number Participating</th>
</tr>
</thead>
<tbody>
<tr>
<td>( n = 35 )</td>
</tr>
<tr>
<td>Senior Staff = 18</td>
</tr>
<tr>
<td>Junior Staff = 17 - Registrars = 13</td>
</tr>
<tr>
<td>- CMOs = 4</td>
</tr>
</tbody>
</table>
Study participants were male (54%), greater than 35 years of age (80%), received their medical degree in Australia (51%), had worked for less than ten years in psychiatry (57%) and there was a slight majority of senior specialist consultant psychiatrists (51%).

5.3.3 Measures

Study Two is a “Knowledge, Attitude and Behaviour practice (KAB)” study. The attractiveness of KAB surveys to gain information on health-seeking or health-providing practices is attributable to characteristics such as an easy design, quantifiable data, ease of interpretation and concise presentation of results, generalisability of small sample results to a wider population and speed of implementation (Launiala, 2009). KAB surveys may have limitations in their predictive capabilities, as they are typically cross-sectional surveys and may be affected by issues, such as information bias (Cleland, 1973; Launiala, 2009).

The KAB survey of Study Two was implemented as a questionnaire to research doctors working in psychiatry. Survey questions are from previous published studies (Dev & Sievert, 2002; Mulvey et al., 1997) that had assessed KAB for STIs and BBVs. Directly observable doctor characteristics were questions with categorised options. Knowledge questions were in the format of “yes/no/uncertain”, a variation of the true-false format, chosen because it is a simple, direct, and an efficient way to assess knowledge about a subject (Downing, 1992). Attitude and behaviour are not readily observable. Instead, these variables are studied as an inferred location on a dimension, by observing ratings given to items on psychological inventories (Blanton & Jaccard, 2006). For this KAB survey, attitude and behaviour are assessed with psychometric summated scales, with multiple Likert-type items, to capture a domain. Multiple items that measure a domain or scale potentially increase reliability and are important in creating the KAB survey (Spector, 1992).

The questionnaire used in the present study consisted of four domains covering (1) demographic and descriptive items, (2) knowledge, (3) attitudes and (4) self-reported behaviours. The questionnaire had 105 items, was 5 pages in length and required
most responses to be ticked (e.g., multiple-choice, categorical or Likert-type items). The domains and items included were identified from previous research. The questionnaire was comprised of 12 items asking demographic and descriptive STI/BBV questions, 60 items covering five knowledge subscales, 12 items comprising two attitude subscales, and 21 items assessing four behaviour subscales. Items in each subscale of knowledge, attitude and self-reported behaviour were grouped together in the questionnaire (See Appendix 6).

Measurements of Study Two included:
Domain 1: Demographic and Descriptive STI/BBV
Domain 2: Knowledge - Subscales:
   (i) STI/BBV Asymptomatic
   (ii) STI/BBV Epidemiology
   (iii) HCV Epidemiology
   (iv) HCV Referral
   (v) HCV Management
Domain 3: Attitude (toward) - Subscales
   (i) STI/BBV History Barriers
   (ii) Treating HCV patients
Domain 4: Behaviour - Subscales
   (i) STI/BBV History Taking
   (ii) Post-test STI/BBV Management
   (iii) Pre-test HIV Screening
   (iv) Pre-test HCV Screening

For the knowledge subscales, a sum of the number of “correct” items was used. For the attitude and behaviour subscales, a mean of items in each subscale was used. Scoring was organised such that higher scores for each subscale indicated better knowledge, more positive attitudes or more appropriate behaviour. For the purposes of this study, in order to define a “satisfactory” level of knowledge, attitude or behaviours we used a value 70% or more of the maximum score. Although this value is somewhat arbitrary for knowledge scales, it provides a standard point of reference
for descriptive purposes and does represent the positive end of most 5 or 7-point Likert-type item responses.

With the exception of the knowledge subscales, each subscale for attitude and behaviour, had internal consistency (reliability) computed using Cronbach's alpha coefficient. Values higher than 0.7, were considered to be sufficiently reliable for use in group comparisons (Bland & Altman DG, 1997). Cronbach alphas for the scales are provided in the Section 5.3.3.3 and 5.3.3.4 below. Cronbach alphas were not calculated for the knowledge subscales since these were multi-dimensional covering diverse knowledge domains and were not expected to yield high internal consistency (Garson, 2011).

5.3.3.1 Demographics and Descriptive STI/BBV Domain

There were seven items measuring demographic characteristics in the first domain. All questions were multiple-choice answers to a limited list of options. These included gender, age group, if primary health care training was in Australia, years since graduation, years in mental health and current position and hours of clinical workload, and reported in section 5.3.3 Study participants. An additional five descriptive questions asked respondents to: estimate HCV prevalence in the hospital inpatient population, whether they felt well informed regarding HCV, the frequency with which they ordered HCV tests, whether they had made any STI or BBV diagnosis in the last year and how commonly they assessed their patients for STIs or BBVs. The descriptive items were reported in results.

5.3.3.2 Measuring Knowledge

Domain two measured Knowledge over 5 key subscales. Two subscales assessed STI and BBV Knowledge: STI/BBV Asymptomatic and STI/BBV Epidemiology and three subscales assessed HCV knowledge only: HCV Epidemiology, HCV Referral, HCV Management.
Questions were mostly in the format of “yes/no/uncertain”. The “uncertain” response option was used to minimise the tendency to guess when not sure (Aday & Cornelius, 2006) and was also the method used in previous surveys (Dev & Sievert, 2002). Each item received a score of one for a correct answer, with “uncertain” counted as incorrect. Two items regarding risk of HCV progression from the subscale HCV Epidemiology and all items part of STI/BBVs Epidemiology subscale differed, with study participants having to pick the correct answer from a list of multiple choices. Knowledge level for each subscale was calculated as the sum of correct answers for each item.

**Knowledge STI/BBVs Asymptomatic**
Eighteen questions assessed knowledge regarding the asymptomatic nature of STIs and BBVs with respondents selecting from a list of nine STIs or BBVs that may be present without causing symptoms in males and nine of the same STIs or BBVs that may be present without causing symptoms in female patients. Ten questions were from Mulvey et al (1997) the other eight questions in this subscale were included to assess STIs and BBVs based on the current academic literature (e.g., asking if chlamydia or HCV may be present without causing any symptoms). The maximum score possible was 18 on this subscale.

**Knowledge STI/BBVs Epidemiology**
There were seven questions with six of the items from Mulvey et al (1997). These items assessed the epidemiology of some STIs and BBVs, such as the most common age groups for detecting chlamydia. An additional question regarding the epidemiology of syphilis was added as there has been a recent syphilis resurgence (National Centre in HIV Epidemiology and Clinical Research, 2008). Study participants received a score only if they correctly identified all of the one or two risk categories as requested. The maximum score possible for this subscale was 7.

**Knowledge HCV Epidemiology**
There were 16 items that had all been used in previous research by Dev and Sievert (2002) that assessed knowledge of the transmission and disease progression risk. For example, if “HCV can be spread through faecal contact, (Yes/No/Uncertain)” or
picking the correct “percentage that progress to hepato-cellular carcinoma in 20 to 40 years, from the multiple choices of; “< 10%, 10 - 40%, > 40%”. The maximum score possible on this scale was 16.

*Knowledge HCV Referral*

There were 10 questions, all from Dev and Sievert (2002) that assessed knowledge regarding situations for referring patients with HCV for specialist management, for example, “Referral should occur as soon as a patient tests Hepatitis C antibody +ve”, (Yes/No/Uncertain). The maximum possible score for the subscale was 10.

*Knowledge HCV Management*

This scale had nine items, with eight derived from previous research, that assessed knowledge about choice of antivirals and advocacy of vaccinations (Dev & Sievert, 2002). One item was added by the authors, asking if “management of HCV includes immunisation against HCV”, (Yes/No/Uncertain), as this was a common misconception for patients and healthcare workers (Anjum et al., 2005; Munoz Sastre et al., 2002). The maximum score was 9.

5.3.3.3 Measuring Attitude

There were two attitude subscales. One subscale assessed Attitudes towards “STI/BBV History” with review of perceived barriers, and one subscale assessed Attitudes towards “Treating HCV patients”.

*Attitude Barriers to STI/BBV History*

This subscale explored barriers to taking STI/BBV history and had nine attitude statements that had all been used in previous research (Temple-Smith et al., 1999). Study participants were asked to respond to each statement on 6-point rating scale from “major barrier” to “not at all a barrier”. The subscale had a potential mean score ranging from 1 to 6. An example of a barrier item in this subscale is “appreciable age difference between doctor and patient”. The scale had an internal reliability with a Cronbach alpha value of .80.
*Attitude Treating HCV Patients*

The subscale of attitudes toward treating patients with HCV was assessed with three items and evaluated such attitudes as “believing that psychiatry has a central role in the treatment of patients with HCV”. All three questions were verbatim from past research (Richmond et al., 2007, p. 626). Study participants were asked to indicate their agreement on a 5-point Likert-type scale from (1) “never” to (5) “always”. The maximum possible score for the subscale’s calculated mean was 5. The Cronbach alpha value was unsatisfactory with a value of .32, indicating low internal consistency and suggesting that the 3 items were measuring different attributes or dimensions (Garson, 2011).

5.3.3.4 Measuring Behaviour

There were four behaviour subscales. Three subscales explored behaviour related to STI/BBVs: STI/BBV History, Post-test STI/BBV Management and Pre-test HIV Screening. The behaviour subscale Pre-test HCV Screening, assessed behaviour practices related to HCV.

*Behaviour STI/BBV History Taking*

This subscale had seven statements used in previous research, asking respondents about their behaviour of history taking they conducted as part of risk assessment for STI/BBVs (Temple-Smith et al., 1999). Study participants were asked to indicate their level of involvement in the behaviour on a 3-point rating scale, from “not at all common” (1) to “very common (3)” (Temple-Smith et al., 1999). A mean of all items was calculated and scores could range from 1 to 3. An example of an item from this subscale asked respondents how commonly they assessed the gender of sexual contacts during history taking. Cronbach alpha for this scale was .83.

*Behaviour HIV Pre-test Screening*

The extent to which respondents self-reported engagement in various aspects of HIV pre-test screening discussion behaviour was assessed by four items from previous research (Temple-Smith et al., 1999). Each item was rated on a 5-point Likert-type scale from (1) “never” to (5) “always”.

A mean score for all items was calculated
with potential scores ranging from 1 to 5. This subscale attempted to gauge the frequency that risks and implications of HIV testing were discussed. For example, whether the implications of a negative HIV Antibody test result was discussed, if the risk for HIV occurred in the recent, 2 to 3 month window period. Cronbach alpha for the scale was .81.

**Behaviour Post-test STI/BBV Management**

There were four statements as part of this subscale assessing behaviours related to Post-test STI/BBV Management. These items explored management after STI/BBV testing, for example issues such as the frequency of recommending vaccinations were investigated. All items were from previous research (Mulvey et al., 1997; Temple-Smith et al., 1999). Each statement had 4 response options from “never” to “always” (1 = never, 2 = sometimes, 3 = mostly, 4 = always). A mean score for the scale could range from 1 to 4. Cronbach alpha reliability was .68.

**Behaviour HCV Pre-test Screening**

HCV Pre-test Screening behaviour had 6 statements. This subscale attempted to identify the regularity that risks and implications of testing for HCV were discussed. HCV and HIV pre-test discussions have a similar format and these HCV items were created and included in this questionnaire because of the significance of HCV prevalence for patients with SMI. Three items were based on the items exploring HIV pre-test screening discussion (Temple-Smith et al., 1999) and three items were developed for this study according to national guidelines (Australian Government Department of Health and Ageing, 2007). Each item had a 5 point rating, from “never” to “always”, (1 = never, 2 = rare, 3 = sometimes, 4 = mostly, 5 = always), and a maximum possible item score of 5 and a mean score for the subscale ranging from 1 to 5. Cronbach alpha was .91 for items in this subscale.

5.3.3.5 Bias In KAB Survey Assessing Psychiatrists

Bias in Study Two is also a potential problem. Bias could occur because of the research tool, especially for surveys with poor validity or reliability, causing information bias. Study Two may also potentially have selection bias. It is
appropriate to use as research tools for new projects existing, psychometrically tested questionnaires identified from the literature (Kelley, Clark, Brown, & Sitzia, 2003). The questionnaires must demonstrate the psychometric properties of reliability (consistency from one measurement to the next), validity (accurate measurement of the concept).

The questionnaires utilised in Study Two have all been previously devised and used in research and have had previous evaluation, (Dev & Sievert, 2002; Mulvey et al., 1997; Richmond et al., 2007; Temple-Smith et al., 1999). Questions from Mulvey et al (1997) and Temple-Smith (1999), had face validity assessed, with review and pilot testing of the questionnaire by GPs, venereologists and epidemiologists. Two other sources of questions were available from published studies (Dev & Sievert, 2002; Richmond et al., 2007). The results by Richmond et al (2007, p. 627) demonstrated aspects of construct validity as medical practitioners scored higher on knowledge compared to pharmacists, who would not be expected to have as much coverage of content regarding hepatitis C. The questions developed by Dev and Sievert (2002) were knowledge questions, based on the comprehensive hepatitis C publication, “Hepatitis C – A management guide for general practitioners”, produced by the Australian National Council for AIDS, Hepatitis C and Related Diseases; the Gastroenterological Society of Australia; and the Royal Australasian College of General Practitioners (Puplick, Farrell, Dore, MacDonald, McCoy et al., 1999). This publication had been distributed to every doctor in Australia in 2000. Dev and Sievert’s study (2002) was conducted 6 months after the publication’s distribution and presumed GPs had read this comprehensive HCV management publication and thus have a valid knowledge basis.

The collated questionnaire used as the research tool for Study Two met validity and reliability requirements. The knowledge, attitude and behaviour questions reviewing STIs had, as stated, face validity assessed by the original researchers (Mulvey et al., 1997; Temple-Smith et al., 1999). Though the study by Dev and Sievert (2002) did not provide information regarding validity it is assumed that the creation of the questions based on the recent publication for GPs would have validity. All the subscales with corresponding items for Study Two had internal reliability formally
assessed as part of this thesis. All the subscales, apart from one, had a Cronbach alpha reliability coefficient of .70 or higher, which is considered acceptable and indicative of satisfactory reliability for the KAB survey.

As well as potential weaknesses in the questionnaire there is also a risk of selection bias. Studies with doctors as research participants, may suffer from selection bias as it is not uncommon for doctors to decline to participate in surveys (Kellerman & Herold, 2001). Doctors who are hesitant to participate may simply not be interested, be too busy, worried about confidentiality or not see the value in the survey (Sudman, 1985). What could be of concern, but difficult to identify, is if doctors with poorer skills, or with conservative attitudes, choose not to participate in surveys.

Study Two’s techniques considered this issue and attempted to minimise poor participation with the psychiatry attendees not having prior knowledge that recruitment for research participation would occur and having participation as voluntary and anonymous.

5.3.4 Statistical Issues

Data was analysed with PASW 18 (SPSS IBM, 2009). Frequencies were reported for items part of the Demographic and Descriptive STI/BBV domain. Descriptive statistics, including frequencies, were calculated for each item and for the subscales for the other domains. Data was presented for the summarised subscales of each domain in tables, with the number of items, mean, standard deviation, % index mean for knowledge (mean/maximum score possible as a percentage), range and mean rank for each subscale. Frequencies for some items are also presented.

Initial screening of data indicated many variables were not normally distributed and did not meet the assumptions of the parametric tests. Thus non-parametric tests were used to provide inferential statistics about the parameters of the distribution for the summarised subscales. These included: Friedman’s ANOVA test to detect differences in the means of two or more subscales; Wilcoxon signed-rank test to look for differences between pairs of related subscale results; non-parametric Kruskal-
Wallis ANOVAs; Chi-square analyses to explore differences in subscale scores for doctors of varying experience or qualifications; Spearman’s correlations performed to determine significant correlations between subscales. Lastly standard multiple linear regression analysis were performed to identify predictors of self-reported behaviour. The major assumptions to permit multiple regression analyses were assessed and addressed in the results.

Sample size estimates for Study Two took into consideration that the study was assessing relationships, including regression. As a descriptive study, a sample of 200 would suffice.

5.4 RESULTS

Results of Study Two included descriptions of the domains, a comparison of KAB items with other researched groups, correlation between subscales, as well as multiple linear regression analyses discussing predictors of behaviour. Domain portrayals included frequency descriptive statistics for the general Descriptive STI/BBV domain and some interesting KAB items, as well as summarised data of all the subscales in the KAB domains in tables. Comparisons of KAB results for these doctors working in psychiatry with prior research were made and data provided in tables. Other comparison groups included Australian GPs (Mulvey et al., 1997; Temple-Smith et al., 1999), Pakistani medical students (Anjum et al., 2005), French lay people and liver specialists (Munoz Sastre et al., 2002), Australian health professionals (complementary therapists, dentists, pharmacists, nurses and medical practitioners) (Richmond et al., 2007) and persons with SMI (Goldberg et al., 2009).

5.4.1 Descriptive STI/BBV Domain Results

Most medical officers (86%), who participated in this survey, incorrectly estimated that the percentage of their patients with HCV was “less than 10%”. Only 29% felt that they were “well informed regarding HCV”. Only 37% “mostly” or “always” ordered a HCV antibody test. Most (60%), “never” or only “sometimes”, considered
assessing patients for STIs or BBVs and 68% had not diagnosed any STI or BBV in the last year.

5.4.2 Knowledge Domain Results

Table 5.1 indicates that doctors were more knowledgeable regarding the Asymptomatic nature of STIs and BBVs, than STI/BBV Epidemiology in recognising risk groups. The doctors working in psychiatry had good knowledge regarding HCV Epidemiology and HCV Referral but were less knowledgeable about HCV Management.

Table 5.1 Summary of Knowledge Domain

<table>
<thead>
<tr>
<th>Description of Subscales</th>
<th>No. of items</th>
<th>Mean</th>
<th>SD</th>
<th>% Index Mean*</th>
<th>Range</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>STIs/BBVs Asymptomatic</td>
<td>18</td>
<td>11.85</td>
<td>5.29</td>
<td>66%</td>
<td>0-18</td>
<td>1.93</td>
</tr>
<tr>
<td>STIs/BBVs Epidemiology</td>
<td>7</td>
<td>2.83</td>
<td>1.34</td>
<td>40%</td>
<td>0-6</td>
<td>1.07</td>
</tr>
<tr>
<td>HCV Epidemiology</td>
<td>16</td>
<td>11.71</td>
<td>2.07</td>
<td>73%</td>
<td>7-15</td>
<td>2.93</td>
</tr>
<tr>
<td>HCV Referral</td>
<td>10</td>
<td>7.80</td>
<td>1.41</td>
<td>78%</td>
<td>5-10</td>
<td>2.07</td>
</tr>
<tr>
<td>HCV Management</td>
<td>9</td>
<td>3.29</td>
<td>2.20</td>
<td>37%</td>
<td>0-7</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* % Index Mean = mean/max score possible, as percentage

5.4.2.1 Knowledge STI/BBVs Asymptomatic

The mean score for the Knowledge STI/BBVs Asymptomatic subscale was 11.85 from 18 items. The doctors recognised that many of the STI or BBV infections can be asymptomatic including HCV exposure (82%).

5.4.2.2 Knowledge STI/BBVs Epidemiology

The Knowledge STI/BBVs Epidemiology subscale revealed low knowledge in this area with a mean of 2.83 from 7 items. The doctors did not recognise all of the main groups with prevalent infections or complications related to STI or BBV infections. For example, that chlamydia was common in young age groups or that a woman is at
risk of HIV if she has had sexual contact with someone that injects drugs or is bisexual.

