# Gender-based Analysis of Criminogenic Risk and Clinical Need among Ontario Forensic Patients

by

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## Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

## Abstract

Persons suffering from mental illness in the criminal justice system are a heterogeneous group that require specialized services to meet their diverse needs (Mental Health Commission of Canada, 2012; Dupuis, MacKay & Nicol, 2013; Tusca et al., 2011; Penney et al., 2013; Jansman-Hart et al., 2011; MacPhail & Verdun-Jones, 2013; Seto, Harris, Rice, 2004; Chaimowitz, 2012; Tusca et al., 2012; Nowatzi & Grant, 2011). Further, while public safety is a high priority, basing decisions solely on security and reduction of risk do not support the recovery or rehabilitation of the clinical, social and functional needs of the forensic mental health population (Tusca et al., 2012).

Gender can have separate and interacting effects on mental health and criminogenic needs as men and women have different experiences in how they express symptoms associated with mental illness, in service utilization and sometimes in even how these symptoms are managed (Archambault et al., 2014; Eaton et al., 2012; Nowatzki & Grant, 2011; Ramsay et al., 2001; World Health Organization, 2008). Omission of gender in forensic mental health research limits the validity and overall generalizability of findings, which in turn can affect the treatment and services provided at the individual level (Nowatzki & Grant, 2011; Van Voorhis et al., 2010).

Understanding gender differences in forensic mental health will allow for more refined patient-centered care. Patient-centered care addresses and integrates care

for an individual's multiple risk factors and conditions and is sensitive to their social context (Nowatzki & Grant, 2011). Further, among forensic inpatients it is crucial to incorporate criminogenic factors that reduce risk of recidivism (for example, substance abuse, harm to others); ***and*** clinical factors (for example, psychosis, anxiety); social factors (for example, social supports); functional factors (for example, cognitive impairment, IADL) that support recovery and rehabilitation of persons in the forensic mental health system (Chambers et al., 2009; Shrinkfield & Ogloff, 2014; Tusca et al., 2012).

**Aim:** This research focuses on a gender-based analysis of assessing the influences at both the individual and facility level that can predict three outcomes among forensic mental health patients in Ontario:

1. Restriction to room (seclusion/confinement to room) in forensic mental health hospitals;
2. Unaccompanied leaves from forensic mental health hospitals and;
3. Freedom of movement (FoM) among forensic inpatients.

**Results:** This thesis demonstrates that factors influencing the freedom of movement (FoM) among forensic mental health patients include not only indicators of violence, aggressive behaviour and risk of harm to others, but in fact include many clinical, social and functional characteristics. For example, substance use problems, lack of insight into mental health problems, functional impairment, higher scores on the RIIDE scale and being an adult at age of first police intervention for non-violent crime were found to decrease the odds of being in a higher level of freedom of

movement (easing of restrictions) among forensic inpatients. Although public safety is one the factors to consider when easing a person's restrictions, it is not the only factor that should be considered by forensic mental health teams.

There were notable gender differences found in the easing of restrictions among forensic mental health patients. For example, female inpatients with more aggressive behaviour were more likely to be confined to the unit whereas male inpatients demonstrating the same level of aggression were more likely to be restricted to room. Essentially, tighter restrictions are being placed on male forensic inpatients when similar aggressive behaviours are being exhibited compared with female forensic inpatients.

**Conclusion:** This thesis demonstrates that factors influencing the freedom of movement (FoM) among forensic mental health patients include not only indicators of violence, aggressive behaviour and risk of harm to others, but in fact include many clinical, social and functional characteristics. Although public safety is one the factors to consider when easing a person's restrictions, it is not the only factor considered by forensic mental health teams. As well, this research demonstrated that it is important to consider both the individual and facility level characteristics when determining gender differences in factors associated with freedom of movement.

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## Dedication

I dedicate my PhD thesis to my niece, MacKenzie-Lee Mathias simply because I am inspired by **you** every day!

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# Chapter 1
# Introduction

Persons suffering from mental illness are over-represented in the criminal justice system in comparison to those in the general population living with a mental illness (Mental Health Commission of Canada, 2012; Dupuis, MacKay & Nicol, 2013; Tusca et al., 2011; Penney et al., 2013; Jansman-Hart et al., 2011; MacPhail & Verdun-Jones, 2013; Seto, Harris, Rice, 2004; Chaimowitz, 2012) and they are a heterogeneous group that requires specialized services to meet their diverse needs (Tusca et al., 2012; Nowatzi & Grant, 2011). To further complicate matters, persons with a mental illness and involvement in the criminal justice system can face increased stigmatization and this can create barriers towards successful reintegration into the community (CAMH, 2013; Tusca et al., 2012; Chaimowitz, 2012; Jansman-Hart et al., 2011; Livingston, 2011) Further, while public safety is a high priority, basing decisions solely on security and reduction of risk, do not support the recovery or rehabilitation of the clinical, social and functional needs of the forensic mental health population (Tusca et al., 2012).

Good risk management targets individual level characteristics; however, the criminal justice system tends to focus on recidivism outcomes rather than dealing with dynamic changes in clinical, social, and functional components of risk management. In order to fully support a person's recovery in the forensic mental health system we need to move beyond the exclusive focus on recividism and to consider dynamic changes in the person's needsas components of risk management and treatment interventions(Shrinkfield & Ogloff, 2014; Fitzpatrick et al., 2010). It is imperative to incorporate criminogenic factors that reduce risk of recidivism (for example, substance abuse, harm to others); ***and*** clinical factors (for example, psychosis, anxiety); social

factors (for example, social supports); functional factors (for example, cognitive impairment, IADL) that support recovery and rehabilitation of persons in the forensic mental health system (Chambers et al., 2009; Shrinkfield & Ogloff, 2014; Tusca et al., 2012).

Since gender has been shown to have separate and interacting effects on mental health and criminogenic needs (Nowatzki & Grant, 2011; Ramsay, Welch, Youard, 2001; WHO 2008; Archambault, Joubert, Brown, 2013; Eaton et al., 2012); understanding gender differences in forensic mental health can provide care that meets a person's individual needs and is sensitive to their social context (Nowatzki & Grant, 2011).

### 1.1 Gender-based Analysis

Gender-based analysis (GBA) in mental health challenges the premise that men and women are affected by health issues, service utilization and the overall causes of mental health in the same way (Clow, Pederson, Haworth-Brockman, & Bernier, 2009). GBA not only examines the differences and similarities between men and women but within groups as well (among women only; among men only) (Clow et al., 2009; Johnson, Greaves, & Repta, 2009). GBA is based on evidence that economic and social differences among men and women can influence differences in health outcomes (Clow et al., 2009; Vlassof, 2007; World Health Organization, 2008). Includingthese social constructs and analyzing how they relate to mental health issues is the fundamental construct of GBA (Clow et al., 2009).

As a starting point, it is necessary to examine the differences and similarities in the mental health needs of men and women. However, it is crucial to move beyond the

basis of sex disaggregated data analysis and explore how sex and gender work together to influence mental health outcomes and associated behaviours (Johnson et al., 2009; Vlassof, 2007). When conducting GBA, it is also important to avoid making assumptions that all members of gender groups experience things in the same way or have the same needs both within and between groups (Clow et al., 2009; Johnson et al., 2009). The gender differences that exist can include how the illness affects men and women; social support systems; willingness to seek treatment and stigma associated with the illness (Butler-Jones, 2012; Ramsay, Welch, & Youard, 2001; Vlassof, 2007). Understanding the gender differences that affect persons in the forensic mental health system can in turn lead to better interventions/treatment and improve overall outcomes for these individuals (Ad hoc Working Group on Women, Mental Health, Mental Illness and Addictions, 2008; Vlassof, 2007).

Even with the recent attention that GBA has received within health research, there are still obstacles associated with its application in forensic mental health (Johnson et al., 2009). One of the biggest contradictions in the literature is the fact that gender is often confused with sex and these terms are often used interchangeably in forensic mental health (Johnson et al., 2009).This confusion leads to misunderstandings regarding the influence that sex and/or gender can have on mental health outcomes, needs; and treatment interventions (Johnson et al., 2009).

Sex and gender are multidimensional constructs, where sex refers to the biological characteristics such as anatomy, genes, physiology and hormonal variations that are usually measured in a binary fashion (male vs. female), and gender refers to the social constructs that are culturally, politically and historically based (Johnson et al.,

2009; Johnson & Repta, 2012; Vlassof, 2007). This thesis research will focus on the influences of gender in forensic mental health.

### 1.2 Gender Differences in Mental Health

Gender differences may exist in expression of symptoms, their utilization of services, and even perhaps the way they are assessed and managed by clinicians (Archambault, Joubert, & Brown, 2014; Eaton et al., 2012; Ramsay et al., 2001; World Health Organization, 2008). Among persons with a diagnosis of depression, women report higher levels of distress then men do and are more likely to seek psychiatric services for help with their mental health concerns (Butler-Jones, 2012; Ramsay et al., 2001). In fact prevalence rates of mood disorder and anxiety among women is twice that of men (Mental Health Commission of Canada, 2013). Even when men and women present the same symptoms and have similar scores on depression rating scales, women are more likely to be diagnosed with depression. Accurate diagnosis is further complicated by the fact that men tend to acknowledge physical symptoms more easily than emotional ones (Butler-Jones, 2012; World Health Organization, 2008). Gender roles and gender identity can mitigate perceptions of symptoms expression by men and women, and these perceptions may not be in line with the diagnostic criteria associated with depression (Kuehner, 2003).

Research has suggested clinical manifestation of mental illness (for example, schizophrenia) will differ between men and women, which may translate into differences in the focus of care plans developed to respond to their needs (for example, to deal with substance use). Moreover, the gender differences in symptoms may lead to use of different treatment modalities (for example, group vs. individual therapies) and control

interventions to manage disruptive behaviours (for example, restraint use, acute control medications) (Ochoa, Usall, Cobo, Labad, & Kulkarni, 2012).

In recent years, understanding the role of gender in the developmental psychopathology of mental illness has become a focus of interest (Crick & Zahn-Waxler, 2003). Many of these gender differences are exhibited in childhood and/or adolescence and can result in poor outcomes during adulthood (Crick & Zahn-Waxler, 2003; Odgers et al., 2008). For example, during adolescence females are almost twice as likely to experience symptoms of anxiety and depression compared to their male counterparts (Crick & Zahn-Waxler, 2003). As well, females (both during adolescence and adulthood) exhibit different symptoms associated with depression compared to males. Males often exhibit symptoms such as: greater sleep disturbance; increased appetite, psychomotor dysfunction; and higher levels of anxiety compared to their female counterparts (Crick & Zahn-Waxler, 2003). Research has also showcased gender differences in antisocial behaviour (Messer, Goodman, Rowe, Meltzer, & Maughan, 2006; Moffit, Caspi, Rutter, & Silva, 2001; Odgers et al., 2008). In fact, antisocial behaviour in adolescence has been linked to several poor outcomes during adulthood including: substance use problems, being subject to abusive relationships and reliance on social support as a form of income (Moffit et al., 2001; Odgers et al., 2008). Also, a diagnosis of Oppositional Defiant Disorder (ODD) in adolescence increases the odds of developing either mood disorder or substance use disorders in adulthood; although gender differences were not noted (Moffit et al., 2001; Odgers et al., 2008).

As well, the factors that may contribute to gender differences during adolescence may differ from those expressed in adulthood; emphasizing the need to understand

gender differences in mental health across the lifespan. The greater the level of understanding of the gender differences associated with mental illness across the life span, the earlier targeted interventions can begin.

GBA emphasizes the need for gender-specific services and perspectives within the forensic mental health system in an attempt to better support the care needs of women (Clow et al., 2009). Understanding gender differences in mental health will allow for more refined care based on individual needs that addresses and integrates care for an individual's multiple risk factors and conditions while being sensitive to their social context (Nowatzki & Grant, 2011).

### 1.3 Forensic Mental Health System in Ontario

The forensic mental health system in Ontario consists of a wide range of both inpatient and community-based services offered to persons experiencing both mental health problems and involvement in the criminal justice system (Livingston, 2006). In a presentation by the Ministry of Health and Long-term Care (MOHLTC) Higgins and colleagues (2013) noted that in Ontario, there are 771 total forensic designated beds; of which 558 are secure forensic units (Higgins, Weisberg, Gug, 2013).

Mental disorder is defined in section 2 of the criminal code as a 'disease of the mind' which includes an illness or abnormal condition that impairs a person's functioning as determined by the courts (Criminal Code, 1985, s 2). Forensic services are geared towards persons who have been ordered by the court for forensic assessment; who are unfit to stand trial; or are not criminally responsible on account of mental disorder (NCRMD) (Criminal Code, 1985, s 2; Barbaree & Goering, 2006; Bettridge & Barbaree, 2008; Goering, Wasylenki, & Durbin, 2000; Hucker, 2008; Latimer & Lawrence, 2006;

Livingston, 2006). The court makes the final decision on whether a person is NCRMD or unfit to stand trial (Bettridge & Barbaree, 2008; Latimer & Lawrence, 2006). Forensic assessments can be requested by the court to determine fitness to stand trial or whether a person is criminally responsible for their actions (Bettridge & Barbaree, 2008; Latimer & Lawrence, 2006). Specialized forensic assessments also include dangerousness, longer-term offender, and pre-sentence assessments (Bettridge & Barbaree, 2008). Patients are sent to forensic mental health units by the courts for two reasons: (1) short-term assessment and treatment services or (2) long-term inpatient rehabilitation/ re-integration after the court deems the person NCRMD (Bettridge & Barbaree, 2008, Criminal Code, 1985, s 2). However, not every person with a mental illness who comes into contact with the criminal justice system is given a NCRMD designation (CAMH, 2013; MacPhail & Verdun-Jones, 2013; Mental Health Commission of Canada, 2012). Recent data from the Ontario Review Board (ORB) show that during the fiscal year 2012-2013 the courts found 70 accused to be unfit to stand trial and 161 not criminally responsible on account of mental disorder for the commission of a criminal offence for a total of 231 new accused coming under the jurisdiction of the Board (ORB, 2013).

A person is considered unfit to stand trial on account of their mental illness, according the Criminal Code of Canada if they are unable to actively participate in their own legal defence (Criminal Code, 1985, s 672.22).

A person is deemed NCRMD, according the Criminal Code of Canada, if s/he has committed an illegal act but at the time of the offence, was suffering from a serious

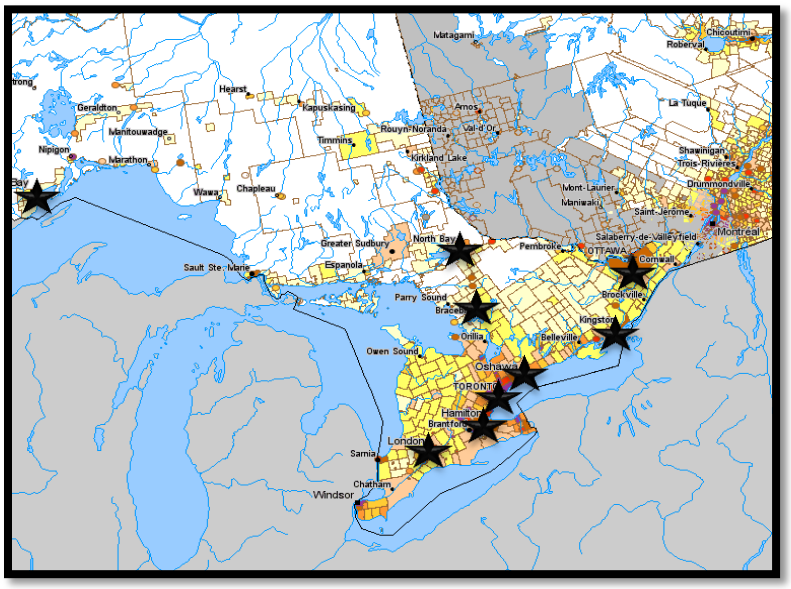
mental illness that rendered them incapable of appreciating the wrongness of their actions (Criminal Code, 1985, s 672.34).

Forensic patients found unfit to stand trial or not criminally responsible on account of mental disorder in Ontario are under the jurisdiction of the Ontario Review Board (ORB), which aims to strike a balance between public safety and a person's treatment/rehabilitation need through their decisions (Bettridge & Barbaree, 2008; Lines, 2009; Ontario Review Board, 2013b). The ORB monitors the progress of forensic patients and annually reviews their cases (Bettridge & Barbaree, 2008; Ontario Review Board, 2013b). The ORB is responsible for monitoring all forensic patients in rehabilitation/reintegration programs from point of entry into the hospital until they receive 'absolute discharge' (Bettridge & Barbaree, 2008; Latimer & Lawrence, 2006; Ontario Review Board, 2013b). This includes monitoring these patients as they transition through levels of care (from forensic inpatient units to the community) (Bettridge & Barbaree, 2008; Latimer & Lawrence, 2006).

Ontario has the largest forensic mental health inpatient program in Canada (Livingston, 2006). Across the province of Ontario, forensic hospitals are comprised of standalone secure facilities or designated forensic beds within a general psychiatric hospital; for purposes of this research, forensic hospitals will refer to both types of facilities. There are nine provincial forensic mental health programs throughout Ontario: Waypoint Centre for Mental Health Care (Penetanguishene); Royal Ottawa Health Care Group (Brockville & Ottawa); Centre for Addiction and Mental Health (Toronto); Providence Continuing Care (Kingston); St. Joseph's Healthcare Centre Hamilton (Hamilton); North Eastern Mental Health Centre (North Bay); St. Joseph's Healthcare

London (St. Thomas); and Ontario Shores Mental Health Centre (Whitby) (Refer to Figure 1.1).

**Figure 1.1 Map of Provincial Forensic Programs in Ontario**




## 1.4 Gender Differences in Forensic Mental Health

In the forensic mental health system, women represent a smaller percentage of the population than men and this is true in both prison and inpatient mental health settings; often being perceived as an afterthought (Nicholls, Brink, Greaves, Lussier, & Verdun-Jones, 2009; Wootton & Maden, 2010). Despite this, proportionally, women are more likely to receive psychiatric treatment for criminal behaviour in comparison to men within the forensic mental health system (Archambault et al., 2014; Fradella & Smith-Casey, 2014; Wootton & Maden, 2010).

Women in the forensic mental health system have fewer criminal convictions and more lifetime psychiatric admissions and are more likely to be diverted into treatment compared to men (Fradella & Smith-Casey, 2014; Hartwell, 2001; Wootton & Maden,

2010). It is believed that women in secure forensic inpatient programs present more psychiatric symptoms/concerns and exhibit less criminal behaviour compared to their male counterparts. Wootten & Maden (2010), claim that women tend to be admitted into forensic programs as transfers from other hospitals following non-criminalized behaviour (for example, self-harm). This may be the case in other jurisdictions; however, this is not the case in Ontario, as designated forensic beds cannot be filled by admission from emergency room visits or via transfers from other hospitals (Bettridge & Barbaree, 2008). Within the prison system, women are demonstrating higher histories of psychiatric hospital admissions. Canadian research findings have showed that of 500 offenders, 30% of female offenders compared to 15% of male offenders had previous psychiatric hospital admissions (CAMH, 2013; Chaimowitz, 2012; Dupuis, MacKay, & Nicol, 2013).

Increasingly, research is focusing on gender differences associated with violence, mental illness and associated risks; to better enhance our understanding of these behaviours among women (Nicholls et al., 2009). Preliminary research by Nicholls and colleagues (2009) indicates there are no gender differences in prevalence and severity of aggression among forensic patients. Therefore, similar interventions for aggressive behaviour would be appropriate for both male and female forensic patients; although, further investigation is required to determine the strength of this association (Nicholls et al., 2009). However, Nicholls and colleagues (2009) study does not address the reasons for aggressive behaviours, which may be different by gender. Whereas, research from the US has suggested that there are gender differences in the effect that social and clinical factors have on aggressive behaviour among men and women

(Krakowski &Czobor, 2004; Yourstone, Linholm, Grann & Fazel, 2009). Although it is generally believed that women are less of a threat to society (with respect to risk of violent recidivism) there is general agreement that they present more of a challenge within the secure hospital setting (Wootton & Maden, 2010). In many cases, women have been placed into services that were designed to meet the needs of men (Wootton & Maden, 2010). Research has noted that there are gender differences with respect to access to health services (Bertakis, Azari, Callahan, & Robbins, 2006). However, gender differences and access to forensic mental health care has only recently become an area of research focus.

In the literature, most of the focus of risk assessment and risk management has been on outcomes related to ensuring public safety and reducing risk of violent recidivism with the dynamic changes in the wide range of clinical, social and functional needs and outcomes often less of a focus (Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014; Yiend et al., 2010). However, the importance of incorporating the clinical, functional, social and risk characteristics of the person to inform care planning and support overall recovery of the person is starting to receive greater attention. In a recent review by Fitzpatrick and colleagues (2010), they recommended focusing outcomes on clinical characteristics (signs and symptoms of mental illness); social and instrumental functioning; quality of life and well-being and public safety. Further investigation is required to truly understand the gender differences and/or similarities in access to forensic mental health care.

### 1.5 Gender Differences in Assessing Outcomes in Forensic Mental Health

Across healthcare services, there is an increasing focus on assessing outcome measures to determine the most effective and appropriate forms of intervention and treatment (Chambers et al., 2009; Shinkfield & Ogloff, 2014; Yiend et al., 2010). However, throughout the forensic mental health literature, there is very little consensus on the outcomes measures utilized (Chambers et al., 2009; Fitzpatrick et al., 2010; Prince & Willet, 2014; Shinkfield & Ogloff, 2014; Yiend et al., 2010). There is excessive focus on risk of recidivism with very little attention be paid to clinical outcomes, rehabilitation and functional capacity (Chambers et al., 2009; Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014; Yiend et al., 2010). In this sense, it appears that the safety of the public has superseded the individual patient interest (Chambers et al., 2009).

In forensic mental health assessing outcome measures can pose a particular challenge as they need to span clinical, legal and public safety concern domains (Chambers et al., 2009; Fitzpatrick et al., 2010).The complexity of this is even seen in the outcome measures of recidivism. Throughout the literature recidivism is often measured differently, with definitions of recidivism ranging from offending behaviour through aspects of the legal process to parole violations (Chambers et al., 2009; Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014). Even the instruments used to assess recidivism and other outcome measures vary throughout the literature (Chambers et al., 2009; Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014; Yiend et al., 2010).

A meta-analysis conducted by Chambers et al. (2009), reviewed both the outcome measures utilized across studies and the instruments employed to measure these outcomes. A total of 308 studies included between 450 instruments (both scales

and questionnaires), which then incorporated 1038 separate outcome variables (Chambers et al., 2009). Nonviolent recidivism was measured using 314 different variables and violent recidivism was measured using 80 different variables (Chambers et al., 2009). Another commonly measured outcome was substance abuse and this was found to be measured using 133 different variables across the studies (Chambers et al., 2009). Domains not as commonly addressed throughout the literature included rehabilitation (social and instrumental functioning), humanitarian (quality of life), clinical outcomes and measurements of costs (Chambers et al., 2009; Fitzpatrick et al., 2010; Yiend et al., 2010). Similarly, Shrinkfield and Ogloff (2014) conducted a review of forensic assessment tools that validly provide a measure of recovery, risk and placement pathways and identified 19 tools of which only 6 tools were considered for use in forensic mental health services. In fact, no tool was found to assess all domains.

It is clear that there is a substantial number and range of outcome measures used in forensic mental health research. This in turn, makes it difficult to truly compare studies to obtain better informed treatment, intervention and policy (Chambers et al., 2009; Fitzpatrick et al., 2010). To accurately assess the effects on interventions, an outcome measure needs to be sensitive to change (dynamic), a valid indicator of the intervention, and reliable (Yiend et al., 2010). As well, the focus needs to shift from focusing solely on criminal justice outcome measures (for example, recidivism) and incorporate aspects of clinical (for example, mental health symptoms) and humanitarian (for example, quality of life) goals (Chambers et al., 2009; Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014; Yiend et al., 2010). Many existing psychological measures such as impulsivity, negative attitudes, cognition, aggression, emotional control, and

interpersonal factors could serve as useful outcome measures; however, to date, they have only been used as predictors (Yiend et al., 2010).

There is a lack of consensus on what outcome measures should be employed in forensic mental health. This is partly a result of the complexity of the population as well the variety of contributing disciplines and care providers (Prince & Willet, 2014; Shinkfield & Ogloff, 2014; Yiend et al., 2010). Another aspect that is missing from the examination of outcome measures in forensic mental health would the possible gender differences within these outcome measures.

### 1.6 Risk-Need-Responsivity (RNR) Theory

The risk-need responsivity (RNR) model is used on an international level, with adoption in Canada, England, Wales and the Netherlands (van der Knaap, Alberda, Oosterveld, & Born, 2011). The RNR model focuses on the individual differences in criminal behaviour that focuses on the social context, biology and psychopathology (Ogloff & Davis, 2004). The RNR model is based on the social learning theory which draws upon differential association theory (Sutherland) and operant conditioning (Skinner) (Ogloff & Davis, 2004). Differential association theory states that criminal behaviour is learned not inherited, and is learned through associations with persons that have pro-criminal attitudes (Ogloff & Davis, 2004; Sutherland, 1947; Sutherland, 1956). Individuals will develop similar attitudes, perceptions, drives and motives and in turn, causes the person to act on criminal behaviours (Sutherland, 1947; Sutherland, 1956). People learn through modeling, which is that they learn a particular behaviour through watching others engage in that behaviour (Hollin & Palmer, 2006; Ogloff & Davis, 2004; Sutherland, 1947; Sutherland, 1956). Operant conditioning attempts to modify behavior

through the use of positive and negative reinforcement, where an individual makes an association between a particular behavior and a consequence (Nye, 1979; Skinner, 1966). Essentially, behaviour that is reinforced has a higher likelihood of reoccurrence (Nye, 1979; Ogloff & Davis, 2004; Skinner, 1966). Therefore, criminal behaviour is the outcome of criminogenic needs (interaction of personal and situational factors) that in turn increase the likelihood of this criminal behaviour. Based on this, minimizing associations with peers who have pro-criminal attitudes and encouraging positive modeling behaviour will in turn help reduce the occurrence of future criminal behaviour (Hollin & Palmer, 2006).

The RNR model is comprised of 3 principles: risk, need and responsivity. The risk principle states that future criminal behaviour can be accurately predicted and that treatment should match level of risk; high risk individuals receive higher levels of intensity of treatment ( Barbaree & Goering, 2006). The need principle assess criminogenic need and focuses on them in the treatment (Bonta & Andrews, 2007). Criminogenic needs (for example, substance abuse, antisocial attitudes, employment, family relationships) are a dynamic characteristics that are part of the person's risk level that when changed (through targeted treatment) can reduce a person's risk of reoffending (Andrews & Bonta, 2003; Hollin & Palmer, 2006; Stubner, Grob, & Nedopil, 2006). The responsivity principle holds that treatment should be delivered in a fashion that is geared to the strengths and weaknesses of the person ( Barbaree & Goering, 2006; Bonta & Andrews, 2007). There are two parts of the responsivity principle: general responsivity utilizes cognitive social learning to influence behaviour through treatment (Bonta & Andrews, 2007). Specific responsivity takes into account the

person's strengths, motivation, and bio-social (for example gender and age) characteristics into account when providing treatment (Bonta & Andrews, 2007).

Criminogenic risk factors are comprised of static and dynamic risk factors (Andrews & Bonta, 2003; Bonta & Andrews, 2007). Static factors do not change overtime and can include severity of previous offences, escape history and criminal history (Andrews & Bonta, 2003; Andrews & Bonta, 2007). Dynamic factors change over time and the assessed change is associated with future criminal behaviour (Andrews & Bonta, 2003; Andrews & Bonta, 2007). These dynamic predictors often serve as treatment goals within the criminal justice context that, if treated, can reduce a person's likelihood of re-offending (Andrews & Bonta, 2003; Motiuk, 2009). Dynamic risk factors are of particular interest not simply because they are predictive of violence (and they can and do change), but also because these factors are indicative of responsiveness to treatment (Chambers et al., 2009).

The RNR model works on the premise that some aspects of a person's functioning are risk factors for future offending behaviour (H. Barbaree & Goering, 2006; Hollin & Palmer, 2006). As alluded to above, these risk factors are comprised of historical items (static factors) and current functioning that is amenable to change (dynamic factors) (Andrews & Bonta, 2003; Hollin & Palmer, 2006). The commonly identified risk factors, known as the 'Big 8' include: antisocial attitudes; antisocial associates; a history of antisocial behaviour; antisocial personality pattern; family/marital, school/employment and leisure problematic circumstances; and substance abuse (Andrews & Bonta, 2003; Andrews & Bonta, 2007). These risk factors have consistently been identified as predictors of future criminal behaviour among male

population samples. Although, their predictive ability is less clear among females in the forensic mental health system.

Over the years, extensive efforts have been made towards improving the prediction and management of risk models (Chambers et al., 2009). This is demonstrated through the evolution of risk assessment tools (Andrews & Bonta, 2003; Andrews, Bonta, & Wormith, 2006; Andrews & Bonta, 2007). However, one major flaw that has become a primary focus in the research and practice of risk assessment is the applicability of these measures of risk for women. The majority of the research on the RNR model has been conducted on male offender populations (Hollin & Palmer, 2006). This is turn causes one to question whether the criminogenic needs identified on the male offender population will hold true for women or whether there are women-specific criminogenic needs (Hollin & Palmer, 2006)?

### 1.6.1 Gender Differences in Criminogenic Need

There is huge debate in the forensic mental health literature as to whether current measures of criminogenic need employed are equally representative for both men and women. The current assessment tools employed in forensic mental health are gender-neutral and work on the premise that the crimongenic needs for men and women are the same (Van Voorhis, Wright, Salisbury, & Bauman, 2010). Most risk assessment tools for risk of future criminal behaviour were developed and validated on male populations (van der Knaap, Alberda, Oosterveld & Born, 2011). The concern with this approach is that it informs treatment and if there are risk factors specific to women that are being omitted from assessment; this may result in lack of treatment that meets the specific needs of these women (Van Voorhis et al., 2010). There are no widely used risk

assessments instruments designed specifically for females in forensic settings, but some supplements have been developed (e.g., Female Additional Manual to the HCR-20) (de Vogel, de Vries Robbe, van Kalmthout & Place, 2011).

The most commonly used risk assessment instruments used in forensic mental health settings include the Psychopathy Checklist – Revised (PCL-R); Violence Risk Appraisal Guide (VRAG) and the Historical, Clinical and Risk Management (HCR-20). All of these risk assessment instruments have been tested empirically on male samples. Although many of these instruments have been since tested on female samples, their predictive utility among females varies across studies.

The ability of the VRAG to predict violent behavior among criminal and mentally-disordered male inmates has been well-established (Hastings, Krishnan, Tangney, & Stuewig, 2011). However, the validity and interpretation of VRAG scores with female populations is still unknown (Hastings, Krishnan, Tangney, & Stuewig, 2011). Nonetheless, it is a commonly used assessment tool for both male and female forensic populations (Hastings, Krishnan, Tangney, & Stuewig, 2011).

Hare et al. (2000) noted that although the PCL-R was originally developed and validated on male forensic populations, it is has since been shown that similar psychometric properties apply to other forensic mental health populations such as, females and sex offenders (Hare, Clark, Grann & Thornton, 2000). Among these studies on female offender populations, the distribution of scores and reliability were comparable to the male offender populations (Hare, 1990). However, several items may not be as useful in predicting psychopathy in female offenders as they are in male

offenders (Hare, 1990). Further investigation is warranted to determine the extent of these potential discrepancies between males and females.

To further complicate matters, studies have noted that the PCL-R diagnosis of psychopathy is a moderately strong predictor of recidivism in male offender populations, but it is not as strong a predictoramong female offender populations (Hart, Kropp, & Hare, 1988; Salekin et al. 1998; Cale & Lilienfeld, 2002). Only Factor 1 characteristics were predictive of recidivism among female offender populations (r=.26); however, both Factor 1 and Factor 2 characteristics predicted recidivism among males (Cale & Lilienfeld, 2011). It is unclear whether the differences in correlations between Factor 1, Factor 2 and recidivism were significant between men and women offender populations (Cale & Lilienfeld, 2011).

Little is known about the causes, assessments and diagnosis of psychopathy in female offender populations, let alone females in forensic psychiatric hospitals (Cale & Lilienfeld, 2002). Are the factors that are predictive of psychopathy among males the same as females in forensic mental health? There is no doubt that further investigation into the sex and gender differences associated with assessment and diagnosis of psychopathy is warranted.

The HCR-20 was developed and validated on male populations and the majority of the research has also been conducted on male samples only (de Vogel & de Ruiter, 2005). Recently, the Female Additional Manual (FAM) was developed to assess violence in women (de Vogel, de Vries Robbe, van Kalmthout & Place, 2011). Some new items were added and special guidelines were developed for old items to better meet the needs of women. For example, the historical item related to major mental

illness, is accompanied by the instruction for the assessor to code based on major mental illnesses that are possibly related to violence to others (or to oneself) and that are exclusively or mainly present in women (e.g., postpartum depression) (de Vogel, de Vries Robbe, van Kalmthout & Place, 2011). The FAM is currently used in the Netherlands and its overall utility in meeting the unique needs of women in forensic system is currently being evaluated.

Research into gender-responsive assessment tools implies that women in the forensic system are different compared to their male counterparts (Hollin & Palmer, 2006; Van Voorhis et al., 2010).These differences are highlighted through women's pathways into the criminal justice system, offences they commit, and perceptions of decreased violence in forensic settings (Van Voorhis et al., 2010). The specific criminogenic needs that are highlighted include: histories of victimization and abuse; mental illness; substance abuse; and financial difficulties (Hollin & Palmer, 2006; Van Voorhis et al., 2010).

Histories of victimization and abuse (both in childhood and adulthood) that then lead to criminal behaviour have been demonstrated among both men and women (Hollin & Palmer, 2006; Van Voorhis et al., 2010). However, the experience of physical and sexual abuse among women is believed to have a stronger impact on future criminal behaviour (Hollin & Palmer, 2006; Van Voorhis et al., 2010). Still, the research on this is mixed. A study by Lowenkamp, Holsinger and Latessa (2002) examined the relationship between childhood abuse and recidivism using LSI-R scores (Hollin & Palmer, 2006). This study found that in fact, history of abuse was not a factor predictive of recidivism for either men or women (Hollin & Palmer, 2006). The question then

becomes, is it that women are more likely to report histories of abuse or, that in fact a history of abuse can lead to future criminal behaviour among women? Based on this, further investigation is needed to determine if history of abuse is a crimonogenic need for both men and women or if it is a stronger risk factor for future criminal behaviour among women.

Mental health needs of women in the forensic mental health system differ considerably from men (Van Voorhis et al., 2010). Mental illness and self-injurious behaviour are more common among women and have been related to future criminal behaviour among women to a greater degree than men (Van Voorhis et al., 2010). Currently in risk assessment tools, mental health needs are not measured extensively and are often not incorporated in risk scales predicting risk of future criminal behaviour (Van Voorhis et al., 2010). When mental health needs are incorporated in risk assessment they are often historical in nature or based on psychiatric diagnoses (Van Voorhis et al., 2010). It is believed that behavioural indicators of mental health may be stronger predictors of future criminal behaviour, especially among women (Van Voorhis et al., 2010).

It has been demonstrated that substance abuse and criminal behaviour are strongly associated for both men and women in predicting future criminal behaviour (Hollin & Palmer, 2006). However, it has been documented that substance abuse, particularly drug abuse, is a robust risk factor among women in predicting future criminal behaviour and has unique effects on women (Hollin & Palmer, 2006; Van Voorhis et al., 2010). It is believed that different life circumstances such as history of abuse, mental illness, and parental history of abuse; as well as, patterns of drug use, were associated

with gender differences in use of illicit substances (Hollin & Palmer, 2006). It seems as though different life experiences can influence the reason for drug use among women (for example, in some cases, past history of abuse can be a reason for drug use among women). As a result, the issue is not that substance use itself that is the difference among men and women, but rather it is the reasons behind the use of substances that results in the gender differences. This suggests that, it is not just substance abuse treatment that is required for women, but more comprehensive treatment targeting the deeper seeded issues resulting in substance use among these women.

Financial difficulties (including poverty) are a criminogenic need for both men and women; however, it has been noted that poverty may affect women differently (Van Voorhis et al., 2010). However, the findings on this are mixed across research studies and therefore further investigation into possible gender differences associated with financial difficulties and risk of future criminal activity is warranted.

Education, employment and accommodation (for example, homelessness) are criminogenic needs that have been noted to be strong predictors in future criminal behaviour among *both* men and women (Hollin & Palmer, 2006; Van Voorhis et al., 2010). Based on strong theoretical and empirical associations found between these factors and criminal behaviour, they have been noted to be criminogenic needs for both men and women. However, the fact that there are similar criminogenic needs among men and women does not necessarily imply that these needs are of equal magnitude (Hollin & Palmer, 2006).

Our understanding of women-specific criminogenic needs is limited. It has been noted in the research that women experience physical and sexual abuse, substance

use, mental illness and issues around parenthood (Hollin & Palmer, 2006; Van Voorhis et al., 2010). However, it unclear to what degree these factors alone can lead to criminal behaviour. For example, history of abuse alone may not be a dynamic risk factor increasing the risk of future criminal behaviour. Rather, it is the interaction of the past abuse with other psychological and social processes that increases the risk (Hollin & Palmer, 2006). The issue really then becomes how adverse life events interact and how this interaction can lead to an increased likelihood of criminal behaviour (Hollin & Palmer, 2006). This leads to the concept of gender-specific pathways, in which these adverse life events trigger a multitude of personal issues that become a precursor to established criminogenic risk, which can lead to criminal behaviour (Hollin & Palmer, 2006). Determining the effect that these gender-specific pathways have on criminal behaviour among both men and women is critical to the perception of how adverse life events and psychological factors interact and establish criminogenic need (Hollin & Palmer, 2006; Rettinger & Andrews, 2010).

One of the major limitations with this comparison of gender-specific criminogenic needs is that majority of the research has been conducted on prison populations. It is unclear as to whether these differences associated with criminogenic needs hold true in a forensic mental health population. As well, the research does not examine potential differences within the female population; it simply compares men and women. Further, it appears that the literature examining the possibility of gender-specific criminogenic needs, in fact looks at differences between men and women (sex differences) and does not delve into potential gender influences that can help explain these differences. In many cases noted above, the risk factors identified were risk factors for both men and

women in predicting future criminal behaviour. However, in many cases, they seemed to affect women differently. This warrants further investigation of possible gender differences in criminogenic need among the forensic mental health inpatient setting.

Increasing our understanding of the crimonogenic needs of both men and women, if they differ and how will in turn enhance the ability to provide treatment that meet the person's individual needs (Nicholls et al., 2009; van der Knaap et al., 2011). An over or under-estimation of a specific need can result in an inappropriate level of treatment or intervention (Hollin & Palmer, 2006). If these needs are then incorporated into a measure of risk, it can lead to an inaccurate reduction or elevation in risk (Hollin & Palmer, 2006; Rettinger & Andrews, 2010).