5.4.2.3 Knowledge HCV Epidemiology

The Knowledge of HCV Epidemiology subscale generally had high scores (M = 11.71, out of 16 items). For example, 94% recognized the risk associated with other injecting paraphernalia as well as all recognising the HCV risk associated with direct IDU. Some items, such as risk of progression to cirrhosis (10-40% over 20 to 40 years), were correctly recognized by only 59% of doctors and risk of progression to hepatocellular carcinoma (<10% over 20 to 40 years) by only 41%. Although knowledge in this domain was good overall, almost 80% of respondents believed that HCV is spread through sexual contact.

5.4.2.4 Knowledge HCV Referral

Respondents, with a subscale mean of 7.80 out of 10 items, correctly answered most items on the Knowledge HCV Referral subscale. Seventy-nine percent of doctors identified correct situations for an HCV antibody positive patient to be referred to a specialist for further assessment of HCV treatment options (such as when abnormal liver function tests occur or a patient is symptomatic). All doctors indicated they would refer patients with SMI to a specialist and 91% indicated they would refer patients with intravenous drug use. However, only a limited number (29%) reported that patients with solitary raised ALT liver function tests should also be referred.

5.4.2.5 Knowledge HCV Management

Doctors had low scores on the Knowledge of HCV Management subscale, which had a mean of 3.29 out of a possible 9 items. For example, 47% of doctors were not aware that the current medical treatment for HCV is dual therapy interferon and ribavirin. Other inaccuracies reported included 69% of doctors wrongly thinking that HCV vaccination was a current option. Doctors did not adequately know that vaccination for other hepatitis infections was beneficial, though this was the highest
correct response provided in this knowledge subscale, with 68% recognising that patients with HCV should be immunised against HBV, but only 41% also advised HAV vaccination. Only thirty-five percent of doctors appreciated that abstinence from alcohol was recommended.

5.4.2.6 Knowledge Domain Differences

The two subscales for Knowledge STI/BBVs varied significantly and were assessed by pairwise comparisons with the Wilcoxon signed rank test and a Bonferroni adjusted $\alpha$ of .025 (.05/2). The STI/BBVs Asymptomatic subscale scores (mean rank 1.93) were significantly higher than STI/BBVs Epidemiology subscale scores (mean rank 1.07), $T = 1, z = -5.00, N - \text{Ties} = 33, p < .0001$. This effect can be considered “large” (Cohen, 1986), with $r = .88$.

A Friedman two way ANOVA indicated that rankings of Knowledge HCV varied significantly between the three subscales, $\chi^2 = 65.83$, df = 2, $N = 35, p < .0001$. Follow-up pairwise comparisons, using Wilcoxon signed rank test and a Bonferroni adjusted $\alpha$ of .017 (.05/3), were undertaken. HCV Epidemiology (mean rank 2.93) had better scores than the HCV Referral scores (mean rank 2.07), $T = -4.99, N - \text{Ties} = 34, p < .001$, two tailed. This effect was considered “large” (Cohen, 1988), $r = -.85$. Both HCV Epidemiology (mean 2.93) $T = 0, z = -5.18, N\text{-Ties} = 35, p < .0001$ and HCV Referral (mean rank 2.07) had $T = 0, z = -5.18, N\text{-Ties} = 35, p < .0001$ had better scores than HCV Management (mean rank 1.00). The effect can be considered “large” (Cohen, 1988), with $r = -.88$ for both.

5.4.3 Knowledge of Psychiatrists compared with other researched groups.

Table 5.2 provides a descriptive evaluation of psychiatrists’ knowledge regarding STI/BBV and HCV, compared to other researched groups. The following narrative provides an outline of the comparisons only and no formal statistical tests were conducted. This was in part due to the large number of potential comparisons, but also because the broad aim was to provide a reference points for appreciating psychiatrists knowledge base. Psychiatrists were more knowledgeable regarding
HCV epidemiology and referral than GPs and similar regarding STI/BBV knowledge but both groups were weak in their knowledge of HCV management.

In keeping with the good scores overall regarding Knowledge of HCV Epidemiology, psychiatrists had better knowledge regarding HCV epidemiology than GPs despite reporting less confidence in their HCV knowledge than GPs (Dev & Sievert, 2002). For example, more psychiatrists (97%) than GPs (32%) recognised that HCV can spread through injecting paraphernalia (Dev & Sievert, 2002). More psychiatrists (89%) compared to GPs (67%) (Dev & Sievert, 2002) recognised that prison is risk factor.

Knowledge of HCV referral, was stronger for psychiatrists than for GPs (Dev & Sievert, 2002). GPs less frequently reported correct situations for referring patients for HCV specialist opinion and treatment. Nearly all psychiatrist would refer patients with and injecting drug use history or with SMI, whereas only about 80% of GPs would consider such referrals.

Knowledge regarding HCV therapy was similar for psychiatrists (55%), GPs (48%) and primary care trainees (52%), with only about half of each group recognising that combination interferon and ribavirin treatment as the most effective. Knowledge regarding HCV vaccination, also part of HCV management was a misunderstood issue. In this study 69% of psychiatrists wrongly thought that HCV vaccination was a current option, as did primary care residents (66%), Pakistani medical students (48%) (Anjum et al., 2005) and patients with SMI (75%). Only the study with French liver or infectious diseases HCV experts had correct responses with all of the HCV experts recognising that HCV vaccination does not exist (Munoz Sastre et al., 2002).

Scores on the Knowledge STI/BBV Asymptomatic subscale were similar for GPs (63%) (Mulvey et al., 1997) and psychiatrists (70%). The knowledge of the asymptomatic nature of HCV was well recognised by both psychiatrists (88%) and SMI patients (92%) (Goldberg et al., 2009) but not assessed in the GP study.
Table 5.2: Comparison of Knowledge Items with Correct Responses for different participant groups (%)

<table>
<thead>
<tr>
<th>Knowledge Items (with correct answers)</th>
<th>Psychiatrists SWAHS</th>
<th>GPs (Dev &amp; Sievert)</th>
<th>GPs (Mulvey et al)</th>
<th>Pakistani medical students (Anjum et al.)</th>
<th>French specialists (Munoz Sastre et al.)</th>
<th>SMI patients (Goldberg et al.)</th>
<th>Primary Care Trainees (Coppola et al.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% reporting that they were well informed regarding HCV</td>
<td>29%</td>
<td>68%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>HCV Epidemiology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCV re-infection can occur (T)</td>
<td>71%</td>
<td>52%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV Ab test does not differentiates b/w current and past (T)</td>
<td>50%</td>
<td>62%</td>
<td>-</td>
<td>-</td>
<td>75%</td>
<td>-</td>
<td>75%</td>
</tr>
<tr>
<td>HCV in adults is more chronic compared to HBV in adult (T)</td>
<td>71%</td>
<td>42%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV can be spread through shared needles in drug usage (T)</td>
<td>100%</td>
<td>100%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>88%</td>
<td>92%</td>
</tr>
<tr>
<td>HCV can be spread through shared injecting paraphernalia (T)</td>
<td>94%</td>
<td>32%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV can be spread Blood products (T)</td>
<td>94%</td>
<td>-</td>
<td>-</td>
<td>84%</td>
<td>-</td>
<td>-</td>
<td>46%</td>
</tr>
<tr>
<td>HCV can be spread by medical equipment/procedures (T)</td>
<td>97%</td>
<td>-</td>
<td>-</td>
<td>86%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV can be spread sexually (F)</td>
<td>23%</td>
<td>-</td>
<td>-</td>
<td>66%</td>
<td>48%</td>
<td>25%</td>
<td>48%</td>
</tr>
<tr>
<td>HCV can spread vertically (T)</td>
<td>69%</td>
<td>-</td>
<td>-</td>
<td>59%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV can spread contaminated food (F)</td>
<td>94%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV can be spread oral faecal (F)</td>
<td>80%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV can be spread poor hygiene (F)</td>
<td>71%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV can spread with infected household members (F)</td>
<td>71%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>72%</td>
</tr>
<tr>
<td>Prison is a risk marker for HCV (F)</td>
<td>89%</td>
<td>67%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV exposure has a 10-40% risk of cirrhosis (T)</td>
<td>60%</td>
<td>45%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HCV exposure has a &lt;10% risk of hepatocellular carcinoma (T)</td>
<td>43%</td>
<td>29%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>HCV Referral</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer if HCV Antibody +ve (T)</td>
<td>71%</td>
<td>24%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refer if abnormal LFT (T)</td>
<td>65%</td>
<td>35%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refer if ALT &gt;100 (T)</td>
<td>29%</td>
<td>35%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refer if symptomatic (T)</td>
<td>79%</td>
<td>3%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refer when patients requests (T)</td>
<td>84%</td>
<td>4%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refer if IDU - as suitable (T)</td>
<td>94%</td>
<td>85%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refer if with SMI - as suitable (T)</td>
<td>100%</td>
<td>82%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Refer even if not interested in treatment (T)</td>
<td>100%</td>
<td>68%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Refer if Prisoner (T)                     97%  8%  -  -  -  -  -
Refer - as no patient is unsuitable (T)  74%  56% -  -  -  -  -

**HCV Management**

Best treatment Interferon and Ribavirin (T)  55%  48% -  -  -  -  52%
Best treatment Interferon (F)               9%   76% -  -  -  -  -
Best treatment Ribavirin (F)                18%  97% -  -  -  -  -
Best treatment Lamivudine (F)               18%  75% -  -  -  -  -
Management includes Immunise HAV Vaccine (T) 41%  57% -  -  -  -  41%
Management includes Immunise HBV Vaccine (T) 68%  67% -  -  -  -  65%
Management includes Immunise HCV Vaccine (F) 31%  -  -  -  -  -  25%  34%
Management includes - nil Vaccine (F)        56%  91% -  -  -  -  -
Management includes avoiding alcohol (T)     43%  77% -  -  -  -  70% -

**STI/BBV Asymptomatic**

Recognise STI can be asymptomatic            70%  -  63% -  -  -  -
Recognise HCV can be asymptomatic            88%  -  -  -  -  -  92% -

**STI/BBV Epidemiology – common groups**

Chlamydia age groups – 15-19 & 20-24        35%  -  28% -  -  -  -
HIV risk groups – MSM & Overseas contact     21%  -  30% -  -  -  -
Syphilis risk groups – MSM & Overseas contact 12%  -  -  -  -  -  -
Gonorrhoea risk groups – MSM & Men Overseas sex 9%  -  42% -  -  -  -
HIV risk groups for women – Bisexual male & IDU 53%  -  83% -  -  -  -
STI associated with cervical cancer - HPV      94%  -  96% -  -  -  -
STI associated with infertility - Chlamydia     53%  -  92% -  -  -  -

Note: % = proportion correct
GPs overall scored better on the Knowledge STI/BBV Epidemiology items. The correct age groups for chlamydia infection were similarly identified by 28% of GPs (Mulvey et al., 1997) and 35% of psychiatrists. Other items had better responses from GPs, for example 83% of GPs (Mulvey et al., 1997) correctly identified the two main sources of HIV infection for women, as “injecting drug use” and “sexual contact with bisexual men”, whereas only 53% of psychiatrists answered this question correctly.

5.4.4 Attitude Domain Results

Attitude subscales were generally in the positive range of responses. Barriers to STI/BBV History Taking had a mean of 3.76 from a possible score of 6. Attitudes toward Treating Patients with HCV had a mean of 4.01, from a maximum possible score of 5 (See Table 5.3).

5.4.4.1 Attitude Barriers STI/BBV History

Barriers to STI/BBV History subscale had most items favourably reported. There appeared to be few significant barriers identified by the psychiatrists involved in this survey. Nearly 40% believed that sexual history taking was an “appropriate part of a psychiatric assessment” (M = 3.91 out of a score of 6). The strongest barrier (M = 2.91) was not having “enough time to take a sexual history” with 29% reporting this as “a major barrier”.

5.4.4.2 Attitude Treating Patients with HCV

The 3 items in this subscale are all described with an overall subscale mean of 4.01 from 5. The 3 items are multidirectional and as such have a low Cronbach alpha value. One item assessed the study participants “willingness to treat patients with HCV”. This had a high item mean of 4.29/5, with 82% indicating that they “mostly” or “always” agreed with this response. The second item assessing if psychiatrists “do not like treating people with HCV” with reverse scaling order, had a mean of 4.49/5 and 89% “rarely” or “never” agreeing with the statement. Beliefs that “psychiatry
should have a central role in HCV” were lower, but still favourable, (mean 3.26/5), with 46% “mostly” or “always”, and 31% “sometimes”, agreeing with the statement.

Table 5.3 Summary of Attitude Domain

<table>
<thead>
<tr>
<th>Description of Subscale</th>
<th>No. of items</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Mean Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barriers STI/BBV History</td>
<td>9</td>
<td>3.76</td>
<td>1.02</td>
<td>1.44-5.33</td>
<td>1.40</td>
</tr>
<tr>
<td>Treating HCV patients</td>
<td>3</td>
<td>4.01</td>
<td>0.66</td>
<td>2.33-5.00</td>
<td>1.60</td>
</tr>
</tbody>
</table>

5.4.4.3 Attitude Domain Differences

A Wilcoxon signed rank test with Bonferroni adjusted $\alpha$ of .025 (.05/2) indicated that the attitudes towards barriers STI/BBV History (mean rank 1.40) and the attitudes towards treating patients with HCV (mean rank 1.60), did not significantly differ $T = 192$, $z = -1.35$, $N – Ties = 32$, $p = .18$, with a small effect of $r = .24$ (Cohen, 1988).

5.4.5 Attitudes of Psychiatrists compared with other researched groups.

Doctors working in psychiatry had positive attitudes towards patients on the subscale Attitude towards Treating Patients with HCV. In Richmond’s study (2007), 13% of GP doctors did not want to treat patients that injected drugs (and had HCV), whereas none of the psychiatrists surveyed chose the response that they “never” want to treat, for this item.

In surveying Barrier Attitudes to STI/BBV History (Table 5.4), it can be seen that in general psychiatrists were less concerned about the “presence of a third person”, “issues related to language” and “culture” as barriers than GPs (Temple-Smith et al., 1999). Psychiatrists main “major barriers” to sexual history taking were “first consultation” and “insufficient time”, but were considered as barriers at lower frequencies, compared to GPs.
Table 5.4 *Comparison of Attitudes - Barriers to STI/BBV History (%)*

<table>
<thead>
<tr>
<th>Attitude Items</th>
<th>Psychiatrists SWAHS</th>
<th>GPs (Temple-Smith et al., 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barriers to STI/BBV History</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sufficient time for consultation</td>
<td>32.4%</td>
<td>42.0%</td>
</tr>
<tr>
<td>language issues</td>
<td>28.6%</td>
<td>28.1%</td>
</tr>
<tr>
<td>presence of a third party</td>
<td>17.6%</td>
<td>56.4%</td>
</tr>
<tr>
<td>appropriateness for psychiatry</td>
<td>14.7%</td>
<td>73.0%</td>
</tr>
<tr>
<td>significant age gap with patient</td>
<td>11.8%</td>
<td>-</td>
</tr>
<tr>
<td>patient is of the opposite sex</td>
<td>5.9%</td>
<td>10.2%</td>
</tr>
<tr>
<td>cultural issues</td>
<td>3.0%</td>
<td>35.6%</td>
</tr>
<tr>
<td>fear of uncovering a problem</td>
<td>2.9%</td>
<td>3.9%</td>
</tr>
</tbody>
</table>

Note: % = proportion who perceived the item as a major barrier

### 5.4.6 Behaviour Domain Results

The subscales examining STI/BBV and HCV Behaviours (see Table 5.5) indicated that psychiatrists reported appropriate behavioural practices. The most frequently reported behaviours related to conducting Pre-test HIV Screening discussions and the least for coverage of Pre-test HCV Screening discussion items and performing STI/BBV History Taking.

#### 5.4.6.1 Behaviour STI/BBV History Taking

The subscale assessing behaviours related to STI/BBV History Taking had a low mean, (M = 2.00 out of a possible score of 3) indicating that this behaviour was not frequently undertaken. For most of the items that assessed risk history behaviours, less than a quarter of the psychiatrists reported eliciting the various components that should be performed “very commonly”. The only exceptions were that 74% of study participants indicated they conducted an IDU history “very commonly” (M = 2.7) and 46% indicated that they asked about safe sex “very commonly” (M = 2.2).
Table 5.5 Summary of Behaviour Domain

<table>
<thead>
<tr>
<th>Description of Subscales</th>
<th>No. of items</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
<th>Mean Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>STI/BBV History Taking</td>
<td>7</td>
<td>2.00</td>
<td>0.56</td>
<td>1-3</td>
<td>1.23</td>
</tr>
<tr>
<td>HIV Pre-test Screening</td>
<td>4</td>
<td>4.13</td>
<td>0.86</td>
<td>1-5</td>
<td>3.80</td>
</tr>
<tr>
<td>STI/BBV Post-test Management</td>
<td>4</td>
<td>3.20</td>
<td>0.64</td>
<td>2-4</td>
<td>2.60</td>
</tr>
<tr>
<td>HCV Pre-test Screening</td>
<td>6</td>
<td>2.87</td>
<td>0.9</td>
<td>1-5</td>
<td>2.37</td>
</tr>
</tbody>
</table>

5.4.6.2 Behaviour STI/BBV Post-test Management

The subscale assessing STI/BBV Post-test Management Behaviour (M = 3.2 out of 4) explored patient management after a test had been done. In this subscale more than 70% indicated they “always” seek specialist advice about management for abnormal syphilis serology (M = 3.69). But only 41%, “always” recommended vaccination against hepatitis B for patients that had a negative test result (M = 2.8).

5.4.6.3 Behaviour HIV Pre-test Screening

Pre-test HIV Screening discussion was the most frequently reported behaviour, with more than two thirds of the study participants reporting that they “mostly” or “always” performed the listed behaviours (M = 4.13 out of 5). Examples of highly endorsed behaviours included discussing the implications of a negative HIV test result if testing occurred during the window period for HIV detection (M = 4.11) and discussing safe sex (M = 4.03)

5.4.6.4 Behaviour HCV Pre-test Screening

Doctors did not conduct the components HCV Pre-test Screening discussion very frequently (M = 2.87 out of 5 items) (see Table 5.5). Although most respondents asked about IDU as part of Behaviour STI/BBV History Taking, only a third “mostly” or “always” said they discussed the various components expected during HCV Pre-test discussion.

126
5.4.6.5 Behaviour Domain Differences

A Friedman two way ANOVA indicated that rankings of Behaviour varied significantly across the subscales, $\chi^2 = 71.01$, df = 3, N = 35, $p < .0001$. Follow-up pairwise comparisons with the Wilcoxon Signed Rank test and a Bonferroni adjusted $\alpha$ of .0125 (.05/4) indicated that the Behaviour HIV Pre-test Screening scores (mean rank 3.80) were significantly higher than (i) Behaviour STI/BBVs Post-test Management scores (mean rank 2.60), $T = 29.50$, $z = -4.39$, N – Ties = 32 $p < .0001$ with a large effect of $r = .78$ (Cohen, 1988), than (ii) Behaviour HCV Pre-Test Screening scores (mean rank 2.37), $T = 5.00$, $z = -5.00$, N – Ties = 34 $p < .0001$ with a large effect of $r = .86$ (Cohen, 1986) and (iii) Behaviour STI/BBV History Taking scores (mean rank 1.23), $T = 1.00$, $z = -5.14$, N – Ties = 35 $p < .0001$ with a large effect of $r = .87$ (Cohen, 1988).

The Behaviour STI/BBV Post-Test Management scores (mean rank 2.60), were significantly higher than Behaviour STI/BBVs History Taking scores (mean rank 1.23) $T = 11.50$, $z = -4.97$, N – Ties = 35 $p < .0001$ with a large effect of $r = .84$ (Cohen, 1986) but not significantly higher than Behaviour HCV Pre-Test Screening scores (mean rank 2.37), $T = 186.50$, $z = -1.90$, N – Ties = 34 $p < .058$ with a medium effect of $r = .33$ (Cohen, 1988).

Finally, the difference between Behaviour HCV Pre-Test Screening scores (mean rank 2.37) were significantly higher than Behaviour STI/BBVs History Taking (mean rank 1.23), $T = 33.50$, $z = -4.61$, N – Ties = 35, $p < .001$, with a large effect of $r = .78$ (Cohen, 1988).

5.4.7 Behaviour of Psychiatrists compared with other researched groups

Table 5.6 provides descriptive comparison of psychiatrists’ behaviours compared to other researched groups. The most common behaviour reported by GPs involved asking about “safe sex” (79%) (Temple-Smith et al., 1999), whereas only 44% of psychiatrists elicited this history. Psychiatrists more commonly asked about “IDU” activities (77%) whereas only 60% of GPs questioned their patients on this issue.
Similar proportions, 88% of GPs (Mulvey et al., 1997) and 97% of psychiatrists “mostly” or “always” sought specialist advice regarding abnormal syphilis, as part of Post-test Management of STI/BBVs.

Table 5.6 Comparison of Behaviours of Psychiatrists and GPs

<table>
<thead>
<tr>
<th>Behaviour Items</th>
<th>Psychiatrists SWAHS</th>
<th>Psychiatrists (Temple-Smith et al., 1999)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*not common</td>
<td>very common</td>
</tr>
<tr>
<td>Behaviour STI/BBV History Taking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of sexual partners</td>
<td>44.1%</td>
<td>26.5%</td>
</tr>
<tr>
<td>having safe sex</td>
<td>25.7%</td>
<td>28.6%</td>
</tr>
<tr>
<td>gender of sexual partners</td>
<td>35.3%</td>
<td>32.4%</td>
</tr>
<tr>
<td>having sex with sex worker</td>
<td>44.1%</td>
<td>35.3%</td>
</tr>
<tr>
<td>involvement in sex work</td>
<td>51.5%</td>
<td>27.3%</td>
</tr>
<tr>
<td>recent overseas travel</td>
<td>50.0%</td>
<td>38.2%</td>
</tr>
<tr>
<td>injecting drug use</td>
<td>5.7%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Behaviour STI/BBV Post-Test Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>seek specialist advice for abnormal syphilis</td>
<td>-</td>
<td>97.1%</td>
</tr>
<tr>
<td>counsel patients for HBV immunisation</td>
<td>-</td>
<td>58.8%</td>
</tr>
</tbody>
</table>

Note: % = proportion who asked or acted regarding study item for scale of 1 to 6 with * not common = 1 or 2, medium = 3 or 4, and very common = 5 or 6.

5.4.8 Bivariate Analysis: The relationship between doctor characteristics and Knowledge, Attitudes and self-reported Behaviours

An analysis was undertaken to explore the relationship of doctor characteristics with the knowledge, attitude and behaviour subscale scores, with the use of non-parametric Kruskal-Wallis ANOVAs and chi-square analyses. The significant findings occurred for HCV items only and not for items that were part of the STI/BBV scales.

Doctors who had worked for less than 10 years in mental health had higher scores in (i) HCV Knowledge Referral subscale ( χ² = 8.28, df = 1, p = 0.004) and (ii) HCV Knowledge Management ( χ² = 5.42, df = 1, p = 0.02), than those who had greater than 10 years working in mental health. Likewise assessment by junior versus senior
doctors (specialist consultant psychiatrists) found that junior doctors were also more knowledgeable with respect to HCV Referral Knowledge ($\chi^2 = 4.14$, df = 1, $p = 0.04$) and reported more frequent HCV Pre-test Screening Behaviour than the senior consultants ($\chi^2 = 9.07$, df = 1, $p = 0.003$). Doctors who felt that they were well informed regarding HCV reported more frequent HCV Pre-test Screening Behaviours ($\chi^2 = 10.76$, df = 1, $p = 0.001$). Overall, it seems that younger or “newer” doctors had more HCV Knowledge and “well informed” doctors reported better HCV Screening Behaviours, in keeping with some of the hypotheses.

5.4.9 Multivariable Analysis: The Relationship of Knowledge and Attitude to Behaviour

To explore the relationship between knowledge, attitude and behaviour for the HCV and STI/BBV subscales, Spearman’s correlations were performed (because the variables were not all normally distributed). Table 5.7 provides the correlations specific for STIs/BBVs. Table 5.8 provides the summary of the analysis of correlations specific for HCV. STI/BBV analyses (Table 5.7) did not show any significant correlations except between behaviour subscales.

Only results from the analysis of HCV variables (Table 5.8) had statistically significant correlations. Knowledge of HCV Referral correlated with both Attitude Treating HCV patients ($r = .45$) and with Behaviours HCV Pre-test Screening ($r = .49$).

To determine the predictors of behaviour, standard multiple linear regression analysis was performed. The selected variables in the regression analysis were the subscales with significant correlations between knowledge and behaviour or attitude and behaviour.
### Table 5.7 Spearman’s Correlation coefficients and significance tests for STI/BBV subscales

<table>
<thead>
<tr>
<th>Knowledge STI/BBV</th>
<th>Attitude STI/BBV</th>
<th>Behaviour STI/BBV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymptomatic</td>
<td>0.25</td>
<td>-0.02</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>-</td>
<td>0.03</td>
</tr>
<tr>
<td>Barrier to History</td>
<td>-</td>
<td>0.05</td>
</tr>
</tbody>
</table>

**Knowledge STI/BBV**
- Asymptomatic
- Epidemiology
- Barrier to History

**Attitude STI/BBV**
- Barriers to History

Note: *Significance p < 0.05 level (1-tailed) Listwise N = 34

### Table 5.8 Spearman’s Correlation coefficients and significance tests for HCV subscales

<table>
<thead>
<tr>
<th>Knowledge HCV</th>
<th>Attitude HCV</th>
<th>Behaviour HCV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidemiology</td>
<td>Referral</td>
<td>Management</td>
</tr>
<tr>
<td></td>
<td>0.22</td>
<td>0.36*</td>
</tr>
<tr>
<td>Referral</td>
<td>-</td>
<td>0.19</td>
</tr>
<tr>
<td>Management</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td>Treating HCV Patients</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Knowledge HCV**
- Epidemiology
- Referral
- Management

**Attitude HCV**
- Treating HCV Patients

Note: *Significance p< 0.05 level (1-tailed) ** p< 0.01 level (1-tailed) Listwise N = 35
Multiple linear regression analyses requires that the assumptions regarding normality, linearity and homoscedasticity of the standardised residuals are met, that there are not any multivariate outliers and that there is no multicollinearity. Thus, prior to conducting multiple linear regression analyses, these assumptions of these selected variables were evaluated (Allen & Bennett, 2008, pp. 182-191). Inspection of the normal probability plot of standardised residuals as well as the scatterplot of standardised residuals against standardised predicted values indicated that the assumptions of normality, linearity and homoscedasticity of the standardised residuals were met. Second Mahalonobis distance did not exceed the critical $\chi^2$ for df $= 2$ (at $a = .001$) of 13.82 for any cases in the data file, indicating that multivariate outliers were not of concern. Third, relatively high tolerances for both predictors in the regression model indicated that multicollinearity would not interfere with the ability to interpret the outcome of the multiple regression analyses.

Thus, the significant correlations for the related domains of HCV subscales were combined in a model to evaluate the hypothesis that the behaviour of doctors working in psychiatry in SWAHS, can be predicted by their knowledge and attitudes. Specifically the hypothesis that if doctors had good Knowledge of HCV Referral and positive Attitudes toward Treating Patients with HCV, then this would predict their Behaviours for HCV Pre-test discussion.

Table 5.9 provides the regression co-efficients for predicting behaviours. The likelihood of reporting appropriate behaviour as part of HCV Pre-test Screening discussions was the dependent variable, and Knowledge of HCV Referral and Attitude toward Treating Patients with HCV, as the independent variables.
Table 5.9 Summary of standard multiple regression variables predicting self reported Behaviour of HCV Pre-test Screening (n = 35)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>β</th>
<th>sr²</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge HCV Referral</td>
<td>.46</td>
<td>.72</td>
<td>.41**</td>
<td>7.8</td>
<td>1.41</td>
</tr>
<tr>
<td>Attitude Treating HCV Patients</td>
<td>-.46</td>
<td>-.34</td>
<td>.09*</td>
<td>4.0</td>
<td>.66</td>
</tr>
</tbody>
</table>

Note: * Significance p < 0.05 level (1-tailed) ** p < 0.01 level

sr² = the square of the semi-partial correlation between predictor and criterion (provides variance)

Both Knowledge of HCV Referral and Attitude toward Treating HCV patients are important predictors and accounted for 41% of the variability of Behaviour HCV Pre-test Screening, R² = .41 adjusted R² = .37, F (2, 32) = 10.96, p < .0001.

Unstandardised (B) and Standardised (β) Regression Co-efficients, and squared semi-partial (or ‘part’) correlations (sr²) for each predictor in the regression model are reported in Table 5.9.

The most important predictor for the Behaviour of HCV Pre-test Screening is Knowledge of HCV Referral as this variable alone still provided 41% of the variance, as depicted by the sr² value. By Cohen’s (1988) convention, the combined effect of this magnitude, proportion of variance for HCV Pre-test Screening Behaviour that can be accounted for by the predictors of HCV Referral Knowledge and HCV Treating Patients Attitude, can be considered “large” (f² = .69).

5.5 DISCUSSION

Study Two surveyed doctors working in psychiatry and caring for patients with SMI regarding their STI and BBV related knowledge, attitudes and behaviours, with emphasis on HCV. This second study does explain the low referral of patients to Study One for assessment of risk factors and infection. Overall, psychiatrists caring for patients with SMI do not frequently screen patients and subsequently do not detect STI or BBV infections, despite the high levels of HCV. The doctors that participated in Study Two were mostly older than 35 years, senior specialists and less than a third reported being well informed regarding HCV. This small KAB study
found that psychiatry doctors did relatively well in all domains when compared to GPs, even though more GPs reported that they were well informed regarding HCV.

Doctors working in psychiatry are knowledgeable about HCV, more so than other STIs and BBVs, with the exception of current HCV treatment options. Psychiatrists have good attitudes regarding history taking and dealing with HCV patients, though they are less in agreement regarding the central role psychiatry should have. Psychiatrists reported appropriate behaviours more so for referral and management of STI and BBVs and for Pre-test HIV screening, than HCV screening provision. Some discrepancies included the overestimation of HCV disease progression, the underestimation of HCV prevalence, the high reporting of IDU risk history questioning but the poorest rating behaviour being for HCV Pre-test Screening.

A contentious item was the role of HCV heterosexual transmission. Current knowledge recognises the role of sexual transmission for MSM, but in 1999 (Puplick et al., 1999) and for most of the proceeding decade, HCV by sexual transmission was very rare, even for MSM. Prevalence has only been prominent in the last few years (Centers for Disease Control and Prevention, 2011a) and if doctors were up to date, their knowledge would reflect that HCV was not routinely sexually transmitted.

Study Two identified that one of the key elements in providing care for patients with SMI, are behaviours required for HCV assessment. These behaviours were predicted by knowledge and attitudes. In particular, Knowledge of HCV referral, that all groups with HCV should be referred and assessed for treatment, and positive Attitudes towards treating HCV patients, predicted the Behaviour of Pre-test HCV Screening for patients. The findings are consistent with the theory-driven approaches to understanding and modifying clinicians’ behaviour (Casper, 2007; Perkins, Jensen, Jaccard, Gollwitzer, Oettingen et al., 2007).

Key findings for this small study are that psychiatrists’ knowledge, attitudes and behaviours are relatively “good”. HCV Pre-test Screening behaviours are predicted by appropriate knowledge and attitudes and “newer” doctors to psychiatry reported, “better” HCV knowledge and behaviours.
5.6 OVERALL STRENGTHS AND LIMITATIONS

This study’s strengths include researching psychiatrists and researching their knowledge, attitudes and behaviours regarding STIs and BBVs for patients with SMI. One strength is use of validated previous research tools that help provide a context for the psychiatrists’ knowledge, attitudes and behaviours. The finding that knowledge, and attitude to a lesser extent, predicts behaviour with a large effect is reassuring that the research is useful despite the suboptimal sample size. Conclusions though are limited in their application because of the small number of study participants.

Another study strength is that the participation rate in this study was good at 70% for those offered the opportunity, which is comparable to the participation rates amongst GP samples (Mulvey et al., 1997). Poor response rates of doctors to surveys is often reported (Kellerman & Herold, 2001). Low attendance for medical education programmes is also common, which had been the planned “draw card” for recruitment into the study (Smith, Singleton, & Hilton, 1998). Attendance at the scheduled weekly meeting had been relatively low at 52%, and had there been better attendance; a higher number of study participants might have been recruited.

Study Two potentially suffered from selection bias because of the low number of doctors attending the education meeting, and from that group 30% of attendees choosing not to complete the questionnaire. Study Two may also have information bias as doctors may have provided, “socially acceptable answers”, particularly to the attitudinal and behaviour components of the survey (Adams, Soumerai, Lomas, & Ross-Degnan, 1999; Bowling, 2005). Comparison of psychiatrists to other doctors can result in selection bias as has been described by Berkson (Berkson, 1946), that arises when there is an ascertainment bias inherent in a study design (Westreich, 2012).

Other limitations include the very low Cronbach alpha, of .32, for the Attitude toward Treating HCV patients. This could be problematic for results of multiple linear regression, though the dependent variable “Behaviour of HCV Pre-test
Screening” had an excellent alpha value (.91). Cronbach alpha will be low and even unstable with small sample size and few and varied variables, as occurred for this study (Torabi, 1988). Review and deletion of the poorest performing item in the attitude scale improved Cronbach alpha to 0.6. Results with re-analysis of linear regression were almost identical, as the main contributor to Behaviour was Knowledge (data not shown).

5.7 CONCLUSION

Preliminary data from this small study highlights the risk from underestimating STI and BBV prevalence, particularly HCV. Good knowledge about the role IDU activities play in HCV epidemiology and referral options for those who are HCV positive, suggests that appropriate clinical behaviours are achievable even if doctors working in psychiatry fail to recognize the magnitude and significance of HCV exposure for patients with SMI. Improving knowledge of HCV disease progression and management options may facilitate better health care for patients with severe mental illness.
CHAPTER 6

Discussion

6.1. INTRODUCTION

This discussion chapter integrates the findings across the two studies and links the aims, hypotheses and background literature of the thesis. Specifically this section evaluates why patients with SMI are at risk for STIs and BBVs. Considered are emerging patterns with attempts to gauge the mechanisms, and implications, for this risk. Several concepts at the individual, partner and community level may be important to understand the elevated risk for patients with SMI, and will be discussed under key headings.

6.2 INTEGRATION OF STUDIES’ AIMS, HYPOTHESES and FINDINGS

Study One’s findings identified that the level of risk for STIs and BBVs for inpatients with SMI, in western Sydney, Australia is prominent. Elevated risk is determined by; the rates of risk factors, rates STI and BBV infections and by comparison of these rates with the Australian population.

Patients had a higher risk for risk factor histories, STI or BBV infection being present and a higher likelihood for STI or BBV infection acquisition. It was seen that they engage in a wider range of risk behaviours and do so more frequently, than the general population. The prevalence of STIs and BBVs for patients with SMI was higher than the general population. Consistent with risk factor correlation, is the finding that patients with risk factor histories are at a higher risk for STI and BBV acquisition compared to patients without risk factor histories. Specifically HCV exposure was predictable if patients reported “IDU ever” or “incarceration ever” and self-reported STIs were predicted by “marijuana use ever” or “sex ever with IDU risk partner”.

136
Patients with SMI compared to the Australian population with comparable risk factor histories had a higher risk for STIs and BBVs even when risk factors were controlled in the analysis. It seems that the nature of having an illness such as SMI, identifies and places patients at risk for both risk behaviours and acquiring infection, even in the absence of reported risk factors.

Both studies identified that this risk for patients is not well appreciated. From Study One it was seen that patients did not recognise the extent of risk for themselves. Patients underestimated the extent of acquired BBV infections when compared to current biological sample results. Study Two identified that doctors had reasonable knowledge and attitudes regarding STIs and BBVs compared to GPs but doctors working in psychiatry did not fully recognise the risk for their patients, as some behaviours, such as assessment practices for patients with SMI, were suboptimal, particularly for HCV.

Study Two could identify the influences on behaviours to assess for risk regarding HCV. The doctor characteristics that suggested appropriate behaviours included younger or “newer” doctors reporting better HCV knowledge, whereas “well informed” doctors reported better HCV assessment behaviours. Analysis with linear regression, demonstrated that HCV referral knowledge and genial attitudes to HCV patients predicted the self-reported behaviour practices of screening for HCV.

From these results, the patterns of individual risk activities, partner risk activities, inappropriate healthcare, in the context of SMI, help explain the elevated risks for patients.

**6.3 UNDERSTANDING WHY PATIENTS WITH SMI ARE AT RISK**

The work that has been part of this thesis; the literature review and the two studies, undoubtedly finds that patients with SMI are at risk. The two studies have displayed the heightened risk, as first defined in the Chapter Two, of being infected, encountering an infected partner and acquiring infection if exposed. Though not explicitly evaluated there probably is also a heightened risk of exhibiting disease if
infected and transmitting disease to others, because of low testing and poor treatment uptake. Some facets of risks for patients with SMI are considered.

6.3.1 Risks for Patients with SMI at the Individual Level

Many risk factors were elevated and contributed to the risk of STI and BBV infections for patients with SMI. Patients had more risky sex, with high numbers of partners, casual sex and elevated rates of sex work, or sex with sex workers. In this section the risks of sexual behaviours, substance use(particularly IDU), incarceration and healthcare are discussed and evaluated against other priority risk groups. Lastly, the possible role of SMI is considered in the extent of risk for patients.

6.3.1.1 Elevated Risk associated with Risk Factors

Sexual Behaviours

Study One portrayed a picture of patients with SMI not having good sexual health. Patients are sexually active, but less often have mutually exclusive, safe and supportive sexual partners. Many risk behaviours were reported at higher levels than the Australian population survey. Some sexual behaviours are compared to risk groups such as prisoners and injecting drug cohorts to provide a context for risk.

A comparison with sexual risk behaviour reported by 1317 prisoners, who had a modified ASHR telephone survey, showed many analogous findings (Richters et al., 2008). Patients with SMI and prisoners had similar reports for sexuality and number of partners ever. Differences were that male prisoners were more likely to report 2 or more partners in the last 12 months and patients with SMI more frequently reported sex with sex workers and casual partners at last sexual contact, though again patients reported more condom use. Comparable sexual behaviours of persons with an IDU history seem to be less frequently studied or published. A large report of 902 injecting drug users, had only one variable that could be compared, and found just over 50% of injecting drug users reported being single (Stafford & Burns, 2011), whereas many more patients with SMI were likely to be single (88%).
Other similarities were that up to 20% of prisoners had a mental illness that had resulted in hospitalisation, hinting that it may have been an SMI. Future evaluation of behaviours for prisoners and injecting drug users with and without SMI will be useful to elucidate the risk for those with SMI.