### 1.7 Bridging the Gap using interRAI

The philosophy of the RNR theory can be applied to interRAI with respect to patient assessment and treatment. Within the RNR theory, the risk principle speaks of who should be treated (the high risk offender), the need principle speaks to what should be treated (criminogenic needs) and the responsivity principle helps determine how to treat (Andrews & Bonta, 2003; Andrews & Bonta, 2007; Bonta & Andrews, 2007). Conversely, applying the RNR theory to the interRAI philosophy, risk examines how likely a person is to be rehospitalized due to a mental illness; need identifies what areas (based on outcome scales and CAPs triggered) in a person's life that should be targeted within the care planning to support recovery of the person; and responsivity focuses on incorporating the person's strengths, needs and preferences that might influence the effectiveness of treatment services.

In a recent review by Shrinkfield and Ogloff, (2014) they identified that there are currently no assessment tools that measure recovery, risk and placement pathways. As well, research has indicated that many of the commonly used tools focus on risk of recidivism with little focus on other clinical, social and functional characteristics (Chambers et al., 2009; Shinkfield & Ogloff, 2014).

interRAI is an international collaborative network of researchers from over 30 countries committed to improving the care and quality of life for person's throughout the lifespan and across health and social service settings (www.interRAI.org). As an organization, interRAI maintains high quality standards with each version of its assessment systems undergoing extensive research and testing to demonstrate reliability and validity of items, assessment protocols, clinical outcome measures, case-mix systems, and quality indicators (www.interRAI.org). Although each instrument is designed for a specific setting, the interRAI suite of assessments is designed to provide a common language allowing for assessment data to follow the patient across different care settings and throughout the lifespan (www.interRAI.org). The RAI-MH is standardized, comprehensive assessment tool that employs a multidisciplinary approach in assessing a person's functioning to help inform clinical decision making as part of the care planning process and it encompasses aspects of clinical, social, functional and risk (for example, harm to others, violence) characteristics (Hirdes et al., 2000; Martin et al., 2009).

The RAI-MH was developed as part of an international research effort that began with collaboration between the Ontario Ministry of Health and Long Term Care, the Ontario Hospital Association, the Ontario Joint Policy and Planning Committee, and

interRAI to provide a comprehensive assessment of all adults in in-patient mental health settings, including acute, forensic, long stay, and geriatric psychiatry (Hirdes et al., 2000; Hirdes et al., 2010).

The RAI-MH is intended to support comprehensive care planning, outcome measurement, quality indicators, and case mix classification to estimate relative resource intensity (Hirdes et al., 2010). It employs a three-day observation period in order to provide reliable and valid measures of clinical characteristics (Hirdes et al., 2010).

The interRAI assessments are distinct from other instruments because they combine a comprehensive, multidisciplinary evaluation of an individual's strengths, preferences, and needs with a series of Clinical Assessment Protocols (CAPs) that inform clinical decision-making as part of the care planning process (Martin et al., 2009). Each CAP contains an issue statement, goals of care, triggers, guidelines and additional resources (Hirdes et al., 2011). The issue statement describes why the domain area is an important area of focus in mental health care (Hirdes et al., 2011). Goals of care highlight the specific targets within the CAP to support the patient's recovery and the CAP triggers are intended to either reduce risk of decline or increase the potential for improvement in the specific CAP domain area (Hirdes et al., 2011). The CAP guidelines are intended to help inform the care planning process and along with clinical judgement and incorporating the patient's preferences, help to inform the treatment plan (Hirdes et al., 2011).

Along with informing care planning, the RAI-MH assessments also have applications for outcomes, quality indicators and case-mix (Hirdes et al., 2010; Perlman et al., 2013).

Recently, mental health quality indicators (MHQI's) have been revised to evaluate quality of care based on person level characteristics collected at multiple points during the inpatient stay (Perlman et al., 2013). MHQI's can identify variability across mental health settings in order to identify opportunities to improve quality at the hospital level and in the healthcare sector as a whole (Perlman et al., 2013).

Across psychiatric hospitals in Ontario the System for Classification of Inpatient Psychiatry (SCIPP) derived from the RAI-MH, is the recommended case-mix classification system to inform funding across inpatient psychiatry (Hirdes et al., 2003; Perlman et al., 2013).

The RAI-MH has been mandated for use in all psychiatric hospitals throughout the province of Ontario since 2005 (Mathias, Hirdes, & Pittman, 2010).As part of this Ministry of Health and Long-term Care (MOHLTC) mandate, hospitals with designated adult psychiatric hospital beds in Ontario are required to submit completed RAI-MH assessment data to the Canadian Institute of Health Information (CIHI) on a quarterly basis (Canadian Institute of Health Information (CIHI), 2013). On behalf of the MOHLTC, CIHI has created the Ontario Mental Health Reporting System (OMHRS) as a data repository to help support these services (Canadian Institute of Health Information (CIHI), 2013).

There are a variety of ways in which data quality is ensured with respect to the RAI-MH data collection. First , data quality is taken into consideration in the overall design of interRAI instruments (Chan, Lai & Li, 2014; Hirdes et al., 2008; Hirdes et al., 2002). Also, CIHI trains hospital staff in completion of the RAI-MH and its applications using a variety of ongoing educational strategies. Further, CIHI uses data submission controls

to reject unacceptable data submissions. Hospitals are required to resubmit the corrected data within a specific time frame to avoid penalties imposed by provincial ministries of health. Public reporting also helps to improve data quality. For example, CIHI provides de-identified hospital comparison reports on indicators of quality of care. These provide strong incentives to ensure data quality because the performance on those quality indicators can have a strong, public impact on the reputation and management of hospitals.

Moving forward, OMHRs data can be analyzed using various statistical techniques that provide evidence in trends, validity, reliability, and population attributes. Methods similar to those used by Hirdes and colleagues (2013) for CIHI's Continuing Care Reporting System (CCRS) data can be employed. Specifically, time series comparisons including evaluations of scale reliability, patterns of associations between items and scales that provide evidence about convergent validity and measures of changes in population characteristics over time should be conducted to monitor data quality in OMHRs. In recent years, interRAI assessments have been conducted within criminal justice settings  for example, . Brown and colleagues (2013), used the RAI-MH in prisons to determine prevalence of mental illness among Ontario prison populations. Also, new instruments have been developed to better meet the needs of persons in the criminal justice system. For example, the interRAI Correctional Facilities (interRAI CF) instrument has been developed and tested in prison populations within the state of Michigan (Fries et al., 2013).  The interRAI Brief Mental Health Screener (interRAI BMHS) which is a mental health screener for police officers is now being used by the Ontario Provincial Police and a few local police agencies throughout Ontario (Hoffman,

2013). The interRAI BMHS has received international attention with polices agencies from around the world showing interest in the use of this assessment tool within their jurisdictions. Finally, the interRAI Forensic Supplement was developed as a one page addition to the interRAI-MH and interRAI-CMH to better meet the needs of forensic patients in both hospital and community settings. The interRAI Forensic Supplement has been piloted in both Ontario and in the Netherlands.

The interRAI Forensic Supplement is based on, and intended to compliment, the RAI-MH and the interRAI Mental Health (interRAI MH) assessment instruments for inpatient psychiatry and the interRAI Community Mental Health (interRAI CMH) assessment instrument. The interRAI Forensic Supplement is standardized, minimum screening tool designed to be used in multiple settings, including both inpatient and community programs and services. It is a one page assessment that is intended to augment the interRAI MH and interRAI CMH assessments by focusing on information specific to the forensic population. The compatibility of elements improves the continuity of care through a seamless health evaluation system across multiple settings, and promotes a person-centred approach to care. The items in this instrument focus on the person's risk of danger to others and recidivism.

The commonly identified items of the RNR theory's "Big 8" which include: antisocial attitudes; antisocial associates; a history of antisocial behaviour; antisocial personality pattern; family/marital; school/employment for the most part can also be measured using the RAI-MH and interRAI FS. For example, substance abuse is measured using the CAGE, time since use of substance; withdrawal symptoms, alcohol use and misuse of prescription medications. In addition, the Substance Abuse CAP

provides a targeting mechanism for persons with substance use issues combined with care planning guidelines to support intervention. Indicators of procriminal attitudes indicators included in the interRAI FS include: denies or minimizes harm to others, inappropriately blames others; and expressions supportive of criminal activity. See Appendix B for a full list of interRAI indicators found to measure aspects of the components of RNR theory. There is no measure of history of antisocial behaviour found within the RAI-MH or interRAI FS, but as a static measure it could not be targeted in interventions to help reduce risk of re-offending. In fact, Andrews and Bonta (2007) omitted history of antisocial behaviour because the items are static or unchangeable in.

In addition to these 'Big 8' risk factors, the RAI-MH and interRAI FS also have a variety of items that measure a person's social, behavioural, and functional characteristics. These focus on the dynamic changes in these characteristics, rather than emphasizing recividism outcomes. Hence, it can be argued that this is a greater emphasis on recovery within the RAI-MH and the interRAI Forensic Supplement compared to other risk assessment instruments.

Among forensic inpatients it is crucial to incorporate factors that can reduce risk of recidivism (for example, substance use, harm to others); clinical factors (for example, psychosis, anxiety); and social and functional characteristics (for example, social supports, (Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014; Yiend et al., 2010) to help reduce risk of rehospitalisation and promote recovery. For forensic mental health patients these characteristics are interconnected and can often influence re-contact with the forensic mental health system if not targeted during treatment. Currently there are no standardized assessment tools that have been known to measure all of these

domains (Shinkfield & Ogloff, 2014). Therefore, this dissertation research uses the RAI-MH (internationally known as interRAI MH) and interRAI Forensic Supplement assessment tools to provide a comprehensive assessment of forensic mental health patients capturing clinical, social, functional, and criminogenic risk factors that are associated with easing of restrictions in forensic mental health settings. The process of easing restrictions is an essential component to a person's rehabilitation and recovery because it allows the staff to detect relapse of undesirable behaviour prior to their full release (Bettridge & Barbaree, 2008; Tigges, 1991). As well, it provides a person with an opportunity to demonstrate to the clinical team they are capable with coping with further freedom of movement (Tigges, 1991). The challenge for forensic mental health hospitals is that they must protect public safety at the same time support the person's readjustment to life in the community (Bettridge & Barbaree, 2008; Carroll, Lyall, & Forrester, 2004; Department of Justice & Department of Health and Wellness, 2012; Green & Baglioni, 1998; Reichlin & Bloom, 1993; Walker, Farnworth, & Lapinski, 2013).

The gender differences associated with the process of easing restrictions in forensic mental health hospital settings, has received little attention in the literature. Even so, there are notable gender differences in easing of restrictions found across the forensic mental system. For example, a higher proportion of female forensic patients are being restricted to room in comparison to men (Ahmed & Lepnurm, 2001; Mason, 1998). So even though women represent a smaller number of the total psychiatric admissions they were accounting for majority of the restrictions to room (Ahmed & Lepnurm, 2001; Dumais, Larue, Drapeau, Menard, & Allard, 2011; Mason, 1998). Literature based in prison settings suggests that among women factors such as: family

separation; poor quality of life; mental illness; employment instability; and residential status affected successful reintegration into the community (Blanchette & Taylor, 2009).

There are several factors that need to be taken into account when determining the pace of progress for easing of restrictions at the patient level. Factors that have been known to increase tightening of restrictions include: aggressive behaviour; impulsiveness; antisocial behaviours; and instability (acute psychosis, cognitive impairments) (Stubner et al., 2006). Whereas, factors that increased the likelihood of easing restrictions included: having a confidant; positive coping mechanisms; and social skills (Stubner et al., 2006). There is clear overlap in factors that can affect easing of restrictions that require further investigation among potential gender and facility level differences.

Transitioning through levels of care is a staged process that involves the incremental easing of restrictions (BC Mental Health & Addiction Services, March 2013; Walker et al., 2013). The patient's trajectory through this staged process can have both periods of progress and relapse. Understanding the factors that can help reduce relapse will in turn support the patient's overall recover (Simpson, 2012). Further, if there are gender differences associated with the easing of restrictions, understanding these inherent differences can help inform policy and practice to improve the overall patient care.

However, recent changes in legislation may affect a person's freedom of movement. *The Not Criminally Responsible (NCR) Reform Act Bill C-14* (formerly *Bill C-54*), an act to amend the Criminal Code and the National Defence Act received Royal Assent on April 11, 2014 (Government of Canada - Department of Justice, 2013; House

of Commons Canada, 2013). The changes that Bill C-14 introduces include: putting public safety first; creating high-risk designation for persons deemed NCR; and enhancing victim's rights (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). Specifically, the new high-risk NCR designation could limit a person's ability to progress toward greater the freedom of movement by restricting them to a hospital until the court revokes their designation (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). This designation can be extended to a period of up to 3 years before the review board can review the person's progress. Prior to the legislation changes, annual reviews were conducted on the patient`s treatment progress. As well, persons deemed high-risk NCR cannot be granted unaccompanied leaves and accompanied leaves can only be granted in special circumstances and with the proper safeguards in place to protect the public (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). Changes that Bill C-14 brings came into effect as of July 11, 2014.

### 1.8 Summary

Gender can have separate and interacting effects on mental health and criminogenic needs (Archambault et al., 2014; Eaton et al., 2012; Nowatzki & Grant, 2011; Ramsay et al., 2001; World Health Organization, 2008). Men and women have different experiences in how express symptoms associated with mental illness, in service utilization and sometimes in even how these symptoms are managed. Therefore getting at the root of these gender differences can help provide the care that meets their individual needs (Nowatzki & Grant, 2011) GBA can help uncover these gender differences.

Omission of gender in forensic mental health research limits the validity and overall generalizability of findings, which in turn can affect the treatment and services provided at the individual level (Nowatzki & Grant, 2011; Van Voorhis et al., 2010).

As a starting point, it is necessary to examine the differences in the forensic mental health needs of men and women. However, it is crucial to move beyond sex disaggregated data analysis and explore how sex and gender influence the diverse health needs and care experiences of women and men in forensic mental health (Johnson et al., 2009; Nowatzki & Grant, 2011). Essentially, GBA provides more valid and reliable information that can in turn lead to better interventions/treatment and better overall outcomes for individuals in the forensic mental health system (Ad hoc Working Group on Women, Mental Health, Mental Illness and Addictions, 2008).

Understanding gender differences in forensic mental health will allow for more refined patient-centered care. Patient-centered care that addresses and integrates care for an individual's multiple risk factors and conditions and is sensitive to their social context (Nowatzki & Grant, 2011). Further, among forensic inpatients it is crucial to incorporate both factors that can reduce risk of recidivism (for example, substance use, harm to others) *and* clinical factors (for example, psychosis, anxiety) to help reduce risk of rehospitalisation and promote recovery. It is not just about assessing risk but it is supporting the overall recovery of the individual with the intent of supporting their overall reintegration into the community.

### 1.9 Dissertation Rationale

This research focuses on a gender-based analysis assessing the influences that can predict three outcomes among forensic mental health patients in Ontario including:

1) restriction to room (seclusion/confined to room) in forensic mental health hospitals;
2) unaccompanied leaves from forensic mental health hospitals; and
3) freedom of movement (FoM) among forensic inpatients.

As well, this thesis introduces the interRAI Forensic Supplement and determines what forensic variables can help determine freedom of movement among forensic inpatients. Key findings indicate that factors predicting Freedom of Movement are influenced by both individual and facility level factors. In addition, the individual factors that influence the easing or tightening of restrictions (FoM) are not solely aggressive behavioural indicators but also include several clinical, functional and social characteristics.

### 1.10 Ethics

The interRAI Forensic Supplement received ethics approval through the University of Waterloo (ORE #14616) and through each of the participating provincial forensic mental health program in Ontario. As well, ethics approval was provided for the validation of the interRAI Forensic Supplement against other forensic risk assessment data (ORE #: 18701). Data collected throughout these projects will be utilized in my PhD thesis research. Ethics approval was received for this thesis research (ORE #19798**).**

### 1.11 Confidentiality and Anonymity of Participants

Data was collected using the forensic mental health hospital case record number which is not publically identified. No individual identifiers were included. Specifically, the patient name, day of birth and last 3 digits of the health card number were removed to further ensure protection of privacy. The person's partial health card number will provide

only a means of identification (linking the RAI-MH to the interRAI Forensic Supplement and to other risk assessment instruments). Researchers will have no way to link a partial health card number to any medical or clinical records, nor to any individual's name. Results are reported on an aggregate level not on an individual level.

# Chapter 2
# Gender-based Analysis of Restriction to Room among Forensic Psychiatric Patients

## 2.1 Introduction

Although considerable research has been conducted on control interventions in acute psychiatric units little research has been done on their use in secure forensic mental health settings (Haw, Stubbs, Bickle, & Stewart, 2011). As well, the literature on possible sex and gender differences associated with the use of control interventions in any mental health setting is limited. Given that the use of control interventions has become a contentious form of behaviour control and due to threats of patient safety and the associated stigma it is important to understand the factors affecting their use in order to reduce their use (Macguire, Young, & Martin, 2011). Further, if there are inherent gender differences associated with the use control interventions, unveiling the potential institutional and societal biases that influence their use is a key part of this understanding.

### 2.1.1 Background

In forensic mental health inpatient settings, restriction to room (seclusion or confinement to room) occurs when a person is contained and prevented from leaving a space as a form of immediate psychiatric intervention (Canadian Institute of Health Information (CIHI), 2011; Hirdes et al., 2010).

Although international best practice guidelines are not regulated and can vary across jurisdictions, a few fundamental themes have emerged with respect to the practice of restricting patients to room (Canadian Institute of Health Information (CIHI),

2011; Mental Health Commission of Canada, 2012).Confining patients to a room (for example, seclusion) is viewed as a last resort because it can have negative effects on the patient, and the therapeutic value of these types of control interventions have been questioned by researchers (Canadian Institute of Health Information (CIHI), 2011; Centre for Addiction and Mental Health (CAMH), 2013; Hui, Middleton, & Vollm, 2013; Mah, 2013). However, in the event that restriction to room does occur, the focus is on ensuring the person's recovery and maintaining their dignity through this type of intervention process.

The rates of restriction to room vary across psychiatric hospitals. Some studies have noted rates of 23%, with other suggesting rates as high as 35% (Dumais et al., 2011; Mason, 1998). In a Canadian retrospective analysis of civil psychiatric inpatients, rates of seclusion with our without restraint were reported at 23.2% (Dumais et al., 2011). Similarly, in a Canadian study of forensic psychiatric patients serving federal sentences rates of seclusion were 27.7% (Ahmed & Lepnurm, 2001). In a study by Mason (1998), women accounted for the majority of these episodes of restriction to room even though they accounted for a smaller proportion of the forensic population as a whole. However, the duration of these restrictions to room was much shorter for women compared to their male counterparts (Dumais et al., 2011; Mason, 1998).

There are inconsistent findings in the literature regarding symptoms associated with increased risk of restriction to room. Previous research has noted that positive symptoms; suicidal threats or risk of self-harm; personality disorder diagnosis; bipolar disorder diagnosis; substance use problems; and days of stay increase the risk of being restricted to room (Ahmed & Lepnurm, 2001; Dumais et al., 2011; Mason, 1998).

Some research has noted gender differences in the rates of being restricted to room. For example in two studies, a higher proportion of women were secluded compared to men (Ahmed & Lepnurm, 2001; Mason, 1998) Even though women had a smaller number of the total psychiatric admissions, these accounted for the majority of seclusions (Ahmed & Lepnurm, 2001; Dumais et al., 2011; Mason, 1998). For example, Ahmed & Lepnurm (2011) reported that 60% of female admissions produced episodes of restriction to room compared to only 25% of male admissions.

Although there are international efforts to eliminate the use of control interventions all together; the primary approach in Canada has been to minimize restriction to room (Canadian Institute of Health Information (CIHI), 2011; Happell & Koehn, 2010; Mah, 2013; Mental Health Commission of Canada, 2012). In fact, the Canadian Patient Safety Initiative and Mental Health Commission of Canada (2012) recently declared the minimization of restriction to room as the standard of care throughout hospitals across the country. These reduction initiatives are currently underway in many hospitals across the province of Ontario (Mental Health Commission of Canada, 2012).

However, there are challenges associated with reducing restriction to room in forensic mental health settings. Many forensic patients exhibit aggressive behaviours and clinical issues (for example, substance use, negative attitudes, antisocial behaviour) that can increase the likelihood of being restricted to room (Macguire et al., 2011). It is also imperative for the clinical staff to ensure safety on the unit by protecting the safety of the staff and other patients (Macguire, Young & Martin, 2012).

The factors associated with violent, aggressive and suicidal behaviours are complex and the effect of gender in relation to these factors in predicting the use of control interventions is still unclear. Hence, there is a need for further investigation in this area (Paavola & Tiihonen, 2010).

It may not be possible to completely eliminate restriction to room in forensic mental health settings because of high risk behaviours in this population. However, measures can be put in place to help reduce their use in order to support the person's recovery process.

## 2.2 Purpose

This chapter will provide an analysis of the gender-based influences associated with restriction to room in forensic mental health hospitals. Additionally, understanding the factors associated with lower likelihood of restriction to room and their interaction with gender can provide helpful insight to inform the focus of treatment interventions. Physical restraint use was omitted from this analysis because Mah (2013) recently published thesis results examining control interventions within various mental health settings.

## 2.3 Methods

### 2.3.1 Data Source

The RAI-MH is standardized, comprehensive assessment tool that helps inform clinical decision making as part of the care planning process through a multidisciplinary approach for assessing a person's functioning (Hirdes et al., 2000; Martin et al., 2009). It uses a three-day observation period to provide stable estimate of clinical characteristics (Hirdes et al., 2010). The RAI-MH has exhibited strong inter-rater

reliability and convergent validity in a variety of studies (Gibbons et al., 2008; Hirdes et al., 2002; Hirdes et al., 2008). The RAI-MH assessments can be used to inform care planning, but they have applications for case-mix, outcomes and quality measurement (Hirdes et al., 2010; Perlman et al., 2013). Recently, mental health quality indicators (MHQI's) have been revised to evaluate quality of care based on person level characteristics collected at multiple points during the inpatient stay (Perlman et al., 2013). MHQI's can identify variability across mental health settings in order to identify opportunities to improve quality at the hospital level and in the healthcare sector as a whole (Perlman et al., 2013).

Since October 2005, the use of the RAI-MH has been mandated in all psychiatric hospitals throughout the province of Ontario (Mathias et al., 2010). As part of this mandate, psychiatric hospitals in Ontario submit completed assessment data to the Canadian Institute of Health Information (CIHI) on a quarterly basis (Canadian Institute of Health Information (CIHI), 2013). CIHI's Ontario Mental Health Reporting System (OMHRS) includes a data repository and analytical services that support management of RAI-MH data on behalf of the Ministry of Health and Long-term Care (MOHTLC) (Canadian Institute of Health Information (CIHI), 2013).

For purposes of this chapter, the OMHRS dataset was constrained to include only forensic mental health episodes. This includes all adults who were admitted as forensic patients and assessed in a forensic mental health hospital (or forensic unit within a psychiatric hospital) in Ontario from October 7, 2005 to March 31, 2011. All nine provincial forensic mental health hospitals throughout Ontario were included in this

dataset for a total sample size of 6,619. Of this total sample size, 5, 593 were male and 1, 026 were female forensic inpatients.

The sample includes all forensic patients in Ontario assessed using the RAI-MH between October 7, 2005 and March 31, 2011. Short stay patients were excluded from the dataset, because only patients who stay for 3 days or more in inpatient mental health settings have a full assessment completed. Partial assessments are conducted on short-stay hospital patients (0–2 day stays) for tracking purposes. Those short stay patients would therefore be under-represented in the present study. As of December 1, 2009, short-stay patients account for just over 25% of overall admissions to inpatient mental health in Ontario (Mathias, Hirdes, Pittman, 2010). The short-stay assessment record has substantially fewer mandatory data elements than the full admission record. Only unique individuals were included in the dataset.

Those who are in forensic services in Ontario consist of persons who: have been ordered by court for forensic assessment; are unfit to stand trial; or are not criminally responsible due to mental disorder (NCRMD)( Barbaree & Goering, 2006; Bettridge & Barbaree, 2008; Goering et al., 2000; Hucker, 2008; Livingston, 2006).

## 2.4 Measures

### 2.4.1 Dependent Variable

#### 2.4.1.1 Restricted to Room

The dependent variable 'restricted to room' was created to examine any use of either seclusion or confinement to room in the last 3 days. Seclusion is any room that restricts the person preventing his or her exit freely; and confinement to room is restricting the person to a room that is not otherwise deemed a seclusion room (Hirdes et al., 2010).

This item within the RAI-MH measures whether this type of control intervention was used less than daily, used daily – nights only; used daily – days only; used nights and days but not constant; and constant use for full 24 hours. For purposes of the analysis in this chapter this variable was recoded as a binary measure, whether the event occurred at any frequency or not. Restricted to room is a dichotomous dependent variable where the probability modeled is 'restricted to room=1'.

### 2.4.2 Independent Variables

2.4.2.1 Sociodemographic Characteristics

*Age*

Age was collapsed into four groups: 18-24, 25-44, 45-64, and 65+. The reference group was 18-24.

*Female Gender*

The RAI-MH sex variable consists of three response options: male, female and other. Because the 'other' response category is an underused response option, there were not enough cases to warrant 'other' being its own gender category. Males represent a large majority of the forensic inpatient population. For purposes of this analysis, 'male' and 'other' were recoded into one variable (female gender=0) and was used as the reference group and 'female' (female gender=1) was the comparison group. This binary measure of female gender was also used to stratify the logistic regression models to examine gender influences on factors that predict unaccompanied leaves.

*Psychiatric Diagnoses*

Psychiatric diagnoses documents the top 3 specific psychiatric diagnosis in order of importance (for example,1='for the most important diagnosis'). All diagnoses are

based on DSM-IV provisional diagnostic criteria. For this particular analysis, psychiatric diagnosis was recoded into a series of binary measures (Yes/No) for each diagnosis. Not having the given diagnosis was the reference group for each dummy variable.

#### 2.4.2.2 Mental Health Service Use Characteristics

*Day of Stay*

The last assessment of each forensic episode was extracted to determine the patient's day of stay. The specific day of stay categories are less than 45 days, 45-179 days, 180-1094 days and 1095+ days. The reference group was less than 45 days.

*Amount of Time Hospitalized*

This variable records the amount of time the person was hospitalized for mental health services during the last 2 years. The specific categories of amount of time hospitalized are 0 days; 30 days or less; 31 days to 1 year; and more than 1 year. The reference group was '0 days (no other admission in the last 2 years)'.

*Staff Report Persistent Frustration when Dealing with Patient*

A binary measure (Yes/No) where one or more staff member report persistent frustration with the person was available. The reference group is "No", where staff do not report frustration in dealing with the person.

#### 2.4.2.3 Mental Health Clinical Characteristics

*Insight into Mental Health*

Insight into mental health assesses the person's level of awareness of their mental health problems. The categories for degree of insight into mental health are Full, Limited, and None. The reference group is 'full' degree of insight.

*Refusal of Medication*

Refusal of medication is a binary measure (Yes/No) that documents any refusal of prescribed medications regardless of the reason. The reference group is “No, or no medications”.

*Psychiatric Intensive Care Unit*

This item measures the use of a psychiatric intensive care unit (ICU) within the last 3 days where a patient can be under constant clinical observation. The number of actual days the person is in the psychiatric ICU in the last 3 days was recorded but this was collapsed into a binary variable with any days as the comparison group. The reference group was ‘0 days’.

*Acute control Medications*

Psychotropic medications are provided to patients as an immediate response to control behaviours that have the potential of harming the person or others. The frequency of administered acute control medications over the last 3 days was recorded. If the person has received acute control medications greater than 9 times in the last 3 days “9” is noted. Acute control medications were recoded where the coding categories are 0, 1-4 and 5+. The reference group was ‘0’, received no acute control medications in the last 3 days.

2.4.2.4 Behavioural Symptoms

Behavioural symptoms identify the presence of behaviours that cause distress or that are potentially harmful to the person or others that have occurred in the last 3 days. These include wandering: physical abuse; verbal abuse; socially inappropriate behaviour; inappropriate sexual behaviour; resistance to care; and elopement attempts were the specific behavioural symptoms investigated. The coding categories for the

behavioural symptoms are: not exhibited, present but not exhibited, exhibited 1-2 times and exhibited daily. The reference group for each behaviour is “did not exhibit the behavioural symptom in the last 3 days”.

*Extreme behaviour Disturbance*

Extreme behaviour disturbance assessed prior history of extreme behaviours that suggests serious risk of harm to self/others based three categories: whether the event happened (No); previous behaviour but not within the last 7 days; and has been exhibited in the last 7 days. The reference group is “No extreme behaviour disturbance”.

*Persistent Anger*

Persistent anger with self or others assesses the presence of the observed indicator (persistent anger) within the last 3 days. The coding categories for persistent anger with self or others includes: not exhibited, present but not exhibited, exhibited 1-2 times and exhibited daily. The reference group is persistent anger with self or others not exhibited within the last 3 days.

2.4.2.5 Harm to Self or Others

*Suicide Plan*

Suicide plan is a binary measure (Yes/No) that identifies if the person has formulated a plan to end their own life within the last month. The reference group is having no suicide plan.

*Most Recent Self-Injurious Act (within last month)*

Most recent self-injurious act identifies if the person has engaged in self-injurious behaviour within the last month. This variable was recoded into a binary measure (Yes/No) to measure whether the event occurred regardless of the recency of the event. The reference group is no self-injurious act within the last month.

*Violence to others*

The violence to others variable measures the most recent instance of violence. For the analysis in this chapter, violence to others was recoded into a binary measure (Yes/No) to identify persons at risk of becoming violent towards others. The reference group is no instance of violence towards others.

2.4.2.6 RAI-MH Clinical Scales

Eleven clinical outcome scales derived from the RAI-MH were included in the bivariate analysis. The specific scales examined included: Aggressive Behaviour Scale (ABS) (Perlman & Hirdes, 2008); Risk of Harm to Others (RHO); Severity of Self-Harm (SoS); Self-Care Index (SCI); Depressive Severity Index (DSI); Positive Symptom Scale (PSS); Mania; Social Withdrawal; ADL Hierarchy; Instrumental Activities of Daily Living (IADL) Capacity Scale; and Cognitive Performance Scale (CPS) (Bula, C.J., & Wietlisbach, V., 2009; Hartmaier et al., 1995; Morris et al., 1994; Yamauchi & Ikegami, 1999). These scales were recoded into categorical variables in the analyses. All scales were recoded based on cut-off points presented in a paper by Hirdes et al., (in press) Appendix A describes the RAI-MH scale and the categories for each level of the scale in greater detail. Higher scores on the scale indicate greater loss or severity of a condition.

2.4.2.7 Mental Health Clinical Assessment Protocols (CAPs)

The interRAI assessments combine a comprehensive, multidisciplinary evaluation of an individual's strengths, preferences, and needs with a series of Clinical Assessment Protocols (CAPs) that inform clinical decision-making as part of the care planning process (Martin et al., 2009). Each CAP contains an issue statement, goals of care, triggers, guidelines and additional resources (Hirdes et al., 2011). The issue

statement describes why the domain area is an important area of focus in mental health care (Hirdes et al., 2011). Goals of care highlight the specific targets within the CAP to support the patient's recovery and the CAP triggers are intended to either reduce risk of decline or increase the potential for improvement in the specific CAP domain area (Hirdes et al., 2011). The CAP guidelines are intended to help inform the care planning process and along with clinical judgement and incorporating the patient's preferences, help to inform the treatment plan (Hirdes et al., 2011). Below is a list of the CAPs that were found to be significant in the bivariate analysis.

*Social Relationships*

This CAP aims to address factors leading to disruption in social relationships that may ultimately result in isolation of the person from family, friends and the greater community. This CAP is triggered to either reduce social isolation and family dysfunction (Level 2) or to improve close friendships and family functioning (Level 1). The not triggered group is the reference group.

*Interpersonal Conflict*

The Interpersonal Conflict Cap addresses the issue of conflict that a person may have in his or her relationships with others. This CAP is triggered to reduce widespread conflict (Level 2) and to reduce conflict within specific relationships (Level 1). The not triggered group is the reference group.

*Traumatic Life Events*

The Traumatic Life Events CAP is comprised of two triggering levels: triggered to address immediate safety concerns; and triggered to reduce the impact of the prior traumatic life events. The not triggered group is the reference group.

*Medication Management and Adherence*

The Medication Management and Adherence CAP has two triggering levels: triggered for problems with medication management and adherence related to cognitive deficits and positive symptoms; and triggered for having previously stopped taking medication due to side effects. The not triggered group is the reference group.

## 2.5 Data Analysis

Bivariate analyses were done for of each independent variable using the restricted to room as the dependent variable. Gender differences in these associations were also examined through stratified bivariate analysis. Results from this initial analysis provided insight into potentially viable multivariate models. This was determined based both on variables reported to have clinical relevance based on the literature and statistical significance using chi-square statistics (significance level 0.05).

Multivariate logistic regression was performed to identify the independent associations between restriction to room and the explanatory variables. Non-significant variables were deleted sequentially from the multivariate models until only significant variables remained (backward selection). Variables not found to be statistically significant were removed from the model individually, effects on the model were noted and only those variables that remained statistically significant were retained in the model. Stepwise methods were not employed, rather manual selection of the final model was done in order to avoid potential order of entry/deletion effects. Variables that were expected to be important based on the literature or clinical input were tested at various stages of model develop to ensure that they were not excluded due to problems

related to multicollinearity, for example. However, only variables that achieved the .05 level of significance were retained in the final multivariate logistic regression models

Odds ratios were produced for the odds of restriction to room with one-level increase in the value of the independent variable. Odds ratios of less than one indicate a decreased likelihood of restriction to room.

Analyses were undertaken for each of the final models to ensure appropriate data fit. Accuracy of the model prediction was determined using the c-statistic (or area under the curve AUC). Where a c-statistic of 0.50 indicates that the model prediction is no better than chance, of 0.70 is considered reasonable, 0.80 is strong and 1.0 indicates a perfect fit (Hosmer & Lemeshow, 1989; Hosmer & Lemeshow, 2000).

## 2.6 Results

There were 6,564 RAI-MH assessments retained for the current study that were completed between October 7, 2005 and March 31, 2011. 18% of the sample had been restricted to room as a form of control interventions within the last three days. Of those who had been restricted to room, 91% were male and 9% were female.

### 2.6.1 Descriptive Bivariate Analysis Results

The tables 2.1 to 2.6 show the bivariate analysis for rates of restriction to room by independent variables of interest for all forensic patients and stratified by gender.

*Sociodemographic Characteristics*

The highest rate of forensic psychiatric patients who have been restricted to room are for the 18-24 and 25-44 age groups and this is true for both men and women. A substantially higher percentage of men over the age of 65 had restriction to room compared to women of the same age group (16% vs 3%, respectively).

Men with a diagnosis of personality disorder, schizophrenia, substance use or mood disorder had higher rates of restriction to room compared to women. While women with an anxiety disorder diagnosis had higher rates of restriction to room compared to men (14% vs. 9%, respectively). The highest rates of restriction to room for all groups were in the personality disorder group.

*Mental Service Use Characteristic*

Men had higher rates of restriction to room irrespective of day of stay; however, this difference became more pronounced with higher days of stay. For women the lowest rates of restriction to room were in the middle days of stay group.

For all other variables considered in Table 2.2, the rates of restriction to room were higher for men than women regardless of the service user subgroup.

For forensic patients where staff report persistent frustration in dealing with the person, rates of restriction to room were 30%. There were minimal gender differences with respect to the rate of restriction to room when staff report persistent frustration with the patient. This suggests that staff who report having difficulty in dealing with patient can result in an increased likelihood of being restricted to room or that persons restricted to room can cause frustration in staff, regardless of gender.

*Mental Health Clinical Characteristics*

Forensic patients who have no degree of insight into their mental health problems; refuse medications; have been given acute control medications and been in the psychiatric ICU in the last 3 days all have higher rates of restriction to room than those without these characteristics.

Men with no degree of insight into their mental health problems have rates of restriction to room that are almost twice that of their female counterparts. Similarly, men who refused medication and have been in the psychiatric ICU daily over the last 3 days have higher rates of restriction to room compared to women. However, women who have been administered acute control medications more than 5 times over the last 3 days had greater rates of restriction to room compared to men.

*Behavioural Symptoms Characteristics*

Exhibiting behavioural symptoms of various types increases the rate of restriction to room among forensic patients. There are however, gender differences with rate of restriction to room found through types of behavioural symptoms. Men exhibiting wandering, verbal abuse, resistance to care and elopement threats/attempts daily over the last 3 days had higher rates of restriction to room than women. Women exhibiting physical abuse daily over the last days had rates of restriction to room of 86%, a slightly higher rate than men. Men exhibiting extreme behaviour disturbance in the last 7 days had rates of restriction to room of 74%, higher rates than the women. There are minimal gender differences found among exhibiting socially inappropriate behaviours, persistent anger and rates of restriction to room.

*Harm to Self or Others Characteristics*

Among forensic inpatients, demonstrating violence towards others, having a suicide plan and have attempted self-injury in the last month are associated with higher rates of restriction to room compared to the reference group. There are minimal gender differences found among these characteristics and rates of restriction to room.

*RAI-MH Clinical Scales*

Generally, patients are more likely to be restricted to room as a form of control intervention if they are exhibiting higher levels of aggressive behaviours, risk of harm to others, risk of harm to self, inability to care for self due to mental illness, positive symptoms, mania, social withdrawal, ADL, IADL and cognitive impairments.

There are a few distinct gender differences found between RAI-MH clinical scale scores and rates of restriction to room. Men with more aggressive behaviour, risk of harm to others, mania symptoms, positive symptoms, social withdrawal, depressive symptoms, ADL, IADL and cognitive impairments had higher rates of restriction to room. There were minimal gender differences found among a person's inability to care for oneself due to mental illness and rates of restriction to room.

*Clinical Assessment Protocols*

Men who trigger the Social Relationships, Interpersonal Conflict, Traumatic Life Events and Medication Management CAPs have higher rates of restriction to room compared to women. For each of these CAPs the triggered groups have higher rates of restriction to room than the not triggered groups.

### 2.6.2 Multivariate Analysis Results

Using logistic regression analysis, factors that are predictive of restriction to room (seclusion or confinement to room) were examined for the sample as a whole, and by gender. The initial logistic regression model was ***not*** stratified by 'female gender' and therefore examined at factors that were predictive of restriction to room among the entire forensic psychiatric patient population included in this study.