**IDU History**

As seen in Study One, patients with SMI have risks related to injecting behaviours for HCV exposure. A problem for patients with SMI that inject is that the likelihood of HCV exposure is greater than for injectors part of the general population. Though HCV was predicted by “IDU ever”, or “incarceration ever”, which is in keeping with the ASHR correlates (Grulich, de Visser et al., 2003c, p. 240), the patients with an IDU history, at least part of this study, seem to be different to the Australian population with IDU history. Patients with SMI were more likely to inject heroin and methadone, though, use of other injecting drug substances or sharing of needles and other paraphernalia were not different. Though not explored in this study it may be that patients have been injecting drugs for longer and with heavier drug abuse problems, based on higher heroin and methadone use that explains their higher HCV prevalence and risk. Another complicating factor is that in the state of NSW, Australia, persons that inject are more likely to inject heroin (Stafford & Burns, 2011). NSW prisoners are also more likely to inject heroin and more likely to be HCV positive than prisoners from other states (Butler et al., 2007). Perhaps NSW SMI patients may represent NSW IDU users, but not other Australian injectors. Patients with SMI have at least similar or higher risks than others who inject drugs, but review with injectors in NSW would be useful.

**Incarceration History**

An important finding is the high incarceration rate for patients with SMI and part of Study One along with high IDU activities and the predicted HCV infection. The incarceration rate of 30% was much higher than for the Australian general population at 2% (Grulich, de Visser et al., 2003a), and approaching rates for African-American male patients with SMI of 58% (Ramsay, Goulding, Broussard, Cristofaro, Abedi et al., 2011) and of other IDU cohorts at 50% (Stafford & Burns, 2011). Further work can elaborate this association and risk, but some groups have reported that patients
with SMI are more likely to have repeat incarcerations that may play a role in causation (Baillargeon et al., 2009; Ramsay et al., 2011). Research could explore the duration of incarceration, reasons for imprisonment, risk activities whilst incarcerated and how these behaviours differ from, others with SMI and not incarcerated, or those incarcerated but without a SMI.

**Healthcare**

Access and provision of appropriate healthcare helps minimise risks from STIs and BBVs. These studies have highlighted that patients may not be receiving the correct healthcare to identify and manage STIs and BBVs, as assessment may be inaccurate or lacking. The KAB survey of psychiatrists, examining STIs and BBVs, and in particular HCV, isolated some of the issues that may account for the suboptimal STI and BBV management, despite patients’ increased risk.

Non-comprehensive healthcare for this patient group may be because the lead psychiatry doctors are older and have been working for longer in the speciality of psychiatry. Statistically it was seen that overall knowledge was better for “newer” doctors working in psychiatry; those who had worked for less than 10 years in psychiatry and for those that did not have specialist qualifications. This may be related to “newer doctors” having had more up-to-date training or a broader scope of practice prior to psychiatry, keeping in mind that the science of HCV is a relatively new body of knowledge. Other groups such as Mulvey et al (1997) found that younger doctors also had better knowledge scores for STIs, probably for similar reasons, with the “…undergraduate medical training in STDs having undergone improvement in recent years…” (Mulvey et al., 1997, p. 537). Doctors that have been working for longer in a senior psychiatry role may feel that it is not appropriate for psychiatrists to consider other health problems, exemplified by doctors having the most ambivalence regarding the attitude that psychiatry should have “a central role in the treatment of HCV”.

In this research, doctors working in psychiatry underestimated the extent of the problem of HCV exposure for patients with SMI that they were caring for in hospital. Actual rates of HCV for all Cumberland Hospital patients are close to 20% of those
tested, whereas the doctors estimated 10% of their patients would have HCV. The underestimated response rates regarding the extent of HCV exposure may carry through to insufficient screening and management for their patients with SMI.

From this study an uncertain area, that may influence healthcare and requires clarification, was sexual transmission of HCV. The role of sexual transmission was unclear to as many psychiatrists part of Study Two, as well as French specialists (Munoz Sastre et al., 2002), Pakistani students (Anjum et al., 2005) and patients with SMI (Goldberg et al., 2009). HCV may be transmitted with HIV co-infection, or with sexual practices that involve exposure to blood (Wyld, Robertson, Bresters, Mauser-Bunschoten, Reesink, Roosendaal, van der Poel et al., 1993; Chiaramonte, Stroffolini, Lorenzoni, Minniti, Conti et al., 1996; Lauer & Walker, 2001; MacDonald & Wodak, 2003). The second most frequent assessment behaviour reported for history taking was asking about safe sex (46%). Perhaps there is a mistaken belief that needs further exploring, that if patients with SMI report safe sex, then they may not be at risk for HCV and not screened.

The misconceptions regarding HCV may follow through with the inconsistencies identified in this study. Though there were many areas of HCV knowledge in which psychiatrists fared better than previously surveyed GPs (Dev & Sievert, 2002), appropriate clinical behaviours for HCV were reported at lower frequencies by the psychiatrists in this study. Knowledge and attitudes predicted HCV pre-test related behaviours, indicating screening of patients, but the reported HCV pre-test screening behaviours had the lowest subscale score of all behaviour domains. For example, almost all psychiatrists (100%) knew IDU was a risk for HCV infection and almost all (94%) reported the behaviour of asking about IDU. But only a third of psychiatrists reported testing for HCV and about a third stated that they provided the behaviours related to HCV screening, whereas two thirds provided HIV screening behaviours. An explanation may be related to SWAHS requirements. Pre-test HIV Screening is mandatory prior to HIV testing, whereas this does not apply for HCV
testing. Cumberland testing revealed that few HIV tests were performed with only 4% of all patients had HIV testing. It seems that those few psychiatrists that assess for HIV are correctly performing all the necessary behaviours related to HIV assessment. A quarter of all patients had HCV testing but fewer patients received the appropriate non-mandatory pre-test discussion. Therefore, there may be a small subgroup of psychiatrists who perform well, but low scores for many others may translate into low and incorrect estimates of HCV, sub-optimal subsequent screening and management.

Suboptimal healthcare is apparent from many patients reporting previous HIV screening (72%), but less assessment for other individual STIs or BBVs. Patients, and psychiatrists, underreported rates of HCV. The underreporting may be because patients do not recall their results or it may be that patients have not been tested. The psychiatrists reported that they did not assess for STIs and BBVs, with only about a third frequently assessing for HCV. Their declaration can be verified from the information regarding testing of all Cumberland Hospital clients. As stated in the above paragraph, the largest group of testing was for HCV and HBV, with about a quarter tested, and only a small group was tested for other STIs.

Another component to consider for suboptimal healthcare is that screening patients based on history alone is not sufficient. The prevalence of infections such as HCV, at 26% for all study participants, 5% prevalence for the whole Cumberland patient population and at 9% for patients without an IDU risk history requires serious consideration. The discrepancy may be because of lack of recognition, or inability to report involvement with injecting drug risk activities, by patients with SMI. There is a need for a broader approach to screening patients with SMI, at least for HCV.

6.3.1.2 Elevated Risk associated with STI and BBV Infections

Heightened STI and BBV risk is evident, with HCV infection more common for both patients that did and for patients that did not report injecting drug use. The extent of STI and BBV risk compared to other risk priority groups is presented.
HCV rates were elevated for patients with SMI with high rates for HCV at 26% overall and 69% for those that reported IDU. This study’s findings are in keeping with previous research. One other Australian group identified a 20% overall prevalence for patients with SMI (Lacey et al., 2007). National surveillance data quote a 50% HCV prevalence for injecting drug users (National Centre in HIV Epidemiology and Clinical Research, 2010). HCV prevalence for patients with SMI is more similar to prison samples, who have an HCV prevalence rate of 34% (Butler et al., 2007).

Nearly half of patients with SMI provided self-reported STI histories. Two groups researching patients with SMI (part of the Literature Review in Chapter 3), correspondingly identified past STI rates at 40% (Coverdale & Turbott, 2000; Klinkenberg et al., 2003). A more recent Australian survey reported 27% (Lacey et al., 2007), while the Australian population had lower self-reported STI rates at 18% (Grulich, de Visser et al., 2003c). Other more current surveys such as one of Vietnamese men in Sydney had a lower rate of self-reported STIs (12%) (O’Connor, Shaw, Wen, & Quine, 2009), whereas prisoners reported comparable or lower levels of past individual STI diagnoses than patients with SMI (Richers et al., 2008). The prisoner study had a similar older-age group but differed in other demographics, as one fifth was indigenous. Prisoners self-reported less genital herpes (2.5%) than patients (7.2%), and less genital warts (7.5%) compared to patients (16.7%). The prisoners self-reported similar previous chlamydia but higher gonorrhoea rates than patients, which may be related to the larger indigenous group. Studies that have looked at STI rates in injecting drug users have provided comparable rates for past STIs at 48% (Kuyper, Collins, Kerr, Hogg, Li et al., 2005). A Melbourne study of 314 young street-based injecting drug users had similar STI and BBV results, with high HCV and HBV, but low HIV and gonorrhoea, and negative syphilis. As a young group, there was a 9% chlamydia prevalence (Bradshaw, Pierce, Tabrizi, Fairley, & Garland, 2005), in keeping with the level of self-reported previous chlamydia rate for patients with SMI and reflecting that chlamydia is present in young cohorts.

The particular self-reported STIs of patients with SMI part of Study One were those more often diagnosed in the general community such as chlamydia, genital herpes
and warts. The infections of gonorrhoea and syphilis were not common for patients with SMI. These infections are more prevalent in men-who-have-sex-with-men (MSM) in Australia, as described in Chapter 2, and this was not a reported behaviour for this study group. Western Sydney, being twenty kilometres from the “high visibility of inner city gay territories” (Hodge, 1995, p. 41), has a much smaller MSM community, and less likelihood of representation in surveys.

In Study One the prevalence of HBV was also very high. There was a bigger discrepancy between self-reported HBV at 4%, and biological sample results with prevalence at 16%, with nearly eighty percent unaware of previous HBV exposure. Though HBV infection is less likely to cause long term health effects if infection was acquired as an adult, it should be assessed. HBV is preventable for those negative, may require medical treatment for those positive and is a marker of potential risk for those previously exposed. HIV rates were not as elevated as found in the USA. HIV at 2.5% for patients with SMI is still significantly higher than community levels and warrants vigilance to prevent escalating epidemics.

Even though this patient group with SMI did not comprise of MSM or indigenous persons, the recognised risk groups for STIs and BBVs in Australia, there was significantly raised STI and BBV infection prevalence. High infection rates add to the risk picture for patients with SMI.

6.3.1.3 Elevated Risk associated with SMI

A diagnosis of SMI, as well as creating mental health problems and prolonged hospitalisations, affects cognition and socialisation for patients. It is postulated that a diagnosis of SMI may play a role in the existence of risk for STIs and BBVs. An SMI diagnosis is associated with a myriad of effects, such as poor social skills, poor housing, and limited social networks outside of hospitals, that all contribute to risk. It is possible that patients with SMI are not socially proficient and this may explain why they engage in (risky) sex and drug use activities, since these activities provide ways to interact with others without the need for elaborate social skills. This has been seen for marijuana use and socialisation for patients with psychosis and possibly
applies to other activities (Schofield, Tennant, Nash, Degenhardt, Cornish et al., 2006). Ethnographic USA research has depicted SMI as a risk network and has described different substance-use socialisation patterns, with importance for the individual based on different levels of involvement (Alverson, Alverson, & Drake, 2000).

It also is possible that the nature of a mental illness precludes safe decision-making and even recollection of risks. For example, patients with SMI have an excessive risk for HCV and this risk may be because they engage in injecting activities when psychiatrically unwell and less likely to have a recollection of risk activity or be able to provide a reliable history. In light of Study One’s findings the above consequences related to a diagnosis of severe mental illness, may explain why patients that do not provide a risk history still have a higher prevalence of HCV exposure.

6.3.2 Risks for Patients with SMI at the Partner and Community Level

Patients’ risks are compounded by risk factors related to their partners and their position in society. Patients with SMI are a group with a mixed risk profile of injecting drug users, prisoners and possibly other undifferentiated risks. The role that SMI may contribute to this risk network is explored.

6.3.2.1 SMI Risk Network

Patients with a diagnosis of SMI, report at the individual level unsafe sexual behaviours, high rates of substance use (including IDU) and incarceration histories. Patients continue with risk at the partner level. Their sexual contacts were others that reported unsafe sexual, substance use, incarceration and others with a diagnosis of SMI (and often met in hospital). This studied group can be defined as a “network”. According to Klovdahl (1985), “…a network is a set of nodes connected together by links of one kind or another.” In this network, the nodes are persons with SMI and the links are sexual or substance related relationships, with risks for STIs or BBVs. This thesis explores sexual links but it is possible that the same individuals are also part of a substance use network, fitting in with previous work identifying networks
often with dual risks, “risky needle-sharing and sex norms” (Latkin et al., 2010, p. 1159; Shev et al., 1995).

Patients with SMI differ from the general community and even from other injecting drug users. They have an enhanced risk, possibly because of their SMI diagnosis. SMI provides a frequent hospitalisation framework within an encircling theme of unsafe risk factors, of substance use, incarceration, or sexual contact with someone else that has these risk factors. As inpatients, this group experienced an average of six hospital admissions, and based on prior reports (Jablensky, 1999) an estimated average length of stay of 13 weeks., This suggests that meeting and socialising with others whilst in hospital may happen regularly and for sufficient durations to allow development of relationships. In hospital, there is probably mixing with other risk partners not currently hospitalised, who are able to attain access as visitors, in the open psychiatric ward conditions (Lelliott, 2006), and a mixing of similar persons as sexual partners and probably as substance use partners. In this small SMI network, there is similar “associative mixing” by SMI diagnosis but possibly “dissociative” mixing by risk activities. A situation similar to the risks African Americans encounter (Hallfors et al., 2007). This risk network had been first recognised by Kalichman et al (1994). Their study also identified that the “…use of illicit drugs, meeting sex partners in psychiatric clinics, and meeting partners in bars…” accounted for risk (Kalichman et al., 1994, p. 221), which is the situation for patients with SMI part of this study. This newly recognised risk network should be part of the recognised priority groups for health care and health promotion, with respect to preventing STI and BBV infections. Data from two population studies support mental illness as a risk or risk marker for HIV, but have not examined other infections such as HCV (Blank, Mandell, Aiken, & Hadley, 2002; Hoff, Beam-Goulet, & Rosenheck, 1997). The important findings from Study One support that severe mental illness is a risk marker, at least for HCV exposure.

Such an SMI risk network for this patient group seems to be a closed network as none of the STI and BBV infections, identified from biological samples, were new or recent infections, apart from one new chlamydia diagnosis, in a young person and possible externally acquired. The reporting of common but past STIs may reflect that
there was an enhanced risk for STIs, for patients with SMI, when younger. This hospitalised patient group may not currently have contacts outside of this network and be relatively protected. There can be a degree of safety with an established but closed network because new infections may be less likely to be introduced.

6.3.2.2 SMI in the Community

Throughout this thesis, the devastating impact of SMI has been described for persons affected. This thesis has identified some of the social isolation issues for patients such as poor relationships and the available socialisation being risky sexual contacts or drug sharing. The high rates of incarceration and sex work hint that SMI limits effective and safe means of income and creates protracted episodes of institutionalisation. This adds to the theory of the unique SMI network, as socialisation is limited to hospitals, custodial settings and possibly street-based, as many patients with SMI lack a known or fixed address.

6.3.2.3 Patient Healthcare Provider Networks

The health system available to patients with SMI affects their level of risk. Discussion has occurred for the issues at an individual level for patients, such as lack of accurate screening. Inappropriate healthcare is an issue at the community level as health centres, testing policies and healthcare workers are all determined on a larger scale. Patients with SMI spend a lot of time in hospital and may not access healthcare elsewhere. Part of the psychiatry’s lead care role is to ensure broad healthcare is available for patients.

6.4 CONCLUSION

Patients with SMI are at risk because of their risk behaviours and risk partners. They constitute a risk network with unique characteristics. They are at risk for unsafe behaviours and infections. SMI risk networks are akin and cumulative to risks that prisoners and injecting drug users experience, but perhaps risk is exaggerated because of the presence of an SMI.
CHAPTER SEVEN

Conclusions and Recommendations

7.1 IMPORTANCE OF FINDINGS

As noted in the first chapters of this thesis “…sexual health requires a positive and respectful approach to sexuality and sexual relationships…” (WHO, 2002, p. 5) and is facilitated by good mental health. Many patients because of poor mental health, due to severe mental illness, do not enjoy “good” sexual health. The subsequent adverse effects of severe mental illness on mental health and on sexual health, contribute to risk for sexually transmitted and blood borne virus infections at many levels.

The two studies of this thesis have endorsed the literature review findings that patients with SMI are at risk for STIs and BBVs. Their risky behaviour is associated with increased rates of infections, such as HCV. Contributing to the ongoing risk is a lack of appreciation of the extent of risk by patients and by psychiatrists caring for them. Traditional assessment methods based on history alone may not be sufficient for patients with SMI, possibly because of their mental illness. The findings from this thesis indicate that STI and BBV infections probably happen for patients in their earlier years. Infections may occur with initial SMI diagnosis, and sexual and drug use debuts, and this early period should be the focus points for preventative healthcare.

Patients have higher rates of risk factors, STI and BBV prevalence and likelihood for infection than the Australian population. For this study, some of the key priority groups for STIs, such as MSM, were not reported as present, yet STI and BBV rates were high. Risk was compared to studies of other key risk groups of prisoners and injecting drug users. Patients with SMI closely resembled these two groups but some risks, such as less stable relationships, seemed more prominent for patients, indicating additional or differing paths of risk.
This thesis’ research has discovered a new risk network, defined by linkage of patients’ sexual, substance use, and incarceration risks with similar partners. A diagnosis of SMI marks risk for this newly recognised network. This studied group may be a closed SMI risk network, as new infections were mostly not identified, and somewhat safe. For other, particularly younger SMI risk networks, priority health care and more research is warranted. Both doctors caring for patients and government public authorities must take on recommendations, such as education, harm minimisation strategies, broader screening and healthcare programmes for this risk network.

7.2 PUBLIC HEALTH IMPLICATIONS

Both STI and BBV infections and SMI are significant public health problems, as they affect physical, psychological, social and economic well-being. These health problems affect the whole community creating public health and economic issues, such as high health and social costs, for example from loss of employment. Both fulfil the criteria requiring public health action, in that they occur frequently and widely, can cause severe disability and suffering and both have effective methods of prevention or management with mostly acceptable therapies.

The public health costs are often not well recognised, as the sequelae of an STI or BBV infection, such as liver disease, can be delayed and the threat to society lags with postponement of the risk of disease. Public health measures, such as mandatory screening, strain individual rights and as risk from STI or BBV infections are not immediately apparent, infections are tolerated rather than managed (WHO, 1992). Sexually transmitted diseases have been called the "hidden epidemic" because "their scope and consequences are under-recognized by public and healthcare professionals" (Workowski, William, & Wasserheit, 2002, pp. E-255). The findings from Study Two appear to support these concerns. HCV is a problem for patients with SMI, and “…even where liver complications have not developed, the burden of disease is high. Fatigue, depression and decreased quality of life are common…” (Seccull, Richmond, Thomas, & Herrman, 2006, p. 374). Seccull et al (2006, p. 377) advise that, “Hepatitis C is a major issue of concern for both people with mental
illness and health professionals...A considered, systematic approach to testing, counselling and referral needs to be taken by every mental health service”.

Overall the impact of STIs and BBVs, and in particular HCV, must be alleviated for patients with SMI. Patients are burdened because of their psychiatric illness with many problems. They, have “…poor diet...little exercise and... high rates of smoking” (Peet, 2004, p. s102). As well antipsychotic medications can cause increased food intake, all which can contribute to metabolic syndrome, and subsequent risk for cardiovascular disease and diabetes. Patients may be burdened with associated substance abuse problems (Dixon, 1999). Measures to prevent further adverse outcomes from HCV, must be implemented. Recognition of the personal health costs for a patient with SMI, as well as the costs to society, show benefit in early recognition and consideration of prevention strategies (Seccull et al., 2006).