**Table 2.1 Rate of Restricted to Room by Sociodemographic Characteristics among Ontario Forensic Patients**

| Sociodemographic Characteristic | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Age** | | | | |
| 18-24 | | 22.8 (192) | 23.7 (174) | 16.2 (18) |
| 25-44 | | 18.0 (648) | 19.2 (591) | 10.7 (57) |
| 45-64 | | 14.5 (267) | 15.9 (237) | 8.8 (30) |
| 65+ | | 14.3 (38) | 15.7 (37) | 3.3 (1) |
| | *p* | *<.0001* | *<.0001* | *0.09* |
| | *$X^2$ (DF)* | *29.6 (3)* | *22.1 (3)* | *6.6 (3)* |
| **Psychiatric Diagnoses** | | | | |
| Personality Disorder | | 22.5 (324) | 23.8 (282) | 16.4 (42) |
| Substance Use Disorder | | 13.1 (766) | 13.5 (320) | 10.4 (37) |
| Mood Disorder | | 12.3 (152) | 13.0 (121) | 10.4 (31) |
| Anxiety Disorder | | 10.1 (36) | 9.2 (26) | 13.9 (10) |
| | *p* | *<.0001* | | |
| | *$X^2$ (DF)* | | | |

**Table 2.2 Rate of Restricted to Room by Mental Health Service Use Characteristics among Ontario Forensic Patients**

| Mental Health Clinical Characteristic | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Day of Stay** | | | | |
| Less than 45 days | | 16.8 (560) | 17.6 (488)) | 12.9 (72) |
| 45-179 days | | 19.0 (304) | 21.2(284) | 7.75.8 |
| 180-1094 days | | 16.0 (209) | 17.4 (200) | (9)12.5 |
| 1095+ days | | 22.3 (73) | 23.7 (68) | (5)*0.02 9.6 (3)* |
| | *p* | *0.01* | *0.003* | |
| | *$X^2$ (DF)* | *10.8 (3)* | *13.7 (3)* | |
| **Amount of Time Hospitalized** | | | | |
| No other admissions in last 2 years | | 16.9 (461) | 18.2 (423) | 9.4 (38) |
| 30 days or less | | 14.3 (174) | 15.0 (153) | 10.6 (21) |
| 31 days to 1 year | | 18.2 (331) | 19.7 (296) | 11.2 (35) |
| More than 1 year | | 25.2 (170) | 27.1 (160) | 11.9 (10) |
| | *p* | *<.0001* | *<.0001* | *0.84* |
| | *$X^2$ (DF)* | *37.5 (3)* | *37.2 (3)* | *0.82 (3)* |
| **Reason for Admission: Violent & Forensic Patient** | | | | |
| No | | 6.7 (9) | 8.7 (9) | 0 |
| Yes | | 18.3 (565) | 19.8 (512) | 10.8 (53) |
| | *p* | *0.0006* | *0.006* | *0.05* |
| | *$X^2$ (DF)* | *11.8 (1)* | *7.7 (1)* | *3.7 (1)* |
| **Frustrated Staff** | | | | |
| No | | 15.7 (906) | 17.2 (845) | 7.2 (61) |
| Yes | | 29.7 (236) | 30.5 (191) | 26.8 (45) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *94.7 (1)* | *64.4 (1)* | *45.8 (1)* |

**Table 2.2 Rate of Restricted to Room by Mental Health Clinical Characteristics among Ontario Forensic Patients**

| Mental Health Clinical Characteristic | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Insight into Mental Health** | | | | |
| Full | | 12.9 (148) | 13.8 (138) | 6.6 (10) |
| Limited | | 14.6 (578) | 15.7 (523) | 8.8 (55) |
| None | | 28.9 (417) | 31.2 (376) | 17.5 (41) |
| | *p* | *<.0001* | *<.0001* | *0.0003* |
| | *$X^2$ (DF)* | *171.5 (2)* | *159.1 (2)* | *16.5 (2)* |
| **Refusal of Medication** *(in last 3 days)* | | | | |
| No | | 14.4 (842) | 15.5 (769) | 8.1 (73) |
| Yes | | 42.9 (302) | 45.2 (269) | 30.3 (33) |
| | *p* | *<.0001* | <.0001 | <.0001 |
| | *$X^2$ (DF)* | *355.3 (1)* | 307.6 (1) | 51.4 (1) |
| **Psychiatric Intensive Care Unit** *(in last 3 days)* | | | | |
| No | | 16.9 (1,081) | 18.2 (985) | 9.7 (96) |
| Yes | | 42.1 (64) | 42.5 (54) | 40.0 (10) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *65.7 (3)* | *48.3 (3)* | *23.9 (3)* |
| **Acute Control Medications** | | | | |
| 0 | | 15.5 (942) | 17.1 (885) | 6.3 (57) |
| 1-4 | | 40.6 (165) | 40.0 (128) | 43.0 (37) |
| 5+ | | 44.6 (37) | 41.7 (25) | 52.2 (12) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *210.0 (2)* | *124.6 (2)* | *157.1 (2)* |

**Table 2.3 Rate of Restricted to Room by Behavioural Symptoms among Ontario Forensic Patients**

| **Behavioural Symptoms** *(in last 3 days)* | | **Total Sample** (N=6,564) % (n) | **Male** (N=5,549) % (n) | **Female** (N=1,015) % (n) |
|---|---|---|---|---|
| **Wandering** | | | | |
| Not exhibited | | 16.5 (1,028) | 17.8 (934) | 9.8 (94) |
| Not exhibited, put reported to be present | | 30.0 (45) | 30.7 (39) | 26.1 (6) |
| Exhibited on 1-2 of last 3 days | | 29.2 (28) | 32.0 (24) | 19.1 (4) |
| Exhibited daily in last 3 days | | 42.6 (43) | 43.6 (41) | 28.6 (2) |
| | *p* | *<.0001* | *<.0001* | *0.01* |
| | *$X^2$ (DF)* | *73.4 (3)* | *62.0 (3)* | *10.6 (3)* |
| **Verbal Abuse** | | | | |
| Not exhibited | | 12.7 (660) | 14.1 (627) | 4.4 (33) |
| Not exhibited, put reported to be present | | 26.0 (181) | 27.8 (160) | 17.4 (21) |
| Exhibited on 1-2 of last 3 days | | 40.9 (167) | 44.6 (140) | 28.7 (27) |
| Exhibited daily in last 3 days | | 52.7 (136) | 54.4 (111) | 46.3 (25) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *495.8 (3)* | *402.9 (3)* | *142.7 (3)* |
| **Physical Abuse** | | | | |
| Not exhibited | | 14.5 (854) | 15.8 (787) | 7.4 (67) |
| Not exhibited, put reported to be present | | 36.3 (198) | 38.1 (175) | 26.44 (23) |
| Exhibited on 1-2 of last 3 days | | 63.4 (59) | 62.8 (49) | 66.7 (10) |
| Exhibited daily in last 3 days | | 80.5 (33) | 79.4 (27) | 85.7 (6) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *419.1 (3)* | *323.2 (3)* | *125.8 (3)* |

**Table 2.3 Rate of Restricted to Room by Behavioural Symptoms among Ontario Forensic Patients**

| **Behavioural Symptoms** *(in last 3 days)* | | **Total Sample** (N=6,564) % (n) | **Male** (N=5,549) % (n) | **Female** (N=1,015) % (n) |
|---|---|---|---|---|
| **Socially Inappropriate Behaviour** | | | | |
| Not exhibited | | 13.3 (740) | 14.6 (692) | 5.7 (48) |
| Not exhibited, put reported to be present | | 30.3 (125) | 31.9 (108) | 23.3 (17) |
| Exhibited on 1-2 of last 3 days | | 39.7 (125) | 42.2 (108) | 28.8 (17) |
| Exhibited daily in last 3 days | | 59.0 (154) | 59.9 (130) | 54.6 (24) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *536.1 (3)* | *425.5 (3)* | *145.5 (3)* |
| **Resistance to Care** | | | | |
| Not exhibited | | 13.7 (767) | 14.8 (709) | 6.9 (58) |
| Not exhibited, put reported to be present | | 31.5 (133) | 35.0 (123) | 14.1 (10) |
| Exhibited on 1-2 of last 3 days | | 42.9 (115) | 44.3 (93) | 37.9 (22) |
| Exhibited daily in last 3 days | | 51.4 (129) | 54.6 (113) | 36.4 (16) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *435.9 (3)* | *373.9 (3)* | *90.7 (3)* |
| **Elopement Attempts/Threats** | | | | |
| Not exhibited | | 16.9 (1,061) | 18.0 (960) | 10.4 (101) |
| Not exhibited, put reported to be present | | 23.6 (46) | 27.7 (44) | 5.6 (2) |
| Exhibited on 1-2 of last 3 days | | 49.0 (24) | 52.4 (22) | 28.6 (2) |
| Exhibited daily in last 3 days | | 52.0 (154) | 57.1 (12) | 25.0 (1) |
| | *p* | *<.0001* | *<.0001* | *0.2* |
| | *$X^2$ (DF)* | *61.2 (3)* | *61.7 (3)* | *4.3 (3)* |

**Table 2.3 Rate of Restricted to Room by Behavioural Symptoms among Ontario Forensic Patients**

| **Behavioural Symptoms** *(in last 3 days)* | | **Total Sample** (N=6,564) % (n) | **Male** (N=5,549) % (n) | **Female** (N=1,015) % (n) |
|---|---|---|---|---|
| **Extreme behaviour disturbance** | | | | |
| No | | 14.4 (726) | 15.8 (674) | 6.6 (52) |
| Yes, but not exhibited in last 7 days | | 19.6 (249) | 20.1 (216) | 16.8 (33) |
| Yes, exhibited in last 7 days | | 72.8 (169) | 74.0 (148) | 65.6 (21) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *532.4 (2)* | *427.5 (2)* | *124.7 (2)* |
| **Persistent Anger** | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *369.5 (3)* | *288.6 (3)* | *135.9 (3)* |
| Not exhibited | | 12.9 (618) | 14.4 (591) | 4.1 (27) |
| Not exhibited, put reported to be present | | 18.0 (122) | 19.5 (107) | 11.8 (15) |
| Exhibited on 1-2 of last 3 days | | 33.0 (220) | 36.0 (194) | 20.3 (26) |
| Exhibited daily in last 3 days | | 42.7 (182) | 43.1 (144) | 41.3 (38) |

**Table 2.4 Rate of Restricted to Room by Harm to Self or Others Characteristics among Ontario Forensic Patients**

| Harm to Self or Others Characteristic | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Suicide Plan** | | | | |
| No | | 18.8 (566) | 20.4 (521) | 10.0 (45) |
| Yes | | 35.6 (21) | 36.0 (18) | 33.3 (3) |
| | *p* | *0.001* | *0.007* | *0.02* |
| | *$X^2$ (DF)* | *10.5 (1)* | *7.3 (1)* | *5.2 (1)* |
| **Most Recent Self-Injurious Act** *(within last month)* | | | | |
| No | | 17.0 (1,100) | 18.4 (1,008) | 9.3 (92) |
| Yes | | 56.1 (46) | 56.1 (32) | 56.0 (14) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *86.0 (1)* | *52.9 (1)* | *56.9 (1)* |
| **Violence to Others** *(within last month)* | | | | |
| No | | 16.3 (1,040) | 17.6 (951) | 9.0 (89) |
| Yes | | 60.2 (106) | 60.5 (89) | 58.6 (17) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *229.6 (1)* | *129.6 (1)* | *74.1 (1)* |

**Table 2.5 Rate of Restricted to Room by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Aggressive Behaviour Scale (ABS)** | | | | |
| 0 | | 10.7 (493) | 11.9 (470) | 3.5 (23) |
| 1-3 | | 24.3 (289) | 26.9 (264) | 12.1 (25) |
| 4+ | | 48.3 (362) | 50.3 (304) | 40.3 (58) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *682.3 (2)* | *559.8 (2)* | *172.0 (2)* |
| **Risk of Harm to Others (RHO)** | | | | |
| 0 | | 5.7 (22) | 6.4 (18) | 4.0 (4) |
| 1-2 | | 14.0 (635) | 15.5 (602) | 5.2 (33) |
| 3-4 | | 20.3 (245) | 21.4 (215) | 14.7 (30) |
| 5-6 | | 55.6 (240) | 56.0 (201) | 53.4 (39) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *515.9 (3)* | *388.1 (3)* | *170.6 (3)* |
| **Severity of Self-harm Scale (SoS)** | | | | |
| 0 | | 10.9 (333) | 11.8 (308) | 5.5 (25) |
| 1-2 | | 21.6 (581) | 23.3 (532) | 12.2 (49) |
| 3-4 | | 36.9 (96) | 37.4 (79) | 34.7 (17) |
| 5-6 | | 24.3 (132) | 26.8 (117) | 13.9 (15) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *209.9 (3)* | *179.8 (3)* | *45.2 (3)* |

**Table 2.5 Rate of Restricted to Room by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Self-Care Index (SCI)** | | | | |
| 0 | | 9.8 (257) | 10.6 (238) | 4.9 (19) |
| 1-2 | | 20.4 (530) | 22.1 (487) | 10.8 (43) |
| 3-4 | | 23.9 (232) | 25.6 (205) | 15.6 (27) |
| 5-6 | | 35.2 (123) | 35.8 (106) | 32.1 (17) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *227.0 (3)* | *194.3 (3)* | *44.2 (3)* |
| **Depressive Severity Index (DSI)** | | | | |
| 0 | | 14.7 (643) | 16.2 (612) | 5.3 (31) |
| 1-3 | | 20.7 (311) | 22.2 (272) | 14.1 (39) |
| 4+ | | 27.1 (188) | 28.3 (152) | 23.1 (36) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *78.7 (2)* | *58.5 (2)* | *46.8 (2)* |
| **Positive Symptom Long Scale (PSS_Long)** | | | | |
| 0 | | 12.0 (407) | 13.1 (379) | 5.6 (28) |
| 1-3 | | 20.7 (347) | 22.8 (324) | 9.2 (23) |
| 4+ | | 26.0 (388) | 27.0 (333) | 21.2 (55) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *158.0 (2)* | *130.0 (2)* | *45.3 (2)* |

**Table 2.5 Rate of Restricted to Room by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Mania** | | | | |
| 0 | | 11.1 (424) | 12.2 (402) | 4.2 (22) |
| 1-3 | | 21.6 (309) | 23.8 (290) | 8.8 (19) |
| 4+ | | 31.6 (409) | 33.6 (344) | 24.1 (65) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *304.5 (2)* | *262.2 (2)* | *76.2 (2)* |
| **Social Withdrawal (Anhedonia)** | | | | |
| 0 | | 15.8 (727) | 17.0 (662) | 9.1 (65) |
| 1-4 | | 19.7 (252) | 21.3 (232) | 10.3 (20) |
| 5+ | | 24.9 (163) | 25.7 (142) | 20.4 (21) |
| | *p* | *<.0001* | *<.0001* | *0.002* |
| | *$X^2$ (DF)* | *38.8 (2)* | *30.6 (2)* | *12.2 (2)* |

**Table 2.5 Rate of Restricted to Room by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **ADL Hierarchy** | | | | |
| 0 | | 13.0 (745) | 13.8 (664) | 8.9 (81) |
| 1-2 | | 50.2 (333) | 53.0 (314) | 27.1 (19) |
| 3+ | | 36.3 (62) | 39.4 (56) | 20.7 (6) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *616.1 (2)* | *574.1 (2)* | *26.6 (2)* |
| **IADL** | | | | |
| 0 | | 9.7 (239) | 10.1 (210) | 7.6 (29) |
| 1-4 | | 14.1 (248) | 15.0 (224) | 9.2 (24) |
| 5+ | | 27.9 (652) | 30.5 (599) | 14.3 (53) |
| | *p* | *<.0001* | *<.0001* | *0.008* |
| | *$X^2$ (DF)* | *294.4 (2)* | *294.3 (2)* | *9.7 (2)* |
| **Cognitive Performance Scale (CPS)** | | | | |
| 0 | | 12.9 (583) | 13.4 (521) | 8.9 (62) |
| 1-2 | | 25.3 (427) | 27.4 (391) | 14.1 (36) |
| 3+ | | 37.0 (132) | 38.5 (124) | 22.9 (8) |
| | *p* | *<.0001* | *<.0001* | *0.002* |
| | *$X^2$ (DF)* | *231.8 (2)* | *214.6 (2)* | *12.0 (2)* |

**Table 2.6 Rate of Restricted to Room by Mental Health Clinical Assessment Protocols (MH-CAPs) among Ontario Forensic Patients**

| Clinical Assessment Protocols (CAPs) | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Social Relationship** | | | | |
| Not Triggered | | 15.1 (527) | 16.1 (484) | 8.7 (43) |
| Triggered – Improve Relationships | | 17.5 (250) | 19.0 (222) | 10.7 (28) |
| Triggered **–** Isolation & Dysfunction | | 22.6 (369) | 24.3 (334) | 13.5 (35) |
| | *p* | *<.0001* | *<.0001* | *0.1* |
| | *$X^2$ (DF)* | *43.9 (2)* | *42.0 (2)* | *4.2 (2)* |
| **Interpersonal Conflict** | | | | |
| Not Triggered | | 12.1 (486) | 13.8 (466) | 3.7 (20) |
| Triggered – Limited Conflict | | 22.9 (346) | 25.1 (313) | 12.5 (33) |
| Triggered – Widespread Conflict | | 30.5 (310) | 31.9 (257) | 25.4 (53) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *234.1 (2)* | *191.7 (2)* | *77.3 (2)* |
| **Traumatic Life Events** | | | | |
| Not Triggered | | 17.5 (1,050) | 18.7 (965) | 10.0 (85) |
| Triggered – Prior Trauma | | 13.1 (35) | 14.5 (27) | 9.9 (8) |
| Triggered – Current Abuse | | 21.8 (61) | 24.5 (48) | 15.5 (13) |
| | *p* | *0.03* | *0.04* | *0.3* |
| | *$X^2$ (DF)* | *7.1 (2)* | *6.4 (2)* | *2.5 (2)* |

**Table 2.6 Rate of Restricted to Room by Mental Health Clinical Assessment Protocols (MH-CAPs) among Ontario Forensic Patients**

| Clinical Assessment Protocols (CAPs) | | Total Sample (N=6,564) % (n) | Male (N=5,549) % (n) | Female (N=1,015) % (n) |
|---|---|---|---|---|
| **Medication Management & Adherence** | | | | |
| Not Triggered | | 11.0 (404) | 11.9 (373) | 5.7 (31) |
| Triggered – Previous Side Effects | | 16.8 (16) | 19.7 (15) | 5.0 (1) |
| Triggered – Cognitive/Positive Symptoms | | 26.0 (726) | 27.9 (652) | 16.3 (74) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | $X^2$ *(DF)* | *249.5 (2)* | *42.0 (2)* | *29.9 (2)* |

Independent variables were considered in the model based on a chi-square statistical significance of 0.05 at the bivariate level or based on clinical relevance. Variables that were dropped from the model because they were ultimately found to *not* be statistically significant in the multivariate model included: cognitive impairment (CPS); social withdrawal (Anhedonia); severity of depressive symptoms (DSI); positive symptoms (PSS); persistent anger, violence to others, recent self-injurious act; elopement attempts; resistance to care; socially inappropriate behaviour; wandering; physical abuse; verbal abuse; and sexual abuse; psychiatric intensive care unit; reason for admission – violent/forensic; day of stay; amount of time hospitalized; and frustrated staff. Also, having a diagnosis of substance use disorder, mood disorder or anxiety disorder was not found to be associated with restriction to room. As well, the Social Relationship, Interpersonal Conflict, Traumatic Life Events and Medication Management and Adherence CAPs were not found to be statistically significant in the logistic regression model. The final logistic regression model is reported in Table 2.8.

There were several variables that increased the odds of being restricted to room. These factors included: personality disorder diagnosis; risk of harm to others; aggressive behaviour; manic symptoms; having a suicide plan; functional impairment (ADL Hierarchy); IADL capacity; refusal of medications; and extreme behaviour disturbance (within the last 7 days).

Age was associated with restriction to room, with decreasing odds of being restricted to room with increases in age. Forensic patients between 18-24 years of age had the greatest odds of being restricted to room.

Forensic patients at high risk of harm to others (RHO scores of 5-6) had a 3.23 times greater odds of being restricted to room to the reference group (RHO=0). Also, aggressive behaviour increases the odds of being restricted to room. Forensic patients with greater frequency and diversity of aggressive behaviours had 2.40 greater odds of being restricted to room compared with those with no behaviours. A diagnosis of personality disorder increased the odds of being restricted to room (OR=1.52).

Forensic patients who exhibited extreme behaviour disturbance (for example, homicide, rape, severe self-mutilation, history of fire settings) in the last 7 days had 3.13 greater odds of being restricted to room. This indicates that the current extreme behavioural disturbance is the factor that increases the odds of being restricted to room; as opposed to this behaviour being exhibited historically.

Patients who had made a plan to end their own life had increased odds of being restricted to room compared to the reference group. In fact, forensic patients who have made a suicide plan within the last month had 2.11 greater odds of being restricted to room.

Forensic patients with less capacity to carry out instrumental activities of daily living had greater odds of being restricted to room compared to the reference group (IADL=0).This was also true for impairments in functional performance (ADL Hierarchy).

Forensic patients who have limited awareness of their mental health problems had 0.53 odds of being restricted to room compared with those with full insight. However the no insight group was not significantly different.

Medication refusal increases the odds of being restricted to room. Forensic patients who refused medications in the last 3 days had 2.02 greater odds of being restricted to room.

Female Gender had a significant interaction with acute control medications (see Figure 2.1). With women having decreased odds of being restricted to room compared to men with no or with 5 or more acute control medications.

If there was no interaction effect on use of acute control medications, then acute control medications would be interpreted as the unique effect of restriction to room and acute control medications (when controlling for gender). However, since the interaction is statistically significant the unique effect of acute control medication and on restriction to room is not limited to acute control medications but is also dependent on gender. The presence of a significant interaction indicates that the effect of acute control medications on restriction to room is different for men and women (at different levels of gender).

Figure 2.1 shows the interaction between acute control medications and gender. For both men and women, being administered acute control medications in the last 3 days increase the odds of being restricted to room. However, there is a greater relative increase in the odds of restriction to room for men who were administered acute control medications 5 or more times in the last 3 days, compared with their female counterparts.

**Table 2.7 Summary of Multivariate Logistic Regression Model of Restriction to Room among Ontario Forensic Patients**

| | TOTAL | MALE | FEMALE |
|---|---|---|---|
| **Sociodemographic Characteristics** | | | |
| **Age** - *18-24 (REF)* | | | |
| 25-44 | - | - * | ns |
| 45-64 | - | - | ns |
| 65+ | - | - | ns |
| **Marital Status** – *Not Partnered (REF)* | | | |
| Partnered | + | + | ns |
| **Mental Health Clinical Characteristics** | | | |
| **Insight into Mental Health** - *Full (REF)* | | | |
| Limited | - | -* | ns |
| None | - * | +* | ns |
| **Medication Refusal** - *No (REF)* | | | |
| Yes | + | +* | ns |
| **Acute Control Medications** - *0 (REF)* | | | |
| 1-4 | ^ | + | + |
| 5+ | | +* | + |
| **Extreme Behaviour Disturbance** - *No (REF)* | | | |
| Yes, not in last 7 days | -* | -* | -* |
| Yes, in last 7 days | + | + | + |
| **RAI-MH Clinical Scales** | | | |
| **Risk of Harm to Others -** *0 (REF)* | | | |
| 1-2 | + | + | -* |
| 3-4 | +* | +* | +* |
| 5-6 | + | + | +* |
| **Aggressive Behaviour Scale**- *0 (REF)* | + | | |
| 1-3 | + | + | + |
| 4+ | + | + | + |
| **Mania** - *0 (REF)* | | | |
| 1-3 | + | + | ns |
| 4+ | + | + | ns |
| **IADL** - *0 (REF)* | | | |
| 1-4 | + | + | ns |
| 5+ | + | + | ns |
| **ADL Hierarchy** - *0 (REF)* | | | |
| 1-2 | + | + | ns |
| 3+ | + | + | ns |

*^ interaction effect with female gender; * - overall variable is statistically significant but individual parameter estimate for ordinal variable is not significant; ns – overall variable is not statistically significant*

**Table 2.8 – Multivariate Logistic Regression Model for Restricted to Room among Ontario Forensic Patients**

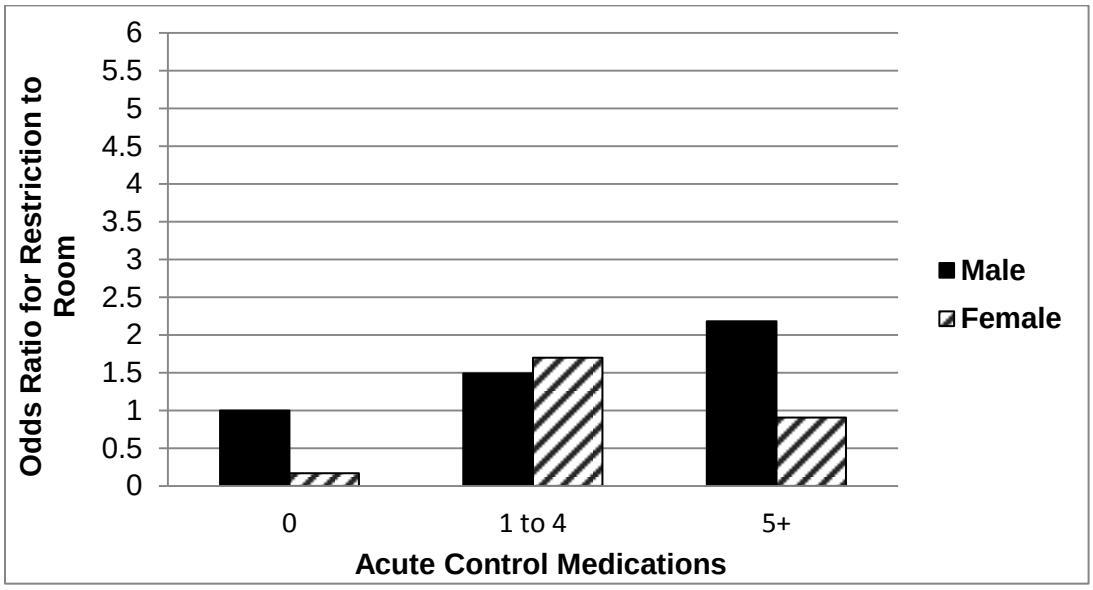
| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Sex** | | | | |
| Male (REF) | 0 | 1.00 | <.0001 | |
| Female | -1.28 (0.20) | 0.28 (0.19 – 0.41) | | |
| **Age** | | | | |
| 18-24 (REF) | 0 | 1.00 | | |
| 25-44 | -0.46 (0.16) | 0.63 (0.46 – 0.87) | <.0001 | |
| 45-64 | -0.76 (0.16) | 0.47(0.33 – 0.67 ) | | |
| 65+ | -1.06 (0.30) | 0.35 (0.19 – 0.62) | | |
| **Personality Disorder Diagnosis** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.42 (0.09) | 1.52 (1.18 – 1.96) | | |
| **RHO** | | | | |
| 0 | 0 | 1.00 | | 0.84 |
| 1-2 | 0.60 (0.42) | 1.82 (0.80 – 4.12) | | |
| 3-4 | 0.49 (0.44) | 1.63 (0.69 – 3.84) | | |
| 5-6 | 1.11 (0.47) | 3.05 (1.21 – 7.68) | | |
| **Aggressive Behaviour** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-3 | 0.35 (0.14) | 1.41 (1.07 – 1.88) | | |
| 4+ | 0.87 (0.19) | 2.39 (1.66 – 3.45) | | |
| **Mania** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-3 | 0.56 (0.10) | 1.75 (1.33 – 2.30) | | |
| 4+ | 0.60 (0.11) | 1.83 (1.31 – 2.54) | | |
| **Suicide Plan** | | | | |
| No (REF) | 0 | 1.00 | 0.04 | |
| Yes | 0.71 (0.34) | 2.04 (1.04 – 4.00) | | |

**Table 2.8 – Multivariate Logistic Regression Model for Restricted to Room among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **IADL^** | | | | 0.84 |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-4 | 0.37 (0.11) | 1.52 (1.11 – 2.11) | | |
| 5+ | 0.63 (0.11) | 2.60 (1.91 – 3.52) | | |
| **ADL Hierarchy** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-2 | 1.60 (0.14) | 5.00 (3.75 – 6.57) | | |
| 3+ | 0.41 (0.30) | 1.50 (0.84 – 2.71) | | |
| **Insight into Mental Health** | | | | |
| Full (REF) | 0 | 1.00 | 0.002 | |
| Limited | -0.55 (0.16) | 0.58 (0.42 – 0.79) | | |
| None | -0.32 (0.19) | 0.72 (0.50 – 1.04) | | |
| **Medication Refusal** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.70 (0.15) | 2.02 (1.51 – 2.71) | | |
| **Acute Control Medications^** | | | | |
| 0 (REF) | 0 | See Figure 2.1 | | |
| 1-4 | 1.89 (0.60) | | | |
| 5+ | 1.48 (1.16) | | | |
| **Extreme Behaviour Disturbance** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes, not exhibited in last 7 days | -0.12 (0.15) | 0.88 (0.66 – 1.18) | | |
| Yes, exhibited in last 7 days | 1.16 (0.28) | 3.19 (1.8 – 5.47) | | |

^ *interaction effect with sex*

**Figure 2.1 Odds Ratio for Restricted to Room for Acute Control Medications*Gender Interaction**




This non-stratified model for determining associations with restriction to room had a c-statistic equal to 0.84 which demonstrates strong explanatory power.

Next, a logistic regression model stratified by 'female gender' was investigated to look at factors among men only in forensic mental health hospitals that are associated with restriction to room (Refer to Table 2.9).

Similar to the non-stratified logistic regression model, the same criteria for statistical significance (0.05) were employed to determine which explanatory variables were added into the model.

Analogous to the non-stratified model, the same explanatory variables were found to increase the odds that a person would be restricted to room, with the exception of having a suicide plan within the last month. Having a suicide plan was not statistically significant in predicting the odds of being restricted to room among men.

Forensic patients between 25 and 44 had the greatest odds of being restricted to room (OR=0.63). In general, age was associated with restriction to room, with decreasing odds of being restricted to room with increases in age.

Similar to the full sample model, men at high risk of harming others; demonstrating aggressive behaviour; and exhibiting extreme behaviour disturbance (in the last 7 days) had increased odds of being restricted to room. Additionally, men with a personality disorder diagnosis had 1.49 greater odds of being restricted to room.

Men demonstrating more mania symptoms had increased odds of being restricted to room. As well, men who are appear to have no awareness of their mental health problems had 1.14 greater odds of being restricted to room. These odds for the male model were greater than the full sample model.

Men with less capacity to carry out instrumental activities of daily living had 2.09 greater odds of being restricted to room compared to the reference group (IADL=0). However, greater impairments in functional performance (ADL Hierarchy) decreased the odds of being restricted to room.

Overall, there were minimal differences in the non-stratified logistic regression model and the model stratified by gender (men only). This model examining associations for restriction to room among men had a c-statistic of 0.84. which demonstrates strong explanatory power.

A logistic regression model to examine factors among women only that are associated with restriction to room was also created (Refer to Table 2.10). Explanatory variables were added to the model based on a chi-square statistical significance of 0.05 or greater.

**Table 2.9 – Multivariate Logistic Regression Model for Restricted to Room among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Age** | | | | |
| 18-24 (REF) | 0 | 1.00 | | |
| 25-44 | -0.15 (0.11) | 0.86 (0.69 – 1.07) | <.0001 | |
| 45-64 | -0.55 (0.13) | 0.58 (0.45 – 0.75) | | |
| 65+ | -0.93 (0.24) | 0.40 (0.25 – 0.63) | | |
| **Personality Disorder Diagnosis** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.40 (0.09) | 1.49 (1.24 – 1.79) | | |
| **RHO** | | | | 0.84 |
| 0 | 0 | 1.00 | 0.0003 | |
| 1-2 | 0.76 (0.26) | 2.15 (1.29 – 3.58) | | |
| 3-4 | 0.51 (0.28) | 1.66 (0.97 -2.87) | | |
| 5-6 | 1.01 (0.30) | 2.75 (1.52-4.98) | | |
| **Aggressive Behaviour** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-3 | 0.40 (0.10) | 1.49 (1.22 -1.83) | | |
| 4+ | 0.79 (0.13) | 2.20 (1.70 – 2.86) | | |
| **Mania** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-3 | 0.47 (0.10) | 1.60 (1.31 – 1.95) | | |
| 4+ | 0.53 (0.12) | 1.70 (1.34 – 2.16) | | |

**Table 2.9 – Multivariate Logistic Regression Model for Restricted to Room among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **IADL** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-4 | 0.38 (0.11) | 1.46 (1.17 – 1.82) | | |
| 5+ | 0.74 (0.11) | 2.09 (1.70 – 2.58) | | |
| **ADL Hierarchy** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-2 | 1.56 (0.11) | 4.78 (3.86 – 5.93) | | |
| 3+ | 0.51 (0.22) | 1.67 (1.09 – 2.57) | | |
| **Insight into Mental Health** | | | | |
| Full (REF) | 0 | 1.00 | 0.001 | |
| Limited | -0.20 (0.18) | 0.82 (0.65 – 1.03) | | 0.84 |
| None | 0.13 (0.14) | 1.14 (0.89 – 1.49) | | |
| **Medication Refusal** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.80 (0.11) | 2.23 (1.79 – 2.79) | | |
| **Acute Control Medications** | | | | |
| 0 (REF) | 0 | 1.00 | 0.002 | |
| 1-4 | 0.60 (0.15) | 1.82 (1.79 – 2.77) | | |
| 5+ | 0.34 (0.36) | 1.40 (0.71 – 2.76) | | |
| **Extreme Behaviour Disturbance** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes, not exhibited in last 7 days | -0.09 (0.10) | 0.91 (0.75 – 1.12) | | |
| Yes, exhibited in last 7 days | 1.46 (0.21) | 4.29 (2.87 – 6.41) | | |

**Table 2.10 – Multivariate Logistic Regression Model for Restricted to Room among Ontario Female Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **RHO** | | | | |
| 0 | 0 | 1.00 | | |
| 1-2 | -0.38 (0.57) | 0.69 (0.23 – 2.10) | 0.001 | |
| 3-4 | 0.20 (0.60) | 1.23 (0.38 – 3.99) | | |
| 5-6 | 1.15 (0.65) | 3.17 (0.88 – 11.40) | | |
| **Aggressive Behaviour** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-3 | 0.96 (0.34) | 2.61 (1.35-5.05) | | 0.86 |
| 4+ | 1.67 (0.35) | 5.30 (2.64 – 10.61) | | |
| **Extreme Behaviour Disturbance** | | | | |
| No (REF) | 0 | 1.00 | 0.04 | |
| Yes, not exhibited in last 7 days | 0.43 (0.29) | 1.54 (0.87 – 2.71) | | |
| Yes, exhibited in last 7 days | 1.22 (0.52) | 3.39 (1.22 – 9.42) | | |
| **Acute Control Mediations** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-4 | 1.74 (0.31) | 5.68 (3.11 – 10.38) | | |
| 5+ | 1.97 (0.52) | 7.19 (2.59 – 19.97) | | |

There were a few explanatory variables that were found statistically significant in the previous two logistic regression models that were not statistically significant in the model for women. These explanatory variables include: personality disorder diagnosis; mania symptoms; having a suicide plan (within last month); degree of insight into mental health problems; refusal of medications and impaired capacity for instrumental activities of daily living.

Interestingly the variables that are predictive of restriction to room among women are strictly behavioural issues that show concerns for risk of harm to others or oneself. The exception is acute control medications, which have intended to be an immediate response to these exhibited behaviours.

Similar trends that were found among the other 2 models, is found among the female model. Specifically, risk of harm to others, aggressive behaviour, extreme behaviour disturbance in the last 7 days and greater frequency in acute control medications increase the odds of being restricted to room. However, the odds among the female model are substantially higher in comparison to men (and the total sample model).

Women at high risk of harm to others had 3.17 greater odds of being restricted to room. Additionally, women with greater frequency and diversity of aggressive behaviours had 5.30 greater odds of being restricted to room

Women demonstrating extreme behaviour disturbances in the last 7 days had 3.39 greater odds of being restricted to room.

Not surprisingly, women who were administered acute control medications 5 or more times in the last 3 days, had greater odds of restricted to room compared with

their male counterparts. In fact, women who had been administered psychotropic medications 5 or more times had 7.19 greater odds of being restricted to room.

This model for predicting restriction to room among women had a c-statistic of 0.86 which demonstrates strong explanatory power.

## 2.7 Discussion

Very little research has been done on restriction to room in forensic mental settings. The majority of the studies focus on acute psychiatric units or in community mental health settings (Haw et al., 2011). Additionally, although there are studies that discuss gender differences in restriction to room, there are currently no studies that examine the predictive factors associated with restriction to room and the potential gender differences associated with these factors.

Findings from this study indicate that men had greater odds of being restricted to room. Among female forensic patients it is diversely danger to others that warrants restriction to room whereas among men there are many other factors including functional disability and medication refusal that are associated with restriction to room. This finding is contradictory to research by Ahmed & Lepnurm (2011) that stated women were more likely to be secluded and Mason (1998), that found women accounted for more restrictions to room than their male counterparts.

Being restricted to room decreases with age, which is similar to reports in the literature (Mason, 1998). There are no found gender differences associated with age and restriction to room. Therefore targeting interventions to reduce behaviours associated with increasing odds of behaviour to younger age groups, specifically among persons 25-44, could help in turn reduce persons being restricted to room.

Forensic patients who had made a suicide plan had increased odds of being restricted to room. Suicide plan was not predictive in the female model. Although this does not suggest that men who have a plan to end their life are necessarily at greater risk of self-harm; it does imply that when this behaviour is present interventions differ among men and women. In this particular case, men are more likely to be restricted to room, whereas women appear to have alternative forms of intervention to address risk of self-harming behaviour.

Forensic patients with less capacity to carry out instrumental activities of daily living had greater odds of being restricted to room compared to the reference group. However, greater impairments in functional performance (ADL Hierarchy) decreased the odds of being restricted to room. This trend was found among the male model as well but neither was found significantly associated with restriction of room among the female model.

Men demonstrating more mania symptoms had increased odds of restriction to room. As well, men who appear to heave no degree of insight into their mental health problems had 1.14 greater odds of being restricted to room. These odds for the male model are greater than the full sample model. Both mania symptoms and degree of insight into mental health problems were not significantly associated with restriction to room in the female model.

Among both the male and total sample models, medication refusal in the last 3 days increased the odds being restricted to room. Medication refusal was not found to be significantly associated with restriction to room among the female model. This signifies that there is a perception in forensic mental health care that men who have

refused medications within the last 3 days pose a greater threat compared to their female counterparts.

An interaction effect was found between acute control medications and gender; indicating a greater relative increase in the odds of restriction to room for women who were administered acute control medications 5 or more times in the last 3 days compared to their male counterparts. The curvilinear effect of acute control medications among female forensic patients may be indicative of a gender based response to medications. Among female forensic patients, there may be no need to for both acute control medications and restriction to room because the acute control medications may be more effective in incapacitating the person. In the logistic regression models stratified by gender, both male and female forensic patients had greater odds of restriction to room when administered acute control medications 5 or more times. However, the likelihood was greater among female forensic patients. This could be a reflection of the fact that the behaviours that are most likely to increase the risk of restriction to room among women (extreme behaviour disturbances, aggression and violence towards others) are also behaviours that lead to the administration of acute control medications. This also speaks to the fact that women who exhibit these aggressive and violent behaviours are perceived to be much more unpredictable compared to their male counterparts exhibiting the same behaviour.