The morbidity and costs of STIs and BBVs for patients with SMI may be estimated, with HCV as an example. If two percent of the Australian population has a severe mental illness and 5% at minimum have HCV infection, then potentially another 15,000 patients will develop chronic hepatitis and be at risk for liver failure or malignancy. Direct and indirect costs of SMI and STI and BBV infections to patients and society are already significant without factoring further costs from HCV. Projection of the extent of the combined problems of SMI and STI and BBV infections would show an even grimmer situation. Australian estimates for HCV cost in 1996/97 were $107.5 million (Lowe & Cotton, 1999). It has been estimated that prevention of a single HCV case may save at least $6000 as direct costs (Shiell & Law, 2001) and savings of much more with respect to indirect costs. Mental health disorders, as lifelong problems for an individual and society, create the some of the biggest costs in Australia. Schizophrenia has been assessed to be $1.85 billion, in 2001, costing nearly $50,000 per annum on average for each of more than 37,000 Australians with the illness (Carr, Hocking, Jablesnky, James, Leggatt et al., 2002; Smark, 2006). Efforts to minimise unfavourable health outcomes for patients with SMI, with removal of the hazards from preventable infections, such as HCV, is
crucial. Elimination of problems from preventable infections promotes maintenance of good health and savings of health dollars.

Another concern and public health impact for patients with SMI, as a unique risk network with riskier behaviours, is the consequences of an infection such as HIV has the potential to spread easily amongst network members. The extent of HIV infection for many African patients with SMI is significant as risk is additive to the endemic HIV levels (Collins, Berkmana, Mestryd, & Pillaia, 2009) The USA has higher STI levels, such as HIV, gonorrhoea and syphilis, in general and for patients with SMI. It would be expected that if a similar situation occurred in Australia and HIV infection was introduced to this SMI network, the spread would be facilitated because of the network and prevalent HCV infection (Polis et al., 2007; Renton et al., 1998).

Australia’s harm minimisation policy, with Needle and Syringe Programs and substance abuse management, such as methadone prescribing, have prevented HIV spread in IDU communities (Commonwealth Department of Health and Ageing, 2002). An understanding of the biological factor differences and interactions of STIs and BBVs has allowed successful strategies to be in place when HIV was a new infection and not yet introduced into IDU communities. HCV, a more efficient blood borne viral infection regarding transmission, has been well established in IDU communities for many decades, and is not as well controlled by Needle and Syringe Programmes (NSP) strategies as is HIV (Commonwealth Department of Health and Ageing, 2002). The USA did not adopt such measures and has a significant problem with high HIV and HCV rates for IDU groups, including those with SMI (Rosenberg et al., 2001). The USA was slow to realize the extent of HIV and HCV risk to communities with IDU and is only now recognizing the additional risk for the network of patients with SMI. Patients with SMI that inject drugs should theoretically benefit from harm minimisation programmes. The elements of severe mental illness though that create HCV risk without recognition or recollection of risk activity, suggest that harm minimisation programmes may be less protective for this unique risky IDU group with SMI and require tailoring.
There has to be a consideration of the detriments as well as benefits of detecting STI or BBV infections. An additional STI or BBV diagnosis has the potential to add to the stigma and health burden for patients with SMI. HIV infection, substance abuse and mental illness have already been labelled as the “triple diagnosis” (Douaihy, Jou, Gorske, & Salloum, 2003) and pose a major challenge at both a clinical and public health level. There will be some patients with four major health problems that need attention - HIV care, drug and alcohol services, HCV hepatology services as well as psychiatric services (Douaihy et al., 2003). It could be argued that the benefits of better screening for these patients would clearly outweigh potential stigma concerns. However in Australia and in other parts of the world, the risks, costs and benefits of routine screening of all patients with severe mental illness have yet to be fully investigated or debated.

Prevention of additional health burdens for patients with SMI requires a medical and public health model. Ideally, a psychosocial component of improving patients’ lifestyles, with housing, jobs and enhanced social situations should be incorporated to attain the best sexual and mental health.

7.3 RECOMMENDATIONS

Recommendations start off with key healthcare programme providers acknowledging that patients are a unique SMI risk network. Patients with SMI need to be recognised as a priority group with programmes and resources allocated accordingly.

Then, a comprehensive approach should be considered for patients with SMI, incorporating clinical and public health measures, such as care for STIs and BBVs, as well as addressing substance abuse and psychiatric illness requirements of their patients (Rosenberg, Goldberg, Dixon, Wolford, Slade et al., 2010; Walkup, Santriano, Barry, Sadler, & Cournos, 2002). Mental health policies need to include and address the problem of risk networks, risk behaviours and resulting infections. Recognising and understanding the different substance-use socialisation patterns and the significance that this socialisation has in patient’s lives is important if healthcare workers are to effectively support patients sobriety (Alverson et al., 2000).
Strategies to minimise the number of new infections must use a combination of approaches at primary preventative level, at a secondary level of detection and treatment and a tertiary level to minimise morbidity and mortality. Expanded Response Programmes (Stover, Walker, Garnett, Salomon, Stanecki et al., 2002), or STIRR (Screening for HIV and HCV risk factors, Testing for HIV and hepatitis, Immunization against hepatitis A and B, Risk reduction counselling, and medical treatment Referral) (Rosenberg et al., 2010) may be useful models. These programmes simultaneously address problems at a clinical, public health, political and social level to alleviate the impact of HIV.

The New South Wales capacity-building framework to improve health (NSW Health, 2001) provides a useful model of the complex system changes that are needed for effective change. There are five areas that need to be considered in order to ensure that evidence from research can be effectively translated into action and can be sustained. These five areas, are: workforce, development, organisational development, resource allocation, partnerships and leadership. NSW Health advocates for incorporation and sustainment “...of effective health promotion programs into the routine work of services from across the whole health care continuum...”(NSW Health, 2001, p. ii)

7.3.1 Primary Prevention – Education and Harm Minimisation

Primary prevention includes education to patients and healthcare workers as well as harm minimisation such as Needle and Syringe Programmes and condom availability. Patients would benefit with specific education and skill attainment. Learning the risk of infection and means of minimising risk behaviours may prevent new infections. Studies have shown that patients have sub-optimal knowledge, such as with HIV transmission, with many reporting risk behaviours but not believing that they are at risk (Davidson et al., 2001; Kalichman et al., 1994). Other studies from the USA, show that patients have better HIV information than HCV (Goldberg et al., 2009). Education programmes are new and still being evaluated regarding the most effective means of delivery to achieve safer behaviours (Rosenberg et al., 2010). All healthcare workers caring for patients with SMI require education regarding the
clinical, epidemiological and psychosocial consequences of STIs and BBVs. With good knowledge, and positive attitudes we can see that healthcare workers can integrate STI and BBV prevention activities into routine care for patients, as established in Study Two. This concept has been evaluated with others finding that psychiatrists (Casper, 2007) and patients (Lacey et al., 2007) report better self-predicted behaviours after appropriate education. Some previous studies have already shown that patients with SMI receive lower levels of care for preventative and early health interventions (Carney, Allen, & Doebbeling, 2002). Patients who were part of our study, reported HBV and HAV vaccinations at rates similar to the Australian population, indicating that preventative measures are happening, but can be improved.

Ideally, a replication of the service provided by some clinical settings that incorporates education and an opportunity for “appropriate” socialisation could be considered. An example is the invitingly named “Coffee and Condoms” programme in the USA (Woolf & Jackson, 1996). The programme consists of gender-specific and mixed groups, a drop-in service and condom provision. The aim is to provide knowledge and skills for safe-sex, HIV/AIDS and other STIs, including assertiveness and condom use, for patients with SMI.

7.3.2 Secondary Prevention - Improved Patient Clinical Care

Improved clinical care may consist of comprehensive programmes for patients with SMI, or be at the basic level of screening for infections. Screening is one of the most important components of sexual health clinical care. The studies that are part of the literature review in Chapter 3 indicated that screening and testing should be for those with a risk history only, as is the practice for the general population. A contentious issue is whether screening should be based on a risk assessment history, or should involve biological specimen assessment for all patients. Findings from Study One, of high HCV and high HBV rates, would suggest the need for screening with biological specimens, for all patients with SMI. The Centers for Disease Control (CDC) recommendation of population screening (for HIV), once the prevalence surpasses 1% (Bozette, 2005), needs serious consideration for the prevalent infections. In fact
the most recent guidelines advocate for universal HIV testing in health care settings (Centers for Disease Control and Prevention, Branson, Handsfield, Lampe, Janssen et al., 2006), though most professionals advocate for improved voluntary testing rather than mandatory testing (Walkup et al., 2002).

The CDC also advocates for prevention of HIV transmission related to HCV and STIs (Renton et al., 1998; Workowski et al., 2002). Reduced transmission of other STIs and BBVs, and thus HIV, is achievable by a broad screening approach, adding to the benefits of screening.

Education is also helpful for secondary prevention methods. Lacey et al (2007) found that the background HCV testing level of 9% improved to 18% with the advent of HCV education provided to patients. There is a potential for similar improvements at Cumberland Hospital regarding HCV detection and management with similar interventions.

7.3.3 Tertiary Prevention - Integrated Clinical Care Services

For many current patients prevention of infection, such as HCV, may be too late, but optimising health despite chronic illnesses can be achieved. It has been noted that, “Integration of services and co-management for mental health, substance use, primary medical care and hepatology/ID treatment will become the standard of care for ..populations (with SMI)...” (Freedman & Nathanson, 2009, p. 372). Freedman and Nathanson even add that the above problems need to be co-managed with all the other health issues for patients with SMI, such as diabetes and obesity that lead to other metabolic disorders. The authors clearly argue that there should be a focus on integrated services.

As already mentioned some psychiatric care settings have started, as already mentioned, comprehensive sexual health programmes. An example is the STIRR model (screening, testing, immunisation, risk reduction and referral) that reported increased screening, vaccination and reduced alcohol abuse. Risky sex and needle sharing did not improve but the researchers considered that patients with SMI
benefited (Rosenberg et al., 2010). HIV risk reduction programmes have been evaluated for cost-effectiveness. Programmes tailored to patients with SMI are more resource intensive and more costly but can still be cost-effective (Pinkerton, Johnson-Masotti, Otto-Salaj, Stevenson, & Hoffmann, 2001). The STIRR researchers still felt that their intervention was “…efficacious in providing a basic, best-practice package of interventions for clients with co-occurring disorders” (Rosenberg et al., 2010, p. 885). The results of this thesis lead to the recommendation that patients have access to comprehensive healthcare programmes for sexual, physical and psychiatric well-being.

HCV prevention and management will be key attention areas for patients with SMI and should be integrated with general psychiatry care. Although there have not been any descriptions of unique HCV risk-reduction strategies and cost benefit analysis for patients with SMI, it may be that we can extrapolate from reviews of HCV prevention in injecting drug users generally. HCV prevention strategies are multifaceted and focus on IDU activities as well as therapies for substance abuse (Freedman & Nathanson, 2009). Transmission can be reduced by (i) preventing uptake of any IDU activities, (ii) shortening IDU duration of use, (iii) vaccinations against other hepatitis viruses, (iv) encouragement of NSP services, needle cleansing with provision of bleach (v) referral for treatment such as methadone maintenance. Prevention services would potentially provide the greatest benefit if they were focused on younger persons or newer persons commencing IDU activities and for those at risk of relapse, but not yet HCV infected.

There has been the successful development of other integrated services such as dual diagnosis management of substance abuse and SMI, by psychiatrists. In the US triple disease management with the inclusion of HIV has been developed (Douaihy et al., 2003). So far most work, particularly for HCV therapy, has been limited to those with severe depression and not illnesses such as schizophrenia (Freedman & Nathanson, 2009). In Australia (Matthews, 2012), and in the USA (Mistler, Brunette, Marsh, Vidaver, Luckoor et al., 2006; Mistler, Brunette, Rosenberg, Vidaver, Luckoor et al., 2006), there have been patients with stable schizophrenia that have been able to successfully complete HCV therapy. In the next few years HCV therapy
will have interferon-free combinations of direct-acting antiviral regimens (Dore, 2012). The new regimes have enhanced tolerability, simplified dosing schedules and monitoring protocols, which will make them an attractive option for patients with SMI (Dore, 2012) and open up more options for integrated and holistic care for patients with SMI.

**7.4 FUTURE RESEARCH**

Larger and more representative studies are needed to replicate the findings from Study One and Study Two. This will increase generalisability and minimise potential selection bias, as has been found from other studies of hospital patients (Berkson, 1946). Study One part of this thesis has provided a snapshot of risk for patients that needs to be elaborated and Study Two has implied that appropriate clinician behaviours are achievable. The problem of STI and BBV risks requires more research to provide further insight into the direction and nature of associations in the population of individuals with SMI. Future research should consider larger projects across other health care settings and take into account research issues that limited the current research of this thesis.

Research such as a prospective observational study of a young cohort, newly diagnosed with SMI at inpatient and outpatient community health services, would be ideal. Regular review of sexual, substance use, cognitive, psychiatric effects and the associated life circumstance changes related to SMI should be observed. Future research needs to be conducted in younger age groups because STI and BBV epidemiology identifies that young persons are most at risk for all infections because of new sexual and drug use activity. This study hints that the bulk of risk has already happened for patients, probably when younger, as the initial years of an SMI diagnosis may be the most chaotic.

The observational study could review doctors’ assessment behaviours, in line with patients’ needs. Research that measures doctors’ behaviours before and after education may help identify the most effective educational methods.
One of the major implications for future research relates to the problem of sampling. Ideally, incorporation of screening by all healthcare workers in psychiatry will allow a better evaluation of the extent of the problem in similar future research projects. Another measure to improve the sample is for patients to be enrolled directly for inclusion in projects and best done with patient education and involvement.

Future research could consider a socio-metric or whole network study approach, enrolling all members of the network and defining interrelationships and transmission risk. Such an approach, though difficult would describe the risks for patients with SMI, in this unique risk group, at risk as a substance and sexual network. Network analysis of injecting behaviour exploring sources of drugs, situations of drug use including drug-sharing partners would in particular provide valuable knowledge for planned health programmes. Studies should review IDU activity, such as frequency of injecting, duration of injecting, and drug preferences. If possible deciphering the mix of drug and sexual partners would be very insightful. Further information would help define if the risk of HCV is exacerbated because of SMI.

Future work must incorporate education for patients, staff and the community of heightened risk. Education will provide a useful tool for patients with knowledge of the risk for themselves and their contacts, and a means of minimising risk of harm (Woolf & Jackson, 1996).

7.5 CONCLUSION

Patients, part of this research, are a SMI risk network with mixed sexual, substance and incarceration risks for themselves and their partners. Priority healthcare programmes, are needed, as well as more research that is on a larger scale, in community settings, with young people and with an emphasis on substance use behaviours.

For now, programmes that implement prevention and detection as well as specialist referral and integrated care, at least for HCV therapy, may lessen the health burden
(Cohn & Sernyak, 2006b; Seccull et al., 2006). Vigilance is needed to recognise and contain any new STI or BBV threats to this vulnerable population of patients with SMI.

Psychiatrists can and should play an integral role. What has been described as, “psychiatry’s unique emphasis on a therapeutic alliance based in a comprehensive view of the patient” (Price & Goyette, 2003, p. 262) provides a strong starting point for assessing both psychological and physical health including STIs, BBVs and especially HCV.
REFERENCES


Matthews, G. (2012). HCV Treatment for cases with schizophrenia (personal communication).


SPSS IBM. (2009). PASW Statistics 18 [Programme]: IBM.


APPENDICES

Appendix 1: Study One: Ethics Approval - Risk of STIs & BBVs For Patients with SMI

INITIAL APPLICATION APPROVAL
In reply please quote: HE05/269
Further Enquiries Phone: 4221 4457

3 November 2006
Dr Katerina Lagois
158 Maradee St
Panmatta NSW 2150

Dear Dr Lagois,

Thank you for your letter of 1 October 2006 responding to the HREC review of the application detailed below. I am pleased to advise that the application has been approved.

Ethics Number: HE05/269
Project Title: Mental Health Problems and risk of blood borne viruses and sexually transmitted infections.
Name of Researchers: Dr Katerina Lagois, Professor Frank Deane, A/Professor Rehan Jusayrly
Approval Date: 2 November 2006
Expiry Date: 1 November 2007

The research has been reviewed in accordance with the National Statement on Ethical Conduct in Research Involving Humans and approval of this project is conditional upon your continuing compliance with this statement. As evidence of continuing compliance, the Human Research Ethics Committee requires that researchers immediately report:

- proposed changes to the protocol including changes to investigators involved
- serious or unexpected adverse effects on participants
- unforeseen events that might affect continued ethical acceptability of the project.

You are also required to complete monitoring reports annually and at the end of your project. These reports are sent out approximately 6 weeks prior to the date your ethics approval expires. The reports must be completed, signed by the appropriate Head of School, and returned to the Research Services Office prior to the expiry date.

The University of Wollongong/SE Sydney and Illawarra Area Health Service Health and Medical HREC is constituted and functions in accordance with the NHMRC National Statement on the Ethical Conduct in Research Involving Humans.

Yours Sincerely,

A/Professor Arthur Jenkins
Chairperson
Human Research Ethics Committee

cc: Professor Frank Deane, Illawarra Institute for Mental Health
Our Ref: HZ/TG SAC2005/11/4.22(2244)
Date: 16 November, 2005

Dr Katerina Lagios
Parramatta Sexual Health Clinic
158 Marsden Street
Parramatta 2150

Dear Dr Lagios

Research Proposal: "Mental Health Problems and risk of blood-borne viruses and sexually transmitted infections"

Your research proposal was reviewed at the Westmead Scientific Advisory Committee meeting held on 14 November 2005.

I am pleased to advise you that our committee has agreed to the scientific validity of the project and that your proposal has now been forwarded to the Human Research Ethics Committee for further consideration of the ethical issues. The committee wishes you all the best for your ongoing research at Westmead.

Please quote reference number SAC2005/11/4.22(2244) in all future correspondence.

Yours sincerely

A/Prof Hans Zoellner
Secretary
Westmead Scientific Advisory Committee
14 December, 2005

Dr Katerina Lagios
Parramatta Sexual Health Clinic
158 Marden Street
Parramatta 2150

Dear Dr Lagios,

Research Proposal: ‘Mental Health Problems and risk of blood-borne viruses and sexually transmitted infections’

Thank you for submitting the above project which was considered by the Sydney West Area Health Service Human Research Ethics Committee at its meeting held on 29 November 2005. The HREC is constituted and operates in accordance with the National Health and Medical Research Council’s National Statement on Ethical Conduct In Research Involving Humans (June 1999) and the CPMP/ICH Note for Guidance on Good Clinical Practice.

1. I am pleased to advise that the Committee has granted ethical approval of the above project conditional upon the psychiatrist making the approach to patients. He/she must explain the study and ask if they would be happy to talk to the researcher about the study with a view to participating. The decision by the psychiatrist that the patient would be an appropriate participant should be documented in the medical notes.

2. The following amendments should be made to the Participant Information and Consent Forms Version 1 dated 16 October 2005:

   i. The study title should be on each page.

   vi. On Page 1 of 7 under the heading Who will be invited to enter the study? the wording should be “You have been invited to enter this study because you are a patient at Cumberland Hospital and have been diagnosed with a severe mental illness.”

   vii. On Page 2 of 7 under the heading Are there any risks? each risk should have a dot point. After the first sentence, participants should be informed how their distress or discomfort will be managed.

   viii. The words “The blood sample ... should begin the next dot point and the words ‘and the risk of infection at the site of the needle insertion’ should be added after the words ‘... and sometimes bruising’.”
On Page 3 of 7 the wording under the heading Confidentiality should be the SWAHS standard wording, i.e. 'All aspects of this study, including results, will be strictly confidential and only the researchers will have access to your personal information.' Any publication of the results from this study will only use unidentifiable information. Participants should be advised however that the doctor has a legal obligation to report transmissible diseases to the Department of Health.