Determining gender differences in predicting restriction to room can allow for more targeted interventions to reduce the use of these types of control interventions. Factors that were predictive of increasing the odds of being restricted to room among women in this study included aggressive behaviours, risk of harm to others, extreme

behaviour disturbances and greater frequency of acute control medications. Although, these factors were predictive in increasing the odds of being restricted to room among men as well, the odds were substantially greater among women. Based on this, developing early intervention strategies to mitigate the stressors that escalate aggressive behaviours, risk of harm to others, and extreme behaviour disturbances will help reduce the odds of being restricted to room. As well, de-escalation strategies can be employed to help equip female patients with strategies to reduce the behaviours that result in these types of control interventions.

The RAI-MH assessments provide a comprehensive record that can establish triggers specific to the individual that escalate behaviour associated with increased risk of being restricted to room and allow for the development of individualized care plans to develop strategies to minimize these triggers. As well, the 3 day assessment of restricted to room provides a stable estimate of the clinical picture. Additionally, the fact that RAI-MH assessments are completed at different points in time (on a quarterly basis) the clinical team can assess changes in the person's risk factors and adjust the care plan accordingly.

*Treatment Implications*

There are several approaches that can be taken by the clinical staff to help reduce the person's risk of being restricted to room. For example, as a way to help reduce being restricted to room, safety plans can be developed between the person and the clinical team immediately at admission (Ching, Daffern, Martin, & Thomas, 2010; Macguire et al., 2011). Safety plans are early intervention strategies designed to identify the particular stressors specific to the person and develop de-escalation strategies that can be utilized when these stressors are triggered (Ching et al., 2010; Macguire et al.,

2011). Across Ontario psychiatric hospitals, safety plans can be completed at admission and incorporated into the care plan. In fact, RAI-MH assessments can help identify additional stressors and helpful interventions to reduce the onset of these stressors and in turn help reduce the risk of being restricted to room.

Another approach that can be taken to help reduce the triggering behaviours or symptoms that increase the odds of being restricted to room are sensory approaches (often provided by Occupational therapists) and the establishment of sensory modulation rooms (Ching et al., 2010; Macguire et al., 2011). In Canada, mental health hospitals are often incorporating these sensory modulation rooms in the re-design of their hospitals. For example, the Royal and Selkirk Mental Health Facility have sensory modulation rooms as a means of providing alternative approaches to help reduce person's being restricted to room. Sensory approaches can include aromatherapy, massage chairs, weighted blankets and rocking chairs (Ching et al., 2010; Macguire et al., 2011). Sensory modulation rooms are designed to help reduce stress, provide emotional control and help the person develop ways to manage stress (Ching et al., 2010; Macguire et al., 2011).

Many psychiatric hospitals are employing the "Early Recognition Model" to help minimize the use of restriction to room (Fluttert, van Meijel, Nijman, Bjorkly, & Grypdonck, 2010; Macguire et al., 2011). In fact, Fluttert et al. (2010) found that after employing the Early Recognition model within the maximum security forensic mental health hospital in the Netherlands; there was a substantial reduction in aggression on the unit and in turn there was a decline in patients being restricted to room. In this particular study, this type of intervention was employed on persons experiencing

psychosis or with a personality disorder diagnosis (Fluttert et al., 2010).The Early Recognition Model discusses the signs of aggression specific to the patient (for example, triggers that can increase the likelihood of aggressive outbursts) to help increase the person's awareness of these early warning signs and employ them with self-management skills to help decrease aggressive behaviour. Forensic mental hospitals can implement similar models within their hospitals to help work with patients to improve their self-awareness and self-management skills in helping reduce aggressive behaviours. Treatment interventions such as this would specifically beneficial to persons with a personality disorder diagnosis.

Many of the treatment interventions discussed above focus on reduction of aggressive behaviours as a way of decreasing the use of restriction to room. However, as indicated in this study, there are several other risk factors that increase the odds of being restricted to room and these should also be targeted in treatment interventions; specifically among men. Men with increased mania symptoms were found to have increased odds of restriction to room. Therefore, targeting mania symptoms, specifically among men, through medications and/or cognitive behavioural therapy can help reduce odds of being restricted to room.

Unfortunately, a complete reduction in restriction to room among forensic mental health patients is a near impossible task to complete based on both the behavioural and psychiatric complexity of this patient population. As a result, measures need to be in place to ensure that in the event that restriction to room occurs, the recovery of the person remains the focus of the intervention. For example, post seclusion briefings can help the patient either address any potential negative and/or positive effects as a result

the restriction to room. As well, to continue to incorporate strategies to help reduce the behaviours and symptoms that triggers restriction to room.

Rooms used for restricting patients can be renovated into private areas where the person can relax and feel safe. These redesigned rooms are known as “safe rooms”, as they provide a ‘safe space’ for patients (Ching et al., 2010; Hui et al., 2013). Essentially, safe rooms provide a more therapeutic atmosphere (as opposed to punitive) to help support the recovery of the patient.

Reviews can be incorporated as part of the post-restriction to room debriefings between the patient and the clinical team. Essentially, these reviews provide an examination of the restriction of room, identifying factors that both increase the risk of being placed in and getting out of restriction to room; and of course incorporating was of reducing the triggers associated with these risk factors into the person’s care plan.

*Policy Implications*

Forensic mental health hospitals can impose mandatory staff training on alternative methods and specific strategies to employ to reduce patients being restricted to room. Specific emphasis should be placed on early intervention strategies and de-escalation techniques (Macguire et al., 2011). As well, hospitals can establish policies and procedures to ensure the proper staff-to-patient ratios to allow for greater ability to implement alternative strategies and de-escalation techniques in order minimize risk of harm to self or others on the unit. Increased staff-to-patient ratios are also important to ensure that when restriction to room occurs there is enough staff on the unit to ensure proper observation of the person to guarantee patient safety while in placed in such restrictions.

Reviews can inform internal hospital policy (which would then inform practice) to identify ways to improve intervention strategies, support patient recovery and ensure safety on the unit. As part of the reporting structure provided by CIHI through quarterly reporting, details on these reviews can be highlighted and a special CIHI report can be released. These benchmarking reports can then be used to inform policy surrounding restriction to room practices.

*Research Implications*

Future research should incorporate international comparisons to provide an enhanced understanding of factors that predict restriction to room and how they compare within and between countries. This type of research could help inform benchmarking practices at an international level.

Future research should also examine other forms of control interventions (for example, physical restraints) used within forensic mental health settings and the gender differences associated with the risk and protective factors predictive of these types of control interventions. Further examination should be undertaken for gender differences associated with multiple types of control interventions used (for example, restriction to room and acute control medications). More research into the mental health quality indicators (MHQI's) on control interventions, specifically in relation to restriction to room, among forensic mental health populations is needed. After all, seclusion practices cannot be completely eradicated from use in forensic mental health care, as it can be in general psychiatry. Therefore, it is possible that different risk adjustments need to be established, as different benchmarking practices may be needed across forensic mental health settings. As well, this research should further investigate the concept for gender-based risk adjustment scores and how this effects that measurement of quality.

Using the interRAI Forensic Supplement pilot data, which consist of completed RAI-MH and corresponding interRAI Forensic Supplement assessments, an analysis of factors predictive of restriction to room should be done. Additional factors from the interRAI Forensic Supplement should be examined to determine if they have an effect on restriction to room among forensic patients and if there are any gender differences associated with these factors.

# Chapter 3

# Gender-based Analysis of Unaccompanied Leaves among Ontario Forensic Patients

## 3.1 Introduction

There is a great deal of public controversy associated with leaves from secure forensic mental health facilities due to fear of potential dangerousness of the patients (Green & Baglioni, 1998). When re-offending occurs, public outrage and controversy surrounding unaccompanied leaves often ensues (Green & Baglioni, 1998; Hilterman, Philipse, & de Graaf, 2011). Nonetheless, the gradual provision of unaccompanied leaves from forensic psychiatric units is a key component of rehabilitation enabling the person to make a successful transition out of the hospital setting (Bettridge & Barbaree, 2008; Hilterman et al., 2011; Stubner et al., 2006; Walker et al., 2013). In addition, permission to go on these leaves is an essential part of the clinical evaluation of progress in respect to treatment.

### 3.1.1 Background

In Ontario, the disposition for the level of security and privileges for accessing the community for persons in forensic mental health hospitals are determined by the Ontario Review Board (ORB). However, the ORB assigns this responsibility to the person in charge at the forensic mental health hospital to exercise the discretion of implementing these conditions (Ontario Review Board, 2013a). Access to the community is granted in a staged process of easing restrictions that can range from

escorted leaves through to “extended leaves” where the person lives in the community (BC Mental Health & Addiction Services, March 2013; Walker et al., 2013).

Assessments are conducted by the clinical team to determine the person’s readiness for unaccompanied leaves, and are made based on individual risks and needs (BC Mental Health & Addiction Services, March 2013; Department of Justice & Department of Health and Wellness, 2012; Walker et al., 2013). Unaccompanied leaves can be revoked should there be a change in the person’s mental health status or a breach of conditions (BC Mental Health & Addiction Services, March 2013; Department of Justice & Department of Health and Wellness, 2012). This approach to unaccompanied leaves is considered to be a best practice in forensic programs across Canada (Department of Justice & Department of Health and Wellness, 2012; Walker et al., 2013).

Decisions regarding unaccompanied leaves can have important implications from both a legal and ethical standpoint, for both the patient and the broader community (Hilterman et al., 2011). However, very little research has been dedicated to investigating the risk and protective factors that affect the decision making process for unaccompanied leaves (Stubner et al., 2006). In addition, there has been no research on potential gender differences associated with these protective and risk factors associated with easing restrictions in forensic mental health settings.

Stubner et al. (2006) examined factors associated with decisions about easing restrictions among mentally ill offenders. Factors that decreased the likelihood of easing restrictions included: aggressive behaviour; impulsiveness; antisocial behaviours; sanctions (e.g., deportation); and instability (e.g., acute psychosis, cognitive abilities).

Protective factors included: having a confidant (especially for longer leaves); coping mechanisms; and social skills (e.g., dependability). Although (Stubner et al., 2006) investigated protective and risk factors that the clinical team may use to determine readiness for discharge, these factors can also be taken into consideration when granting unaccompanied leaves.

Risk assessment and risk management strategies are in place to determine a person's level of risk of reoffending upon release, but no assessment is perfect and errors can occur (Green & Baglioni, 1998). While risk of re-offending is a major concern, it is unrealistic to expect with perfect certainty that re-offenses will not occur (Green & Baglioni, 1998).

Over the last few years there has been a great deal of media attention surrounding risk assessment among forensic patients. At the 190-bed Forensic Psychiatric Hospital, in Port Coquitlam, British Columbia, a few patients did not return (or returned late) from day passes over the period of a few months. A Canadian Broadcasting Corporation (CBC) report noted that Forensic Psychiatric Hospital had 42 patients who failed to return on time within the last 3 years. However, this is out of a total of 19,000 patients who were granted day passes over the 3 years, representing a 0.2% "error" rate (Canadian Broadcasting Corporation (CBC), 2012). Although this is a small proportion of cases compared to the number of patients who have been granted unaccompanied leaves, the media attention that these incidents generated resulted in a public outcry. In response, the Forensic Psychiatric Hospital permanently revoked day passes for all patients (Canadian Broadcasting Corporation (CBC), 2012).

The case that received the widest media in Canada occurred in April 2012, when a patient from the East Coast Forensic Psychiatric Hospital beat a man to death while on an unaccompanied leave (Cross & Boesveld, 2012). This resulted in fear among the general public and nationwide demands to ensure public safety.

More recently, the case of Vince Li, a man who beheaded and cannibalized a fellow passenger on a Greyhound bus over 6 years ago, gained national attention when the Criminal Code Review board in Manitoba granted him unescorted leaves from hospital earlier this year (Lambert, 2014b). Federal Public Safety Minister Steven Blaney was quoted saying “Canadians expect that their justice system will keep them safe from high-risk individuals.” (Lambert, 2014a).

However, the clinical side of this type of story is often down played in the media. Li was found not criminally responsible for his actions. Since his admission to Selkirk Mental Health Centre in March 2009, he has been undergoing treatment and he is reported to have responded to it extremely well (Lambert, 2014a; Mehler- Paperny, 2014). As part of his treatment, he was granted unaccompanied leaves from hospital and was moved to a lower level of security within the hospital (Lambert, 2014b). The unaccompanied leaves were intended to involve a gradual process where the duration of the leaves would begin at 30 minutes and would increase to full days (Lambert, 2014a).

Such high profile incidents result in pressure being placed on the forensic hospitals to ensure public safety. However, this also results in greater restrictions being enforced on rehabilitation programs and reduced opportunities to ensure successful return to the community (Carroll et al., 2004; Hilterman et al., 2011). The challenge for

forensic mental health hospitals is that they must protect public safety and at the same time support the person's readjustment to life in the community (Bettridge & Barbaree, 2008; Carroll et al., 2004; Department of Justice & Department of Health and Wellness, 2012; Green & Baglioni, 1998; Reichlin & Bloom, 1993; Walker et al., 2013). Forensic mental health hospitals must balance the patient's right to liberty based on the Charter of Rights and Freedoms with consideration of public safety during unaccompanied leaves (Carroll et al., 2004; Department of Justice & Department of Health and Wellness, 2012).

Risk and public safety aside, the main goal of unaccompanied leaves is a therapeutic process to help support the person's recovery in moving towards the least restrictive level of care (Bettridge & Barbaree, 2008; Walker et al., 2013). In Australia, the objectives of the unaccompanied leave are designed to meet the needs of the individual care plan (Walker et al., 2013). For example, these goals of care can range from grocery shopping or using public transportation to employment opportunities by connecting with such services in the community (Walker et al., 2013). This provides patients with an opportunity to practice daily living skills while on unaccompanied leaves. The focus of the unaccompanied leave as outlined in the individual care plan is determined prior to the leave being granted (Walker et al., 2013). Incorporating the person's goals of care into the therapeutic process of unaccompanied leaves not only supports the person's recovery but can foster a sense of hope outside of the forensic mental health hospital (Bettridge & Barbaree, 2008; Walker et al., 2013).

The focus should be on ensuring that the proper treatment needs are met at the individual level to help minimize the risk of recidivism. Research has suggested that the

mental health needs of women in the forensic mental health system differ considerably from men (Van Voorhis et al., 2010). If gender differences exist among the risk factors and mental health needs of forensic inpatients, and these needs are omitted from the care planning process, this can result in treatment that does not meet the specific needs of these women (Van Voorhis et al., 2010). Understanding potential gender influences associated at the individual level are crucial for ensuring that the right factors are targeted in care planning. It would also make intervention strategies more patient-centred and help to integrate the person's multiple risk factors and mental health conditions into clinical interventions (Nowatzki & Grant, 2011).

## 3.2 Purpose

This chapter will provide an analysis of the impact of gender and other factors that predict unaccompanied leaves from forensic mental health facilities. This will include both an examination of the main effect of gender and factors that may interact with gender.

## 3.3 Methods

### 3.3.1 Data Source

The RAI-MH is standardized, comprehensive assessment tool that employs a multidisciplinary approach in assessing a person's functioning to help inform clinical decision making as part of the care planning process (Hirdes et al., 2000; Martin et al., 2009). It employs a three-day observation period in order to provide reliable and valid measures of clinical characteristics (Hirdes et al., 2010). Further, the RAI-MH has exhibited strong inter-rater reliability and convergent validity (Gibbons et al., 2008; Hirdes et al., 2002; Hirdes et al., 2008). Results from a study by Chan, Lai & Chi (2014)

demonstrated good to excellent coefficient alphas, with strong inter-rater reliability found among assessors. As well, the validity coefficients provided evidence of the validity of various RAI-MH scales. Specifically, the PSS ($r=0.75$, $p<.001$), Social Withdrawal ($r=0.25$, $p<.001$) were found to be significantly correlated with the Brief Psychiatric Rating Scale (BPRS) positive and negative symptom subscales. Similarly, the Depression Rating Scale (DRS) was found to be significantly correlated with the depression/anxiety subscale of the BPRS ($r=0.44$, $p<.001$) (Chan, Lai, & Li, 2014).

The RAI-MH has been mandated for use in all psychiatric hospitals throughout the province of Ontario since 2005 (Mathias et al., 2010).As part of this Ministry of Health and Long-term Care (MOHLTC) mandate, psychiatric hospitals in Ontario are required to submit completed RAI-MH assessment data to the Canadian Institute of Health Information (CIHI) on a quarterly basis (Canadian Institute of Health Information (CIHI), 2013). On behalf of the MOHLTC, CIHI has created the Ontario Mental Health Reporting System (OMHRS) as a data repository to help support these services (Canadian Institute of Health Information (CIHI), 2013).

For purposes of this chapter, the OMHRS dataset was restricted to forensic patients only. This study includes all adults who were admitted as forensic patients and assessed in a forensic mental health hospital or forensic unit within a psychiatric hospital in Ontario from October 7, 2005 to March 31, 2011. All nine provincial mental health hospitals with forensic beds throughout Ontario were included in this dataset for a total sample size of 6,620 assessments (last assessment for each episode). The gender distribution for the sample included 5, 593 male and 1, 026 female forensic inpatients.

Persons in forensic services in Ontario included those who have been ordered by court for forensic assessment; who are unfit to stand trial; or who are not criminally responsible due to mental disorder (NCRMD)(Barbaree & Goering, 2006; Bettridge & Barbaree, 2008; Goering et al., 2000; Hucker, 2008; Livingston, 2006). Patients are sent to forensic mental health units by the courts for assessment and/or rehabilitation/reintegration after the court deems the person not criminally responsible for crimes committed (Bettridge & Barbaree, 2008).

## 3.4 Measures

### 3.4.1 Dependent Variable

#### 3.4.1.1 Unaccompanied Leaves

The dependent variable indicates if the person left the facility or locked unit at any time in the last 3 days without staff accompaniment (Hirdes et al., 2010). This RAI-MH item measures the number of times during the last 3 days that the person left the facility or locked unit unaccompanied by staff. However, for purposes of the logistic regression model, this variable was recoded as a binary measure, indicating whether the event occurred in the last 3 days or not. Unaccompanied leave is a dichotomous dependent variable where the probability modeled is ‘left unaccompanied=1’.

### 3.4.2 Independent Variables

The selection of independent variables was guided by the findings in the literature. As well, the RAI-MH assessment instrument itself served as a point of reference in the selection for independent variables. Variables shown to be either risk or protective factors for easing restrictions were examined and gender differences among these associations were also investigated.

#### 3.4.2.1 Sociodemographic Characteristics

*Age*

Age was collapsed into four groups: 18-24, 25-44, 45-64, and 65+. The reference group was 18-24.

*Female Gender*

The RAI-MH sex variable consists of three response options: male, female and other. Unfortunately the 'other' response option is underutilized and as such did not have enough cases to warrant 'other' being its own gender category. Therefore, for purposes of this analysis, 'male' and 'other' were recoded into one variable (female gender=0) to serve as the reference group, 'female' (female gender=1) was the comparison group. This binary measure of female gender was used to stratify the logistic regression models to examine gender influences on factors that predict unaccompanied leaves.

*Marital Status*

Marital status was collapsed into two groups: "Not partnered" (never married, separated, divorced or widowed) and 'partnered' (married or in common-law relationship). Not partnered was the reference group while partnered was the comparison group.

*Residential Instability*

Residential instability is a binary measure to determine if the person has a history of temporary residence (living in a shelter, lack of permanent address, homeless) within the last 2 years (Yes/No). The reference group was that prior to admission the person's residence was not temporary.

#### 3.4.2.2 Mental Health Service Use

*Multiple Hospitalizations (Lifetime)*

Number of lifetime psychiatric admissions was collapsed into a dichotomous variable indicating whether the person had multiple hospitalizations (Yes/No). Multiple hospitalizations excludes the current admission. The reference group was no history of multiple hospitalizations.

*Day of Stay*

The last assessment of each forensic episode was extracted to determine the patient's days of stay. The specific days of stay categories are less than 45 days, 45-179 days, 180-1094 days and 1095+ days. The reference group was "less than 45 days".

*Recent Psychiatric Admissions (last 2 years)*

Number of psychiatric admissions in the last 2 year was reported based on the following categories: none, 1-2 or 3 or more. The reference group was "None", as in no recent psychiatric admissions within the last 2 years.

#### 3.4.2.3 Mental Health Clinical Characteristics

*Impaired Capacity – Transportation IADL*

The IADL capacity item for transportation was collapsed into a dichotomous variable (Yes/No), where the person either had impaired capacity to navigate transportation or they did not. Capacity to navigate transportation can include the person's ability to travel by public transit or to drive oneself. Any assessment with a score of 2 or greater (range from supervision to full dependence) was considered to have impaired capability for navigating transportation. The reference group "No",

includes persons that demonstrated independence or require set-up help only in the ability to carry out the daily skills necessary for transportation.

*Medication Refusal*

The medication refusal is a dichotomous variable (Yes/No) that documents a person's refusal to take prescribed medications during the last 3 days. The reference group "No" refers to persons who have not misused any prescribed medications in the last 3 days.

*Intentional Misuse of Medication*

The intentional misuse of medication is a binary variable (Yes/No) that records if misuse of medications (both prescription and over-the-counter medications) has occurred in the last 90 days. The reference group "No" refers to persons who either did not misuse medications or has not taken any medications in the last 90 days.

*Intimidation of others or threatened violence*

The intimidation of others or threatened violence item was collapsed into a binary measure (Yes/No) where the event occurred or it did not. The reference group was "Never".

*Extreme Behaviour Disturbance*

Extreme behaviour disturbance assessed prior history of extreme behaviours that suggests serious risk of harm to self/others based three categories: whether the event happened (No); previous behaviour but not within the last 7 days; and has been exhibited in the last 7 days. The reference group is "No extreme behaviour disturbance".

3.4.2.4 Social Relations and Interpersonal Conflict Characteristic

*Staff Report Persistent Frustration when dealing with Patient*

A binary measures (Yes/No) where one or more staff member report persistent frustration with the person. The reference group is “No”, where staff are not frustrated in dealing with the person.

*Family Report Feeling Overwhelmed by patient’s illness*

A binary measure (Yes/No), to assess whether the person’s family feel overwhelmed by the patient’s illness. The reference group is “No, family/close friends not overwhelmed by the person’s illness”.

*Confidant*

The RAI-MH item ‘person reports having no confidant’ was recoded to align with interRAI Mental Health suite standards where this item is worded as ‘reports having a confidant’ (Yes/No). For purposes of this analysis, the reference group is “No” as in the person reports having no confidant (someone to confide in).

3.4.2.5 RAI-MH ~ Clinical Scales

Eleven clinical outcome scales derived from the RAI-MH were included in the bivariate analysis based on statistical significance (p 0.05). The specific scales examined included: Aggressive Behaviour Scale (ABS) (Perlman & Hirdes, 2008); Cognitive Performance Scale (CPS) (Bula, C.J., & Wietlisbach, V., 2009; Hartmaier et al., 1995; Morris et al., 1994; Yamauchi & Ikegami, 1999); Depressive Severity Index (DSI); Mania Scale; Social Withdrawal (Anhedonia); Risk of Harm to Others (RHO); Self-Care Index (SCI); Severity of Self-harm Scale (SoS); Positive Symptom Scale (PSS); CAGE; and Activities of Daily Living Hierarchy Scale (ADL Hierarchy) (Hirdes et al., 2011). These scales were recoded into categorical variables in the analyses. All scales were recoded based on cut-off points presented in a paper by Hirdes et al., (in press). Refer to

Appendix A for detail on the RAI-MH scales and the categories for each level of the scales. Overall, higher scores on the scale indicate greater loss or severity of a condition.

#### 3.4.2.6 MH - Clinical Assessment Protocols (CAPs)

The interRAI assessments are distinct from other instruments because they combine a comprehensive, multidisciplinary evaluation of an individual's strengths, preferences, and needs with a series of Clinical Assessment Protocols (CAPs) that inform clinical decision-making as part of the care planning process (Martin et al. 2009). Each CAP contains an issue statement, goals of care, triggers, guidelines and additional resources (Hirdes et al., 2011). The issue statement describes why the domain area is an important area of focus in mental health care (Hirdes et al., 2011). Goals of care highlight the specific targets within the CAP to support the patient's recovery and the CAP triggers are intended to either reduce risk of decline or increase the potential for improvement in the specific CAP domain area (Hirdes et al., 2011). The CAP guidelines are intended to help inform the care planning process and along with clinical judgement and incorporating the patient's preferences, help to inform the treatment plan (Hirdes et al., 2011). Below is a list of the CAPs that were found to be significant in the bivariate analysis.

*Social Relationships*

This CAP aims to address factors leading to disruption in social relationships that may ultimately result in isolation of the person from family, friends and the greater community. This CAP is triggered to either reduce social isolation and family

dysfunction (Level 2) or to improve close friendships and family functioning (Level 1). The not triggered group is the reference group.

*Interpersonal Conflict*

The Interpersonal Conflict Cap addresses the issue of conflict that a person may have in his or her relationships with others. This CAP is triggered to reduce widespread conflict (Level 2) and to reduce conflict within specific relationships (Level 1). The not triggered group is the reference group.

*Substance Use*

The Substance Use CAP is based on the CAGE and consists of two groups: triggered where the aim is to reduce or eliminate substance use (current use); and triggered to maintain abstinence (prior use) Triggered for prior substance use (Level 1) and current substance use (Level 2). The not triggered group is the reference group.

*Medication Management and Adherence*

The Medication Management and Adherence CAP has two triggering levels: triggered for problems with medication management and adherence related to cognitive deficits and positive symptoms; and triggered for having previously stopped taking medication due to side effects. The not triggered group is the reference group.

*Control Interventions*

The Control Interventions CAP is triggered to eliminate the need for control interventions within two specific groups: persons in an emergency psychiatric situation and persons not in an emergency psychiatric situation. The not triggered group is the reference group.

*Suicidality and Purposeful Self-Harm*

The Suicidaility and Purposeful Self-Harm CAP is based on the severity of self-harm scale (SOS) and is comprised of three groups: not triggered, triggered due to moderate risk, and high risk of harm to self. The not triggered group is the reference group.

*Harm to Others*

The Harm to Others CAP is triggered according to the presence of violent or aggressive behaviour in the last 7 days or the person's score on the RHO scale (refer to Appendix _ for more detail on the RHO). The CAP is comprised of three groups: not triggered, triggered due moderate risk, and triggered due to high risk of harm to others. The not triggered group is the reference group.

*Self-Care*

The Self-Care CAP is based on the self-care index (SCI) and is comprised of three groups: not triggered, triggered due to moderate risk, and high risk of inability to care for self. The not triggered group is the reference group.

## 3.5 Data Analysis

Bivariate analyses were done for each predictor in relation to the unaccompanied leaves (dependent variable), using chi-square statistics (significance level 0.05). As well, the gender differences were examined among these associations. Results from these initial analyses provided insight into candidate variables for the multivariate models. Preliminary models were specified based on statistical significance using chi-square statistics (significance level 0.05) at the bivariate level.

Multivariate logistic regression was performed to identify the independent associations between unaccompanied leaves and the explanatory variables. Non-significant variables were deleted sequentially from the multivariate models until only significant variables remained (backward selection) after the models were examined to ensure that the final model was not affected by order of deletion effects. Variables not found to be statistically significant were removed from the model individually, effects on the model were noted and only those variables that remained statistically significant were retained in the model. Stepwise methods were not employed; rather manual selection of the final model was done in order to avoid potential order of entry/deletion effects. Variables that were expected to be important based on the literature or clinical input were tested at various stages of model develop to ensure that they were not excluded due to problems related to multicollinearity, for example. However, only variables that achieved the .05 level of significance were retained in the final multivariate logistic regression models

Odds ratios were produced representing the increased odds of unaccompanied leave with one-level increase in the value of the explanatory variable. Odds ratios of less than one indicate a decreased likelihood of unaccompanied leave. Odds ratios with confidence limits that include the value of 1.00 are not significant.

Analyses were undertaken for each of the final models to ensure appropriate data fit. Accuracy of the model prediction was determined using the c-statistic (or area under the curve AUC). Where a c-statistic of 0.50 indicates that the model prediction is no better than chance, of 0.70 is considered reasonable, 0.80 is strong and 1.0 indicates a perfect fit (Hosmer & Lemeshow, 1989; Hosmer & Lemeshow, 2000).

Regression diagnostics were undertaken for each of the final models to ensure appropriate fit of the data.

## 3.6 Results

There were 6,620 RAI-MH assessments completed between October 7, 2005 and March 31, 2011 that met the inclusion criteria for this study. One quarter of the sample had received unaccompanied leaves within the last three days. Of those who had received an unaccompanied leave, 84% were male and 16% were female.

### 3.6.1 Descriptive Bivariate Analyses Results

Tables 3.1 to 3.6 show the bivariate analysis for rates of unaccompanied leave by independent variables of interest for all forensic patients and stratified by gender.

*Sociodemographic Characteristics*

Forensic psychiatric patients were most likely to be unaccompanied leaves within the last three days if they were between the age groups 25-44 or 45-64, and this is true for both men and women. Women over the age of 65 had higher rates of unaccompanied leave compared to men of the same age group (27% vs 19%, respectively). Women who are partnered (married or significant other/partner) have higher rates of unaccompanied leaves; while males who were partnered were less likely to get leaves then those who were not partnered, this difference was not significant for women. Among forensic patients who have experienced residential instability over the last 2 years the rate of unaccompanied leave was 30% with no evidence of gender differences.

*Mental Health Service Use Characteristics*

Patients who have had multiple hospitalizations, 3 or more psychiatric admissions within the last 2 years and longer days of stay were more likely to be granted unaccompanied leaves. Men with days of stay of 3 years or greater had higher rates of receiving unaccompanied leaves compared to women with similar days of stay. Even so, generally days of stay of 6 months or greater increased the likelihood of being granted unaccompanied leaves. Those with recent psychiatric admissions were slightly more likely to have unaccompanied leaves, but his was not significant for women.

*Mental Health Clinical Characteristics*

Patients were less likely to be granted unaccompanied leave if they were demonstrating impaired capacity for transportation; threatening violence or intimidating others; have a history of extreme behaviour disturbance in last 7 days; misuse of medication refusal and intentional misuse of medications.

Gender differences were found for functional characteristics and rates of unaccompanied leaves. Women with impaired ability to navigate transportation had higher rates of unaccompanied leave in comparison to men (18% vs 12%, respectively).

*Social Relations and Interpersonal Conflict Characteristics*

Forensic inpatients that report not having a confidant, that have family members who are feeling overwhelmed with persons illness and where staff express persistent anger with the person are less likely to be allowed unaccompanied leaves.

There are similar trends with respect to patients with a confidant; family/friends feeling overwhelmed by person's illness; and staff feel persistent frustration in dealing with the person. Minimal gender differences were found among social relations and

interpersonal conflict characteristics. There were minimal gender differences found among social relations and interpersonal conflict characteristics and rates of unaccompanied leaves.

*RAI-MH Clinical Scales*

Generally, patients were less likely to be granted unaccompanied leaves if they were exhibiting aggressive behaviour, risk of harm to others, risk of harm to self, inability to care for self due to mental illness, depressive symptoms, mania symptoms, positive symptoms and substance use problems.

There are a few distinct gender differences found between RAI-MH clinical scale scores and rates of unaccompanied leaves. Women with more depressive symptoms, mania symptoms, social withdrawal; positive symptoms; and greater ADL and cognitive impairment are more likely to be allowed unaccompanied leaves. Whereas, men at high risk of harm to others and with substance use problems are more likely to be granted unaccompanied leaves compared to their female counterparts showing similar scale scores.

Higher scale scores on the ADL Hierarchy, Cognitive Performance Scale (CPS) and Social Withdrawal scales had interesting gender effects with respect to rates of unaccompanied leaves. Women with higher levels of social withdrawal, and ADL and cognitive impairments were granted unaccompanied leaves at much higher rates in comparison to men with similar scale scores.

**Table 3.1 Rate of Unaccompanied Leaves by Sociodemographic Characteristics among Ontario Forensic Patients**

| Sociodemographic Characteristic | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Age** | | | | |
| 18-24 | | 15.9 (135) | 15.5 (115) | 17.9 (20) |
| 25-44 | | 25.4 (923) | 25.7 (794) | 24.1 (129) |
| 45-64 | | 29.5 (549) | 29.4 (444) | 30.3 (105) |
| 65+ | | 19.9 (53) | 19.0 (45) | 26.7 (8) |
| | *p* | *<.0001* | *<.0001* | *0.04* |
| | *$X^2$ (DF)* | *62.2 (3)* | *55.8 (3)* | *8.1 (3)* |
| **Marital status** | | | | |
| Not Partnered | | *25.7*(1,527) | 25.7 (1,303) | 25.7 (224) |
| Partnered | | 20.0 (133) | 18.5 (95) | 24.8 (38) |
| | *p* | *0.001* | *0.0004* | *0.8* |
| | *$X^2$ (DF)* | *10.3 (1)* | *12.6 (1)* | *0.05 (1)* |
| **Residential Instability** | | | | |
| No | | 22.3 (950) | 22.2 (805) | 23.1 (145) |
| Yes | | 30.1 (710) | 30.2 (593) | 29.8 (117) |
| | *p* | *<.0001* | *<.0001* | *0.02* |
| | *$X^2$ (DF)* | *49.4 (1)* | *44.4 (1)* | *5.3 (1)* |

**Table 3.2 Rate of Unaccompanied Leaves by Mental Health Service Use Characteristics among Ontario Forensic Patients**

| Mental Health Service Use Characteristics | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Multiple hospitalizations (lifetime)** | | | | |
| No | | 14.8 (229) | 15.0 (199) | 13.7 (30) |
| Yes | | 28.2 (1,431) | 28.1 (1,119) | 28.8 (232) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *114.3 (1)* | *94.0 (1)* | *20.5 (1)* |
| **Day of stay** | | | | |
| 45 days or less | | 18.1 (611) | 18.0 (505) | 18.8 (106) |
| 45-179 days | | 23.7 (381) | 22.9 (308) | 27.8 (73) |
| 180-1094 | | 40.6 (532) | 40.1 (462) | 44.0 (70) |
| 1095+ | | 41.6 (136) | 42.9 (123) | 32.5 (3) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *303.2 (3)* | *265.4 (3)* | *43.8 (3)* |
| **Recent psychiatric admissions** *(last 2 years)* | | | | |
| None | | 22.7 (620) | 22.7 (526) | 23.3 (94) |
| 1-2 | | 26.2 (683) | 26.0 (576) | 27.0 (107) |
| 3+ | | 26.8 (295) | 26.7 (240) | 27.4 (55) |
| | *p* | *0.004* | *0.01* | *0.4* |
| | *$X^2$ (DF)* | *11.2 (2)* | *9.3 (2)* | *1.9 (2)* |
| **Impaired capacity – transportation IADL** | | | | |
| No | | *28.2 (1,482)* | 28.3 (1,254) | 27.4 (228) |
| Yes | | *13.1 (178)* | 12.4 (144) | 17.5 (34) |
| | *p* | *<.0001* | *<.0001* | *0.005* |
| | *$X^2$ (DF)* | *129.9 (1)* | *124.6 (1)* | *12.3 (1)* |

**Table 3.3 Rate of Unaccompanied Leaves by Mental Health Clinical Characteristics among Ontario Forensic Patients**

| Mental Health Clinical Characteristic | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Intimidation** | | | | |
| No | | 26.1 (1,614) | 26.0 (1,360) | 37.0 (254) |
| Yes | | 10.7 (46) | 10.9 (138) | 9.1 (8) |
| | *p* | *<.0001* | *<.0001* | *0.0004* |
| | $X^2$ *(DF)* | *51.2 (1)* | *39.2 (1)* | *12.3 (1)* |
| **Extreme behaviour disturbance** | | | | |
| No | | 24.8 (1,256) | 24.7 (1,057) | 25.7 (199) |
| Yes, but not exhibited in last 7 days | | 30.0 (380) | 30.0 (321) | 30.0 (59) |
| Yes, exhibited in last 7 days | | 10.3 (24) | 10.0 (20) | 12.5 (4) |
| | *p* | *<.0001* | *<.0001* | *0.08* |
| | $X^2$ *(DF)* | *49.4 (1)* | *38.0 (2)* | *4.8 (2)* |
| **Misuse of Medication** | | | | |
| **No** | | 26.8 (1,571) | 26.7 (1,323) | 27.3 (248) |
| **Yes** | | 12.6 (89) | 12.6 (75) | 12.8 (14) |
| | *p* | <.0001 | <.0001 | 0.001 |
| | $X^2$ *(DF)* | 66.5 (1) | 55.9 (1) | 10.7 (1) |
| **Misuse of Medication** | | | | |
| **No** | | 26.3 (1,607) | 26.1 (1,354) | 27.2 (253) |
| **Yes** | | 11.5 (53) | 11.7 (44) | 10.2 (9) |
| | *p* | <.0001 | <.0001 | 0.001 |
| | $X^2$ *(DF)* | 50.4 (1) | 38.6 (1) | 12.2 (1) |

**Table 3.4 Rate of Unaccompanied Leaves by Social Relations and Interpersonal Conflict Characteristics among Ontario Forensic Patients**

| Social Relations and Interpersonal Conflict Characteristic | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Frustrated staff** | | | | |
| No | | 25.7 (1,486) | 25.7 (1,263) | 26.3 (223) |
| Yes | | 21.9 (174) | 21.5 (135) | 23.2 (39) |
| | *p* | *0.02* | *0.02* | *0.4* |
| | $X^2$ *(DF)* | *5.6 (1)* | *5.1 (1)* | *0.7 (1)* |
| **Family overwhelmed** | | | | |
| No | | 27.4 (1,273) | 27.5 (1,079) | 27.0 (194) |
| Yes | | 20.1 (387) | 19.6 (319) | 22.8 (68) |
| | *p* | *<.0001* | *<.0001* | *0.2* |
| | $X^2$ *(DF)* | *38.8 (1)* | *38.3 (1)* | *1.9 (1)* |
| **Has confidant** | | | | |
| No | | 15.7 (950) | 16.2 (100) | 12.9 (15) |
| Yes | | 26.3 (710) | 26.1 (1,298) | 27.1 (117) |
| | *p* | *<.0001* | *<.0001* | *0.001* |
| | $X^2$ *(DF)* | *39.1 (1)* | *29.0 (1)* | *10.9 (1)* |

**Table 3.5 Rate of Unaccompanied Leaves by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Aggressive Behaviour Scale (ABS)** | | | | |
| 0 | | 29.8 (1,378) | 29.6 (1,172) | 31.0 (206) |
| 1-3 | | 17.7 (210) | 17.0 (167) | 20.8 (43) |
| 4+ | | 9.6 (72) | 9.8 (59) | 9.0 (13) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *183.4 (2)* | *152.0 (2)* | *33.2 (2)* |
| **Risk of Harm to Others (RHO)** | | | | |
| 0 | | 22.6 (87) | 21.6 (61) | 25.5 (26) |
| 1-2 | | 28.0 (1,270) | 28.0 (1,090) | 28.4(180) |
| 3-4 | | 22.1 (267) | 21.4 (215) | 25.5(52) |
| 5-6 | | 8.3 (36) | 9.0 (32) | 5.5 (7) |
| | *p* | *<.0001* | *<.0001* | *0.0004* |
| | *$X^2$ (DF)* | *91.4 (3)* | *75.8 (3)* | *18.0 (3)* |
| **Severity of Self-harm Scale (SoS)** | | | | |
| 0 | | 30.6 (936) | 31.1 (810) | 27.8 (126) |
| 1-2 | | 20.6 (555) | 19.9 (456) | 24.6 (99) |
| 3-4 | | 13.1 (34) | 12.3 (26) | 16.3 (8) |
| 5-6 | | 24.8 (135) | 24.3 (106) | 26.9 (29) |
| | *p* | *<.0001* | *<.0001* | *0.3* |
| | *$X^2$ (DF)* | *97.0 (3)* | *100.6 (3)* | *3.5 (3)* |