There should be a section headed Compensation and worded 'Every reasonable precaution will be taken to ensure your safety during the course of this study. If you suffer any serious injuries or complications as a result of your participation in this study, you should, as soon as possible, contact the study doctor who will arrange appropriate medical treatment free of charge in any Australian public hospital. Your participation in this study will not affect any right to compensation that you might have under statute or common law for any serious injuries or complications resulting from this study, caused by unsafe drugs or equipment or by negligence.'

Under the heading Do you have a choice? sixth line, the word 'date' should be added after the words '... from the study at a later'.

The time given for completion of the survey is 30 minutes, however it is 48 pages of questions, many on sensitive matters, and it would be doubtful if 30 minutes is a realistic time.

The survey should have a version number and date and the pages should be numbered 'Page 1 of ...... etc.

The following documentation has been reviewed and approved by the HREC:

- Protocol dated 17 October 2006.
- Survey
- ICPMR R&D Specimen Management Policies and Procedures Version 1.5 expiry date 31 December 2005 including Questionnaire. When available, an updated version should be submitted.

Please note the following conditions of approval:

- The approval of this research proposal applies to the ethical content of the study and individual arrangements should be negotiated with heads of departments in those situations where the use of their resources is involved (e.g. nursing etc).
- The HREC has the delegated authority to approve the commencement of this research on behalf of Sydney West Area Health Service.
- Approval is given subject to your acceptance of the Royal Australasian College of Physicians Guidelines on ethical relationships with the Pharmaceutical Industry.
- The Principal Investigator must immediately report anything which might warrant review of ethical approval of the project in the specified format, including any serious or unexpected adverse events and any unforeseen events that might affect continued ethical acceptability of the project.
- The Principal Investigator must report proposed changes to the research protocol, conduct of the research, or length of HREC approval to the HREC for review.
- The Principal Investigator must notify the HREC of the date of commencement of the study and recruitment of subjects.
- The Principal Investigator must inform the HREC, giving reasons, if the study is discontinued before the expected date of completion.
- The Principal Investigator must provide an annual report to the HREC and a final report at completion of the study, in the specified format. HREC approval is valid for 12 months from the date of final approval and continuation of the HREC approval beyond the initial 12 month approval period, is contingent upon submission of an annual report each year. A copy of the Annual / Final Research Report Form is attached and can be obtained electronically from the Research Office on request.
3.

It should be noted that compliance with the ethical guidelines is entirely the responsibility of the researcher.

A copy of the HREC’s Standard Operating Procedures is attached.

You are reminded that from 1 July 2005 the International Committee of Medical Journal Editors (ICMJE - which includes among many others, the Medical Journal of Australia, the Lancet and The New England Journal) will not publish the results of any clinical trials not included on an authorised Clinical Trial Registry (NHMRC advice attached). This information should be passed on to the sponsor.

Please return the attached copy letter, signed and dated in acknowledgment, to the Research Office, together with the Participant Information and Consent Forms revised as above, ensuring all amendments are highlighted and an updated version number and date appears at the foot of each page. The study may not begin until final approval is given and the revised forms are returned to you marked ‘Approved’.

Should you have any queries about your study, please contact the HREC Executive Officer or the HREC Secretary through the Research Office on 9845 8183. The HREC membership details and standard forms are available by telephoning the Research Office or emailing researchoffice@westgate.wl.usyd.edu.au.

In all future correspondence concerning this study, please quote your approval number HREC2005/11/4.22(2244).

Yours sincerely

Dr Howard Smith
Secretary
Sydney West Area Health Service
Human Research Ethics Committee

I accept, acknowledge and will comply with the conditions of approval for this project and acknowledge that compliance with the ethical guidelines is my responsibility.

Chief Investigator __________________________ Date __________________________

178
Appendix 2: Study One: Participant Information Sheets & Consent Forms with SWAHS HIV Consent Form

Mental Health Problems and Risk of Blood-Borne Viruses and Sexually Transmitted Infections

University of Wollongong

PARTICIPANT INFORMATION

Title of Project: MENTAL HEALTH PROBLEMS AND RISK OF BLOOD-BORNE VIRUSES AND SEXUALLY TRANSMITTED INFECTIONS.

Name(s) of Investigator(s):
Dr Katerina Lagios
Parramatta Sexual Health Clinic, Sydney West Area Health Service ph 9643 3124

Professor Frank Deane
Director Illawarra Institute for Mental Health, University of Wollongong Ph. 02 4221 4523

What is the purpose of the study?:
We want to see if a mental health problem puts you at risk for particular infections from sex or blood contact. Previous studies show that people with mental health problems are more likely to engage in sexual and drug-taking behaviours that put them at greater risk for getting infections such as Hepatitis C. To find out what the risks of infection are for people with mental health problems we will be assessing the level of sex, drug and health care behaviours and checking this against your levels of sexually and blood transmitted infections. We will be comparing the risk factors and rates of infection to the rates found in the general Australian population. We will also be looking to see if particular risk behaviours are more likely to be associated with particular infections. This information will help us in the future to decrease the risks of infections from sex or blood contact amongst people who have mental health problems.

There can be a benefit to you if you wish to participate in this study as health problems may be detected that might otherwise not have been evident. If an infection is detected you will receive the appropriate medical care. If you do not have any infections detected then you will still benefit as you will be provided with prevention strategies of education and vaccinations.

Who will be invited to enter the study?:
You have been invited to enter this study because you are a patient at Cumberland Hospital and have been diagnosed with a severe mental illness. This study is a research project involving persons that are patients at Cumberland Hospital aged over 18 years with a diagnosis of a severe mental illness. Only those patients who have been assessed by their psychiatrist as capable of participating are eligible to enter the study. It is expected that about 200 people will be part of this study.

What will happen on the study?:
1. You will get information about this study from the psychiatrist looking after you. Only the psychiatrist looking after you will approach you about this study. He or she will explain the study and ask if you would be happy to talk to the researchers about the study with a view to participating. The psychiatrist will write in your medical notes if it is appropriate for you to participate and let the researchers know that you are interested.

2. You need to give permission.
If you are interested, a researcher will explain the study in detail to you and answer any questions you have about the study. You will need to provide written consent if you wish to participate.

3. The first part of the study will be an interview with a researcher (Part 1).
This occurs after you have signed a consent form for this interview. The interview will be done in private in a consultation room in the ward. The interview should take about 30 minutes of your time. You will be asked questions about your medical history, psychiatric history, sexual history, substance use (drug and alcohol) and preventative health care behaviour such as previous tests for HIV or vaccinations. You may

Participant’s Name
Signature
Date


Page 1 of 10

179
have had similar questions asked when you were admitted to Cumberland Hospital. However, you may still find some of these questions quite private and sensitive. You can choose not to answer any question.

4. The interview answers will be used for research purposes.
Your responses to the interview questions of risk behaviours will be stored securely by the researchers at Parramatta Sexual Health Clinic. The results will not be stored in your medical record notes to protect your privacy.

5. The second part of the study will be blood and urine tests to check for infections (Part 2). This part will be looking at the level of sexually transmitted and blood transmitted infections after a second consent form for blood and urine tests is signed by you. These tests are often checked when a patient is at Cumberland Hospital and it may be that you have already had a test for HIV, hepatitis B, hepatitis C, syphilis, chlamydia or gonorrhoea in the last 3 months. If you have had a test in the last 3 months then you will not need another test for research purposes. Instead we would like your permission to access the results of these prior tests from your medical record.
If you have not had a recent test then you will be invited to have these tests. HIV, hepatitis B, hepatitis C, syphilis tests are done on blood samples (about 10mls - a dessertspoon full) and chlamydia and gonorrhoea are tested by urine samples (also about 10mls). You will receive information about each infection before a test is done (this is called pre-test counselling). If you are having an HIV antibody test you will receive this pre-test counselling and you will need to sign a third consent form specific for HIV testing as this is the hospital policy. The tests done as part of this study will only use coded personal information, not your full name. This will maintain confidentiality and comply with the law.

6. Blood tests will then be collected by the blood collecting nurses of Cumberland hospital.
For Urine tests you will be given a yellow topped jar and asked to go to the toilet and to provide a urine test collecting the very first 10 ml of urine.
You do not have to have blood nor urine tests if you do not want to.

7. Blood samples and urine samples will be sent to the pathology service.
Your samples will be labelled with first two letters of your first name and the first two letters of your surname, date of birth and study number.

8. Results of tests will be available in 1 week which is the regular time frame for receiving results. A copy of your urine and or blood test will be sent to your psychiatrist who will discuss your results with you. The results of your urine or blood test will be both stored by the researchers at Parramatta Sexual Health Clinic and in your medical record. If a test result indicates an infection and further health care is needed then the psychiatrist looking after you will provide treatment or refer you to another doctor. The psychiatrist will discuss and organise with you the need to have any other person that may have been in contact with you, and may also be at risk of an infection, to be also assessed.

5. Findings from the study
The results from this study will be written up in journal articles, a thesis and will be presented at scientific conferences. No participating individual will be able to be identified because only the results of groups of people will be reported and information that is analysed will not use any identifying details. You are able to receive a report at the end of the study about the key findings from Cumberland Hospital.

Are there any risks?
• Some of the interview questions are personal and may cause some distress or discomfort for some people. The researchers are health care professionals that have worked in the areas of sexual health and mental health and will be able to provide support to you with counselling, providing information, answering your questions. If required the researchers will organise with your psychiatrist for further counselling and health care.
• The blood sample will be collected from a vein, by using a needle and syringe. This may cause a little pain at the time of collection, sometimes bruising and there may be a risk of infection at the site of the needle insertion. The blood collection will be done by the blood collecting nurses of Cumberland.
hospital who are skilled at blood collecting and follow strict guidelines to minimise risks of injury and infection. If a problem does occur the researchers will organise with your psychiatrist for further medical care.

Confidentiality
All aspects of this study, including results, will be strictly confidential and only the researchers will have access to your personal information. Any publication of the results from this study will only use unidentifiable information.

There are some limits to confidentiality:
• If you provide information during the interview that indicates you may be a danger to yourself or others the researchers will need to let treating staff (e.g., psychiatrist) know so we can prevent harm to you or anyone else.
• If it is found that you have an infection that might be passed on to others the researchers will advise and encourage you to let close contacts know about this so they can get the appropriate care.
• Some sexually transmitted infections need to be reported to the NSW Health Department (review policy of each of details check ICPMR).
• The interview questions will only be asking about sex between adults and about previous drug use. We will not report prior drug use to the police. If you provide information about other illegal activities such as dealing drugs, sex with minors or murder then this will need to be reported to the police.

Compensation
Every reasonable precaution will be taken to ensure your safety during this study. If you suffer any serious injuries or complications as a result of your participation in this study, you should, as soon as possible, contact the study doctor who will arrange appropriate medical treatment free of charge in any Australian public hospital. Your participation in this study will not affect any right to compensation that you might have under statute or common law for any serious injuries or complications.

Do you have a choice?
Your participation in this study is entirely voluntary.
• You may choose not to join the study, or to only participate in some parts of the study.
• You may choose to be involved in the interview (Part 1) and/or have blood and urine samples taken to check for infections (Part 2).
• If you are in hospital as an ‘involuntary patient’, you may refuse to participate in the research project.
• Refusing to participate in the study will not affect the medical care you would normally receive.
• Even if you agree to participate you may decide to withdraw from the study at a later date.

However, once tests have been conducted we will need to pass on these results so you receive the best medical care possible.

Complaints
If you have any concerns about the conduct of the study, or your rights as a study participant, you may contact:
Westmead Hospital Patient Representative,
Ms Jillian Gwyne Lewis, Telephone No 9845 7014 or email jillan.lewis@wgahs.nsw.gov.au
Or
The Ethics Officer – University of Wollongong ph 2 4221 3366 or email eves@unsw.edu.au

Contact details: If you have any problems while on the study, please contact

Working hours Dr Lagios Telephone No: 9843 3124
After hours Dr Lagios Telephone No: 0417 043 782
OR contact the psychiatrist looking after you

Participant’s Name Signature Date

CONSENT TO PARTICIPATE IN RESEARCH

Title of Research Project:
MENTAL HEALTH PROBLEMS AND RISK OF BLOOD-BORNE VIRUSES AND SEXUALLY TRANSMITTED INFECTIONS

PART 1 – Consent to Interview

Name of Researcher: Dr Katerina Lagios

1. I understand that the researcher Dr Katerina Lagios will conduct this study MENTAL HEALTH PROBLEMS AND RISK FOR BLOOD-BORNE VIRUSES AND SEXUALLY TRANSMITTED INFECTIONS in a manner conforming with ethical and scientific principles set out by the National Health and Medical Research Council of Australia and the Good Clinical Research Practice Guidelines of the Therapeutic Goods Administration and Sydney West Area Health Service Human Research Ethics Committee and University of Wollongong Human Research Ethics Committee.

2. I acknowledge that I have read, or have had made to me the Participant Information Sheet relating to this study. I acknowledge that I understand the Participant Information Sheet. I acknowledge that the general purposes, methods, demands and possible risks and inconveniences which may occur to me during the study have been explained to me by __________________________ (“the researcher”) and I being over the age of 18 years acknowledge that I understand the general purposes, methods, demands and any possible risks and inconveniences which may occur during the study.

3. I acknowledge that I have been given time to consider the information and to seek other advice.

4. I acknowledge that refusal to take part in this study will not affect the usual treatment of my condition.

5. I acknowledge that I am volunteering to take part in this study and I may withdraw at any time.

6. I acknowledge that this research has been approved by the Sydney West Area Health Service Human Research Ethics Committee and University of Wollongong Human Research Ethics Committee.

7. I acknowledge that I have received a copy of this form and the Participant Information Sheet, which I have signed.

8. I understand the information provided in the information sheet and I consent to having an interview about my sexual, drug and health care behaviours.

Name of participant ___________________________ Date of Birth ______________

Address of participant ___________________________

Name of parent or guardian (where applicable) ___________________________

Address of parent or guardian (where applicable) ___________________________

Signature of participant ___________________________ Date: ______________

Signature of parent or guardian (where applicable) ___________________________ Date: ______________

Signature of researcher ___________________________ Date: ______________

Participant’s Name ___________________________ Signature ___________________________ Date: ______________

INDEPENDENT WITNESS

I, ___________________________ (name of independent witness)
of ___________________________ hereby certify as follows:

1. I was present when ___________________________ appeared to read or had read to him/her a document entitled Participant Information Sheet, or I was told by ___________________________ (the participant) that he/she had read a document entitled Participant Information Sheet. (Delete as applicable)

2. I was present when ___________________________ (the researcher) explained the general purposes, methods, demands and the possible risks and inconveniences of participating in the study to the participant. I asked the participant whether he/she had understood the Participant Information Sheet and understood what he/she had been told and he/she told me that he/she did understand.

3. I observed the participant sign the consent to participate in research and he/she appeared to me to be signing the document freely and without duress.

4. The participant showed me a form of identification which satisfied me as to his/her identity.

5. I am not involved in any way as a researcher in this project.

6. (Delete this clause if not applicable) I was present when ___________________________ (the interpreter) read the Participant Information Sheet to the participant in the ___________________________ language. I certify that when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study that what was said by both the researcher and the participant was translated by the interpreter from the English language into the language and vice versa. When I spoke to the participant what I said and what the participant said was translated by the interpreter from the English language into the ___________________________ language and vice versa.

Name of independent witness ___________________________

Address ___________________________

Signature of independent witness ___________________________ Date: ___________________________

Relationship to participant of independent witness ___________________________

Participant's Name ___________________________ Signature ___________________________ Date: ___________________________


Page 5 of 10
CONSENT TO PARTICIPATE IN RESEARCH

Title of Research Project:
MENTAL HEALTH PROBLEMS AND RISK OF BLOOD-BORNE VIRUSES AND SEXUALLY TRANSMITTED INFECTIONS
PART 2 – Consent to Blood and Urine Tests
Or Results of Recent tests done

Name of Researcher: Dr Katerina Lagios

1. I understand that the researcher Dr Katerina Lagios will conduct this study MENTAL HEALTH PROBLEMS AND RISK FOR BLOOD-BORNE VIRUSES AND SEXUALLY TRANSMITTED INFECTIONS in a manner conforming with ethical and scientific principles set out by the National Health and Medical Research Council of Australia and the Good Clinical Research Practice Guidelines of the Therapeutic Goods Administration and Sydney West Area Health Service Human Research Ethics Committee and University of Wollongong Human Research Ethics Committee.

2. I acknowledge that I have read, or have had read to me the Participant Information Sheet relating to this study. I acknowledge that I understand the Participant Information Sheet. I acknowledge that the general purposes, methods, demands and possible risks and inconveniences which may occur to me during the study have been explained to me by ___________________________ ("the researcher") and I, being over the age of 18 years, acknowledge that I understand the general purposes, methods, demands and possible risks and inconveniences which may occur during the study.

3. I acknowledge that I have been given time to consider the information and to seek other advice.

4. I acknowledge that refusal to take part in this study will not affect the usual treatment of my condition.

5. I acknowledge that I am volunteering to take part in this study and I may withdraw at any time.

6. I acknowledge that this research has been approved by the Sydney West Area Health Service Human Research Ethics Committee and University of Wollongong Human Research Ethics Committee.

7. I acknowledge that I have received a copy of this form and the Participant Information Sheet, which I have signed.

8. I understand the information provided in the information sheet and I consent to having blood and/or urine samples taken. If I have had such tests done in the last 3 months I consent to the researcher accessing the results of these prior tests from my medical record.

Name of participant ___________________________ Date of Birth ___________________________

Address of participant ___________________________ ___________________________

Name of parent or guardian (where applicable) ___________________________ ___________________________

Address of parent or guardian (where applicable) ___________________________ ___________________________

Signature of participant ___________________________ Date ___________________________

Signature of parent or guardian (where applicable) ___________________________ Date ___________________________

Signature of researcher ___________________________ Date ___________________________

Signature of witness ___________________________ Date ___________________________

Participant’s Name ___________________________ Signature ___________________________ Date ___________________________

INDEPENDENT WITNESS

I, ____________________________ (name of independent witness)
of ____________________________ hereby certify as follows:

9. I was present when ____________________________ ("the participant") appeared to
read or had read to him / her a document entitled Participant Information Sheet, or
I was told by ____________________________ ("the researcher") that he/she had read a
document entitled Participant Information Sheet ("Delete as applicable")

10. I was present when ____________________________ ("the participant") appeared to be
explained the general purposes, methods, demands and the possible risks and inconveniences of participating in the study to
the participant. I asked the participant whether he/she had understood the Participant Information Sheet and understood what he/she had been told and he/she told me that he/she did understand.

11. I observed the participant sign the consent to participate in research and he/she appeared to me to be
signing the document freely and without duress.

12. The participant showed me a form of identification which satisfied me as to his/her identity.

13. I am not involved in any way as a researcher in this project.

14. (Delete this clause if not applicable) I was present when ____________________________ ("the
researcher") read the Participant Information sheet to the participant in the ________________ (here
insert appropriate language) language. I certify that when the researcher explained the general purposes,
methods, demands and possible risks and inconveniences of participating in the study that what was said
by both the researcher and the participant was translated by the interpreter from the English language
into the ________________ language and vice versa. When I spoke to the participant what I said and what
the participant said was translated by the interpreter from the English language into the
____________________ language and vice versa.

Name of independent witness

Address ____________________________

Signature of independent witness ____________________________ Date: ____________________________

Relationship to participant of independent witness ____________________________

Participant’s Name ____________________________ Signature ____________________________ Date: ____________________________
CONSENT TO PARTICIPATE IN RESEARCH

Title of Research Project:
MENTAL HEALTH PROBLEMS AND RISK OF BLOOD-BORNE VIRUSES AND SEXUALLY TRANSMITTED INFECTIONS
PART 3 HIV Consent get WSAHS

Name of Researcher: Dr Katerina Lagios

1. I understand that the researcher Dr Katerina Lagios will conduct this study MENTAL HEALTH PROBLEMS AND RISK FOR BLOOD-BORNE VIRUSES AND SEXUALLY TRANSMITTED INFECTIONS in a manner conforming with ethical and scientific principles set out by the National Health and Medical Research Council of Australia and the Good Clinical Research Practice Guidelines of the Therapeutic Goods Administration and Sydney West Area Health Service Human Research Ethics Committee and University of Wollongong Human Research Ethics Committee.

2. I acknowledge that I have read, or have had read to me the Participant Information Sheet relating to this study. I acknowledge that I understand the Participant Information Sheet. I acknowledge that the general purposes, methods, demands and possible risks and inconveniences which may occur to me during the study have been explained to me by the researcher ("the researcher") and I, being over the age of 18 years acknowledge that I understand the general purposes, methods, demands and possible risks and inconveniences which may occur during the study.

3. I acknowledge that I have been given time to consider the information and to seek other advice.

4. I acknowledge that refusal to take part in this study will not affect the usual treatment of my condition.

5. I acknowledge that I am volunteering to take part in this study and I may withdraw at any time.

6. I acknowledge that this research has been approved by the Sydney West Area Health Service Human Research Ethics Committee and University of Wollongong Human Research Ethics Committee.

7. I acknowledge that I have received a copy of this form and the Participant Information Sheet, which I have signed.

8. I understand the information provided in the information sheet and I consent to having blood and/or urine samples taken. If I have had such tests done in the last 3 months I consent to the researcher accessing the results of these prior tests from my medical record.

Name of participant __________________________ Date of Birth __________________________

Address of participant ______________________________________________________________

Name of parent or guardian (where applicable) ____________________________________________

Address of parent or guardian (where applicable) _________________________________________

Signature of participant __________________________ Date: __________________________

Signature of parent or guardian (where applicable) __________________________ Date: __________

Signature of researcher __________________________ Date: __________________________

Signature of witness __________________________ Date: __________________________

Participant's Name __________________________ Signature __________________________ Date __________________________

Version No 2 dated: 7th September 2006. Page 8 of 10
INDEPENDENT WITNESS

I, ____________________________________________ (name of independent witness)
of ____________________________________________ hereby certify as follows:

9. I was present when ____________________________________________ ("the participant") appeared to read or had read to him/her a document entitled Participant Information Sheet, or I was told by ____________________________________________ ("the participant") that he/she had read a document entitled Participant Information Sheet ("Delete as applicable)

10. I was present when ____________________________________________ ("the researcher") explained the general purposes, methods, demands and the possible risks and inconveniences of participating in the study to the participant. I asked the participant whether he/she had understood the Participant Information Sheet and understood what he/she had been told and he/she told me that he/she did understand.

11. I observed the participant sign the consent to participate in research and he/she appeared to me to be signing the document freely and without duress.

12. The participant showed me a form of identification which satisfied me as to his/her identity.

13. I am not involved in any way as a researcher in this project.

14. (Delete this clause if not applicable) I was present when ____________________________________________ ("the interpreter") read the Participant Information sheet to the participant in the ____________________________ (here insert appropriate language) language. I certify that when the researcher explained the general purposes, methods, demands and possible risks and inconveniences of participating in the study that what was said by both the researcher and the participant was translated by the interpreter from the English language into the ____________________________ language and vice versa. When I spoke to the participant what I said and what the participant said was translated by the interpreter from the English language into the ____________________________ language and vice versa.

Name of independent witness ____________________________________________

Address ____________________________________________

Signature of independent witness ____________________________________________ Date: ____________

Relationship to participant of independent witness ____________________________________________

Participant's Name ____________________________________________ Signature ____________ Date ____________

I ____________________________ do agree to have my blood tested for the possible detection of the HIV antibody.

I have been counselled in relation to pre and post testing and I understand what has been explained.

____________________________ Date / /

Name of person being tested ____________________________ Signature ____________________________

Witnessed by:

____________________________ ____________________________

Medical officer’s name (print) Medical officer’s signature

____________________________

Designation Date / /

* All information on this form is confidential. Please ensure Counselling Check List (below) is completed.

Counselling Check List Please tick ✓

Pre blood test

1. Reasons for the test
   - [ ] Self-requested
   - [ ] Recent risk factors
   - [ ] Other risk factors
   Comments: ___________________________________________________________

2. [ ] Window period explained

3. [ ] Legal responsibilities explained eg Life insurance, Travel visas

4. Safe practices eg, breast feeding, avoiding pregnancy, safe sex, safe IUD usage

Post blood test

1. If result is negative
   - [ ] Repeat test after 3 months (window period)
   Comments: __________________________________________________________
   - [ ] Indications for referral

2. If result is positive
   - [ ] Medical referral
   - [ ] Support group referral
   - [ ] Local group/s referral
   - [ ] Area group/s
   - [ ] Area reporting
   - [ ] Follow-up counselling
   - [ ] Discuss current and future practices
   Comments: __________________________________________________________

3. Safe practices: □ Discuss and explained

Participant’s Name ____________________________ Signature ____________________________ Date ____________________________

Appendix 3: Study One: Questionnaire

Study ID Number: 
Interviewer: 
Date: 

DEMOGRAPHICS Identification Data

Name: 
QDEM2: Gender: 
QDEM 4: DOB: 
QDEM5: COB: 
QDEM6: ATSI: 
QDEM8: Language spoken at home: 
QDEM9: What is the postcode of the place you live in? 
QDEM21: In terms of legal marital status, are you ... ? (Interviewer reads out options).

PSYCHIATRIC DIAGNOSIS

QPS: Main Psychiatric Diagnosis: 
QPSO: Other Diagnoses: 
QPS1stDX: Year first diagnosed: 
QPSA: Admission Date: 
QPSANo: Number of previous admissions: 
QPSM: Medication: 
QMO: Attending MO:
Study ID Number:

SEXUAL IDENTITY

QSID2: Do you think of yourself as (hetero, homo, bisexual, not sure, other, refused)?
QSID4: Which of these statements best describes your sexual experiences?

Never had sex – confirm if penetrative only or other non-penetrative sex and go to Health Care Behaviour

SEXUAL ACTIVITY WITH MEN EVER.
(Based on gender and sexual experience)

QSWM1V: In your whole life, how many men have you had vaginal sex with?
QSWWLA:QSWMLA: With how many men have you had anal intercourse with?.
QSWM4:QSWM4: With how many men have you had oral sex with?.
QCDM1: Have you ever used condoms to have sex with a man?

SEXUAL ACTIVITY WITH WOMEN EVER.

QSWW1V: In your whole life, how many women have you had vaginal intercourse with?
QSWW1A: With how many women have you had anal intercourse with?
QSWW4:QSWW4: With how many women have you had oral sex with?.
QCDW1: Have you ever used condoms to have sex with a woman? (do not ask if female)

THE FOLLOWING - REGARD THE LAST 5 YEARS - SEX with MEN

QSWM9v: In the last 5 years (that is, since 2001), how many men have you had ‘vaginal’ sex with?
QSWM9a: In the last 5 years (that is, since 2001), how many men have you had ‘anal’ sex with?
QSWM12: In the last 5 years (that is, since 2001), how many men have you had ‘oral’ sex with?

THE FOLLOWING - REGARD THE LAST 5 YEARS - Sex with Women

QSWW9v: In the last 5 years (that is, since 2001), how many women have you had ‘vaginal’ sex with?
QSWW9a: In the last 5 years (that is, since 2001), how many women have you had ‘anal’ sex with?
QSWW12:QSWW9: In the last 5 years (that is, since 2001), how many women have you had ‘oral’ sex with?

THE FOLLOWING - REGARD THE LAST 12 MONTHS - SEX WITH MEN

QSWM17v: In the last 12 months, how many men have you had ‘vaginal’ intercourse with?
QSWM17a: In the last 12 months, how many men have you had ‘anal’ intercourse with?
QSWM20: In the last 12 months, how many men have you had ‘oral’ sex with?
QCDM2: Have you used condoms IN THE LAST 12 MONTHS to have sex with a man?

THE FOLLOWING - REGARD THE LAST 12 MONTHS - SEX WITH WOMEN

QSWW17v: In the last 12 months, how many women have you had ‘vaginal’ sex with?
QSWW17a: In the last 12 months, how many women have you had ‘anal’ sex with?
QSWW20:QSWW17: In the last 12 months, how many women have you had ‘oral’ sex with?
QCDW2: Have you used condoms IN THE LAST 12 MONTHS to have sex with a woman?
Study ID Number:

SEX WITH REGULAR PARTNERS

QREF1: QREM1: Do you currently have a regular sexual partner or partners?
QREM4: How many current regular male partners do you have?
QREF4: How many current regular female partners do you have?
QREM11:m: QREF11: How long have you been in this (first) relationship?
QREM11:X: Where did you meet?
QREM12: QREF12: How long had you known your partner before you had sex for the first time?
QREM15: QREF15: In this relationship, do you expect that your partner would have sex only with you?
QREM16: QREF16: In this relationship, do you expect that you would have sex only with him?
QREM20a: QREF20a: What form of contraception is being used?
QX: When was the last time you had sex with this regular partner?
QREM22: QREF22: How many times in the last 4 weeks have you had sex with your partner?

Q6MMa6: Q6MWa6: In the past 6 months how often did you have vaginal sex?
Q6MMa7: Q6MWa7: When did this how often was a condom used?
Q6MMa10x: Q6MWa10x: In the past 6 months how often did you have anal sex?
Q6MMa11x: Q6MWa11x: When did this how often was a condom used?
Q6MMa14: Q6MWa14: In the past 6 months how often did you have oral sex?
(repeat for second & third regular partners if applicable)

SEX WITH LAST SEXUAL PARTNER

QMRM1: QMRF1: When was the last time you had sex with any partner?
QMRM2: QMRF2: What is your relationship?
QX: Where/how did you meet?
QMRM5: QMRF5: How long had you known your partner before you had sex for the first time?
QMRM6: QMRF6: When was the first time you had sex with this partner?
QX: When was the last time you had sex with this partner?
QMRM7: QMRF7: How many times in the last 4 weeks have you had sex with this partner?
QMRM10: QMRF10: Last time you had sex, did you have penis-vagina sex?
QMRM11: QMRF11: Was a condom used?
QMRM14: QMRF14: Last time you had sex, did you have penis-anus sex?
QMRM15: QMRF15: Was a condom used?
QMRM18x: QMRF18: Last time you had sex, did you have oral-genital sex?
(Repeat for second & third most recent sexual partners)
Study ID Number:

SEX WITH MALE NON-REGULAR/CASUAL PARTNERS

Q6MM4: In the past 6 months how many OTHER men have you had sex?
QX: Where & how did you meet each?
Q6MM5: Did you have sex on more than one occasion? (for each)
Q6MMc6X: During the past 6 months how often did you have vaginal sex?
Q6MM7X: When did this how often was a condom used?
Q6MM9X: During the past 6 months how often did you have anal sex?
Q6MMc11X: When did this how often was a condom used?
Q6MMc14X: During the past 6 months how often did you have oral sex?

SEX WITH FEMALE NON-REGULAR/CASUAL PARTNERS

Q6MW4: In the past 6 months with how many OTHER women have you had sex?
QX: Where & how did you meet each?
Q6MW5: Did you have sex on more than one occasion? (for each)
Q6MWc6X: During the past 6 months how often did you have vaginal sex?
Q6MW7X: When did this how often was a condom used?
Q6MWc10X: During the past 6 months how often did you have anal sex?
Q6MWc11X: When did this how often was a condom used?
Q6MWc14/16: During the past 6 months how often did you have oral sex?

SEX PARTNERS DETAIL

QHIVE: Have you EVER had sex with an HIV +ve partner?
QHIVI2: Have you had sex with an HIV +ve partner IN THE LAST 12 MONTHS?
QIDUE: Have you EVER had sex with an IDU +ve partner?
QIDUI2: Have you had sex with an IDU +ve partner IN THE LAST 12 MONTHS?
QSMIE: Have you EVER had sex with a partner who had a severe mental illness?
QSMIMTE: Where did you meet?
QSMII2: Have you had sex with a partner who had a SMI IN THE LAST 12 MONTHS?
QSMIMMTI2: Where did you meet?
QBIE: Have you EVER had sex with a bisexual partner?
QBII2: Have you had sex with a bisexual partner IN THE LAST 12 MONTHS?
QCSWE: Have you EVER paid money for sex with a female sex worker?
QCSW12: Have you had sex with a sex worker IN THE LAST 12 MONTHS?
QMULTIIE: Have you EVER had sex with a partner that had many other partners?
QMULTI1I2: Have you had sex with partner that had many other partners IN THE LAST 12 MONTHS?
QOSE: Have you EVER had sex with a partner from overseas?
QOSCE: Which country (ies)?
QOSI12: Have you had sex with partner from overseas IN THE LAST 12 MONTHS?
QOSC12: Which country (ies)?
QGE: Have you EVER had sex with a partner who had been in gaol?
QGI2: Have you had sex with a partner who had been in gaol IN THE LAST 12 MONTHS?
Study ID Number:

SEX WORK – work in receiving payment

QSWK1RX: Have you ever been paid money for sex, including oral sex or manual stimulation?
QWWM1: In your whole lifetime, how many men have paid money for sex with you?
QWWM2: How old were you the first time a man paid money for sex with you?
QWWM8: Has a man paid money for sex with you in THE LAST 12 MONTHS?
QWWM9: In the last 12 months, how many men have paid money for sex with you?
QWWM12: In the last 12 months where have you done sex work?
QSWOEX: Has a man given you food, shelter or drugs in return for sex with you EVER?
QSWO12X: Has a man given you food, shelter or drugs in return for sex with you in THE LAST 12 MONTHS?

QSWVX: In the past 12 months how often did you have vaginal sex?
QSWVVCX: When did this how often was a condom used?
QSWAX: In the past 12 months how often did you have anal sex?
QSWACX: When did this how often was a condom used?
QSWOX: In the past 12 months how often did you have oral sex?

SEX WORK – contact of payment made

QSWK1PX: Have you ever paid anyone to have sex with you, including oral sex and manual stimulation?
QMCW1: Have you ever paid for sex with a female?
QMCW3: In your lifetime, how many women have you paid money to for sex?

QMCW9: Have you paid to have sex with a woman in THE LAST 12 MONTHS?
QMCW13: In THE LAST 12 MONTHS, how did you meet women you have paid for sex?
QCSWX: In the past 12 months how often did you have vaginal sex?
QCSWVCX: Was a condom used?
QCSWAX: In the past 12 months how often did you have anal sex?
QCSWACX: When did this how often was a condom used?
QCSWOX: In the past 12 months how often did you have oral sex?

QMCMI: Have you ever paid for sex with a male?
QMCM3: In your lifetime, how many males have you paid money to for sex?

QMCMI8: Have you paid a male for sex in THE LAST 12 MONTHS?
QMCMI12: In THE LAST 12 MONTHS, how did you meet males you have paid for sex?
QCSWMAX: In the past 12 months how often did you have anal sex?
QCSWMACX: When did this how often was a condom used?
QCSWMOX: In the past 12 months how often did you have oral sex?
QMC11: Have you ever paid for sex with a transgender or trannie?

QSWK2: Have you ever BEEN PAID money for sex with a man?
QWWM1: In your whole lifetime, how many men have paid money for sex with you?
QWWM8: Has a man paid money for sex with you in THE LAST 12 MONTHS?
QWWM12: In the last 12 months where have you done sex work?
QWWM1: Have you ever BEEN PAID for sex with a woman?
Study ID Number:

SEX AND DRUGS AND ALCOHOL

QDBE: Have you EVER had sex with a partner that had a drug or alcohol problem?
QDA12: Have you had sex with a partner that had a drug or alcohol problem IN THE LAST 12 months?

Q1HE: Have you EVER had sex with a partner whilst YOU were high on drugs or alcohol?
Q1HL12: Have you had sex with a partner whilst YOU were high on drugs or alcohol IN THE LAST 12 MONTHS?

Q2HE: Have you EVER had sex with a partner whilst they were high on drugs or alcohol?
Q2HL12: Have you had sex with a partner whilst they were high on drugs or alcohol IN THE LAST 12 MONTHS?

SEXUAL FORCING.

QSFO1: Have you ever had a sexual experience with a man or a woman when you didn't want to because you were too drunk or high at the time?
QSFO2: Have you ever been forced or frightened by a man or a woman into doing something sexually that you did not want to do?
QSFO3: How many times has this happened to you?
QSFO4: How old were you when it started/first time?
QSFO7: Did you talk to someone else about it or seek help?
QSFO8: Who did you talk to?
QSFO9: If you would like I can give you a phone number of someone to talk to (more) about this. The number is... (interviewer reads out appropriate number from sheet).

HEALTH CARE BEHAVIOUR - BLOOD BORNE VIRUSES and VACCINATIONS

QBBD1: Have you ever had a blood test for HIV?
QBBD2: When did you have the last test?
QBBD3: Did your most recent test show that you... (interviewer only reads out codes 1 and 2)
QBBD4: Do you PERSONALLY know someone who has AIDS or is HIV-positive?
QBBD24: Have you ever been vaccinated against hepatitis A?
QBBD25: Have you ever been vaccinated against hepatitis B?

OTHER BEHAVIOURS - TATTOOS

QBBD26: Have you ever been tattooed?
QBBD27: Were any of your tattoos done in THE LAST 12 MONTHS?
QBBD28: Where did you go to have the last tattoo done? (Interviewer prompts if necessary).

QBBD29: Including earrings, have you had any body piercings in the last 12 Months?
QBBD30: At what place was it done? (Interviewer prompts if necessary).

QBBD31: Have you ever been detained in a prison or a juvenile detention facility for more than 24 hours (in the last 15 years)?
HEALTH CARE BEHAVIOUR - SEXUALLY TRANSMISSIBLE INFECTIONS.

INTERVIEWER STATES: “Have you ever had any of the following? I will read out a list, and ask you to say Yes or No to each one”.