**Table 3.5 Rate of Unaccompanied Leaves by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Self-Care Index (SCI)** | | | | |
| 0 | | 31.2 (819) | 31.6 (707) | 28.8 (112) |
| 1-2 | | 22.0 (573) | 21.8 (481) | 23.2 (92) |
| 3-4 | | 22.7 (221) | 21.3 (170) | 29.5 (51) |
| 5-6 | | 13.5 (47) | 13.5 (40) | 13.2 (7) |
| | *p* | *<.0001* | *<.0001* | *0.03* |
| | *$X^2$ (DF)* | *92.0 (3)* | *90.0 (3)* | *8.8 (3)* |
| **Depressive Severity Index (DSI)** | | | | |
| 0 | | 28.6 (1,249) | 28.5 (1 080) | 29.1 (169) |
| 1-3 | | 20.8 (313) | 20.3 (248) | 23.4 (65) |
| 4+ | | 14.1 (98) | 13.0 (70) | 18.0 (28) |
| | *p* | *<.0001* | *<.0001* | *0.01* |
| | *$X^2$ (DF)* | *86.6 (2)* | *80.0 (2)* | *9.2 (2)* |
| **Positive Symptom Scale - Long (PSS_Long)** | | | | |
| 0 | | 28.8 (978) | 29.1 (841) | 27.1 (137) |
| 1-3 | | 24.5 (410) | 23.9 (341) | 27.6 (69) |
| 4+ | | 18.2 (272) | 17.5 (216) | 21.6 (56) |
| | *p* | *<.0001* | *<.0001* | *0.2* |
| | *$X^2$ (DF)* | *62.2 (2)* | *63.3 (2)* | *3.2 (2)* |

**Table 3.5 Rate of Unaccompanied Leaves by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Mania** | | | | |
| 0 | | 30.3 (1,160) | 30.5 (1,008) | 28.8 (152) |
| 1-3 | | 19.6 (282) | 18.9 (231) | 23.4 (51) |
| 4+ | | 16.8 (218) | 15.5 (159) | 21.9 (59) |
| | *p* | *<.0001* | *<.0001* | *0.07* |
| | *$X^2$ (DF)* | *123.9 (2)* | *125.9 (2)* | *5.4 (2)* |
| **Social Withdrawal Scale** | | | | |
| 0 | | 26.6 (1,230) | 26.8 (1.046) | 25.7 (184) |
| 1-4 | | 22.9 (294) | 22.8 (248) | 23.5 (46) |
| 5+ | | 20.8 (136) | 18.8 (104) | 31.1 (32) |
| | *p* | *0.0005* | *<.0001* | *0.4* |
| | *$X^2$ (DF)* | *15.3 (2)* | *20.4 (2)* | *2.0 (2)* |
| **CAGE** | | | | |
| 0-1 | | 26.8 (1,504) | 26.5 (1,258) | 28.4 (246) |
| 2+ | | 16.6 (155) | 17.6 (139) | 11.0 (16) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *115.3 (2)* | *27.9 (2)* | *19.8 (2)* |

**Table 3.5 Rate of Unaccompanied Leaves by Resident Assessment Instrument-Mental Health (RAI-MH) Clinical Scales among Ontario Forensic Patients**

| RAI-MH Clinical Scales | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **ADL Hierarchy** | | | | |
| 0 | | 27.5 (1,575) | 27.7 (1,334) | 26.3 (241) |
| 1-2 | | 10.1 (67) | 8.8 (52) | 21.4 (15) |
| 3+ | | 10.5 (18) | 8.5 (12) | 20.7 (6) |
| | *p* | *<.0001* | *<.0001* | *0.5* |
| | *$X^2$ (DF)* | *115.3 (2)* | *122.3 (2)* | *1.2 (2)* |
| **Cognitive Performance Scale (CPS)** | | | | |
| 0 | | 28.8 (1,297) | 29.0 (1,099) | 27.4 (198) |
| 1-2 | | 19.8 (334) | 19.4 (277) | 22.3 (57) |
| 3+ | | 8.1 (29) | 6.8 (22) | 20.0 (7) |
| | *p* | *<.0001* | *<.0001* | *0.2* |
| | *$X^2$ (DF)* | *110.9 (2)* | *112.5 (2)* | *3.2 (2)* |

**Table 3.6 Rate of Unaccompanied Leaves by Mental Health-Clinical Assessment Protocols (MH-CAPs) among Ontario Forensic Patients**

| Clinical Assessment Protocols (CAPs) | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Social Relationship** | | | | |
| Not Triggered | | 27.1 (964) | 27.3 (834) | 25.8 (130) |
| Triggered – Improve Relationships | | 25.6 (366) | 25.7 (300) | 25.1 (66) |
| Triggered **–** Isolation & Dysfunction | | 20.2 (390) | 19.2 (264) | 25.5 (66) |
| | *p* | *<.0001* | *<.0001* | *0.9* |
| | *$X^2$ (DF)* | *28.8 (3)* | *33.7 (3)* | *0.04 (3)* |
| **Interpersonal Conflict** | | | | |
| Not Triggered | | 29.1 (1,175) | 29.2 (1,019) | 28.7 (156) |
| Triggered – Limited Conflict | | 19.4 (294) | 18.3 (228) | 25.0 (66) |
| Triggered – Widespread Conflict | | 18.8 (191) | 18.7 (151) | 19.1 (40) |
| | *p* | *<.0001* | *<.0001* | *0.03* |
| | *$X^2$ (DF)* | *80.8 (2)* | *78.9 (2)* | *8.0 (2)* |
| **Substance Use** | | | | |
| Not Triggered | | 28.3 (1,111) | 28.0 (911) | 29.9 (200) |
| Triggered – Prior Use | | 20.5 (267) | 20.6 (237) | 20.0 (30) |
| Triggered – Current Use | | 20.2 (282) | 21.0 (250) | 15.5 (32) |
| | *p* | *<.0001* | *<.0001* | *<.0001* |
| | *$X^2$ (DF)* | *54.0 (2)* | *37.6 (2)* | *19.8 (2)* |
| **Medication Management & Adherence** | | | | |
| Not Triggered | | 27.6 (1,029) | 27.7 (880) | 27.0 (149) |
| Triggered – Previous Side Effects | | 31.3 (30) | 30.3 (23) | 35.0 (7) |
| Triggered – Cognitive/Positive Symptoms | | 21.5 (601) | 21.2 (495) | 23.3 (106) |
| | *p* | *<.0001* | *<.0001* | *0.2* |
| | *$X^2$ (DF)* | *32.7 (2)* | *31.1 (2)* | *2.8 (2)* |

**Table 3.6 Rate of Unaccompanied Leaves by Mental Health-Clinical Assessment Protocols (MH-CAPs) among Ontario Forensic Patients**

| Clinical Assessment Protocols (CAPs) | | Total Sample (N=6,620) % (n) | Male (N=5,594) % (n) | Female (N=1,026) % (n) |
|---|---|---|---|---|
| **Control Intervention** | | | | |
| Not Triggered | | 27.2 (1,556) | 27.2 (1.316) | 27.6 (940) |
| Triggered – Not Emergent Situation | | 13.0 (74) | 12.1 (58) | 17.2 (16) |
| Triggered – Emergency Situation Intervention | | 9.0 (30) | 8.9 (24) | 9.7 (6) |
| | *p* | *<.0001* | *<.0001* | *0.001* |
| | *$X^2$ (DF)* | *104.4 (2)* | *92.0 (2)* | *13.5 (2)* |
| **Suicidality & Purposeful Self-harm** | | | | |
| Not Triggered | | 25.8 (1,501) | 25.7 (1,275) | 26.2 (226) |
| Triggered – Moderate Risk | | 13.4 (24) | 12.3 (17) | 17.1 (7) |
| Triggered – High Risk | | 24.8 (135) | 24.3 (106) | 26.9 (29) |
| | *p* | *0.001* | *0.002* | *0.03* |
| | *$X^2$ (DF)* | *14.1 (2)* | *12.9 (2)* | *1.7 (2)* |
| **Harm to Others** | | | | |
| Not Triggered | | 27.7 (1,340) | 27.7 (1,140) | 27.9 (200) |
| Triggered – Moderate Risk | | 22.0 (284) | 21.2 (226) | 25.9 (58) |
| Triggered – High Risk | | 8.3 (36) | 8.9 (32) | 5.5 (4) |
| | *p* | *<.0001* | *<.0001* | *0.0002* |
| | *$X^2$ (DF)* | *88.2 (2)* | *73.3 (2)* | *17.4 (2)* |
| **Self-Care** | | | | |
| Not Triggered | | 30.6 (1,059) | 31.2 (917) | 27.1 (142) |
| Triggered – Moderate Risk | | 19.9 (576) | 18.9 (460) | 25.0 (116) |
| Triggered – High Risk | *p* | 13.2 (25) | 12.6 (21) | 17.4 (4) |
| | *$X^2$ (DF)* | *<.0001* | *<.0001* | *0.5* |
| | | *109. (2)* | *120.4 (2)* | *1.4 (2)* |

*Clinical Assessment Protocols (CAPs)*

Forensic patients triggering the Interpersonal Conflict CAP to reduce widespread conflict have similar rates of unaccompanied leaves among both men and women. However, women triggering this CAP to reduce conflict within specific relationships have higher rates of unaccompanied leaves compared to men triggering the CAP at this level.

Men triggering the Risk of Harm to Others CAP at the high risk level have higher rates of unaccompanied leave compared to women. Whereas, among the moderate risk of harm to others triggering level women have slightly higher rates of unaccompanied leaves compared to men.

Women trigger the Social Relationships (to reduce social isolation and dysfunction), Self-Care (high risk) and Suicidality and Purposeful Self-harm CAPs have slightly higher rates of unaccompanied leave compared to men. While men triggering the Substance Use CAP due to current problematic substance use have higher rates of unaccompanied leaves compared to women with substance use problems.

### 3.6.2 Multivariate Analyses Results

Using logistic regression analysis, factors that are predictive of unaccompanied leaves from Ontario forensic mental health hospitals were examined for the sample as a whole, and by gender. The initial logistic regression model was ***not*** stratified by female gender and therefore examined at factors that were predictive of unaccompanied leave among the entire forensic psychiatric patient population included in this study.

Independent variables were examined in the model based on a chi-square statistical significance of 0.05 at the bivariate level or based on clinical relevance. Independent variables that were included in the final model that were ultimately found to

*not* be statistically significant in the multivariate model included: intimidation of others or threatened violence; risk of self-harm (SoS scale); risk of inability to care for self; positive symptoms (PSS_long scale); social withdrawal (ahedonia scale); recent psychiatric admissions; staff report persistent frustration in dealing with person; and family or close friends report feeling overwhelmed by person's illness. As well, the following CAPs were found to not be statistically significant in the multivariate model: social relationships; interpersonal conflict; substance use; harm to others; self-care and suicidality and purposeful self-harm. Since these independent variables were not statistically significant, they were removed from the final model. As well, the Medication Management and Control Interventions CAPs were removed from the model as they were collinear with other variables included in the model (for example, aggressive behaviour (ABS), cognitive performance (CPS) and medication refusal) The final logistic regression model is reported in Table 3.8.

There were several independent variables in the logistic regression model that decreased the odds that a person would be granted an unaccompanied leave. These risk factors included: marital status (married/significant other), depressive symptoms, aggressive behaviour, high risk of harm to others, poor cognitive performance, depressive symptoms, and impaired capacity regarding transportation.

Age was associated with greater odds of granted unaccompanied leave; with highest odds of being granted unaccompanied leave among those in the 45-64 age range (OR=1.82).

Residential instability increased the odds of unaccompanied leaves. In fact, patients with a history of residential instability over the last 2 years had 1.56 times

greater odds of being granted unaccompanied leave. Additionally, persons with multiple hospitalizations had increased odds of being granted unaccompanied leave (OR=1.93).

Patients who report having a confidant (i.e., one or more individuals that they are able to talk about personal issues, troubles or private concerns), had an increased odds of being granted unaccompanied leaves (OR=1.52).

Similarly, the longer the days of stay in hospital increased the odds of being granted unaccompanied leave. Forensic psychiatric patients with lengths of stay greater than 3 years had 3.83 times greater odds of being granted unaccompanied leave compared to the reference group.

Three risk factors were found to have an interaction effect with gender: substance use problems (CAGE), frequency of mania symptoms (Mania scale), and poor functional performance (ADL Hierarchy scale).

If there was no interaction effect on substance use, then substance use would be interpreted as the unique effect of unaccompanied leaves and substance use (when controlling for gender). However, since the interaction is statistically significant the unique effect of substance use on unaccompanied leaves is not only limited to substance use but is also dependent on gender. The presence of a significant interaction indicates that the effect of substance use on unaccompanied leaves is different for men and women (at different levels of gender). Since frequencies of mania symptoms and poor functional performance also have a statistically significant interaction effect, their unique effect on unaccompanied leaves is also dependent on gender.

**Table 3.7 Summary of Multivariate Logistic Regression Model of Unaccompanied Leaves among Ontario Forensic Patients**

| | TOTAL | MALE | FEMALE |
|---|---|---|---|
| **Sociodemographic Characteristics** | | | |
| **Age** - *18-24 (REF)* | | | |
| 25-44 | + | + | ns |
| 45-64 | + | + | ns |
| 65+ | +* | +* | ns |
| **Marital Status** – *Not Partnered (REF)* | | | |
| Partnered | - | - | ns |
| **Residential Instability – *No (REF)*** | | | |
| Yes | + | + | + |
| **Mental Health Clinical Characteristics** | | | |
| **Medication Refusal** - *No (REF)* | | | |
| Yes | - | - | ns |
| **Intentional Misuse of Medication**s – *No (REF)* | | | |
| Yes | - | - | - |
| **Impaired Capacity Transportation IADL** – *No (REF)* | | | |
| Yes | - | - | - |
| **Mental Service Use Characteristics** | | | |
| **Multiple Hospitalizations** – *No (REF)* | | | |
| Yes | + | + | + |
| **Day of Stay** – *Less than 45 days (REF)* | | | |
| 45-179 days | + | + | + |
| 180 – 1094 days | + | + | + |
| 1095+ days | + | + | + |
| **Social Relations Characteristics** | | | |
| **Has Confidant – *No (REF)*** | | | |
| Yes | + | + | + |

*^ interaction effect with female gender; * - overall variable is statistically significant but individual parameter estimate for ordinal variable is not significant; ns – overall variable is not statistically significant*

**Table 3.7 Summary of Multivariate Logistic Regression Model of Unaccompanied Leaves among Ontario Forensic Patients**

| | TOTAL | MALE | FEMALE |
|---|---|---|---|
| **RAI-MH Clinical Scales** | | | |
| **Risk of Harm to Others** – *0 (REF)* | | | |
| 1-2 | **+*** | **ns** | **+*** |
| 3-4 | **+** | **ns** | **+*** |
| 5-6 | **-*** | **ns** | **+*** |
| **Aggressive Behaviour Scale** – *0 (REF)* | | | |
| 1-3 | **-** | **-** | **-** |
| 4+ | **-** | **-** | **-** |
| **CAGE** – *0-1 (REF)* | | | |
| 2+ | **^** | **-** | **-** |
| **Depressive Severity Index**– *0 (REF)* | | | |
| *1-3* | **-*** | **-*** | **ns** |
| *4+* | **-** | **-** | **ns** |
| **Mania** – *0 (REF)* | | | |
| 1-3 | **^** | **-** | **ns** |
| 4+ | | **-*** | **ns** |
| **ADL Hierarchy** – *0 (REF)* | | | |
| 1-2 | **^** | **-** | **ns** |
| 3+ | | **-*** | **ns** |
| **Cognitive Performance Scale** – *0 (REF)* | | | |
| 1-2 | **-** | **-** | **ns** |
| 3-6 | **-** | **-** | **ns** |

*^ interaction effect with female gender; * - overall variable is statistically significant but individual parameter estimate for ordinal variable is not significant; ns – overall variable is not statistically significant*

**Table 3.8 – Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Sex** | | | | |
| Male (REF) | 0 | 1.00 | 0.71 | |
| Female | -0.04 (0.12) | --- | | |
| **Age** | | | | |
| 18-24 (REF) | 0 | 1.00 | | |
| 25-44 | 0.38 (0.11) | 1.46 (1.18 – 1.81) | <.0001 | |
| 45-64 | 0.60 (0.12) | 1.82 (1.45 – 2.29) | | |
| 65+ | 0.38 (0.20) | 1.46 (0.99 – 2.16) | | |
| **Marital** | | | | |
| Not Partnered (REF) | 0 | 1.00 | 0.01 | |
| Partnered | -0.30 (0.11) | 0.74 (0.60 – 0.92) | | 0.76 |
| **CAGE ^** | | | | |
| 0-1 (REF) | 0 | See Figure 2.1 | | |
| 2+ | -0.25 (0.11) | | | |
| **Depressive Severity Index** | | | | |
| 0 (REF) | 0 | 1.00 | | |
| 1-3 | -0.14 (0.08) | 0.87 (0.74 – 1.01) | 0.01 | |
| 4+ | -0.35 (0.13) | 0.71 (0.55 – 0.91) | | |
| **Aggressive Behaviour** | | | | |
| 0 (REF) | 0 | 1.00 | | |
| 1-3 | -0.32 (0.10) | 0.73 (0.60 – 0.88) | <.0001 | |
| 4+ | -0.70 (0.15) | 0.50 (0.37 – 0.67) | | |

^ *interaction effect with female gender*

**Table 3.8 – Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **RHO** | | | | |
| 0 (REF) | 0 | 1.00 | 0.03 | |
| 1-2 | 0.20 (0.14) | 1.22 (0.94 – 1.59) | | |
| 3-4 | 0.31 (0.15) | 1.37 (1.00 -1.87) | | |
| 5-6 | -0.20 (0.24) | 0.82 (0.51 – 1.31) | | |
| **Mania ^** | | | | |
| 0 (REF) | 0 | See Figure 2.2 | | |
| 1-3 | -0.36 (0.09) | | | |
| 4+ | -0.20 (0.12) | | | 0.76 |
| **Cognitive Performance Scale** | | | | |
| 0 (REF) | 0 | 1.00 | | |
| 1-2 | -0.32 (0.08) | 0.72 (0.62 – 0.84) | <.0001 | |
| 3-6 | -0.43 (0.34) | 0.41 (0.27 – 0.63) | | |
| **ADL Hierarchy ^** | | | | |
| 0 (REF) | 0 | | | |
| 1-2 | -0.87 (0.16) | See Figure 2.3 | | |
| 3+ | -0.43 (0.34) | | | |
| **Residential Instability** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.45 (0.06) | 1.56 (1.38 – 1.77) | | |

^ *interaction effect with female gender*

**Table 3.8 – Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Multiple Hospitalizations** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.66 (0.08) | 1.93 (1.64 – 2.28) | | |
| **Impaired Capacity Transportation IADL** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | -0.78 (0.10) | 0.46 (0.38 – 0.55) | | |
| **Has Confidant** | | | | |
| No (REF) | 0 | 1.00 | 0.0001 | |
| Yes | 0.42 (0.11) | 1.52 (1.22 – 1.90) | | 0.76 |
| **Day of Stay** | | | | |
| Less than 45 days (REF) | 0 | 1.00 | <.0001 | |
| 45 – 179 days | 0.28 (0.08) | 1.32 (1.13 – 1.54) | | |
| 180 – 1094 days | 1.11 (0.08) | 3.05 (2.61 – 3.57) | | |
| 1095+ | 1.34 (0.14) | 3.83 (2.29 – 5.02) | | |
| **Medication Refusal** | | | | |
| No (REF) | 0 | 1.00 | 0.01 | |
| Yes | -0.35 (0.13) | 0.71 (0.55 – 0.91) | | |
| **Intentional Misuse of Medications** | | | | |
| No (REF) | 0 | 1.00 | 0.0001 | |
| Yes | -0.53 (0.16) | 0.59 (0.43 – 0.81) | | |

Figure 3.1 shows the interaction between the CAGE addictions scale and female gender. For both men and women, substance use problems lower odds of being granted unaccompanied leave. However, there is a greater relative reduction in the odds of unaccompanied leaves for women with a CAGE score of 2+ compared with their male counterparts.

**Figure 3.1 Odds Ratio for Unaccompanied Leave for CAGE*GENDER Interaction Term**

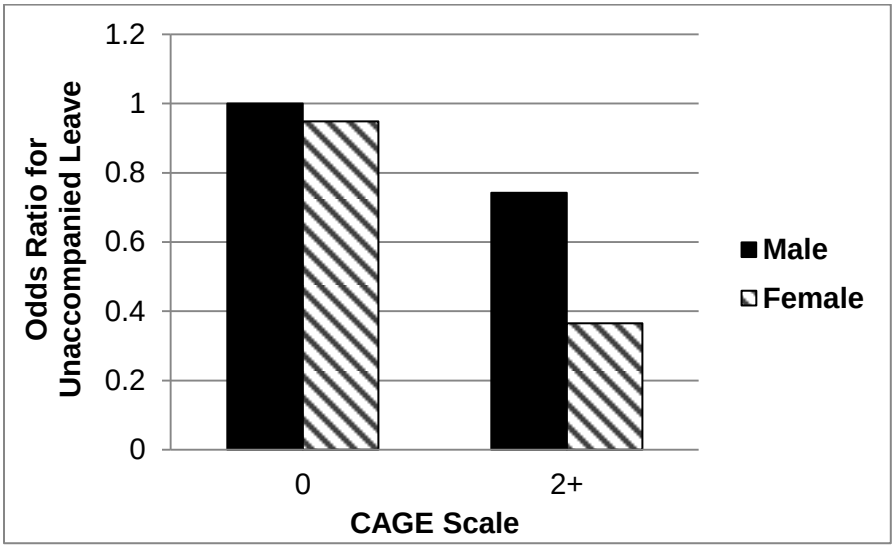



Figure 3.2 shows the interaction between mania and female gender. While women with higher scores for manic symptoms are at increased odds of unaccompanied leaves compared to those with no signs of mania, the inverse relationship is true for men. That is, unaccompanied leaves for men are less likely in the presence of mania symptoms at any level.

**Figure 3.2 Odds Ratio for Unaccompanied Leave for MANIA*GENDER Interaction Term**

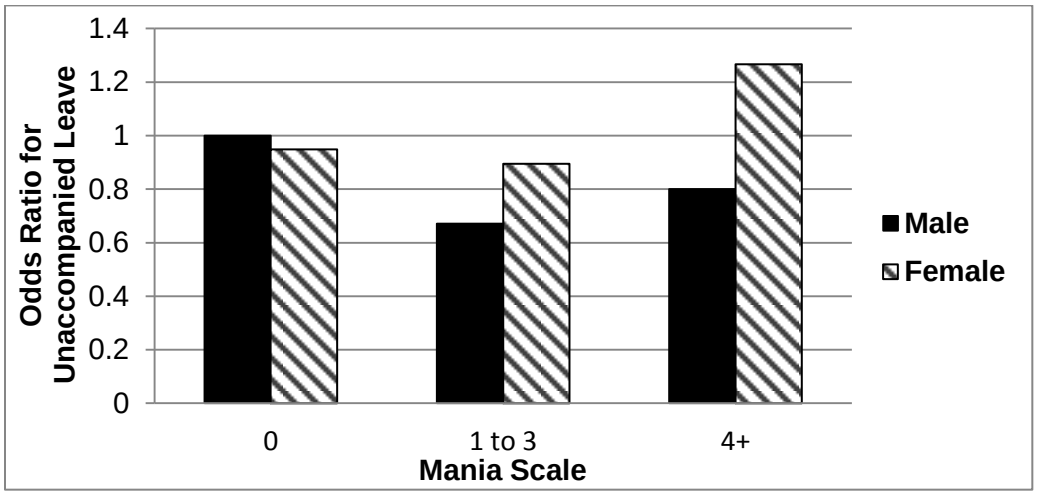
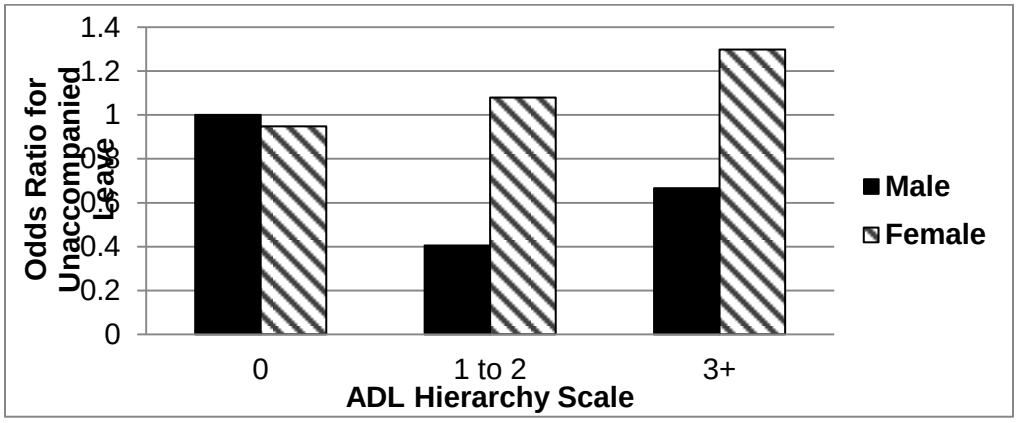



Figure 3.3 shows the interaction between ADL and female gender. With increasing loss of ADL function among women, there is an associated increase in the odds of unaccompanied leave. However, the pattern among men is that ADL impairments result in decreased odds of unaccompanied leave (among those scoring 1-2 on the ADL hierarchy scale). The difference is less pronounced among men who score 3+ on the ADL Hierarchy scale, but continues to predict lower odds of unaccompanied leaves.

**Figure 3.3 Odds Ratio for Unaccompanied Leave for ADL*GENDER Interaction Term**



This non-stratified model for predicting unaccompanied leave had a c-statistic equal to 0.76 which demonstrates good explanatory power.

Next, a logistic regression model stratified by gender was investigated to examine factors among men only in forensic mental health hospitals that are predictive of unaccompanied leaves (Refer to Table 3.9).

Similar to the non-stratified logistic regression model, the same criteria for statistical significance (0.05) was employed to determine which explanatory variables were added into the model.

The same explanatory variables that were noted in the non-stratified logistic regression model decreased the odds that a person would be granted an unaccompanied leave. However, risk of harm to others (RHO scale) was not found statistically significant in the stratified model for male forensic inpatients.

Age was associated with being allowed unaccompanied leave; with increased odds of being granted unaccompanied leave among those in the 45-64 (OR=1.87) age ranges compared to the reference group.

Male patients with a history of residential instability over the last 2 years had 1.60 times greater odds of being granted unaccompanied leave. Additionally, men with multiple hospitalizations had increased odds of being granted unaccompanied leave (OR=1.88) compared to the reference group.

**Table 3.9 - Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Male Forensic Patients in Ontario**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Age** | | | | 0.76 |
| 18-24 (REF) | 0 | 1.00 | | |
| 25-44 | 0.41 (0.12) | 1.50 (1.20 – 1.89) | <.0001 | |
| 45-64 | 0.62 (0.13) | 1.87 (1.46 – 2.39) | | |
| 65+ | 0.39 (0.22) | 1.47 (0.96 – 2.24) | | |
| **Marital** | | | | |
| Not Partnered (REF) | 0 | 1.00 | 0.01 | |
| Partnered | -0.36 (0.13) | 0.69 (0.54 – 0.89) | | |
| **CAGE** | | | | |
| 0-1 (REF) | 0 | 1.00 | 0.02 | |
| 2+ | -0.25 (0.11) | 0.78 (0.63 – 0.96) | | |
| **Depressive Severity Index** | | | | |
| 0 (REF) | 0 | 1.00 | 0.01 | |
| 1-3 | -0.16 (0.09) | 0.85 (0.71 – 1.01) | | |
| 4+ | -0.41 (0.15) | 0.66 (0.50 – 0.89) | | |
| **Aggressive Behaviour** | | | | |
| 0 (REF) | 0 | 1.00 | 0.0001 | |
| 1-3 | -0.27 (0.10) | 0.76 (0.62 – 0.93) | | |
| 4+ | -0.63 (0.16) | 0.53 (0.39 – 0.74) | | |

**Table 3.9 – Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Male Forensic Patients in Ontario**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Mania** | | | | |
| 0 (REF) | 0 | 1.00 | 0.001 | |
| 1-3 | -0.35 (0.09) | 0.71 (0.59 – 0.94) | | |
| 4+ | -0.18 (0.12) | 0.83 (0.66 – 1.04) | | |
| **Cognitive Performance Scale** | | | | |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-2 | -0.32 (0.09) | 0.73 (0.61 – 0.86) | | |
| 3-6 | -1.05 (0.25) | 0.35 (0.22 – 0.57) | | |
| **ADL Hierarchy** | | | | 0.76 |
| 0 (REF) | 0 | 1.00 | <.0001 | |
| 1-2 | -0.88 (0.16) | 0.42 (0.30 – 0.57) | | |
| 3+ | -0.43 (0.34) | 0.65 (0.34 – 1.27) | | |
| **Residential Instability** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.47 (0.07) | 1.60 (1.40 – 1.83) | | |
| **Multiple Hospitalizations** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.63 (0.09) | 1.88 (1.57 – 2.24) | | |
| **Impaired Capacity Transportation IADL** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | -0.80 (0.11) | 0.45 (0.36 – 0.56) | | |

**Table 3.9 – Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Male Forensic Patients in Ontario**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Has Confidant** | | | | |
| No (REF) | 0 | 1.00 | 0.003 | |
| Yes | 0.37 (0.12) | 1.44 (1.13 – 1.83) | | |
| **Day of Stay** | | | | |
| Less than 45 days (REF) | 0 | 1.00 | | |
| 45 – 179 days | 0.26 (0.09) | 1.30 (1.10 – 1.54) | <.0001 | 0.76 |
| 180 – 1094 days | 1.11 (0.09) | 3.04 (2.57 – 3.60) | | |
| 1095+ | 1.44 (0.15) | 4.20 (3.14 – 5.63) | | |
| **Medication Refusal** | | | | |
| No (REF) | 0 | 1.00 | 0.02 | |
| Yes | -0.34 (0.14) | 0.71 (0.54 – 0.94) | | |
| **Intentional Misuse of Medications** | | | | |
| No (REF) | 0 | 1.00 | 0.01 | |
| Yes | -0.48 (0.18) | 0.62 (0.44 – 0.87) | | |

Male patients who report having a confidant (i.e., one or more individuals that they are able to talk about personal issues, troubles or private concerns) had 1.44 times greater odds of unaccompanied leave compared to the reference group.

Male forensic psychiatric patients with days of stay greater than 3 years had 4.20 times greater odds of being granted unaccompanied leave compared to the reference group.

Male patients with substance use problems, increasing ADL function and with higher scores for manic symptoms had decreased odds of being granted unaccompanied leaves. This trend was also exhibited in the interaction effects found in the non-stratified logistic regression model (see Figures 3.1-3.3).

Overall, there were minimal differences in the non-stratified logistic regression model and the model stratified by gender (men only). The model for predicting unaccompanied leave among men only had a c-statistic equal to 0.76 which demonstrates good explanatory power.

A logistic regression model to examine factors among women only that are associated with unaccompanied leaves from forensic mental health hospitals was also created (Refer to Table 3.10). Independent variables were included in the model based on a chi-square statistical significance of 0.05 or greater.

There were several independent variables that were found statistically significant in the previous two logistic regression models that were not statistically significant in the model for women. These explanatory variables include: age; marital status (married/significant other); depressive symptoms; poor cognitive performance; symptoms of mania; poor functional performance; and medication refusal. The

independent variables in the logistic regression model that decreased the odds that female forensic psychiatric patients would be granted an unaccompanied leave included: substance use problems based on the CAGE scale; aggressive behaviour; high risk of harm to others based on the RHO scale; impaired capacity regarding transportation; and intentional misuse of medication.

Female patients with a history of residential instability over the last 2 years had 1.42 times greater odds of being granted unaccompanied leave. Additionally, women with multiple hospitalizations had increased odds of being granted unaccompanied leave (OR=2.47).

Female patients who report having a confidant (i.e., one or more individuals that they are able to talk about personal issues, troubles or private concerns) had 1.49 times greater odds of unaccompanied leave.

Female forensic psychiatric patients with days of stay greater than 3 years had 2.19 times greater odds of being granted unaccompanied leave compared to the reference group.

Female patients with substance use problems had decreased odds of being granted unaccompanied leaves and this was more pronounced compared to their male counterparts. This trend was also exhibited in the interaction effect found between gender and substance use problems (CAGE) in the non-stratified logistic regression model (see Table 3.1). However, ADL function and mania symptoms were not found to be statistically significant in the stratified model for female forensic psychiatric patients.

This model for predicting unaccompanied leave among women had a c-statistic equal to 0.75 which demonstrates good explanatory power.

**Table 3.10 – Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Female Forensic Patients in Ontario**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **CAGE** | | | | |
| 0-1 (REF) | 0 | 1.00 | 0.003 | |
| 2+ | -0.87 (0.29) | 0.42 (0.24 – 0.74) | | |
| **Aggressive Behaviour** | | | | |
| 0 (REF) | 0 | 1.00 | 0.001 | |
| 1-3 | -0.48 (0.22) | 0.62 (0.40 – 0.94) | | |
| 4+ | -1.19 (0.34) | 0.30 (0.16 – 0.59) | | |
| **RHO** | | | | |
| 0 (REF) | 0 | 1.00 | 0.05 | |
| 1-2 | 0.24 (0.26) | 1.28 (0.76 – 2.14) | | |
| 3-4 | 0.50 (0.31) | 1.65 (0.89 – 3.06) | | 0.75 |
| 5-6 | -0.91 (0.61) | 0.40 (0.12 – 1.32) | | |
| **Residential Instability** | | | | |
| No (REF) | 0 | 1.00 | 0.02 | |
| Yes | 0.35 (0.16) | 1.42 (1.05 – 1.94) | | |
| **Multiple Hospitalizations** | | | | |
| No (REF) | 0 | 1.00 | <.0001 | |
| Yes | 0.90 (0.22) | 2.47 (1.59 – 3.84) | | |
| **Impaired Capacity Transportation IADL** | | | | |
| No (REF) | 0 | 1.00 | 0.001 | |
| Yes | -0.77 (0.32) | 0.46 (0.30 – 0.72) | | |
| **Has Confidant** | | | | |
| No (REF) | 0 | 1.00 | 0.01 | |
| Yes | 0.79 (0.30) | 2.20 (1.21 – 3.99) | | |

**Table 3.10 – Multivariate Logistic Regression Model for Unaccompanied Leaves from Hospital among Female Forensic Patients in Ontario**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value | c statistic |
|---|---|---|---|---|
| **Day of Stay** | | | | |
| Less than 45 days (REF) | 0 | 1.00 | <.0001 | |
| 45 – 179 days | 0.39 (0.19) | 1.47 (1.02 – 2.12) | | |
| 180 – 1094 days | 1.21 (0.21) | 3.34 (2.20 – 5.07) | | 0.75 |
| 1095+ | 0.78 (0.39) | 2.19 (1.03 – 4.68) | | |
| **Intentional Misuse of Medications** | | | | |
| No (REF) | 0 | 1.00 | 0.02 | |
| Yes | -0.89 (0.38) | 0.41 (0.19 – 0.87) | | |

## 3.7 Discussion

This is the first research study to examine the gender differences associated with factors that can predict a person's unaccompanied leave from forensic mental health hospital/units. In fact, there is very little research that examines the predictive factors associated with leaves from secure forensic hospitals in general.

The results of this study show that factors predictive of unaccompanied leave are not only dominated by factors related to risk of danger to others, but in fact include many other clinical, functional and social characteristics. This highlights the fact that although public safety is one of the factors to consider when determining a person's approval for unaccompanied leaves it is not the only factor considered. Since unaccompanied leaves are a key component of treatment among forensic mental health patients, the focus should be on improving the clinical and behavioural risk factors to support the person in their recovery. Therefore emphasis should be placed on the treatment of the person not exclusively on public safety. Both should be considered in the decision-making process of granting unaccompanied leaves.

There are minimal differences in the OR's for the total sample model and the model stratified by men. Even though men account for majority of the forensic mental health population, the similarities in the two models were not simply a reflection of the total population being dominated by men. Rather it is a result of the fact that these are factors specifically predictive of unaccompanied leave among male forensic patients. In the model for women, there are several variables that are not significant; however, they were significant in the total sample model and the model for men. Although women do represent a smaller proportion of the forensic mental health population; there were

however, over one thousand women included in the sample of which, 262 had been granted unaccompanied leaves within the last 3 days. Compared to the male forensic population this is a relatively small number, but it represents a census of female forensic patients and it is a larger sample than is found in most of the literature. For example, the majority of what is known about female sex offenders has been derived from studies with small samples sizes and descriptive summaries of women who have been identified as sexual perpetrators (Grayston & De Luca, 1999; Nathan & Ward, 2002). Even with small sample sizes, research has indicated that there are distinct differences found among female and male sex offenders (Miccio-Fonesca, 2000). As well, when reviewing the descriptive analysis, the percentages of the presence of the characteristics were comparable between men, women and in many cases the total sample. This demonstrates a trend in factors that are associated with unaccompanied leave among forensic mental health patients. Based on this, the factors that are most predictive of unaccompanied leave among female forensic patients are reflected in the logistic regression model for women.

In the logistic regression model for men, age was associated with being allowed unaccompanied leave; with increased odds of being granted unaccompanied leave among those in the 45-64 (OR=1.87) age range. Age was not found to be predictive of unaccompanied leaves in the model for women.

Men and women in forensic mental health are treated differently with respect to unaccompanied leaves, not just based on the odds of being granted leave, but in how they are treated when presenting the same risk factors.

Aggressive behaviours decrease the odds of unaccompanied leaves among both men and women. This is not surprising, for safety of the person and the public, a person demonstrating aggressive behaviours would be considered a high risk patient and as such would be denied leave until the aggressive behaviours were addressed in the care plan.

In the bivariate analysis women with more depressive symptoms had higher rates of unaccompanied leave compared to men. In the multivariate models, depressive symptoms were not predictive of unaccompanied leaves among women, but greater depressive symptoms decreased the odds of unaccompanied leave for men.

There were gender differences found among disability items in predicting the odds of unaccompanied leaves. For example, cognitive impairments and impaired capacity to navigate transportation decreased the odds of unaccompanied leave, but were not found to be predictive in the model for women.