QSTD1: Pubic lice or crabs?
QSTD2: Have you had them in the past 12 months?
QSTD3: Where did you go for treatment for them?
QSTD4: Genital warts? (Includes anal warts if interviewer is asked)
QSTD5: Have you had them in the past 12 months?
QSTD6: Where did you go for treatment for them?
QSTD4A: Have you had a Wart virus (HPV) indication on a Pap smear?
QSTD5A: Did this occur in the past 12 months?
QSTD6A: Where did you go for treatment for them?
QSTD7: Chlamydia?
QSTD8: Have you had chlamydia in the past 12 months?
QSTD9: Where did you go for treatment for it?
QSTD10: Genital herpes?
QSTD11: Have you had an attack of herpes in the past 12 months?
QSTD12: Where did you go for treatment for it?
QSTD13: Syphilis?
QSTD14: Have you had syphilis in THE LAST 12 MONTHS?
QSTD15: Where did you go for treatment for it?
QSTD16: Gonorrhoea?
QSTD17: Have you had gonorrhoea in the past 12 months?
QSTD18: Where did you go for treatment for it?
QSTD19: Pelvic inflammatory disease (PID)?
QSTD20: Have you had Pelvic inflammatory disease (PID) in THE LAST 12 MONTHS?
QSTD21: Where did you go for treatment for it?
QSTD22B/N: W- Bacterial vaginosis or gardnerella or M - NSU?
QSTD23B/N: Have you had W- Bacterial vaginosis or gardnerella or M - NSU in THE LAST 12 m?
QSTD24B/N: Where did you go for treatment for it?
QSTD25T: Trichomoniasis or ‘trike’?
QSTD26T: Have you had Trichomoniasis or ‘trike’ in THE LAST 12 MONTHS?
QSTD27T: Where did you go for treatment for it?
QSTD25C/B: Vaginal candida/ thrush or Balanitis?
QSTD26C/B: Have you had Vaginal candida/ thrush or Balanitis in THE LAST 12 MONTHS?
QSTD27C/B: Where did you go for treatment for it?
QSTD28: Hepatitis A?
QSTD29: Have you had hepatitis A in the past 12 months?
QSTD30: Where did you go for treatment for it?
QSTD31: Hepatitis B?
QSTD32: Was this a new infection acquired in the past 12 months?
QSTD33: Where did you go for treatment for it?
QSTD34: Hepatitis C?
QSTD35: Was this a new infection acquired in the past 12 months?
QSTD36: Where did you go for treatment for it?
Study ID Number:

SUBSTANCE USE BEHAVIOUR.

QHEA8: Do you smoke cigarettes, cigars, pipes or any other tobacco products?
QHEA9: Would that be ... ? (Interviewer reads out scale of frequency).
QHEA11: For how many years have you smoked?
QHEA14: On average, how many cigarettes do you smoke a day?
QHEA15: How often do you have an alcoholic drink of any kind?
QHEA16: On a day that you have alcoholic drinks, how many drinks do you usually have?
QHEABX: How often do you have a binge on alcohol?
QHEABQX: On a day that you may have a binge, how many drinks do you usually have?

QBB5: Have you ever injected (self-injected) any drugs, apart from prescribed drugs?
QBB6: In THE LAST 12 MONTHS, have you injected any drugs, apart from prescribed drugs?

QBB7: Have you ever used Marijuana?
QBB7X: Have you used Marijuana IN THE LAST 12 MONTHS?
QBB7E: Have you ever used Heroin?
QBB7: Have you used Heroin IN THE LAST 12 MONTHS?
QBB7E: Have you ever used Methadone?
QBB7E: Have you used Methadone IN THE LAST 12 MONTHS?
QBB7E: Have you ever used Other opiates?
QBB7E: Have you used Other opiates IN THE LAST 12 MONTHS?

QBB10X: Have you ever used Amphetamines?
QBB10X: Have you used Amphetamines IN THE LAST 12 MONTHS?
QBB11: Have you ever used Cocaine ever?
QBB11: Have you used Cocaine IN THE LAST 12 MONTHS?
QBB12: Have you ever used LSD/Hallucinogen?
QBB12: Have you used LSD/Hallucinogen IN THE LAST 12 MONTHS?
QBB13: Have you ever used Ecstasy?
QBB13: Have you used Ecstasy IN THE LAST 12 MONTHS?
QBB14: Have you ever used Benzodiazepines?
QBB14: Have you used Benzodiazepines IN THE LAST 12 MONTHS?
QBB16: Have you ever used any other drugs? Name of Drugs:
QBB16: Have you used any other drugs IN THE LAST 12 MONTHS? Name of Drugs:

QBB18: Where do you usually get needles and syringes from?
QBB19: Have you ever used a needle after someone else had already used it?
QBB20: How long ago was the last time?
QBB21: In the last one month, when you used a needle that had already been used by someone else, did you always clean the needle and syringe using bleach?
QBB22: Have you ever shared a filter, water, spoon, foil, or equipment such as a tourniquet with another drug user?
QBB23: How long ago was the last time?
QBB2X: Have you ever touched someone else’s blood while injecting?

QEND1: How embarrassing did you find the questionnaire?
QEND2: In percentage terms how honest were you in your answers?
Appendix 4: Study Two: Ethics Approval - Psychiatrists’ KAB of STIs & BBVs

University of Wollongong

APPROVAL
In reply please quote: HE08/300
Further Enquiries Phone: 4221 4457

31 October 2008

Dr Katerina Lagios
Parramatta Sexual Health Clinic
Jeffery House
162 Marsden St
Parramatta 2150

Dear Dr Lagios,

I am pleased to advise that the Human Research Ethics application referred to below has been approved.

Ethics Number: HE08/300
Project Title: Mental health care workers’ knowledge, attitudes and practices in screening and assessment of sexually transmitted infections (STIs) and blood borne viruses (BBVs) amongst in-patients with severe mental illness (SMI)
Name of Researchers: Dr Katerina Lagios, Professor Frank Deane
Approval Date: 31 October 2008
Expiry Date: 29 October 2009

This certificate relates to the research protocol submitted in your original application. As a condition of approval, the Human Research Ethics Committee requires that researchers immediately report:
+ proposed changes to the protocol including changes to investigators involved
+ serious or unexpected adverse effects on participants
+ unforeseen events that might affect continued ethical acceptability of the project.

You are also required to complete monitoring reports annually and at the end of your project. These reports are sent out approximately 8 weeks prior to the date your ethics approval expires. The reports must be completed, signed by the appropriate Head of School, and returned to the Research Services Office prior to the expiry date.

Yours Sincerely,

[Signature]
Prof Arthur Jenkins
Chair, Human Research Ethics Committee

cc: Professor Frank Deane, IIMH
Our Ref: JHTG HREC2008/4/4.5 (2767) AU RED 08/001/082

3 October 2008

Dr Katarina Lagios
Parramatta Sexual Health Clinic
Jeffery House
162 Marsden Street
PARRAMATTA 2150

Dear Dr Lagios

Project title: ‘Mental health care workers’ knowledge, attitudes and practices in screening and assessment of sexually transmitted infections (STIs) and blood borne viruses (BBVs) amongst in-patients with severe mental illness (SMI)’

Thank you for submitting the above project for single ethical review at Cumberland Hospital only. This project was considered by the Sydney West Area Health Service Human Research Ethics Committee (HREC) at its meeting held on 30 September 2008.

This HREC has been accredited by the NSW Department of Health as a lead HREC to provide the single ethical and scientific review of proposals to conduct research within the NSW public health system. This lead HREC is constituted and operates in accordance with the National Health and Medical Research Council’s National Statement on Ethical Conduct in Human Research and the CPMP/ICH Note for Guidance on Good Clinical Practice.

I am pleased to advise that the HREC has granted ethical approval of this research project. The following documentation has been reviewed and approved by the HREC:

- Mental Health Care Workers’ Assessment Practices for STIs and BBVs
- Participant Information form Version 1, dated 12 March 2008

Please note the following conditions of approval:

1. The coordinating investigator will immediately report anything which might warrant review of ethical approval of the project in the specified format, including unforeseen events that might affect continued ethical acceptability of the project.

ABN: 70 667 812 950
Post Office Box 63, Penrith NSW 2751
Telephone: (02) 4734 2100 Facsimile: (02) 4734 3727

Providing health services to the communities of
Auburn • Baulkham Hills • Blacktown • Blue Mountains • Bankstown • Parramatta • Fairfield • Blue Mountains • Greater Lithgow

LH031

198
2. Proposed amendments to the research protocol or conduct of the research which may affect the ethical acceptability of the project, are provided to the HREC to review in the specific format. A copy of all proposed changes is also provided to the relevant research governance officer.

3. The HREC must be notified, giving reasons, if the project is discontinued at a site before the expected date of completion.

4. The coordinating investigator must provide an annual report to the HREC and a final report at completion of the study, in the specified format. HREC approval is valid for 12 months from the date of final approval and continuation of the HREC approval beyond the initial 12 month approval period is contingent upon submission of an annual report each year. A copy of the Annual / Final Research Report Form is attached and can be obtained electronically from the Research Office on request.

5. It should be noted that compliance with the ethical guidelines is entirely the responsibility of the researcher.

You are reminded that this letter constitutes ethical approval only. You must not commence this research project at a site until separate authorisation from the Chief Executive or delegate of that site has been obtained. A copy of this letter and the approved Participant Information and Consent Forms must be forwarded to all site investigators for submission to the relevant Research Governance Officer.

A summary of the HREC Standard Operating Procedures is attached for your reference. Should you have any queries about the HREC’s Terms of Reference, Standard Operating Procedures or membership, please contact the HREC Executive Officer through the Research Office on 9845 8183 or emailing researchoffice@westcure.whs.usyd.edu.au. The HREC membership attendance details for the 30 September 2008 meeting are attached.

It was noted by the Committee that no consent page is required as the Participant Information form and survey will be sent to applicants and the survey return will mean that implied consent is given.

In all future correspondences concerning this study, please quote your approval number HREC2008/4/4.5 (2767) AU RED 08/WMEAD/32. The HREC wishes you every success in your research.

Yours sincerely

Ms Tina Goodenough
HREC Executive Officer
SWAHS Human Research Ethics Committee (Westmead Campus)

Enc.
Appendix 5: Study Two: Participant Information Sheet

PARTICIPANT INFORMATION SHEET AND CONSENT DETAILS

Mental Health Care Workers assessment and practices for sexually transmitted infections (STIs) and blood borne viruses (BBVs)

Chief Investigator:  Dr Katerina Lagios  Department of Clinical Sexual Health

Invitation
You are invited to participate in a research study into Mental Health Care Workers assessment and practices for sexually transmitted infections (STIs) and blood borne viruses (BBVs).
The study is being conducted by Dr Katerina Lagios and Professor Frank Deane.
Before you decide whether or not you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

What is the purpose of the study?
The purpose is to “assess the knowledge, attitudes and practices of Mental Health Care Workers regarding STIs and BBVs.”

Who will be invited to enter the study?
You are eligible to participate in this study because you are a mental health care worker.

Do you have a choice?
Participation in this study is voluntary. It is completely up to you whether or not you participate. However, if you choose to participate it will not be possible to withdraw your data from the study at a later date because identifying details are not collected.

What will happen on the study?
This study will be conducted as part of an education meeting.
A questionnaire will be provided and completed by each interested person at the start of the meeting. The questionnaire asks for some demographic details, (e.g., age, gender and years of health experience), knowledge, attitudes and practice questions regarding STIs & BBVs.
By completing the questionnaire you are providing consent to participate.
We do not require a separate consent form because we do not need to know your identity.
Participation in this study is voluntary and you may choose to not complete the questionnaire.

Are there any risks?
It is not envisaged that there would be any risks.

Are there any benefits?
This study aims to provide information that may help improve training and practice in assessing for STIs and BBVs in patients.

Confidentiality / Privacy
PARTICIPANT INFORMATION SHEET AND CONSENT DETAILS

"Mental Health Care Workers assessment and practices for sexually transmitted infections (STIs) and blood borne viruses (BBVs)"

Only you will know whether or not you are participating in this study. There will not be any identifiable information collected about you in connection with this study. Only the researchers named above will have access to the study data and results that will be held securely at Parramatta Sexual Health Clinic.

Will taking part in this study cost me anything, and will I be paid?
Participation in this study will not cost you anything and there is no payment for participation. For some participants, there may be an opportunity to attain Continuing Education credit for participation.

What happens with the results?
If you give us your permission by participating and completing the document, we plan to discuss/publish the results as part of a Doctor of Public Health thesis, in peer-reviewed journals, and presentations at conferences or other professional forums.
In any publication, information will be provided in such a way that you cannot be identified. Results of the study will be provided to you, if you wish.

Complaints
This study has been reviewed and approved by SWAHS and UOW.
Any person with concerns or complaints about the conduct of this study should contact Dr Lagios who is the person, nominated to receive complaints from research participants. You should contact them on mob: 0412 904 992 and quote [HREC project number].

If you have any concerns about the conduct of the study, or your rights as a study participant, you may contact:
The Secretary, SWAHS Human Research Ethics Committee
Ph 9845 8183 or email researchoffice@westmate.wlu.usyd.edu.au
Or
The Ethics Officer – University of Wollongong HREC
ph 4221 3386 or email eves@uow.edu.au

Contact details
When you have read this information, the researcher Dr Lagios will discuss it with you and any queries you may have. If you would like to know more at any stage or if you have any problems while on the study, please do not hesitate to contact:

Dr Lagios
Working hours Telephone
After hours Telephone No:
Thank you for taking the time to consider this study.
If you wish to take part in it, please complete the questionnaire.
This information sheet is for you to keep.
Appendix 6: Study Two: Questionnaire

Mental Health Care Workers' Assessment Practices for STIs and BBVs

Study ID number: [ ] Date: [ ]

Background HCW Information - details about yourself and your practice, please complete or tick

Are you? 
- [ ] Male 
- [ ] Female

To which age group do you belong?
- [ ] 25-34 
- [ ] 35-44 
- [ ] 45-54 
- [ ] 55-64 
- [ ] 65+

What year did you graduate from your primary health care course?
[ ]

Did you do your primary health care training in Australia?
- [ ] Yes 
- [ ] No

Please list the professional affiliations you have? 
e.g. psychiatry, mental health nursing, psychology etc
[ ]

How many years have you worked in Mental Health?
[ ]

Please describe the training you have in any other specialities?
e.g. drug and alcohol, primary care etc
[ ]

What is the postcode of the service that you work at?
[ ]

Please specify what is your Position at this service?
[ ]

How many hours do you spend seeing patients on an average week?
[ ]

Please provide an estimate of the percentage of your patients seen in the last year that were infected with HCV.
[ ]

Have you diagnosed any sexually transmitted infections or blood borne virus infections in the last year?
- [ ] Yes 
- [ ] No 
- [ ] Uncertain

For a patient that you consider may be at risk of acquiring an STI, how common is it for you to ask about these behaviours?

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>Very common</th>
<th>Not at all common</th>
</tr>
</thead>
<tbody>
<tr>
<td>having a number of sexual contacts?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>having safe sex?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gender of sexual contacts?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>having sex with sex workers?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>involvement in sex work?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>recent overseas travel?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>injecting drug use?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1
**To what extent do you consider these items to be barriers to you taking a sexual history?**

<table>
<thead>
<tr>
<th>Major barrier</th>
<th>Not at all a barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>an appreciable age difference between you and patient?</td>
<td></td>
</tr>
<tr>
<td>patient is of the opposite sex to you?</td>
<td></td>
</tr>
<tr>
<td>not enough time to take a sexual history?</td>
<td></td>
</tr>
<tr>
<td>first consultation with this patient?</td>
<td></td>
</tr>
<tr>
<td>fear of uncovering a problem you can't deal with?</td>
<td></td>
</tr>
<tr>
<td>the presence of a third party in the consultation?</td>
<td></td>
</tr>
<tr>
<td>issues related to culture?</td>
<td></td>
</tr>
<tr>
<td>issues related to language?</td>
<td></td>
</tr>
<tr>
<td>appropriateness as part of psychiatric assessment?</td>
<td></td>
</tr>
</tbody>
</table>

Please describe any other issues discussed

**Please tick the your answer regarding HCV knowledge**

- I am well informed regarding HCV
- Once HCV is cleared from the body, one cannot be re-infected
- A positive HCV Ab test differentiates between current and past infection
- Hep C in adults is a more chronic course compared to Hep B in adults
- HCV can be spread through shared needles in drug usage
- HCV can be spread through shared injecting paraphernalia
- HCV can be spread through Blood Products
- HCV can be spread by contaminated medical equipment/procedures
- HCV can be spread by sexual contact
- HCV can be spread vertically (mother to baby)
- HCV can be spread through ingestion of contaminated food
- HCV can be spread through oral faecal contact
- HCV can be spread because of poor hygiene
- HCV can be spread through contact with infected household members
- Being a Prisoner is a risk marker for HCV

The percentage (%) that progress to cirrhosis in 20-40 years is

The percentage (%) that progress to HCC in 20-40 years is

<10% 10-40% >40%
Please tick the response that you best agree with

Always  Mostly  Sometimes  Rare  Never

I do not like treating people with HCV

I am willing to treat people with HCV

I believe my profession should have a central role in the treatment of HCV

Prior to ordering an HIV Ab test - Do you discuss with the patient:

Always  Mostly  Sometimes  Rare  Never

The implications of a negative antibody test result - including the HIV window period?

Implications of a positive HIV Ab result?

Issues of safe sex?

Other risk behaviours?

Management issues

Yes  No

Have you ever ordered an HIV Ab test that was reported as positive?

If so, for the last patient diagnosed did you refer him or her elsewhere?

Always  Mostly  Sometimes

For a patient with abnormal syphilis serology, would you tend to seek specialist advice about management?

For a patient who is a carrier of hepatitis B or hepatitis C, do you counsel the patient regarding the possibility of sexual transmission of his or her infection?

For a patient who you test for hepatitis B and find to be neither a carrier nor immune to the disease, do you recommend vaccination against hepatitis B?

How commonly do you assess your patient for STIs or BBVs? (please tick 1 item)

Always  Mostly  Sometimes  Never
Which of the following STIs may be present without causing any symptoms?

(please tick as many as apply for both males and females)

<table>
<thead>
<tr>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSU</td>
<td>NSU</td>
</tr>
<tr>
<td>chlamydia</td>
<td>chlamydia</td>
</tr>
<tr>
<td>gonorrhoea</td>
<td>gonorrhoea</td>
</tr>
<tr>
<td>herpes</td>
<td>herpes</td>
</tr>
<tr>
<td>HPV (human papilloma virus)</td>
<td>HPV (human papilloma virus)</td>
</tr>
<tr>
<td>Syphilis</td>
<td>Syphilis</td>
</tr>
<tr>
<td>Hepatitis B Virus</td>
<td>Hepatitis B Virus</td>
</tr>
<tr>
<td>Hepatitis C Virus</td>
<td>Hepatitis C Virus</td>
</tr>
<tr>
<td>HIV</td>
<td>HIV</td>
</tr>
</tbody>
</table>

Knowledge of STI epidemiology

What in your opinion are the main age groups in which genital chlamydia is seen?

(please tick 2 items)

<table>
<thead>
<tr>
<th></th>
<th>15-19</th>
<th>20-24</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

HIV infection in Australia occurs mostly in people who belong to the following groups?

(please tick 2 items)

<table>
<thead>
<tr>
<th></th>
<th>same sex with men</th>
<th>heterosexual women</th>
<th>sex workers</th>
<th>injecting drug users</th>
<th>people who have acquired the infection through other means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Syphilis is more commonly detected in which groups?

(please tick 2 items)

<table>
<thead>
<tr>
<th></th>
<th>men who have sex with men</th>
<th>heterosexual women</th>
<th>sex workers</th>
<th>injecting drug users</th>
<th>people who have acquired the infection through other means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Gonorrhoea is now mainly seen in which groups?

(please tick 2 items)

<table>
<thead>
<tr>
<th></th>
<th>men who have sex with men</th>
<th>heterosexual women</th>
<th>sex workers</th>
<th>injecting drug users</th>
<th>people who have acquired the infection through other means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A woman with heterosexually acquired HIV will usually have been in contact with someone

(please tick 2 items)

<table>
<thead>
<tr>
<th></th>
<th>men who have sex with men</th>
<th>heterosexual women</th>
<th>sex workers</th>
<th>injecting drug users</th>
<th>people who have acquired the infection through other means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cancer of the cervix is associated with which particular STD?

(please tick 1 item)

<table>
<thead>
<tr>
<th></th>
<th>cervical HPV</th>
<th>genitai herpes</th>
<th>gonorrhoea</th>
<th>human papilloma virus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Infertility that is secondary to an STD is most commonly a sequela of?

(please tick 1 item)

<table>
<thead>
<tr>
<th></th>
<th>cervical HPV</th>
<th>genitai herpes</th>
<th>gonorrhoea</th>
<th>human papilloma virus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>