In the bivariate analysis, women with increased ADL decline had substantially higher rates of unaccompanied leave compared to men. Nonetheless, ADL functioning was not a predictive factor in the final multivariate model for women. However, there was a noted interaction effect between ADL function and gender where with increasing loss of ADL function among women, there is an associated increase in the odds of unaccompanied leave. However, the pattern among men is that ADL impairments result in decreased odds of unaccompanied leave (among those scoring 1-2 on the ADL hierarchy scale). The difference is less pronounced among men who score 3+ on the ADL Hierarchy scale but continues to predict lower odds of unaccompanied leaves.

Having a partner (married or significant other) is considered a social resource and is considered a protective factor in easing restrictions. However, among men, being partnered decreases the odds of being granted unaccompanied leave. Among women, marital status was not associated with unaccompanied leaves. It is not clear why these differences exist as further research is required.

In the logistic regression model for the total sample there was an interaction effect between substance use problems based on CAGE scores and gender. For both men and women substance use problems lower odds of being granted unaccompanied leave. However, there was greater relative reduction in the odds of unaccompanied leave for female forensic psychiatric patients with a CAGE score of 2+ compared to men. This was also demonstrated in the stratified models.

Forensic patients with days of stay greater than 3 years or longer or multiple hospitalizations had increased odds of being granted unaccompanied leaves. Although this trend was true for both men and women, there were gender differences in the overall odds of being granted leave. For example, men who had been inpatients for 3 or more years had 4.20 times greater odds of being granted unaccompanied leave compared to 2.19 for women. Although day of stay was found to be a significant predictor in being granted unaccompanied leaves, it is important to note that day of stay in Ontario forensic mental health hospitals is affected by legal sanctions. For example, persons under assessment of fitness are mandated to 30-40 days in hospital. Therefore, patients in the less than 45 day of stay group may include persons who are later deemed fit to stand trial. Interpretations of day of stay should be made with caution because the length of stay may be more related to legal sanctions that treatment need.

However, the familiarity with patients and easing of restrictions is not a relationship that should be dismissed.

Forensic patients who report having a confidant (i.e., one or more individuals that they are able to talk about personal issues, troubles or private concerns) had increased odds of unaccompanied leaves. However, having a confidant increased the odds of unaccompanied leave among women to a greater degree than men. Residential instability increased the odds of unaccompanied leave among men to a slightly greater degree than women.

*Treatment Implications*

For risk factors that have roughly the same association for both men and women, it may be reasonable to expect similar treatment could be used to support unaccompanied leaves regardless of gender. Many of these behaviours will trigger CAPs which can help guide the clinical team in the care planning process.

The majority of the factors predictive of unaccompanied leave may be amenable in treatment. For example, decreasing depressive symptoms (which would increase likelihood of being granted leave) could be addressed through medications and/or psychotherapy. Similarly, improving cognitive and physical function could be addressed through rehabilitation. Aggression can be targeted through anger management therapies and manic symptoms can be addressed through medications and/or cognitive behavioural therapy. Addictions treatment can help provide support for persons with substance use problems and this treatment should consist of ongoing support in the community. Residential instability can be addressed by providing housing support as part of the discharge planning, which would begin at admission.

Having a confidant is a predictor of increased odds of being granted unaccompanied leave this would suggest that among patients without a confidant building and strengthening their social supports within their care plan would support the recovery of the person and prepare them for leave.

*Policy Implications*

Understanding the factors that are predictive of unaccompanied leave can help inform decision-making with respect to protocols and assessments used to assist clinicians in determining a person's readiness for unaccompanied leave. Especially since the results of this study demonstrated that there are factors beyond ensuring public safety through mitigating violence towards others that are predictive of unaccompanied leave.

The *Not Criminally Responsible (NCR) Reform Act Bill C-14 (formerly Bill C-54)* which is an act to amend the Criminal Code and the National Defence Act received Royal Assent on April 11, 2014 (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). The intention of this Bill is to put more of an emphasis on public safety when making decisions about persons NCRMD or unfit to stand trial (Government of Canada - Department of Justice, 2013). Bill C-14 officially came into effect on July 11, 2014.

With the passing of this bill, person's deemed NCRMD or unfit to stand trial AND are deemed a "high-risk accused" will not be eligible for conditional or absolute discharge. Essentially this high-risk NCRMD designation restricts the person to hospital with no opportunity for unaccompanied leaves until the court removes their designation (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). This designation can be extended for a period of up to 3 years before the review board can review the person's progress. As well, accompanied leaves can only be

granted in special circumstances and with the proper safeguards in place to protect the public (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). Restricting unaccompanied leaves not only interferes with the treatment of the person but it also decreases the person's ability to make a successful transition out of the hospital setting and into the community (Centre for Addiction and Mental Health (CAMH), 2013).

This is a rather surprising Bill, especially since not only are persons by designation not criminally responsible on account of their mental illness and yet still being sanctioned with punitive restrictions, but the recidivism rates among persons with NCRMD designation are quite low (2.5-7.5%) compared to the general incarcerated population (41-44%) (Government of Canada - Department of Justice, 2013). To provide even more context, 2009 recidivism rates for driving under the influence for first time offenders in the State of California was 45% and this is the lowest the recidivism rates have been in over 20 years (California Department of Alcohol and Drug Programs, 2013).

Health system performance comparisons can be conducted using Canadian Institute for Health Information (CIHI) reporting. As part of the reporting structure provided by CIHI through quarterly reporting, details on unaccompanied leaves (predictive factors, gender differences, across hospital and within hospital comparisons) can be highlighted and a special CIHI report can be released. These reports can then be used to inform policy surrounding unaccompanied leaves both within hospitals and across the forensic mental health care system as a whole.

*Research Implications*

Future research should incorporate international comparisons to provide an enhanced understanding of factors that predict leave and how they compare within and between countries it should also consider methods employed when granting such leaves. As a starting point to facilitate this research, a secondary analysis of RAI-MH data collected in Ontario, Michigan, and the Netherlands could be conducted to determine predictive factors associated with unaccompanied leaves and possible gender differences within these risk factors. As more countries use the interRAI MH on forensic populations, the scope of this research can expand.

Using the interRAI Forensic Supplement pilot data, which consists of completed RAI-MH and corresponding interRAI Forensic Supplement assessments, an analysis of factors predictive of unaccompanied leave should be done. Additional factors from the interRAI Forensic Supplement should be examined to determine if they have an effect on the odds of predicting unaccompanied leave among forensic patients and if there any gender differences among these factors.

Moving forward, a longitudinal study to determine the rate of persons on unaccompanied leaves who reoffend (capturing type of offence, severity of offence and time to offence data) should be conducted. Such a study as this would provide information on what factors are associated with unsuccessful leaves as well as what possible gender differences associated with these factors that increase risk of recidivism during leave. Increasing our understanding of this would help inform treatment and policy around unaccompanied leaves. However, conducting a study of this magnitude would be extremely costly and would require a massive sample size that would be followed over a multi-year period of time (2-3 years).

If unaccompanied leaves are considered part of the recovery process and a focus of the therapeutic treatment, then understanding factors that can either increase or decrease the odds of being granted unaccompanied leaves will help ease the transition towards moving the person into the lowest level of care the community.

# Chapter 4

# Gender-based Analysis of Freedom of Movement (FoM) among Ontario Forensic Patients

## 4.1 Introduction

Rehabilitation, treatment and preparing patients for reintegration into the community are key goals of forensic mental health services (Bettridge & Barbaree, 2008; Simpson, 2012; Stubner et al., 2006). However, forensic hospitals must manage risk to help ensure public safety (Carroll et al., 2004; Department of Justice & Department of Health and Wellness, 2012). The criminal code of Canada requires that a plan of care be established for all patients receiving forensic mental health care while at all times taking public safety into consideration (Simpson, 2012). Care plans address the level of security the persons is being placed under and the progressive easing of restrictions with the ideal end goal being the opportunity to access to the community (Simpson, 2012).

Transitioning through levels of care is a staged process that involves incremental easing of restrictions (BC Mental Health & Addiction Services, March 2013; Walker et al., 2013). The patient's trajectory through this staged process can have both periods of progress and relapse. Understanding the factors that can help reduce relapse will in turn support the patient's overall recovery (Simpson, 2012) Further, if there are gender differences associated with the easing of restrictions, understanding these inherent differences can help inform policy and practice and improve overall patient care.

### 4.1.1 Background

In Ontario, forensic patients fall under the jurisdiction of the Ontario Review Board (ORB), which ORB monitors their progress through levels of care from point of entry into the hospital until they receive 'absolute discharge' (Bettridge & Barbaree, 2008; Crocker & Cote, 2009). As outlined in the criminal code, the ORB must choose a level of privileges that is considered the least onerous and least restrictive for the person (Crocker & Cote, 2009; Department of Justice & Department of Health and Wellness, 2012; Kennedy, 2002; Penney, Morgan, & Simpson, 2013). However, recent changes in legislation may affect a person's freedom of movement. As mentioned in previous chapters, Bill C-14 "Not Criminally Responsible Reform Act" (formerly Bill C-54) was reintroduced in November 2013 and received Royal Assent on April 11, 2014 (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). The changes that Bill C-14 introduces include: putting public safety first; creating a high-risk designation for persons deemed NCR; and enhancing victims' rights (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). Therefore, aspects of public safety and victims' rights will play a more integral part in the decision-making process of easing restrictions among persons deemed NCRMD. Specifically, the new high-risk NCRMD designation could limit a person's ability to progress toward greater the freedom of movement by restricting them to a hospital until the court revokes their designation (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013) This designation can be extended to a period of up to 3 years before the review board can review the person's progress. Prior to the legislation changes, annual reviews were conducted on the patient`s treatment progress. As well, persons deemed high-risk NCRMD cannot be granted

unaccompanied leaves and accompanied leaves can only be granted in special circumstances and with the proper safeguards in place to protect the public (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). Changes that Bill C-14 brings came into effect as of July 11, 2014.

In fact, there seems to be an international trend toward tightening of restrictions and policies across hospitals as a result of incidents involving forensic patients that were either perceived or actual threats to public safety. For example, in Germany as a result of incidents of violence among forensic patients, legal and policy changes were initiated (Stubner et al., 2006). These changes prolonged release processes and delayed the easing of restrictions resulting in longer lengths of stay among forensic patients (Stubner et al., 2006). The end result was an increase in the cost of forensic mental health services and in some cases adverse outcomes for the person (Stubner et al., 2006). There were no reports on the effects that these legal and policy changes had on public safety.

Similarly to Canada and Germany, the Netherlands employs a staged process of easing restrictions among person`s in TBS hospitals (Tigges, 1991). The TBS system aims to reduce the risk of recidivism among high-risk forensic patients and to rehabilitate patients to support their reintegration back into the community (de Boer & Gerrits, 2007; Tigges, 1991). The TBS designation lasts for 2 years, but can be extended (de Boer & Gerrits, 2007). Patients in TBS hospitals go through a staged gradual leaves process that consists of accompanied leaves, unaccompanied leaves and “transmural leave”, which is when the person lives in a residence outside of the hospital that is owned by the hospital and monitored by the TBS clinical team (de Boer

& Gerrits, 2007). Similar to the role of the review boards in Canada (or the courts in cases where the person is deemed high-risk NCR), the Ministry of Justice is responsible for revoking person`s the TBS designation (McInerny, 2000; Tigges, 1991). However, international comparisons of easing of restrictions should be interpreted with caution because definitions of a forensic mental health patient may differ by country. Therefore, without person-level data (e.g., based on interRAI assessments) it may not be possible to ensure that comparisons are based on the same types of patients.

There are several factors that need to be taken into account when determining the pace of progress for easing restrictions at the patient level. In a report by Simpson (2012) for the Department of Health and Wellness, Nova Scotia some of the main factors included: insight into mental health; issues relating to their index offence; victim(s) impact; community supports and destabilizers; and treatment progress. Stubner et al. (2006) investigated factors associated with easing restrictions among mentally ill offenders. The factors that were found to decrease a person's likelihood of easing restrictions included: aggressive behaviour; impulsiveness; antisocial behaviours; sanctions such as deportation; and instability (for example, acute psychosis, cognitive impairments). Factors that increased a person's likelihood of easing restrictions included: having a confidant; positive coping mechanisms; and social skills (Stubner et al., 2006). There is clear overlap in factors that can affect easing of restrictions that require further investigation, especially among potential gender and facility level differences.

Forensic hospitals vary in their approach to determining a person`s readiness for easing restrictions, and although similar approaches with respect to a gradual easing of

restrictions are used across hospitals; there is no standardized assessment for determining readiness for leaves (Simpson, 2012). For example, a variety of risk assessment tools are employed across forensic mental health facilities in Canada, with the HCR-20 being the most commonly used (Simpson, 2012) This is not to suggest that similar processes associated with freedom of movement do not exist, but rather that the means to reach these decisions may vary across settings (Simpson, 2012).

The gender differences associated with the process of easing restrictions in forensic mental health hospital settings, has received limited attention in the literature. However, there have been several studies that examine potential gender differences associated with reintegration from correctional facilities. The literature suggests that among women factors such as: family separation; poor quality of life; mental illness; employment instability; and location of residence in community affect success of reintegration from a correctional facility (Blanchette & Taylor, 2009). Even though many of these factors are similar for men and women, further investigation is needed into the potential gender differences among forensic patients, especially in hospital settings.

The process of easing restrictions is an essential component to a person`s rehabilitation and recovery because it allows the staff to detect a relapse of undesirable behaviour or recidivism prior to their full release from hospital (Tigges, 1991). As well, it provides the person with an opportunity to demonstrate to the clinical team that they are capable of coping with further freedom of movement (Tigges, 1991).

## 4.2 Purpose

This chapter will provide an analysis of the gender-based influences that can predict freedom of movement within forensic mental health hospitals. Additionally,

understanding the factors that can reduce the likelihood of freedom of movement (easing restrictions) and potential gender influences affecting these factors can be used to inform the focus of treatment interventions. Further, adjusted hospital comparisons will be made to determine both the facility and individual level influences associated with freedom of movement.

## 4.3 Methods

### 4.3.1 Data Source

The RAI-MH is standardized, comprehensive assessment tool that employs a multidisciplinary approach in assessing a person's functioning to help inform clinical decision making as part of the care planning process (Hirdes et al., 2000; Martin et al., 2009). It employs a three-day observation period in order to provide reliable and valid measures of clinical characteristics (Hirdes et al., 2010). Along with informing care planning, the RAI-MH assessments also have applications for outcomes, quality indicators and case-mix (Hirdes et al., 2010; Perlman et al., 2013). Across psychiatric hospitals in Ontario the System for Classification of Inpatient Psychiatry (SCIPP) derived from the RAI-MH, is the recommended case-mix classification system to inform funding across inpatient psychiatry (Hirdes et al., 2003; Perlman et al., 2013).

The RAI-MH has been mandated for use in all psychiatric hospitals throughout the province of Ontario since 2005 (Mathias et al., 2010).As part of this Ministry of Health and Long-term Care (MOHLTC) mandate, hospitals with designated adult psychiatric hospital beds in Ontario are required to submit completed RAI-MH assessment data to the Canadian Institute of Health Information (CIHI) on a quarterly basis (Canadian Institute of Health Information (CIHI), 2013). On behalf of the MOHLTC, CIHI has

created the Ontario Mental Health Reporting System (OMHRS) as a data repository to help support these services (Canadian Institute of Health Information (CIHI), 2013).

For purposes of this chapter, the OMHRS dataset used in the analysis was restricted to forensic patients only and included all adults who were admitted as forensic patients and assessed in a forensic mental health hospital or forensic unit within a psychiatric hospital in Ontario from October 7, 2005 to March 31, 2011. All nine provincial mental health hospitals with forensic beds throughout Ontario were included in this dataset for a total sample size of 6,620 assessments (last assessment for each episode). The gender distribution for the sample included 5,593 male and 1,026 female forensic inpatients.

## 4.4 Measures

### 4.4.1 Dependent Variable

#### 4.4.1.1 Freedom of Movement Scale

The dependent variable, Freedom of Movement (FoM) scale, was created to measure the transitions from most restriction (seclusion/confinement to room) to least restriction (unaccompanied leave) among forensic inpatients. Freedom of movement consists of 5 distinct ordinal levels: restricted to room; confined to unit; no outside leaves; accompanied leaves; and unaccompanied leaves. The reference group for this particular analysis is restricted to room.

### 4.4.2 Independent Variables

The selection of independent variables was guided by the findings in the literature. Other variables available in the RAI-MH, but not considered in the literature, were also

examined. Variables shown to be associated with easing restrictions were examined and gender differences among these associations were also investigated.

#### 4.4.2.1 Sociodemographic Characteristics

*Age*

Age was collapsed into four groups: 18-24, 25-44, 45-64, and 65+. The reference group was 18-24.

*Female Gender*

The RAI-MH sex variable, labeled ‘female gender’ for purposes of this research, consists of three response options: male, female and other. Because the ‘other’ response category is an underused response option, there were not enough cases to warrant ‘other’ being its own gender category. Males represent a large majority of the forensic inpatient population. For purposes of this analysis, ‘male’ and ‘other’ were recoded into one variable (female gender=0) and was used as the reference group and ‘female’ (female gender=1) was the comparison group. This binary measure of female gender was also used to stratify the logistic regression models to examine gender influences on factors that predict freedom of movement.

*Marital Status*

Marital status was collapsed into two groups: “Not partnered” (never married, separated, divorced or widowed) and ‘partnered’ (married or in common-law relationship). Not partnered was the reference group while partnered was the comparison group.

*Psychiatric Diagnoses*

Psychiatric diagnoses documents the top 3 specific psychiatric diagnosis in order of importance. All diagnoses are based on DSM-IV provisional diagnostic criteria. For this particular analysis, psychiatric diagnosis was recoded into a series of binary measures (Yes/No) for each diagnosis. Not having the given diagnosis was the reference group for each dummy variable.

*Residential Instability*

Residential instability is a binary measure to determine if the person has a history of temporary residence (living in a shelter, lack of permanent address, homeless) within the last 2 years (Yes/No). The reference group was that prior to admission the person's residence was not temporary.

*Has Confidant*

The RAI-MH item 'person reports having no confidant' was recoded to align with interRAI Mental Health suite standards where this item is worded as 'reports having a confidant' (Yes/No). For purposes of this analysis, the reference group is "No" as in the person reports having no confidant (someone to confide in).

4.4.2.2 Mental Health Service Use Characteristics

*Multiple Hospitalizations (Lifetime)*

Number of lifetime psychiatric admissions was collapsed into a dichotomous variable indicating whether the person had multiple hospitalizations (Yes/No). Multiple hospitalizations exclude the current admission. The reference group was no history of multiple hospitalizations.

*Day of Stay*

The last assessment of each forensic episode was extracted to determine the patient's day of stay. The specific day of stay categories are less than 45 days, 45-179 days, 180-1094 days and 1095+ days. The reference group was less than 45 days.

*Amount of Time Hospitalized*

This variable records the amount of time that the person was hospitalized for mental health services during the last 2 years. The specific categories of amount of time hospitalized are 0 days; 30 days or less; 31 days to 1 year; and more than 1 year. The reference group was '0 days (no other admission in the last 2 years)'.

*Staff Report Persistent Frustration when Dealing with Patient*

A binary measure (Yes/No) was available where one or more staff member report persistent frustration with the person. The reference group is "No", where staff does not report frustration in dealing with the person.

*Intimidation of others or threatened violence*

The intimidation of others or threatened violence item was collapsed into a binary measure (Yes/No) where the event occurred or it did not. The reference group was no did not intimidate others or threaten violence.

4.4.2.3 Mental Health Clinical Characteristics

*Impaired Capacity – Transportation IADL*

The IADL capacity item for transportation was collapsed into a dichotomous variable (Yes/No), where the person either had impaired capacity to navigate transportation or they did not. Capacity to navigate transportation can include the person's ability to travel by public transit or to drive oneself. Any assessment with a score of 2 or greater (range from supervision to full dependence) was considered to

have impaired capability for navigating transportation. The reference group “No”, includes persons that demonstrated independence or require set-up help only in the ability to carry out the daily skills necessary for transportation.

*Insight into Mental Health*

Insight into mental health deals with the person’s level of awareness of their mental health problems. The categories for degree of insight into mental health are Full, Limited, and None. The reference group is ‘full’ degree of insight into mental health.

*Refusal of Medication*

Refusal of medication is a binary measure (Yes/No) that documents any refusal of prescribed medications regardless of the reason. The reference group is “No (did not refuse medications), or no medications”.

*Psychiatric Intensive Care Unit*

This item measures the use of a psychiatric intensive care unit (ICU) within the last 3 days where a patient can be under constant clinical observation. The number of actual days the person is in the psychiatric ICU in the last 3 days was recorded but this was collapsed into a binary variable with any days as the comparison group. The reference group was ‘0 days’ in a psychiatric intensive care unit.

*Acute control Medications*

Acute control medications are provided to patients as an immediate response to control behaviours that have the potential of harming the person or others. The frequency of administered acute control medications over the last 3 days was recorded. If the person has received acute control medications greater than 9 times in the last 3 days “9” is noted. Acute control medications were recoded where the coding categories

are 0, 1-4 and 5+. The reference group was “0”, received no acute control medications in the last 3 days.

#### 4.4.2.4 Behavioural Symptoms

Behavioural symptoms identify the presence of behaviours that cause distress or that is potentially harmful to the person or others that have occurred in the last 3 days. These include wandering; physical abuse; verbal abuse; socially inappropriate behaviour; inappropriate sexual behaviour; resistance to care; and elopement attempts. The coding categories for the behavioural symptoms are: not exhibited, present but not exhibited, exhibited 1-2 times and exhibited daily. The reference group for each behaviour is ‘did not exhibit the behavioural symptom in the last 3 days’.

*Extreme behaviour Disturbance*

Extreme behaviour disturbance assessed prior history of extreme behaviours that suggests serious risk of harm to self/others based three categories: whether the event happened (No); previous behaviour but not within the last 7 days; and has been exhibited in the last 7 days. The reference group is “No extreme behaviour disturbance”.

*Persistent Anger*

Persistent anger with self or others assesses the presence of the observed indicator (persistent anger) within the last 3 days. The coding categories for persistent anger with self or others includes: not exhibited, present but not exhibited, exhibited 1-2 times and exhibited daily. The reference group is persistent anger with self or others not exhibited within the last 3 days.

#### 4.4.2.5 Harm to Self or Others

*Suicide Plan*

Suicide plan is a binary measure (Yes/No) that identifies if the person has formulated a plan to end their own life within the last month. The reference group is having no suicide plan.

*Most Recent Self-Injurious Act (within last month)*

Most recent self-injurious act considers whether the person has engaged in self-injurious behaviour within the last month. This variable was recoded into a binary measure (Yes/No) to measure whether the event occurred regardless of the recency of the event. The reference group is no self-injurious act within the last month.

*Violence to others*

The violence to others variable measures the most recent instance of violence. For the analysis in this chapter, violence to others was recoded into a binary measure (Yes/No) to identify persons at risk of becoming violent towards others. The reference group is no instance of violence towards others.

4.4.2.6 RAI-MH Clinical Scales

Eleven clinical outcome scales derived from the RAI-MH were included in the bivariate analysis. The specific scales examined included: Aggressive Behaviour Scale (ABS) (Perlman & Hirdes, 2008); Risk of Harm to Others (RHO); Severity of Self-Harm (SoS); Self-Care Index (SCI); Depressive Severity Index (DSI); Positive Symptom Scale (PSS); Mania; Social Withdrawal; ADL Hierarchy; Instrumental Activities of Daily Living (IADL) Capacity Scale; and Cognitive Performance Scale (CPS) (Bula, C.J., & Wietlisbach, V., 2009; Hartmaier et al., 1995; Morris et al., 1994; Yamauchi & Ikegami, 1999) . These scales were recoded into categorical variables in the analyses. All scales were recoded based on cut-off points presented in a paper by Hirdes et al., (in press)

Appendix A describes the RAI-MH scale and the categories for each level of the scale in greater detail. Higher scores on the scale indicate greater loss or severity of a condition (Hirdes et al., 2011).

#### 4.4.2.7 Mental Health Clinical Assessment Protocols (CAPs)

The interRAI assessments combine a comprehensive, multidisciplinary evaluation of an individual's strengths, preferences, and needs with a series of Clinical Assessment Protocols (CAPs) that inform clinical decision-making as part of the care planning process (Martin et al., 2009). Each CAP contains an issue statement, goals of care, triggers, guidelines and additional resources (Hirdes et al., 2011). The issue statement describes why the domain area is an important area of focus in mental health care (Hirdes et al., 2011). Goals of care highlight the specific targets within the CAP to support the patient's recovery and the CAP triggers are intended to either reduce risk of decline or increase the potential for improvement in the specific CAP domain area (Hirdes et al., 2011). The CAP guidelines are intended to help inform the care planning process and along with clinical judgement and incorporating the patient's preferences, help to inform the treatment plan (Hirdes et al., 2011). Below is a list of the CAPs that were found to be significant in the bivariate analysis.

*Social Relationships*

This CAP aims to address factors leading to disruption in social relationships that may ultimately result in isolation of the person from family, friends and the greater community. This CAP is triggered to either reduce social isolation and family dysfunction (Level 2) or to improve close friendships and family functioning (Level 1). The not triggered group is the reference group.

*Interpersonal Conflict*

The Interpersonal Conflict Cap addresses the issue of conflict that a person may have in his or her relationships with others. This CAP is triggered to reduce widespread conflict (Level 2) and to reduce conflict within specific relationships (Level 1). The not triggered group is the reference group.

*Traumatic Life Events*

The Traumatic Life Events CAP is comprised of two triggering levels: triggered to address immediate safety concerns; and triggered to reduce the impact of the prior traumatic life events. The not triggered group is the reference group.

*Medication Management and Adherence*

The Medication Management and Adherence CAP has two triggering levels: triggered for problems with medication management and adherence related to cognitive deficits and positive symptoms; and triggered for having previously stopped taking medication due to side effects. The not triggered group is the reference group.

*Substance Use*

The Substance Use CAP is based on the CAGE and consists of two groups: triggered where the aim is to reduce or eliminate substance use (current use); and triggered to maintain abstinence (prior use) Triggered for prior substance use (Level 1) and current substance use (Level 2). The not triggered group is the reference group.

*Control Interventions*

The Control Interventions CAP is triggered to eliminate the need for control interventions within two specific groups: persons in an emergency psychiatric situation

and persons not in an emergency psychiatric situation. The not triggered group is the reference group.

*Suicidality and Purposeful Self-Harm*

The Suicidality and Purposeful Self-Harm CAP is based on the severity of self-harm scale (SOS) and is comprised of three groups: not triggered, triggered due to moderate risk, and high risk of harm to self. The not triggered group is the reference group.

*Harm to Others*

The Harm to Others CAP is triggered according to the presence of violent or aggressive behaviour in the last 7 days or the person's score on the RHO scale (refer to Table 3.1 for more detail on the RHO). The CAP is comprised of three groups: not triggered, triggered due moderate risk, and triggered due to high risk of harm to others. The not triggered group is the reference group.

*Self-Care*

The Self-Care CAP is based on the self-care index (SCI) and is comprised of three groups: not triggered, triggered due to moderate risk, and high risk of inability to care for self. The not triggered group is the reference group.

## 4.5 Data Analysis

Bivariate analyses where done for each independent variable in relation to Freedom of Movement scale (dependent variable), using cross-tabulations and chi-square statistics (significance level 0.05). As well, the gender differences were examined among these associations. Results from these initial analyses provided insight into candidate variables for the ordinal logistic regression models. Preliminary models were specified

based on clinical relevance based on the literature and statistical significance using chi-square statistics (significance level 0.05) at the bivariate level.. Cross-tabulations using chi-square tests of statistical significance of binary variables and Spearman's correlation coefficients of continuous variables were examined.

Ordinal logistic regression was performed to identify the independent associations between freedom of movement and the explanatory variables. Non-significant variables were deleted sequentially from the models until only significant variables remained. Variables not found to be statistically significant were removed from the model individually, effects on the model were noted and only those variables that remained statistically significant were retained in the model. Stepwise methods were not employed; rather manual selection of the final model was done in order to avoid potential order of entry/deletion effects. Variables that were expected to be important based on the literature or clinical input were tested at various stages of model develop to ensure that they were not excluded due to problems related to multicollinearity, for example. However, only variables that achieved the .05 level of significance were retained in the final multivariate logistic regression models. Because the DESCENDING option was used in the proc logistic statement the odds ratio is the effect of the independent variable on the odds of being in a higher category rather than a lower category (Huber, 2012; Stokes, Davis, & Koch, 2002).

Freedom of Movement is an ordinal variable and therefore the proportional odds assumption was utilized. The proportional odds model forces the 5 ordinal categories (of the Freedom of Movement scale) into binary comparisons by combining categories. Dichotomizing the freedom of movement variable would lower the power of the

hypothesis test (Huber, 2012; Stokes et al., 2002). Due to the complexity of the ordinal logistic regression models, interaction effects among variables were not examined in the final models.

The proportional odds assumption tests the null hypothesis that the slope coefficients are equal across the cumulative logits for each predictor variable (Huber, 2012). When the p value is not significant at the 0.05 the assumption of equal slopes is not rejected and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002).

Effect plots on the logit scale for the final ordinal regression models at both the individual and facility level models were prepared to visually inspect the proportional odds assumption. The cumulative logit plots are graphs of each predictor variable to determine if the slopes are parallel. If the slopes are parallel the proportional odds assumption is true (Huber, 2012; Stokes et al., 2002).

Analyses were undertaken for each of the final models to ensure appropriate data fit. Accuracy of the model prediction was determined using the c-statistic (or area under the curve AUC). The c-statistic in the Freedom of Movement model is the probability of an observation with fewer restrictions having a cumulative probability than observations with greater restrictions (Huber, 2012; Stokes et al., 2002). Regression diagnostics were undertaken for each of the final models to ensure appropriate data fit.

## 4.6 Results

There were 6, 564 RAI-MH assessments completed between October 7, 2005 and March 31, 2011 that met the inclusion criteria for this study. Table 4.1 highlights the frequency distribution across the Freedom of Movement scale in the total sample as

well as, for men and women. Less than 5% of forensic patients were restricted to room within the last 3 days and just over 20% of forensic patients had been granted unaccompanied leaves within the last 3 days. A higher percentage of women compared to men were granted accompanied leaves within the last 3 days (10% vs 7%, respectively). Interestingly, a higher percentage of men (38%) had no leaves in the last 3 days compared to their female counterparts (30%). A higher percentage of women in comparison to men were confined to unit (29% vs 35%, respectively).

**Table 4.1 Facility Comparisons of Freedom of Movement among Ontario Forensic Patients**

| **Freedom of Movement Model (FoM)** | **Total Sample** (N=6,564) % (n) | **Male** (N=5,549) % (n) | **Female** (N=1,015) % (n) |
|---|---|---|---|
| **Freedom of Movement*** | | | |
| Constant Restriction to Room | 4.5 (297) | 4.7 (263) | 3.4 (34) |
| Constant Confinement to Unit | 29.5 (1,939) | 28.5 (1,583) | 35.1 (356) |
| No Leaves | 36.4 (2,391) | 37.6 (2,088) | 29.9 (303) |
| Accompanied Leaves | 7.3 (480) | 6.9 (384) | 9.5 (96) |
| Unaccompanied Leaves | 22.2 (1,457) | 22.2 (1,231) | 22.3 (226) |

**missing=56*

## 4.7 Bivariate Results

Freedom of Movement is an ordinal scale that examines the most restrictive (restricted to room) to least restrictive (unaccompanied leave) to reflect recovery-based rehabilitation principles in the forensic mental health system. The bivariate analysis examined the potential total sample and gender differences associated with freedom of movement and various potential independent variables. Tables 4.2 lists the bivariate analysis results for the total sample, but the stratified analyses for men and women

(Tables 4.3– 4.4) can be found in Appendix B. The Spearman's correlation coefficients for the explanatory variables are listed in Table 4.5.

*Sociodemographic Characteristics*

Different age groups seemed to have different patterns of association with Freedom of Movement. For example, a higher percentage of those granted unaccompanied leave were among the age groups 24-44 and 45-64 compared to the other age groups (18-24 and 65+). This could simply be a reflection of the age demographic of the forensic patient population in Ontario. A higher percentage of female forensic patients who were granted unaccompanied leave were in the 65+ age group compared to the male forensic patients (27% vs. 16%, respectively).Easing of restrictions is significantly associated with marital status and this is true among both male and female forensic patients. Among the total sample, a slightly higher percentage of persons' who were granted unaccompanied leave were not partnered. Despite that, a higher percentage of the female forensic patients who were granted unaccompanied leave were partnered compared to their male counterparts. There are also variations in the association between freedom of movement and psychiatric diagnoses. For example, a slightly higher percentage of forensic patients who were restricted to room had a psychiatric diagnosis of personality disorder.

*Harm to Self or Others Characteristics*

The distribution of the Freedom of Movement scale is shifted toward greater restriction for those who have a suicide plan in comparison to those who did not. This pattern was more pronounced in the case of patients with incidents of self-harm in the last month. Tightening of restrictions was also strongly associated with violence towards

others within the last month. These findings were generally consistent when stratified by gender.

*Clinical Characteristics*

Easing of restrictions was associated with multiple hospitalizations and this was true among both male and female forensic patients. On the other hand, tightening of restrictions was associated with medication refusal in the previous 3 days and having been in a psychiatric intensive care unit.

Forensic patients who had a confidant tended to need less restriction in the freedom of movement, and this is true for both male and female patients. Restriction in Freedom of Movement was also greater for forensic patients who had an impaired capability for navigating transportation compared to female forensic patients. In addition, tightening of restrictions among forensic patients is associated with both staff report persistent frustration with patient and patient being hostile towards staff/patients.

Table 4.5 reports the Spearman correlation coefficients for various interRAI scales and clinical indicators with the FoM scale suggesting a weak relationship among these independent variables and freedom of movement. All scores have values of -0.30 or less based on cut-off scores suggested by Dancey & Reidy, (2004). The directions and magnitudes of the relationships with Freedom of Movement varies for the total sample, but these are only modest differences in these associations for male and female forensic patients.

**Table 4.2 Rate of Freedom of Movement by Sociodemographic Characteristics among Ontario Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Age** | | | | | | |
| 18-24 | 8.2 (69) | 36.3 (306) | 38.0 (321) | 4.7 (40) | 12.8 (108) | |
| 25-44 | 4.6 (166) | 29.1 (1,051) | 36.8 (1,327) | 7.0 (254) | 22.5 (810) | *<.0001* |
| 45-64 | 3.2 (58) | 26.7 (491) | 34.7 (637) | 8.5 (156) | 26.9 (494) | *131.7 (12)* |
| 65+ | 1.5 (4) | 33.2 (88) | 37.0 (98) | 11.3 (30) | 17.0 (45) | |
| **Marital status** | | | | | | |
| Not Partnered | 4.5 (268) | 28.6 (1,689) | 36.5 (2,156) | 7.6 (448) | 22.7 (1,342) | *<.0001* |
| Partnered | 4.4 (29) | 37.8 (250) | 35.6 (235) | 4.8 (32) | 17.4 (115) | *31.0 (4)* |
| **Psychiatric Diagnoses** | | | | | | |
| Personality Disorder | 7.0 (101) | 31.1 (448) | 33.6 (484) | 8.1 (117) | 20.1 (289) | <.0001 36.3 (4) |
| Substance Use Disorder | 4.1 (111) | 34.0 (928) | 31.5 (858) | 6.9 (189) | 23.5 (642) | <.0001 244.7 (4) |
| Schizophrenia | 4.4 (199) | 24.2 (1,093) | 37.7 (1,706) | 7.8 (353) | 25.9 (1,172) | <.0001 70.2 (4) |
| Mood Disorder | 3.9 (48) | 35.2 (434) | 33.3 (411) | 7.6 (94) | 20.0 (246) | <.0001 25.4 (4) |
| Anxiety Disorder | 3.9 (14) | 21.4 (76) | 37.1 (132) | 17.4 (62) | 20.2 (72) | <.0001 60.1 (4) |
| **Suicide Plan** | | | | | | |
| No | 4.3 (128) | 28.9 (868) | 34.5 (1,035) | 7.7 (23) | 24.7 (734) | *<.0001* |
| Yes | 18.6 (11) | 32.2 (19) | 28.8 (17) | 1.7 (1) | 18.6 (11) | *30.7 (4)* |

**Table 4.2 Rate of Freedom of Movement by Harm to Self or Others Characteristics among Ontario Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Most Recent Self-Injurious Act** *(within last month)* | | | | | | *<.0001* |
| No | 4.2 (275) | 29.6 (1,916) | 36.4 (2,361) | 7.3 (476) | 22.4 (1,454) | *104.9 (4)* |
| Yes | 26.8 (22) | 28.1 (23) | 36.6 (30) | 4.9 (4) | 3.7 (3) | |
| **Violence to Others** *(within last month)* | | | | | | *<.0001* |
| No | 3.8 (243) | 29.6 (1,888) | 36.6 (2,336) | 7.4 (475) | 22.6 (1,446) | *70.7 (4)* |
| Yes | 30.7 (54) | 29.0 (51) | 31.3 (55) | 2.8 (5) | 6.3 (11) | |
| **Multiple Hospitalizations** *(lifetime)* | | | | | | *<.0001* |
| No | 4.3 (65) | 34.4 (517) | 40.1 (603) | 7.9 (118) | 13.2 (198) | *95.4 (4)* |
| Yes | 4.6 (232) | 28.1 (1,422) | 35.3 (1,788) | 7.2 (362) | 24.9 (1,259) | |
| **Refusal of Medication** *(in last 3 days)* | | | | | | *<.0001* |
| No | 3.4 (199) | 29.5 (1,727) | 36.0 (2,108) | 7.4 (434) | 23.7 (1,390) | *214.5 (4)* |
| Yes | 13.9 (98) | 30.0 (211) | 40.1 (282) | 6.5 (46) | 9.5 (67) | |

**Table 4.2 Rate of Freedom of Movement by Mental Health Clinical Characteristics among Ontario Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Psychiatric Intensive Care Unit** *(in last 3 days)* | | | | | | *<.0001* |
| No | 4.2 (269) | 29.6 (1,899) | 36.5 (2,337) | 7.4 (472) | 22.4 (1,433) | *418.5 (4)* |
| Yes | 18.4 (28) | 25.7 (39) | 34.9 (53) | 5.3 (8) | 15.8 (24) | |
| **Has Confidant** | | | | | | |
| No | 5.8 (40) | 33.3 (230) | 40.4 (279) | 6.4 (44) | 14.2 (98) | <.0001 |
| Yes | 4.4 (257) | 29.1 (1,709) | 36.0 (2,112) | 7.4 (436) | 23.1 (1,359) | 33.0 (4) |
| **Impaired capacity – transportation IADL** | | | | | | *<.0001* |
| No | 3.4 (179) | 32.6 (1,697) | 33.8 (1,758) | 5.3 (276) | 24.9 (1,298) | *418.5 (4)* |
| Yes | 8.7 (118) | 17.9 (242) | 46.7 (633) | 15.0 (204) | 11.7 (159) | |
| **Frustrated Staff** | | | | | | |
| No | 3.6 (206) | 28.3 (1,632) | 37.7 (2,172) | 7.4 (424) | 23.1 (1,328) | *<.0001* |
| Yes | 11.5 (91) | 38.4 (305) | 27.0 (215) | 6.9 (215) | 16.2 (129) | *70.7 (4)* |

**Table 4.2 Rate of Freedom of Movement by Mental Health Clinical Characteristics among Ontario Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Patient Hostile Towards Staff/Patients** | 3.6 (208) | 28.4 (1,656) | 37.4 (2,182) | 7.7 (446) | 22.9 (1,336) | *<.0001* |
| No | 12.2 (89) | 38.6 (281) | 28.1 (205) | 4.5 (33) | 16.6 (121) | *165.1 (4)* |
| Yes | | | | | | |

**Table 4.5 Spearman's Correlation Coefficient of Freedom of Movement by Mental Health Clinical Characteristics among Ontario Forensic Patients**

| Covariate | Total Sample (N=6,564) | | Male (N=5,549) | | Female (N=1,015) | |
|---|---|---|---|---|---|---|
| | Spearman's Correlation Coefficient | p value | Spearman's Correlation Coefficient | p value | Spearman's Correlation Coefficient | p value |
| Aggression (ABS) | -0.25 | <.0001 | -0.24 | <.0001 | -0.29 | <.0001 |
| ADL | -0.06 | <.0001 | -0.06 | <.0001 | -0.02 | 0.5 |
| IADL | -0.007 | 0.6 | -0.003 | 0.8 | -0.02 | 0.4 |
| CAGE | -0.16 | <.0001 | -0.14 | <.0001 | -0.23 | <.0001 |
| CPS | -0.03 | 0.006 | -0.04 | 0.02 | 0.002 | 0.9 |
| Depression (DSI) | -0.15 | <.0001 | -0.15 | <.0001 | -0.18 | <.0001 |
| Positive Symptoms (PSS) | -0.16 | <.0001 | -0.16 | <.0001 | -0.16 | <.0001 |
| Withdrawal | -0.08 | <.0001 | -0.09 | <.0001 | -0.06 | 0.06 |
| Self-Care Index (SCI) | -0.11 | <.0001 | -0.11 | <.0001 | -0.12 | <.0001 |
| Self-Harm (SoS) | -0.12 | <.0001 | -0.13 | <.0001 | -0.11 | <.0001 |
| Harm to Others (RHO) | -0.17 | <.0001 | -0.17 | <.0001 | -0.16 | <.0001 |
| Wandering | -0.08 | <.0001 | -0.08 | <.0001 | -0.20 | 0.001 |
| Verbal Abuse | -0.22 | <.0001 | -0.22 | <.0001 | -0.25 | <.0001 |
| Physical Abuse | -0.16 | <.0001 | -0.17 | <.0001 | -0.15 | <.0001 |
| Socially Inappropriate Behaviour | 0.20 | <.0001 | -0.19 | <.0001 | -0.25 | <.0001 |
| Inappropriate Sexual Behaviour | -0.09 | <.0001 | -0.08 | <.0001 | -0.14 | <.0001 |
| Resistance to Care | -0.18 | <.0001 | -0.17 | <.0001 | -0.24 | <.0001 |
| Elopement Attempts/Threats | -0.05 | <.0001 | -0.05 | 0.0002 | -0.05 | 0.1 |
| Extreme Behaviour Disturbance | -0.11 | <.0001 | -0.10 | <.0001 | -0.15 | <.0001 |
| Amount of Time Hospitalized | 0.07 | <.0001 | 0.07 | <.0001 | 0.07 | 0.02 |
| Insight into Mental Health | -0.12 | <.0001 | -0.12 | <.0001 | -0.10 | 0.001 |
| Days of Stay | -0.07 | <.0001 | 0.29 | <.0001 | 0.27 | <.0001 |
| Acute Control Medications | 0.29 | <.0001 | -0.10 | <.0001 | -0.17 | <.0001 |
| Time Since Las Discharge | 0.11 | <.0001 | -0.07 | <.0001 | -0.06 | 0.08 |

Aggressive behaviour; risk of harm to others; verbal abuse; physical abuse, socially inappropriate behaviour; resistance to care; risk of self-harm; substance abuse problems (CAGE score); wandering; and extreme behaviour disturbance and lack of insight into mental health had the strongest negative correlations with freedom of movement. As such, as the risk of these behaviours increases, the easing of restrictions decreases and this is true among male and female forensic patients. Similarly, depressive symptoms; positive symptoms; inability to care for self due to mental illness; social withdrawal; impaired functional performance; and impaired cognitive performance were also all negatively correlated with freedom of movement among both men and women in the sample.

Amount of time hospitalized is positively correlated with freedom of movement and this is true for both male and female forensic patients; although, there is an extremely weak linear association. And so, as amount of time hospitalized increases so does the easing of restrictions.

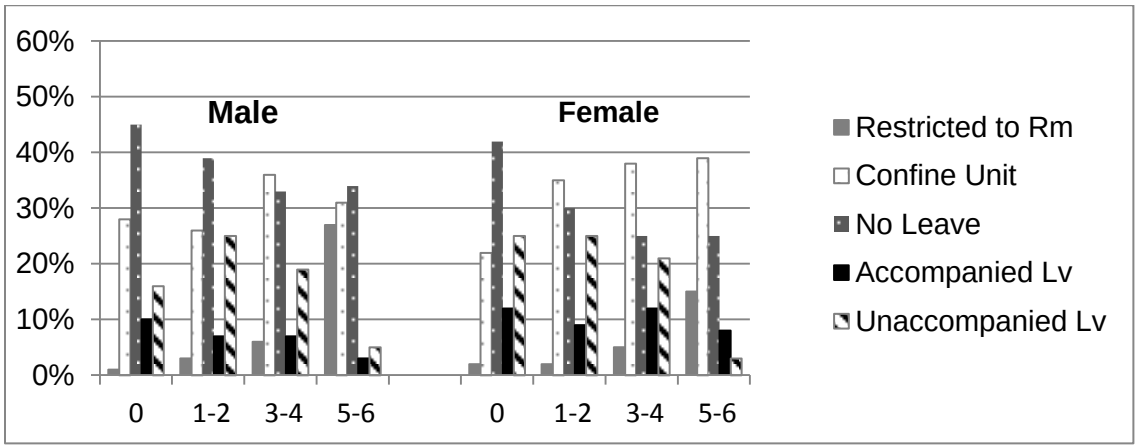
Among the total sample, acute control medications and time since last discharge are positively correlated and have a weak linear association. Therefore, among the total sample, as the use of acute control medications and the time since the person was last discharged increases the easing of restrictions increases. However, when stratifying by gender, among male and female forensic patients acute control medications and time since last discharge are negatively correlated with freedom of movement. Whereas, days of stay are negatively correlated with freedom of movement among the total sample but when stratifying by gender, days of stay are positively correlated with

freedom of movement. Therefore as days of stay among male and female forensic patients increase so does the easing of restrictions.

Figures 4.1 to 4.5 highlight key aspects of associations at the individual level, specifically examining gender differences for the association between the Freedom of Movement scale and the independent variables (RHO, SOS, SCI, ADL, and ABS).

Increased restrictions are associated with a higher scale score on the Risk of Harm to Others (RHO) and this is true for both male and female forensic patients (See Figure 4.1). Tighter restrictions are placed on patients who demonstrate higher risk of harming others. A higher percentage of female forensic patients were confined to unit with increased risk of harming others in comparison to male forensic patients; however, a higher percentage of men were restricted to room with higher risk of harm to others in comparison to women.

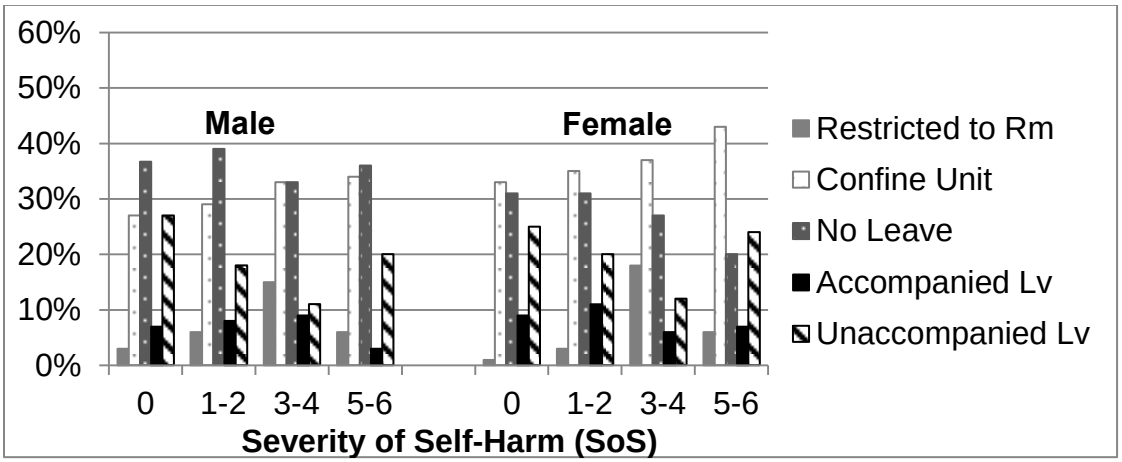
**Figure 4.1 Risk of Harm to Others (RHO) by Freedom of Movement Stratified by Gender**




There are some also noteworthy gender differences in the association of risk of self-harm and freedom of movement (See Figure 4.2). For example, a higher percentage of female forensic patients were confined to unit with higher risk of self-harm

compared to male forensic patients. While restrictions of Freedom of Movement were generally incremental with greater differences for women, the association was much less pronounced for men.

**Figure 4.2 Severity of Self-Harm (SoS) by Freedom of Movement Stratified by Gender**

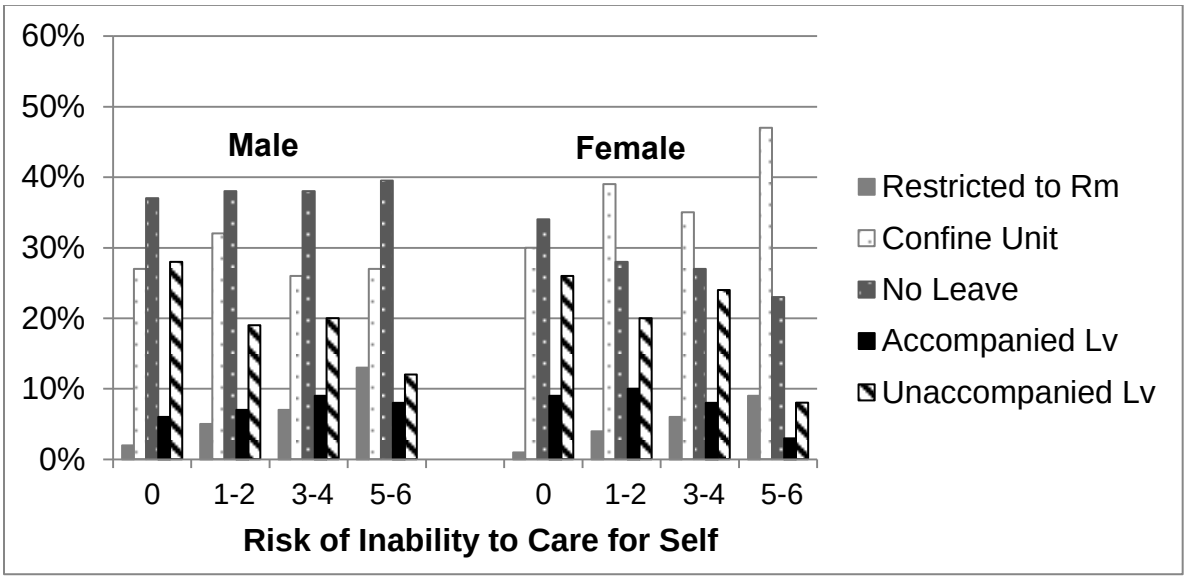



Greater restrictions are also associated with a higher score on the risk of inability to care for self (SCI) scale; however, the associations are again most clear for women (See Figure 4.3). A higher percentage of female patients were confined to unit with increased inability to care for self but this was less evident for male forensic patients.

There was pronounced increase in restrictions places on patients with higher scores on the aggressive behaviour scale (ABS), and this is true for both male and female forensic patients (See Figure 4.4). There are notable gender differences among those who are demonstrating more severe aggression among the freedom of movement levels. For example, a higher percentage of female forensic patients were confined to unit among those demonstrating more severe aggressive behaviour compared to their male counterparts (56% vs. 34%, respectively). Whereas, a higher percentage of male

forensic patients were restricted to room among males who, demonstrated more severe aggressive behaviours in comparison to female forensic patients.

**Figure 4.3 Risk of Inability to Care for Self (SCI) by Freedom of Movement Stratified by Gender**




Gender differences are also found among the association between Freedom of Movement and ADL Hierarchy (See Figure 4.5); however, in this case the associations are more pronounced for males then females. For example, among male forensic patients unaccompanied leaves clearly decrease with higher scores on ADL hierarchy; but the difference is much smaller for females.

**Figure 4.4 Aggressive Behaviour (ABS) by Freedom of Movement Stratified by Gender**

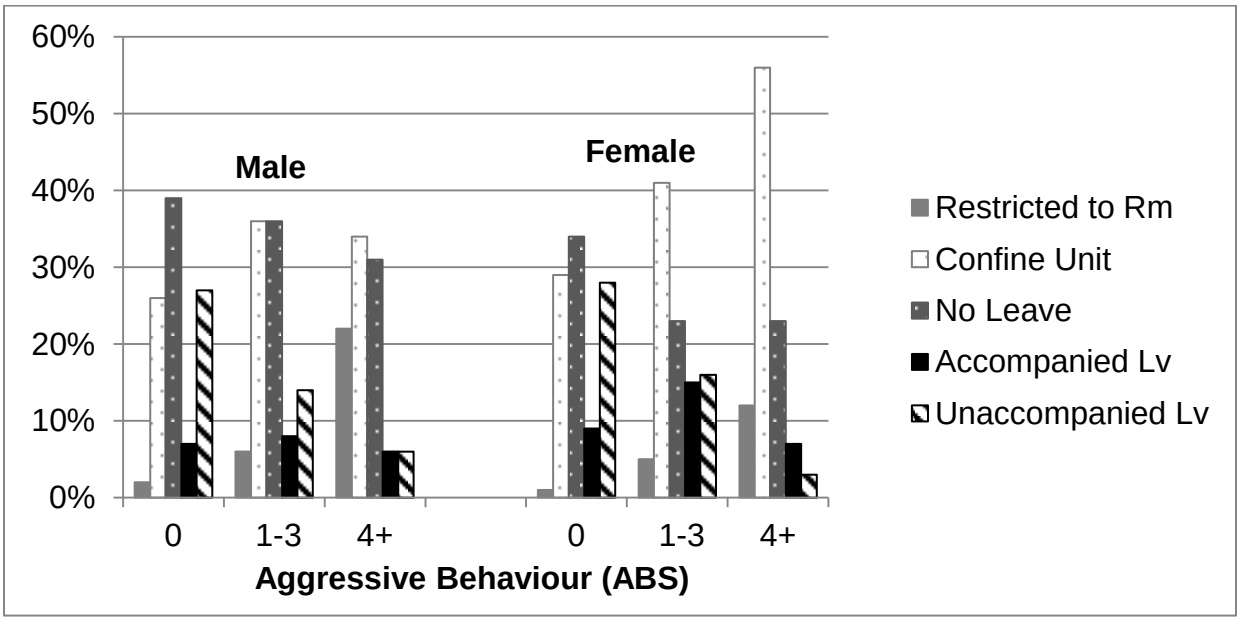
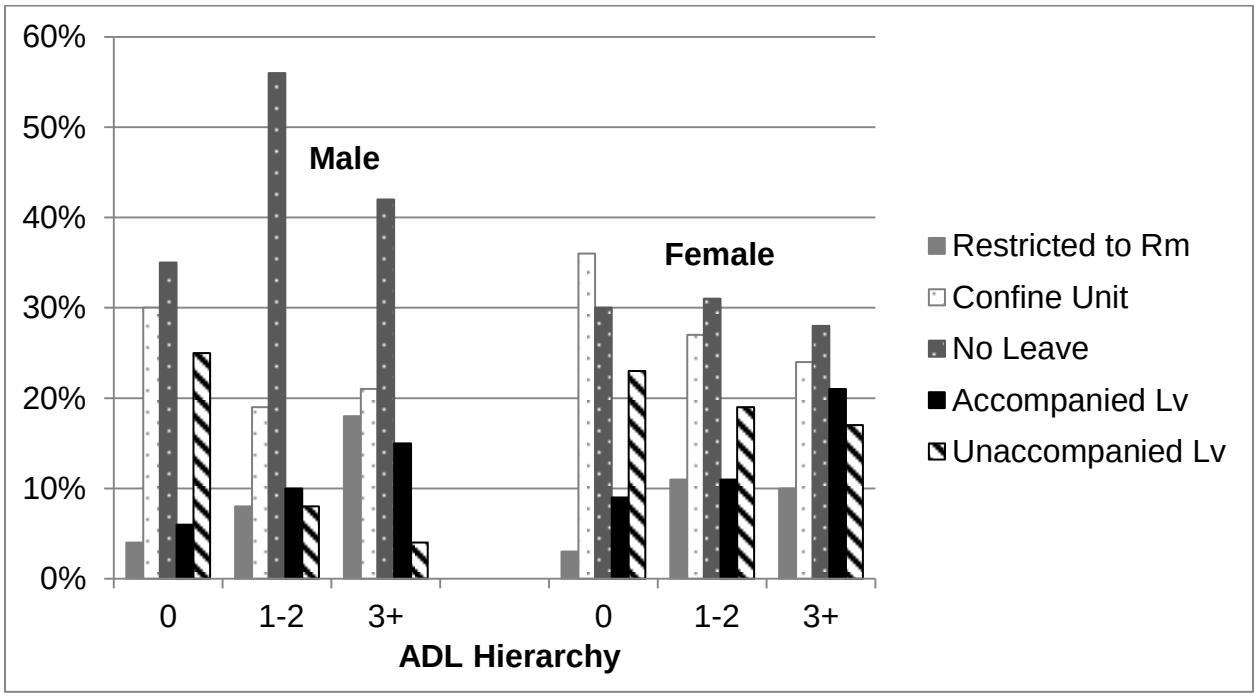



**Figure 4.5 ADL Hierarchy by Freedom of Movement Stratified by Gender**



Aside from the individual level differences notes so far, there are clear facility differences with respect to the Freedom of Movement so that patients experience different rates of easing of restrictions across facilities (See Figure 4.6). Almost 10% of patients in Facility I were restricted to room, yet this facility has the smallest percentage of patients who were confined to unit compared to other forensic facilities. Facility I also has no unaccompanied leaves, which could imply they have longer stay patients in a more secure forensic facility. 48% of patients at Facility B had received unaccompanied leaves in the last 3 days, and 33% of patients in Facility C had been granted unaccompanied leaves. These rates are substantially higher than in other forensic facilities. Aside from differences found among the specific levels of the Freedom of Movement across facilities, there are substantial differences found in the easing of restrictions in general. This could suggest differences in patients' populations across facilities as well as potential variations in policies and procedures surrounding the easing of restrictions.

There are also differences of the freedom of movement across facilities found among men and women forensic patients (See Figure 4.7). For example, Facility B still had the highest percentage of unaccompanied leaves with the rate being slightly higher for men compared to women (49% vs. 43%, respectively). Facility I is a male only facility and as such gender differences associated within this facility could not be established. A higher percentage of women in Facility H were restricted to room, compared to their male counterparts. Aside from differences found among the specific levels of the freedom of movement across facilities, there are notable gender differences found in the easing of restrictions in general.

**Figure 4.6 Facility Comparisons of Freedom of Movement among Ontario Forensic Patients**

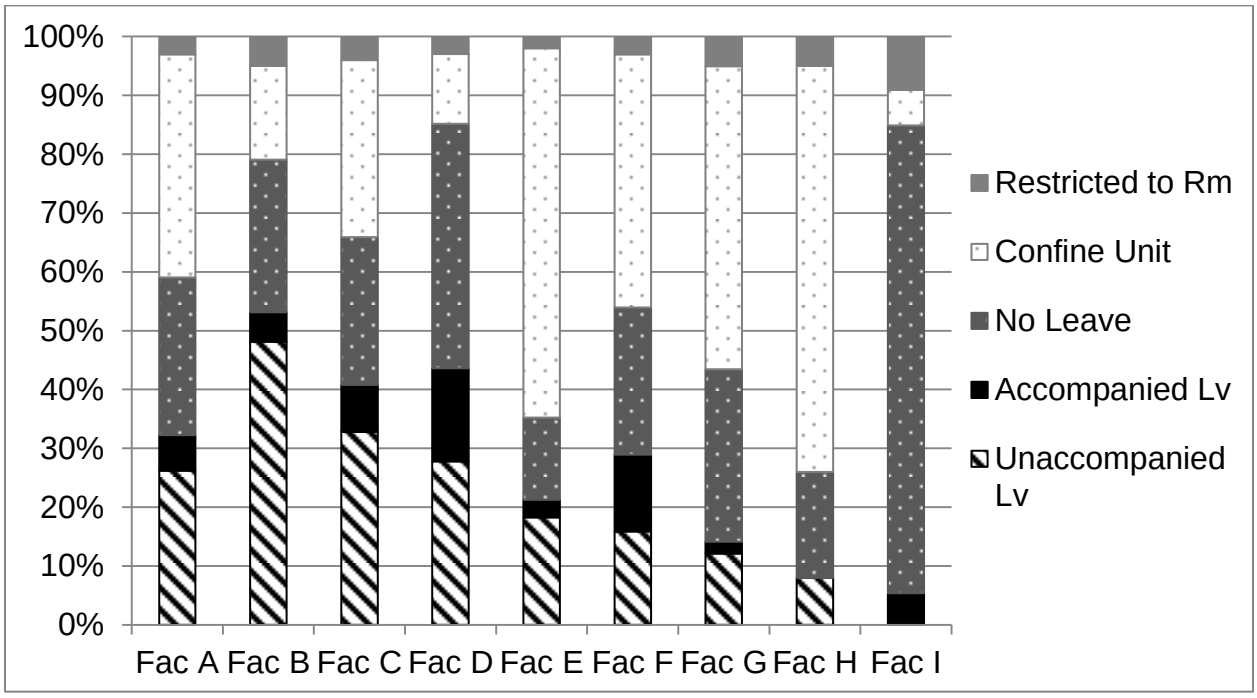
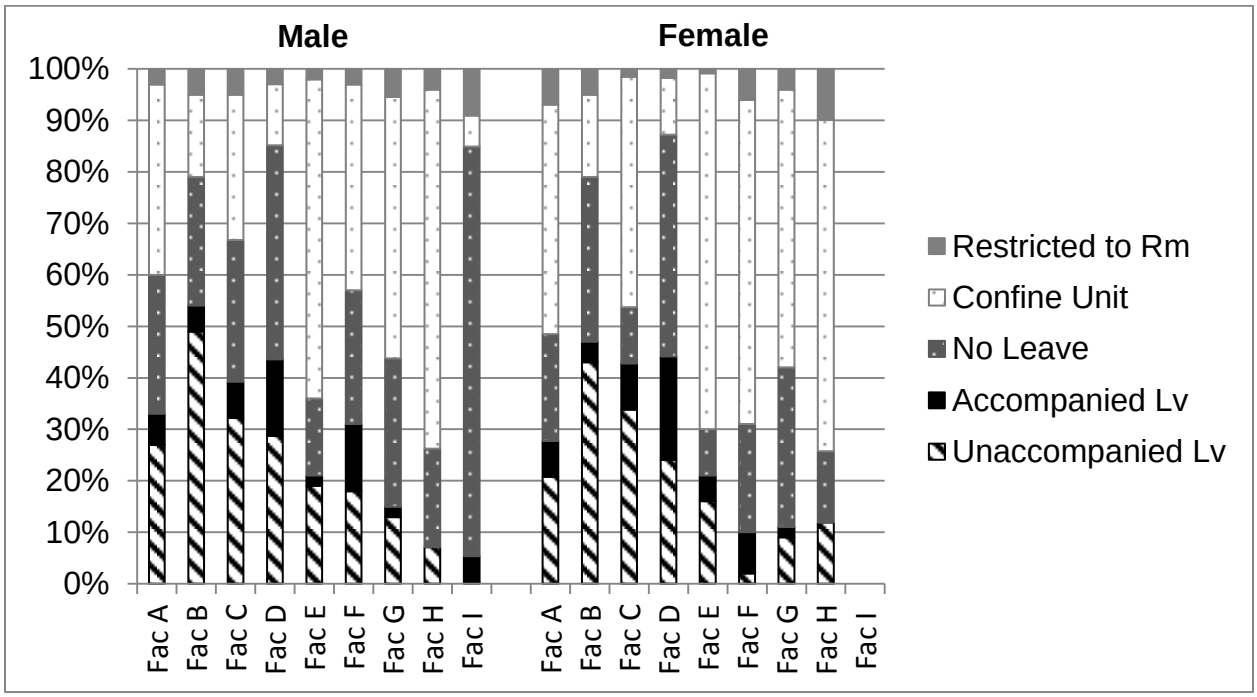



**Figure 4.7 Facility Comparisons of Freedom of Movement among Ontario Forensic Patients Stratified by Gender**



This could suggest that there are gender influences in easing restrictions across facilities. Overall, this emphasizes that both individual and facility level characteristics may play a role in the easing of restrictions within forensic mental health facilities.

### 4.7.1 Multivariate Analysis

Using ordinal logistic regression analysis, factors that are predictive of freedom of movement Ontario forensic mental health hospitals were examined for the sample as a whole, and stratified by gender. Explanatory variables were tested in the model based on a chi-square statistical significance of 0.05 or based on clinical relevance. Explanatory variables that were added to the model that were ultimately found to *not* be statistically significant in the multivariate model included; staff report persistent frustration in dealing with patient; intimidated of others or threatened violence; impaired capacity – transportation IADL; medication refusal; psychiatric intensive care unit; acute control medications; and having a suicide plan.

As well, there were a few variables that even though found to be statistically significant at the bivariate level were not included in the final model due to the fact that they were collinear of other variables included in the model. For example, CPS was removed as it is cofounding with SCI. Similarly, persistent anger (B1dd) was removed from the model as it is a covariate of ABS and the Substance Use CAP was removed from the model and instead the CAGE was included. As well elopement attempts (E1g) was removed from the model. Finally, control interventions CAP was removed from the model as covariates that comprise the CAP are included in the dependent variable.

There are four intercepts in each of the models discussed below, with the reference group for the intercept being restricted to room. The four intercepts can be

interpreted as follows: intercept 1 compares the probability of unaccompanied leaves, accompanied leaves, no leaves and confinement to unit to all others; intercept 2 compares the probability of unaccompanied leaves, accompanied leaves and no leaves to all others; intercept 3 compares the probability of unaccompanied leaves and accompanied leaves to all others; and finally, intercept 4 compares the probability of unaccompanied leaves to all others.

*Individual Characteristics:*

The initial ordinal logistic regression model was ***not*** stratified by 'female gender' and therefore examined factors that were predictive of greater freedom of movement among the entire forensic psychiatric patient population included in this study (See Table 4.7). There were 91 observations that were deleted due to missing values for either the response of explanatory variables.

Female forensic patients had a higher probability of more freedom of movement (easing of restrictions) compared to male forensic patients. Female forensic patients had 1.15 greater odds of being in a higher category (rather than being in a lower category) of freedom of movement compared to their male counterparts. Those in the 45-64 age group had 1.46 greater odds of being in a higher level of freedom of movement compared to 18-24 year olds. As well, having a diagnosis of schizophrenia increases the odds of being in a higher category of freedom of movement compared to those without a schizophrenia diagnosis. Being partnered decreased the odds of easing of restrictions compared to those who are not partnered. The odds of being in a higher category versus a lower category of freedom of movement were 4.04 times greater among those with a stay of 3 years or more compared to those with less than 45 days.

As days of stay increase so does the odds of easing restrictions. Having a confidant increases the odds of being in a higher level of freedom of movement by 1.41 compared to those without a confidant.

Aggressive behaviour, persistent anger; self-harming behaviour, substance use, and problems with social relationships all decrease the odds of being in a higher level of freedom of movement. Forensic patients with more manic symptoms (those scoring higher on the Mania scale) had 1.12 times greater odds of being in a higher level of freedom compared to those in the lower mania scale score categories.

Greater risk of inability to care for self due to mental illness decreases the odds of being in a higher level of freedom of movement (OR=82) compared to those in lower SCI score categories. Similarly, no insight into mental health decreases the odds of being in a higher level of freedom of movement compared to other degrees of insight into mental health (OR=0.71).

Forensic patients triggering Traumatic Life Events CAPs had decreased odds of being in a higher level of freedom of movement compared to those not triggering the CAP. Similarly, forensic patients triggering the Social Relationships CAP due to isolation and dysfunction had decreased odds of being in a higher level of freedom of movement compared to other CAP categories.

**Table 4.6 Summary of Ordinal Logistic Regression Model of Freedom of Movement among Ontario Forensic Patients**

| | TOTAL | MALE | FEMALE |
|---|---|---|---|
| **Facility Characteristics** | | | |
| **Facility** – *A (REF)* | | | |
| B | + | + | + |
| C | + | + | +* |
| D | + | + | + |
| E | - | - | -* |
| F | ns | +* | -* |
| G | - | - | -* |
| H | - | - | -* |
| I | +* | +* | |
| **Sociodemographic Characteristics** | | | |
| **Age** - *18-24 (REF)* | | | |
| 25-44 | + | + | ns |
| 45-64 | + | + | ns |
| 65+ | + | +* | ns |
| **Marital Status** – *Not Partnered (REF)* | | | |
| Partnered | - | - | ns |
| **Schizophrenia Diagnosis** - *No (REF)* | | | |
| Yes | + | + | + |
| **Mental Health Clinical Characteristics** | | | |
| **Insight into Mental Health** - *Full (REF)* | | | |
| Limited | -* | + | ns |
| None | - | +* | ns |
| **Mental Health Service Use** | | | |
| **Day of Stay** – *Less than 45 days (REF)* | | | |
| 45-179 days | + | +* | +* |
| 180 – 1094 days | + | + | + |
| 1095+ days | +* | + | + |
| **Social Relations Characteristic** | | | |
| **Has Confidant** – *No (REF)* | | | |
| Yes | + | + | + |

*^ interaction effect with female gender; * - overall variable is statistically significant but individual parameter estimate for ordinal variable is not significant; ns – overall variable is not statistically significant*

**Table 4.6 Summary of Ordinal Logistic Regression Model of Freedom of Movement among Ontario Forensic Patients**

| | TOTAL | MALE | FEMALE |
|---|---|---|---|
| **Behavioural Symptoms** | | | |
| **Persistent Anger** – *Not Exhibited (REF)* | | | |
| Not exhibited, but reported | -* | -* | ns |
| Exhibited 1-2 of last 3 days | - | - | ns |
| Exhibited daily in last 3 days | - | - | ns |
| **RAI-MH Clinical Scales** | | | |
| **Aggressive Behaviour Scale** – *0 (REF)* | | | |
| 1-3 | - | - | - |
| 4+ | - | - | - |
| **Severity of Self-harm** – *0 (REF)* | | | |
| 1-2 | - | - | ns |
| 3-4 | - | - | ns |
| 5-6 | -* | - | ns |
| **IADL** - *0 (REF)* | | | |
| 1-4 | + | + | ns |
| 5+ | +* | +* | ns |
| **CAGE** – *0-1 (REF)* | | | |
| 2+ | ns | ns | - |
| **Clinical Assessment Protocols** | | | |
| **Traumatic Life Events CAP** – *Not Triggered (REF)* | | | |
| Triggered – Prior Traumatic Events | - | -* | ns |
| Triggered – Immediate Safety | -* | -* | ns |
| **Social Relationships CAP** – *Not Triggered (REF)* | | | |
| Triggered – Improve Relationships | + | +* | + |
| Triggered – Isolation & Dysfunction | - | - | -* |

*^ interaction effect with female gender; * - overall variable is statistically significant but individual parameter estimate for ordinal variable is not significant; ns – overall variable is not statistically significant*

**Table 4.7 –Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -2.17 (0.13) | --- | <.0001 |
| *Intercept 3* | -1.73 (0.13) | --- | <.0001 |
| *Intercept 2* | 0.10 (0.13) | --- | 0.4 |
| *Intercept 1* | 2.81 (0.14) | --- | <.0001 |
| **Female Gender** | | | |
| Male (REF) | 0 | 1.00 | 0.03 |
| Female | 0.14 (0.06) | 1.15 (1.02-1.31) | |
| **Age** | | | |
| 18-24 (REF) | 0 | 1.00 | <.0001 |
| 25-44 | 0.28 (0.07) | 1.32 (1.14-1.52) | |
| 45-64 | 0.47 (0.08) | 1.60 (1.30-1.87) | |
| 65+ | 0.28 (0.13) | 1.32 (1.01-1.71) | |
| **Marital** | | | |
| Not partnered (REF) | 0 | 1.00 | 0.002 |
| Partnered | -0.24 (0.08) | 0.79 (0.67-0.92) | |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.42 (0.05) | 1.52 (1.37 – 1.69) | |
| **Day of Stay** | | | |
| 45 days or less (REF) | 0 | 1.00 | <.0001 |
| 45-179 days | 0.28 (0.06) | 1.32 (1.18 – 1.48) | |
| 180-1094 days | 1.20 (0.07) | 3.31 (2.96 – 3.77) | |
| 1095+ days | 1.40 (0.11) | 4.04 (3.32 – 5.04) | |
| **Has Confidant** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.35 (0.08) | 1.41 (1.20 – 1.67) | |

**Table 4.7 –Ordinal Regression Model for Freedom of Movement among OntarioForensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Mania** | | | |
| 0 (REF) | 0 | 1.00 | 0.02 |
| 1-3 | -0.11 (0.06) | 0.90 (0.79 – 1.02) | |
| 4+ | -0.11 (0.08) | 1.12 (0.96 – 1.31) | |
| **CAGE** | | | |
| 0-1 (REF) | 0 | 1.00 | <.0001 |
| 2+ | -0.51 (0.07) | 0.60 (0.53 – 0.68) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.35 (0.07) | 0.70 (0.62 – 0.80) | |
| 4+ | -1.06 (0.09) | 0.35 (0.29 – 0.42) | |
| **Persistent Anger** | | | |
| Not exhibited (REF) | 0 | 1.00 | <.0001 |
| Not exhibited, put reported to be present | -0.19 (0.08) | 0.83 (0.70 – 0.98) | |
| Exhibited on 1-2 of last 3 days | -0.39 (0.09) | 0.68 (0.57 – 0.81) | |
| Exhibited daily in last 3 days | -0.76 (0.12) | 0.47 (0.37 – 0.59) | |
| **Severity of Self-harm (SoS)** | | | |
| 0 (REF) | 0 | 1.00 | 0.02 |
| 1-2 | -0.20 (0.06) | 0.87 (0.78 – 0.98) | |
| 3-4 | -0.30 (0.13) | 0.74 (0.57 – 0.97) | |
| 5-6 | -0.20 (0.09) | 0.82 (0.69 – 0.98) | |
| **Self-Care Index (SCI)** | | | |
| 0 (REF) | 0 | 1.00 | 0.03 |
| 1-2 | -0.17 (0.06) | 0.85 (0.75 – 0.96) | |
| 3-4 | -0.04 (0.09) | 0.96 (0.81 – 1.15) | |
| 5-6 | -0.20 (0.13) | 0.82 (0.63 – 1.05) | |

**Table 4.7 –Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **IADL** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-4 | 0.39 (0.06) | 1.48 (1.32 – 1.67) | |
| 5+ | 0.06 (0.06) | 1.06 (0.94 – 1.19) | |
| **Insight into Mental Health** | | | |
| Full (REF) | 0 | 1.00 | <.0001 |
| Limited | -0.10 (0.07) | 0.99 (0.87 – 1.12) | |
| None | -0.35 (0.09) | 0.71 (0.60 – 0.84) | |
| **Traumatic Life Events CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | <.0001 |
| Triggered – Prior Traumatic Events | -0.49 (0.12) | 0.62 (0.48 – 0.77) | |
| Triggered – Immediate Safety | -0.29 (0.12) | 0.75 (0.59 – 0.94) | |
| **Social Relationships CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | <.0001 |
| Triggered – Improve Relationships | 0.08 (0.07) | 1.08 (0.96 – 1.23) | |
| Triggered **–** Isolation & Dysfunction | -0.36 (0.06) | 0.70 (0.62 – 0.78) | |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*= 646.29 (DF=96)* **c statistic**= 0.71

The proportional odds assumption for the freedom of movement among the total sample of forensic patients is statistically significant (p=<.0001). Since the p value is significant at the 0.05 significance level it would lead one to reject the assumption of equal slopes and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002). However, the score test for the proportional odds assumption tends to be rejected when there are too many predictor variables and the sample size is large; which is the case in this analysis (Huber, 2012; Stokes et al., 2002). To further investigate the proportional odds assumption, cumulative logit plots were run (available on request). All predictor variables in the cumulative logit plots have reasonably parallel lines indicating that the proportional odds assumption is in fact true and we therefore we do NOT need to reject the assumption of equal slopes and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002).

The model for examining freedom of movement among the total sample had a c statistic of 0.71 which demonstrates good explanatory power.

The ordinal logistic regression models in Table 4.8 and 4.9 are stratified by ‘female gender’ and examined factors that were predictive of freedom of movement among males and female separately. Table 4.8 examines the factors that were predictive of being in a higher level of freedom of movement compared to a lower level among male forensic mental health patients. There were 75 observations deleted due to missing values for the response of explanatory variables.

Male forensic patients in the 45-64 age group had 1.59 greater odds of being in a higher level of freedom of movement compared to other age groups. As well, male forensic patients who were partnered had decreased odds of being a higher level of

freedom of movement compared to male forensic patients who are not partnered. Male forensic mental health patients with a schizophrenia diagnosis had 1.47 greater odds of being in a higher level of freedom of movement compared to male forensic mental health patients without a schizophrenia diagnosis. The odds of being in a higher category versus a lower category of freedom of movement are 4.15 times greater among those with a stay of 3 years or more compared to those with stays less than 45 days. Male forensic mental health patients who reported having a confidant had 1.32 greater odds of being in a higher level of freedom of movement compared to male forensic mental health patients without a confidant.

Male forensic mental health patients with moderate mania symptoms had lower odds of being in a higher level of freedom of movement compared to those with no mania symptoms but the difference was not significant for the highest level of mania symptoms. Similar to the total sample model, aggressive behaviour, persistent anger; self-harming behaviour and substance use problems all decrease the odds of being in a higher level of freedom of movement among male forensic mental health patients.

Among male forensic patients, greater risk of inability to care for self due to mental illness decreases the odds of being in a higher level of freedom of movement compared to those in lower SCI score categories. Similarly, no insight into mental health decreases the odds of being in a higher level of freedom of movement compared to other degrees of insight into mental health (OR=0.72).

Similar to the total sample model, male forensic patients triggering Traumatic Life Events CAPs had decreased odds of being in a higher level of freedom of movement compared to those not triggering the CAP. Forensic patients triggering the Social

Relationships CAP due to isolation and dysfunction had decreased odds of being in a higher level of freedom of movement compared to other CAP categories.

The proportional odds assumption for the freedom of movement among the male sample is statistically significant (p=<.0001). However, based on the fact that the cumulative logit plots have parallel lines; we do NOT reject the assumption of equal slopes and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002).

Similar to the previous model, the model for examining freedom of movement among the male forensic mental health patients had a c statistic of 0.71 which demonstrates good explanatory power.

Table 4.9 examines the factors that were predictive of being in a higher level of freedom of movement compared to a lower level among female forensic mental health patients. There were 14 observations deleted due to missing values for the response of explanatory variables.

The following variables that were found to be statistically significant in the total sample model and the male forensic mental health stratified model include but were NOT statistically significant in the model stratified by female forensic patients: age; marital status; mania symptoms; persistent anger; severity of self harm (SoS); inability to care for self due to mental illness (SCI); and IADL.

Female forensic mental health patients with a schizophrenia diagnosis had 1.75 greater odds of being in a higher level of freedom of movement compared to female forensic patients without a schizophrenia diagnosis. Among female forensic patients,

the odds of being in a higher category versus a lower category of freedom of movement were 3.48 times greater among those with a stay of 3 years or more compared to those with less than 45 days of stay. Female forensic mental health patients who have a confidant had 2.23 greater odds of being in a higher level of freedom of movement compared to female forensic patients without a confidant; which is substantially higher than the odds for the male forensic patients (OR=1.32).

Similar to the other ordinal logistic regression models discussed above, aggressive behaviour and substance use problems decreased the odds of being in a higher level of freedom of movement. As well, no insight into mental health problems had decreased odds of being in a higher level of freedom of movement.

Female forensic patients triggering the Social Relationships CAP due to isolation and dysfunction had decreased odds of being in a higher level of freedom of movement compared to other CAP categories. Female forensic patients triggering the Traumatic Life Events CAP had decreased odds of being in a higher level of freedom of movement.

The proportional odds assumption for the freedom of movement among facilities for the female sample is statistically significant (p=<.0001). However, all predictor variables in the cumulative logit plots have parallel lines indicating that the proportional odds assumption is in fact true and we therefore we do NOT reject the assumption of equal slopes and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002).

**Table 4.8 –Ordinal Regression Model for Freedom of Movement among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -2.08 (0.14) | --- | <.0001 |
| *Intercept 3* | -1.66 (0.14) | --- | <.0001 |
| *Intercept 2* | 0.23 (0.14) | --- | 0.09 |
| *Intercept 1* | 2.83 (0.15) | --- | <.0001 |
| **Age** | | | |
| 18-24 (REF) | 0 | 1.00 | |
| 25-44 | 0.27 (0.08) | 1.31 (1.12 – 1.53) | <.0001 |
| 45-64 | 0.46 (0.09) | 1.59 (1.34 – 1.89) | |
| 65+ | 0.24 (0.14) | 1.28 (0.96 – 1.69) | |
| **Marital** | | | |
| Not partnered (REF) | 0 | 1.00 | 0.002 |
| Partnered | -0.28 (0.09) | 0.75 (0.63 – 0.90) | |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.38 (0.06) | 1.47 (1.31 – 1.65) | |
| **Day of Stay** | | | |
| 45 days or less (REF) | 0 | 1.00 | |
| 45-179 days | 0.27 (0.06) | 1.32 (1.16 – 1.49) | <.0001 |
| 180-1094 days | 1.21 (0.07) | 3.36 (2.93 – 3.85) | |
| 1095+ days | 1.42 (0.12) | 4.15 (3.27 – 5.28) | |
| **Has Confidant** | | | |
| No (REF) | 0 | 1.00 | 0.002 |
| Yes | 0.28 (0.09) | 1.32 (1.10 – 1.58) | |

**Table 4.8 –Ordinal Regression Model for Freedom of Movement among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Mania** | | | |
| 0 (REF) | 0 | 1.00 | 0.02 |
| 1-3 | -0.16 (0.07) | 0.85 (0.74 – 0.97) | |
| 4+ | 0.03 (0.09) | 1.03 (0.89 – 1.22) | |
| **CAGE** | | | |
| 0-1 (REF) | 0 | 1.00 | <.0001 |
| 2+ | -0.43 (0.07) | 0.65 (0.56 – 0.75) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.34 (0.07) | 0.71 (0.61 – 0.82) | |
| 4+ | -1.02 (0.10) | 0.36 (0.30 – 0.44) | |
| **Persistent Anger** | | | |
| Not exhibited (REF) | 0 | 1.00 | <.0001 |
| Not exhibited, put reported to be present | -0.20 (0.09) | 0.82 (0.68 – 0.99) | |
| Exhibited on 1-2 of last 3 days | -0.36 (0.10) | 0.70 (0.57 – 0.85) | |
| Exhibited daily in last 3 days | -0.78 (0.13) | 0.46 (0.36 – 0.59) | |
| **Severity of Self-harm (SoS)** | | | |
| 0 (REF) | 0 | 1.00 | 0.0001 |
| 1-2 | -0.21 (0.06) | 0.81 (0.73 – 0.91) | |
| 3-4 | -0.38 (0.14) | 0.69 (0.52 – 0.90) | |
| 5-6 | -0.28 (0.10) | 0.76 (0.62 – 0.92) | |
| **IADL** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-4 | 0.43 (0.07) | 1.53 (1.35 – 1.74) | |
| 5+ | 0.06 (0.06) | 1.06 (0.94 – 1.20) | |

**Table 4.8 – Ordinal Regression Model for Freedom of Movement among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Insight into Mental Health** | | | |
| Full (REF) | 0 | 1.00 | <.0001 |
| Limited | -0.06 (0.07) | 0.95 (0.83 – 1.08) | |
| None | -0.42 (0.09) | 0.66 (0.55 – 0.79) | |
| **Traumatic Life Events CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | |
| Triggered – Prior Traumatic Events | -0.46 (0.14) | 0.63 (0.48 – 0.83) | 0.0004 |
| Triggered – Immediate Safety | -0.32 (0.14) | 0.73 (0.56 – 0.95) | |
| **Social Relationships CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | <.0001 |
| Triggered – Improve Relationships | 0.06 (0.07) | 1.06 (0.92 – 1.22) | |
| Triggered **–** Isolation & Dysfunction | -0.38 (0.06) | 0.69 (0.61 – 0.78) | |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=562.73 (DF=84)* **c statistic**= 0.71

**Table 4.9 – Ordinal Regression Model for Freedom of Movement among Ontario Female Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -.2.29 (0.29) | --- | <.0001 |
| *Intercept 3* | -1.73 (0.29) | --- | <.0001 |
| *Intercept 2* | -0.22 (0.28) | --- | 0.4 |
| *Intercept 1* | 3.10 (0.32) | --- | <.0001 |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.56 (0.13) | 1.75 (1.32 – 2.27) | |
| **Day of Stay** | | | |
| 45 days or less (REF) | 0 | 1.00 | <.0001 |
| 45-179 days | 0.31 (0.14) | 1.36 (1.03 – 1.80) | |
| 180-1094 days | 1.17 (0.18) | 3.23 (2.28 – 4.56) | |
| 1095+ days | 1.25 (0.31) | 3.48 (1.89 – 6.41) | |
| **Has Confidant** | | | |
| No (REF) | 0 | 1.00 | 0.0002 |
| Yes | 0.80 (0.21) | 2.23 (1.41 – 3.39) | |
| **CAGE** | | | |
| 0-1 (REF) | 0 | 1.00 | <.0001 |
| 2+ | -0.89 (0.18) | 0.41 (0.29 – 0.59) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | 0.51 (0.15) | 0.60 (0.45 – 0.81) | |
| 4+ | -1.51 (0.19) | 0.22 (0.15 – 0.32) | |
| **Insight** | | | |
| Full (REF) | 0 | 1.00 | 0.01 |
| Limited | 0.02 (0.17) | 1.02 (0.73 – 1.43) | |
| None | -0.41 (0.21) | 0.66 (0.44 – 0.99) | |

**Table 4.9–Ordinal Regression Model for Freedom of Movement among Ontario Female Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Traumatic Life Events CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | 0.03 |
| Triggered – Prior Traumatic Events | -0.56 (0.22) | 0.57 (0.37 – 0.89) | |
| Triggered – Immediate Safety | -0.24 (0.22) | 0.78 (0.51 – 1.21) | |
| **Social Relationships CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | 0.02 |
| Triggered – Improve Relationships | 0.15 (0.16) | 1.17 (0.86 – 1.59) | |
| Triggered **–** Isolation & Dysfunction | -0.33 (0.15) | 0.72 (0.54 – 0.96) | |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*= 127.19 (DF=42)* ***c statistic*** *= 0.72*

The model for examining freedom of movement among the female forensic mental health patients had a c statistic of 0.73 which is good explanatory power.

*Facility Characteristics*

There are facility differences in the odds of being in the higher level of freedom of movement (See Table 4.10). For example, forensic mental patients in Facility B had 1.47 greater odds of being in a higher level of freedom of movement compared to Facility A. Whereas, Facility H had 0.25 lower odds of being in a higher level of the freedom of movement. These facility differences can represent a few things: different patient populations and therefore different individual needs in the easing of restrictions; policy differences in how the process of easing of restrictions is granted (facility level); and differences in security levels both within and across facilities.

There are notable gender differences found across facilities with respect to the freedom of movement (See Tables 4.11 – 4.12). First of all, Facility I is a male only facility and therefore no gender comparisons within hospital can be made. Although the odds of being in a higher level of freedom of movement are higher in general for Facility B and D compared to Facility A; the odds are even higher among female forensic patients within Facility B and D. For example, female forensic patients in Facility D had 3.27 greater odds of being in a higher level of freedom of movement compared to Facility A. Whereas, male forensic patients in Facility D had 2.18 greater odds of being in a higher level of freedom compared to Facility A.

The proportional odds assumption for the freedom of movement among facilities for the total sample and stratified models are statistically significant (p=<.0001). However, all predictor variables in the cumulative logit plots have parallel lines indicating that the proportional odds assumption is in fact true and we therefore we do NOT reject the assumption of equal slopes and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002). All 3 models had a c-statistic of 0.67 which indicates modest explanatory power.

The final set of ordinal logistic regression models examine both individual and facility level characteristics. Essentially, the facility variable was added to final models outlined in Tables 4.7-4.9 to determine the effect this would have on the freedom of movement along with any associated gender differences.

The initial ordinal logistic regression model was ***not*** stratified by 'female gender' and therefore examined factors that were predictive of freedom of movement among the entire forensic psychiatric patient population included in this study (See Table 4.13).

When adding the facility variable to the model, the following independent variables were no longer statistically significant: substance use problems; inability to care for self due to mental illness; and symptoms of mania.

**Table 4.10 –Ordinal Regression Model for Freedom of Movement by Facility among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -1.49 (0.11) | --- | <.0001 |
| *Intercept 3* | -1.08 (0.10) | --- | <.0001 |
| *Intercept 2* | 0.68 (0.10) | --- | <.0001 |
| *Intercept 1* | 3.23 (0.12) | --- | <.0001 |
| **Facility** | | | |
| A (REF) | 0 | 1.00 | |
| B | 1.16 (0.12) | 3.18 (2.52 – 4.01) | <.0001 |
| C | 0.38 (0.13) | 1.47 (1.13 – 1.90) | 0.004 |
| D | 0.81 (0.11) | 2.25 (1.80 – 2.81) | <.0001 |
| E | -0.88 (0.12) | 0.41 (0.33 – 0.53) | <.0001 |
| F | -0.28 (0.14) | 0.75 (0.57 – 1.00) | 0.05 |
| G | -0.82 (0.14) | 0.44 (0.39 – 0.57) | <.0001 |
| H | -1.37 (0.15) | 0.25 (0.19 – 0.34) | <.0001 |
| I | -0.008 (0.12) | 0.92 (0.73 – 1.16) | 0.5 |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=2259.29 (DF=24)* **c statistic =** 0.67

**Table 4.11 –Ordinal Regression Model for Freedom of Movement by Facility among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -1.46 (0.11) | --- | <.0001 |
| *Intercept 3* | -1.07 (0.11) | --- | <.0001 |
| *Intercept 2* | 0.75 (0.11) | --- | <.0001 |
| *Intercept 1* | 3.21 (0.13) | --- | <.0001 |
| **Facility** | | | |
| A (REF) | 0 | 1.00 | --- |
| B | 1.17 (0.13) | 3.21 (2.51 – 4.11) | <.0001 |
| C | 0.37 (0.14) | 1.45 (1.10 – 1.92) | 0.01 |
| D | 0.78 (0.12) | 2.18 (1.72 – 2.78) | <.0001 |
| E | -0.91 (0.13) | 0.40 (0.31 – 0.52) | <.0001 |
| F | -0.15 (0.15) | 0.86 (0.64 – 1.16) | 0.3 |
| G | -0.86 (0.15) | 0.43 (0.32 – 0.57) | <.0001 |
| H | -1.40 (0.16) | 0.25 (0.18 – 0.34) | <.0001 |
| I | -0.13 (0.12) | 0.88 (0.69 – 1.12) | 0.3 |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=795.3* *(DF= 8)* **c statistic =**0.67

**Table 4.12 –Ordinal Regression Model for Freedom of Movement by Facility among Ontario Female Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -1.88 (0.35) | --- | <.0001 |
| *Intercept 3* | -1.35 (0.35) | --- | 0.0001 |
| *Intercept 2* | 0.07 (0.34) | --- | 0.8 |
| *Intercept 1* | 3.25 (0.34 | --- | <.0001 |
| **Facility** | | | |
| A (REF) | 0 | 1.00 | --- |
| B | 1.36 (0.37) | 3.91 (1.89 – 8.08) | 0.0002 |
| C | 0.63 (0.41) | 1.88 (0.84 – 4.20) | 0.1 |
| D | 1.18 (0.36) | 3.27 (1.61 – 6.63) | 0.001 |
| E | -0.53 (0.38) | 0.59 (0.28 – 1.25) | 0.2 |
| F | -0.82 (0.45) | 0.44 (0.18 – 1.06) | 0.07 |
| G | -0.41 (0.40) | 0.67 (0.30 – 1.47) | 0.3 |
| H | -1.05 (0.45) | 0.35 (0.15 – 0.83) | 0.01 |
| I* | --- | --- | --- |

**No female patients*

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=164.1 (DF=7)* **c statistic =**0.67

The facility variable in itself is statistically significant in the model with similar trends found in the odds of easing or tightening restrictions across facilities; with the exception of Facility I. In the previous model, being in Facility I decreased the odds of being in a higher level of freedom of movement compared to Facility A (OR=0.92). Whereas in this model the odds of being in a higher level of freedom of movement had 1.16 greater among those in Facility I compared to Facility A.

Female forensic patients have a lower probability of freedom of movement (easing of restrictions) compared to male forensic patients; which is the opposite of what was found in the earlier total sample model.

All other independent variables included in the model had similar odds of increasing or decreasing the odds of easing restrictions as the previous total sample model.

When adding the facility variable to the model stratified by male forensic patients, the following independent variables were no longer statistically significant: mania symptoms and substance abuse problems based on CAGE scores. See Table 4.14 for more details.

**Table 4.13 –Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -2.59 (0.18) | --- | <.0001 |
| *Intercept 3* | -2.13 (0.18) | --- | <.0001 |
| *Intercept 2* | -0.14 (0.18) | --- | 0.03 |
| *Intercept 1* | 2.65 (0.19) | --- | 0.001 |
| **Facility** | | | |
| A (REF) | 0 | 1.00 | <.0001 |
| B | 1.32 (0.12) | 3.74 (2.94 – 4.76) | |
| C | 0.32 (0.14) | 1.38 (1.06 – 1.81) | |
| D | 0.75 (0.15) | 2.11 (1.67 – 2.66) | |
| E | -0.44 (0.12) | 0.64 (0.50 – 0.83) | |
| F | -0.005 (0.07) | 1.00 (0.74 – 1.33) | |
| G | -0.32 (0.07) | 0.72 (0.55 – 0.95) | |
| H | -1.05 (0.12) | 0.35 (0.26 – 0.47) | |
| I | 0.14 (0.12) | 1.16 (0.91 – 1.47) | |
| **Female Gender** | | | |
| Male (REF) | 0 | 1.00 | 0.5 |
| Female | 0.05 (0.07) | 1.05 (0.91 – 1.21) | |
| **Age** | | | |
| 18-24 (REF) | 0 | 1.00 | <.0001 |
| 25-44 | 0.26 (0.08) | 1.30 (1.17 – 1.51) | |
| 45-64 | 0.43 (0.09) | 1.54 (1.31 – 1.83) | |
| 65+ | 0.30 (0.14) | 1.35 (1.02 – 1.79) | |
| **Marital** | | | |
| Not partnered (REF) | 0 | 1.00 | 0.01 |
| Partnered | -0.21 (0.08) | 0.81 (0.69 – 0.95) | |

**Table 4.13 –Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.32 (0.06) | 1.38 (1.23 – 1.55) | |
| **Day of Stay** | | | |
| 45 days or less (REF) | 0 | 1.00 | <.0001 |
| 45-179 days | 0.29 (0.06) | 1.34 (2.94 – 3.87) | |
| 180-1094 days | 1.22 (0.07) | 3.37 (3.05 – 4.93) | |
| 1095+ days | 1.36 (0.12) | 3.88 (0.61 – 1.82) | |
| **Has Confidant** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.42 (0.09) | 1.53 (1.28 – 1.82) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.35 (0.07) | 0.70 (0.61 – 0.81) | |
| 4+ | -1.02 (0.09) | 0.36 (0.30 – 0.43) | |
| **Persistent Anger** | | | |
| Not exhibited (REF) | 0 | 1.00 | <.0001 |
| Not exhibited, put reported to be present | -0.04 (0.08) | 0.96 (0.81 – 1.14) | |
| Exhibited on 1-2 of last 3 days | -0.31 (0.09) | 0.73 (0.61 – 0.88) | |
| Exhibited daily in last 3 days | -0.61 (0.12) | 0.54 (0.43 – 0.68) | |
| **Severity of Self-harm (SoS)** | | | |
| 0 (REF) | 0 | 1.00 | 0.001 |
| 1-2 | -0.15 (0.06) | 0.86 (0.77 – 0.96) | |
| 3-4 | -0.48 (0.14) | 0.62 (0.48 – 0.81) | |
| 5-6 | -0.15 (0.10) | 0.86 (0.72 – 1.04) | |

**Table 4.13 –Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **IADL** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-4 | 0.32 (0.06) | 1.37 (1.21 – 1.55) | |
| 5+ | 0.03 (0.07) | 1.03 (0.91 – 1.17) | |
| **Insight into Mental Health** | | | |
| Full (REF) | 0 | 1.00 | <.0001 |
| Limited | -0.13 (0.07) | 0.88 (0.77 – 1.01) | |
| None | -0.41 (0.08) | 0.66 (0.56 – 0.79) | |
| **Traumatic Life Events CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | 0.02 |
| Triggered – Prior Traumatic Events | -0.30 (0.13) | 0.74 (0.57 – 0.96) | |
| Triggered – Immediate Safety | -0.23 (0.12) | 0.80 (0.63 – 1.02) | |
| **Social Relationships CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | <.0001 |
| Triggered – Improve Relationships | 0.15 (0.07) | 1.17 (1.01 – 1.34) | |
| Triggered **–** Isolation & Dysfunction | -0.40 (0.06) | 0.67 (0.59 – 0.76) | |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=2255.62 (DF=102 )* **c statistic**= *0.75*

The facility variable in itself is statistically significant in the model with similar trends found in the odds of easing or tightening restrictions across facilities compared to the previous facility model stratified by male forensic patients; with the exception of Facility F and I. In the previous model, being in either Facility F or Facility I decreased the odds of being in a higher level of freedom of movement compared to Facility A (OR=0.86 and OR=0.88,respectively). Whereas in this mode, being either Facility F or Facility I increased the odds of being in a higher level of freedom of movement compared to Facility A (OR=1.03 and OR=1.13, respectively).

Adding facility to the model male forensic patients with limited or no degree of insight into mental health problems had increased odds of being in a higher level of freedom of movement compared to male forensic patients with full insight. However, in the previous model male forensic patients with limited or no degree of insight into mental health had decreased odds of being in a higher level of freedom of movement compared to male patients with full insight.

All other independent variables included in the model had similar odds of increasing or decreasing the odds of easing restrictions as the previous model stratified by male forensic patients.

Table 4.15 outlines the ordinal logistic regression model for freedom of movement stratified by female forensic patients. When adding the facility variable to the model stratified by female forensic patients, the following independent variables were no longer statistically significant: mania symptoms, degree of insight into mental health problems and the traumatic life events CAP.

**Table 4.14 –Ordinal Regression Model for Freedom of Movement among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -2.49 (0.19) | --- | <.0001 |
| *Intercept 3* | -2.05 (0.19) | --- | <.0001 |
| *Intercept 2* | 0.006 (0.19) | --- | 1.00 |
| *Intercept 1* | 2.70 (0.20) | --- | <.0001 |
| **Facility** | | | |
| A (REF) | 0 | 1.00 | |
| B | 1.34 (0.13) | 3.80 (2.94 – 4.91) | <.0001 |
| C | 0.29 (0.15) | 1.34 (1.10 – 1.79) | |
| D | 0.70 (0.13) | 2.01 (1.57 – 2.58) | |
| E | -0.44 (0.14) | 0.64 (0.49 – 0.84) | |
| F | 0.03 (0.16) | 1.03 (0.76 – 1.41) | |
| G | -0.38 (0.15) | 0.69 (0.51 – 0.93) | |
| H | -1.09 (0.16) | 0.34 (0.25 – 0.46) | |
| I | 0.12 (0.13) | 1.13 (0.88 – 1.46) | |
| **Age** | | | |
| 18-24 (REF) | 0 | 1.00 | <.0001 |
| 25-44 | 0.29 (0.08) | 1.34 (1.14 – 1.57) | |
| 45-64 | 0.46 (0.09) | 1.59 (1.33 – 1.91) | |
| 65+ | 0.28 (0.15) | 1.32 (0.98 – 1.78) | |
| **Marital** | | | |
| Not partnered (REF) | 0 | 1.00 | 0.01 |
| Partnered | -0.25 (0.09) | 0.78 (0.65 – 0.94) | |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.32 (0.06) | 1.38 (1.22 – 1.56) | |

**Table 4.14 –Ordinal Regression Model for Freedom of Movement among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Day of Stay** | | | |
| 45 days or less (REF) | 0 | 1.00 | <.0001 |
| 45-179 days | 0.29 (0.07) | 1.34 (0.18 – 1.53) | |
| 180-1094 days | 1.21 (0.08) | 3.34 (2.88 – 3.87) | |
| 1095+ days | 1.42 (0.13) | 4.13 (3.19 – 5.34) | |
| **Has Confidant** | | | |
| No (REF) | 0 | 1.00 | 0.0002 |
| Yes | 0.37 (0.10) | 1.45 (1.20 – 1.76) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.36 (0.08) | 0.70 (0.60 – 0.82) | |
| 4+ | -1.01 (0.10) | 0.36 (0.30 – 0.45) | |
| **Persistent Anger** | | | |
| Not exhibited (REF) | 0 | 1.00 | <.0001 |
| Not exhibited, put reported to be present | -0.04 (0.09) | 0.97 (0.80- 1.16) | |
| Exhibited on 1-2 of last 3 days | -0.32 (0.10) | 0.73 (0.60 – 0.88) | |
| Exhibited daily in last 3 days | -0.68 (0.13) | 0.50 (0.39 – 0.65) | |
| **Severity of Self-harm (SoS)** | | | |
| 0 (REF) | 0 | 1.00 | 0.001 |
| 1-2 | -0.17 (0.06) | 0.84 (0.75 – 0.95) | |
| 3-4 | -0.48 (0.15) | 0.62 (0.46 – 0.83) | |
| 5-6 | -0.22 (0.11) | 0.80 (0.65 – 0.99) | |
| **IADL** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-4 | 0.34 (0.07) | 1.41 (1.23 – 1.61) | |
| 5+ | 0.03 (0.07) | 1.03 (0.90 – 1.19) | |

**Table 4.14 –Ordinal Regression Model for Freedom of Movement among Ontario Male Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Insight into Mental Health** | | | |
| Full (REF) | 0 | 1.00 | <.0001 |
| Limited | -0.17 (0.08) | 1.41 (1.23 – 1.61) | |
| None | -0.45 (0.10) | 1.03 (0.90 – 1.19) | |
| **Traumatic Life Events CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | 0.04 |
| Triggered – Prior Trauma | -0.29 (0.16) | 0.75 (0.55 – 1.01) | |
| Triggered – Immediate Safety | -0.26 (0.15) | 0.77 (0.58 – 1.02) | |
| **Social Relationships CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | <.0001 |
| Triggered – Improve Relationships | 0.11 (0.08) | 1.11 (0.96 – 1.30) | |
| Triggered **–** Isolation & Dysfunction | -0.42 (0.07) | 0.66 (0.58 – 0.75) | |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=1973.99 (DF=99)* **c statistic** = 0.75

**Table 4.15 – Ordinal Regression Model for Freedom of Movement among Ontario Female Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -2.92 (0.48) | --- | <.0001 |
| *Intercept 3* | -2.34 (0.47) | --- | <.0001 |
| *Intercept 2* | -0.75 (0.47) | --- | 0.1 |
| *Intercept 1* | 2.71 (0.50) | --- | <.0001 |
| **Facility** | | | |
| A (REF) | 0 | 1.00 | <.0001 |
| B | 1.26 (0.39) | 3.52 (1.65 – 7.52) | |
| C | 0.57 (0.42) | 1.76 (0.77 – 4.05) | |
| D | 0.98 (0.38) | 2.67 (1.27 – 5.62) | |
| E | -0.39 (0.40) | 0.68 (0.31 – 1.49) | |
| F | -0.22 (0.46) | 0.80 (0.33 – 1.98) | |
| G | -0.15 (0.42) | 0.86 (0.38 – 1.98) | |
| H | -0.74 (0.46) | 0.48 (0.19 – 1.16) | |
| I* | --- | --- | |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | 0.01 |
| Yes | 0.39 (0.15) | 1.47 (1.09 – 1.97) | |
| **Day of Stay** | | | |
| 45 days or less (REF) | 0 | 1.00 | <.0001 |
| 45-179 days | 0.28 (0.15) | 1.32 (0.98 – 1.79) | |
| 180-1094 days | 1.23 (0.20) | 3.41 (2.32 – 5.01) | |
| 1095+ days | 0.92 (0.35) | 2.50 (1.26 – 4.98) | |
| **Has Confidant** | | | |
| No (REF) | 0 | 1.00 | 0.002 |
| Yes | 0.77 (0.25) | 2.15 (1.33 – 3.49) | |

**Table 4.15 –Ordinal Regression Model for Freedom of Movement among Ontario Female Forensic Patients**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **CAGE** | | | |
| 0-1 (REF) | 0 | 1.00 | 0.03 |
| 2+ | -0.49 (0.23) | 0.61 (0.39 – 0.95) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.50 (0.17) | 0.61 (0.44 – 0.84) | |
| 4+ | -1.43 (0.21) | 0.24 (0.16 – 0.36) | |
| **Social Relationships CAP** | | | |
| Not Triggered (REF) | 0 | 1.00 | 0.004 |
| Triggered – Improve Relationships | 0.38 (0.18) | 1.46 (1.03 – 2.07) | |
| Triggered **–** Isolation & Dysfunction | -0.30 (0.16) | 0.74 (0.54 – 1.02) | |

**Proportional Odds Assumption:** *p=<.0001 $X^2$=309.94 (DF=51)* ***c statistic*** *= 0.75*

All other independent variables included in the model had similar odds of increasing or decreasing the odds of easing restrictions as the previous model stratified by female forensic patients.

The proportional odds assumption for the freedom of movement among facilities for the total sample and stratified models are statistically significant (p=<.0001). However, all predictor variables in the cumulative logit plots have parallel lines indicating that the proportional odds assumption is in fact true and we therefore we do NOT reject the assumption of equal slopes and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002).

When facility was added as an independent variable, the model for examining freedom of movement among all three models had a c statistic of 0.75, which indicates modest explanatory power. In addition, for all three models facility was a significant predictor of Freedom of Movement after controlling for a large set of individual level covariates.

## 4.8 Discussion

There are a variety of clinical, functional and behavioural factors that were predictive of freedom of movement among forensic inpatients. Therefore, indicating that aggressive and violent behaviour are not the only factors predictive of decreasing the odds of easing restrictions in forensic mental health settings. In fact there are many other clinical factors such as substance use problems and lack of insight into mental health problems that also decreased the odds of easing restrictions. The RAI-MH captures clinical, social and functional characteristics as

well as indicators of aggression and violence which provides a more comprehensive clinical profile of the patient and identifies areas to target during the care planning process. There were notable gender differences with respect to the level of freedom of movement men and women were placed in that persisted after adjusting for a variety of individual level covariates. For example, a greater percentage of women demonstrating severe aggressive behaviour (higher ABS scores) were confined to unit; whereas, a greater percentage of men who were demonstrating severe aggressive behaviours were restricted to room. Essentially the same 'level' of aggression is being exhibited by both men and women and yet greater levels of restrictions are placed upon male forensic mental health patients.

Even with the noted individual differences in freedom of movement in forensic mental health settings, it is difficult to determine the basis for why a person is in a certain stage of freedom of movement. The stage that the patient is in may not be a reflection of an easing or tightening of restrictions but based on external factors (for example, court attendance and medical attention) that are not accounted for in the process of easing of restrictions.

Among both the individual characteristics ordinal logistic regression models (Tables 4.7-4.91) and the facility characteristics ordinal logistic regression models (Tables 4.10-4.12) the direction of the association was the same for both male and female forensic patients; with one exception, substance use problems. Substance use problems based on CAGE scores of 2+ decreased the odds of being in higher level of freedom of movement among female forensic patients (see Table 4.15)

whereas, in the model stratified by male forensic patients, substance use problems was not statistically significant (see Table 4.14).

There are clear facility level differences among freedom of movement of forensic inpatients. Due to the complexity within the forensic mental health patient population as well as the diversity across hospitals in regards to types of facilities (secure hospital versus acute forensic unit) it emphasizes the necessity to incorporate freedom of movement within any benchmarking discussions in forensic mental health.

Aside from differences found among the specific levels of the freedom of movement across facilities, there are notable gender differences found in the easing of restrictions in general. This could suggest that there are gender influences in easing restrictions across facilities. Overall, this emphasizes that both individual and facility level characteristics may play a role in the easing of restrictions within forensic mental health facilities.

Another difference was for Facility F in the stratified by ‘female gender’ models (both individual and facility level characteristics); where female forensic patients in facility F had decreased odds of being in a higher level of freedom of movement compared to females in Facility A. The reverse relationship is found among male forensic patients in Facility F, compared to male forensic patients in Facility A.

Even though the direction of the association between the independent variables and freedom of movement is generally the same for male and female

forensic patients; the magnitude of the odds ratio can differ substantially. This can demonstrate both within and between group differences. For example, female forensic patients who have a confidant had 2.15 greater odds of being in a higher level of freedom of movement compared to female forensic patients without a confidant. Among male forensic patients the OR=1.45 indicating that confidants may be less likely to be considered when granting leaves among men.

*Implications for Treatment*

Many mental health and behavioural issues that decrease the odds of easing restrictions among forensic patients can be targeted through treatment interventions which are guided by the care planning process.

Aggressive behaviour, and persistent anger and substance use problems are all factors that lead to increased levels of restrictions among forensic mental health patients. There are no gender differences found among this association and as such these findings do not warrant gender-specific targeted treatment interventions. Rather, treatment should focus on the individual patient needs, regardless of gender. Anger management and addictions treatment can support the person with their recovery and progress in the process of easing restrictions.

*Implications for Policy*

In a recent report by Simpson (2012) for the Department of Health and Wellness, Nova Scotia, the need for patient assessment prior to easing of restrictions; was emphasized. Since there is no formal protocol across Ontario for the assessment of patients prior to leave and the RAI-MH is a mandatory assessment tool used in all

forensic hospitals, across the province it could be used for assessment of the patient prior to leave. This would allow for a comprehensive clinical assessment of the patient to determine any potential risk factors that may impede a person's recovery on leave. The literature states that more clinically oriented assessment (as opposed to simply a risk of re-offence type of assessment) is needed (Shinkfield & Ogloff, 2014; Simpson, 2012).

Development of consistent policies that help guide forensic mental health hospitals in the easing of restrictions while taking into account a person's individual care needs are needed. Consistency of policies across forensic mental health services is key to help ensure overall consistency of treatment of forensic patients (Department of Justice & Department of Health and Wellness, 2012). Along with the development of consistent policies, mandatory training for all staff must be provided. Training should be provided to all staff on the policies surrounding the process of easing restrictions; with a particular emphasis of both emergency protocol in the event that a patient goes absent without official leave (AWOL) and the process of re-evaluating the person's level of restrictions upon return to hospital.

Benchmarking is necessary to account for both the facility level and individual level differences associated with freedom of movement in forensic mental health settings. CIHI can develop a quarterly benchmarking reporting system on the freedom of movement scale as a whole and/or across levels within the scale (for example, unaccompanied leaves) to allow for within and between hospital comparisons.

The fact that this research emphasizes the importance of examining both individual and facility level characteristics when determining a person's freedom of movement within forensic mental health settings strongly suggests the needs for a forensic mental health quality indicator that risk adjusts for these individual and facility level differences to truly measure the quality of care provided. A potential forensic mental health quality indicator could be developed using the freedom of movement scale; with two potential variations one examining elopement attempts and one without. However, further research is needed to determine the thresholds for the denominator and numerator used for calculating the FoM quality indicator. As well, investigation into the idea of sex-adjusted risk adjustment to see if this approach is warranted in the methodology associated with the development of forensic mental health quality indicators.

*Implications for Research*

Future research should incorporate cross-national and international comparisons to provide an enhanced understanding of factors that predict easing of restrictions based on the FoM scale and how they compare within and between countries. This type of research could help inform benchmarking practices at a national and international level.

Using the interRAI Forensic Supplement pilot data, which consist of completed RAI-MH and corresponding interRAI Forensic Supplement assessments, an analysis of factor associated with freedom of movement (FoM scale) needs to be conducted. Additional factors from the interRAI Forensic Supplement should be examined to determine if they have an effect on freedom of movement among

forensic patients and if there are any gender differences associated with these factors. A longitudinal gender-based analysis of the freedom of movement (FoM scale) incorporating these additional forensic items would allow for measures of change over time.

# Chapter 5

# Applying the Freedom of Movement (FoM) Scale to Ontario Forensic Psychiatric Patients Using the interRAI Forensic Supplement and RAI-MH

## 5.1 Introduction

The balance between public safety and patient rehabilitation is a constant consideration for forensic mental health inpatient care providers when determining a person's freedom of movement (Carroll et al., 2004; Department of Justice & Department of Health and Wellness, 2012). The new federal government legislation (Bill C-14) that came into effect July 11 2014 includes a number of changes including: putting public safety first; creating a high-risk designation for persons deemed NCR; and enhancing victim's rights. Each of these will now play a more integral part in the decision-making process of easing restrictions among persons deemed NCR (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013).

On the other hand, rehabilitation, treatment and reintegrating back into the community are key goals of forensic mental health services employing a staged process of incremental easing of restrictions (BC Mental Health & Addiction Services, March 2013; Stubner et al., 2006; Walker et al., 2013). The process of easing of restrictions is an essential factor affecting a person's recovery because it allows the clinical team to monitor signs of potential relapse. It also provides the person with an opportunity to demonstrate treatment progress while still under the supervision of the hospital and before full release into the community (Tigges, 1991).

Increasing our understanding of the factors that predict of freedom of movement among forensic mental health inpatients using both clinical and criminal justice related items will help support the rehabilitation process while ensuring public safety. Further, adjusted hospital comparisons will help determine both the facility and individual level influences associated with freedom of movement in the forensic mental health population.

### 5.1.1 Background

Across health care services, there is an increasing focus on assessing outcome measures to determine the most effective and appropriate forms of intervention and treatment (Chambers et al., 2009; Shinkfield & Ogloff, 2014; Yiend et al., 2010). However, in the forensic mental health literature there is very little consensus on the outcome measures to be utilized (Chambers et al., 2009; Fitzpatrick et al., 2010; Prince & Willet, 2014; Shinkfield & Ogloff, 2014; Yiend et al., 2010). There is excessive focus on risk of recidivism with very little attention paid to clinical outcomes, rehabilitation and functional capacity (Chambers et al., 2009; Fitzpatrick et al., 2010; Prince & Willet, 2014; Shinkfield & Ogloff, 2014; Yiend et al., 2010). In this sense, it appears that public safety of the public supersedes the interests of the individual patients (Chambers et al., 2009).

In forensic mental health, outcome measurement can pose a particular challenge because of the need to span clinical, legal and public safety concern domains (Chambers et al., 2009; Fitzpatrick et al., 2010). The complexity of this is even seen in the operationalization of recidivism. Recidivism is often measured differently,

with definitions ranging from offending behaviour to aspects of the legal process to parole violations (Chambers et al., 2009; Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014).Even the instruments used to assess recidivism and other outcome measures vary (Chambers et al., 2009; Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014; Yiend et al., 2010).

The focus needs to shift from focusing solely on criminal justice outcome measures (for example, recidivism) to incorporate aspects of clinical, social and functional characteristics (Chambers et al., 2009; Fitzpatrick et al., 2010; Shinkfield & Ogloff, 2014; Yiend et al., 2010). Many existing psychological measures such as impulsivity, negative attitudes, cognition, aggression, emotional control, and interpersonal factors could serve as useful outcome measures; however, to date, they have mainly been used as predictors (Yiend et al., 2010). The balance between risk and clinical need is a common debate in assessment of easing of restrictions and in measuring outcomes specific to forensic mental health. In fact, using evidence informed decision-making is a primary goal when making decisions about individual patient care and the delivery of forensic mental health services. This chapter aims to examine freedom of movement within a forensic inpatient setting as a function of and the clinical, social, functional and risk factors associated with easing or tightening of restrictions.

### 5.2 Purpose

This chapter will provide an analysis of the individual and facility level characteristics that can predict freedom of movement in forensic mental health hospitals.

Additionally items from the interRAI Forensic Supplement will be examined to determine their effects on freedom of movement among forensic inpatients.

## 5.3 Measures

### 5.3.1 Data Source

The interRAI Forensic Supplement is designed to compliment the RAI-MH and the interRAI Mental Health (interRAI MH) assessment instruments for inpatient psychiatry and the interRAI Community Mental Health (interRAI CMH) assessment instrument. The interRAI Forensic Supplement is standardized, minimum screening tool designed to be used in multiple settings, including both inpatient and community programs and services. It is a one page assessment that is intended to augment the interRAI MH and interRAI CMH assessments by focusing on information specific to the forensic population. The compatibility of elements improves the continuity of care through a seamless health evaluation system across multiple settings, and promotes a person-centred approach to care. The items in this instrument focus on the person's risk of danger to others and recidivism.

The interRAI Forensic Supplement was implemented on a pilot basis beginning in 2009 with each of the 6 sites that volunteered to participate in pilot study. The data collection dates may vary across the six sites as each hospital required their own internal ethics clearance. The pilot study of the interRAI Forensic Supplement was implemented to determine how staff responded to the new instrument and how well it correlates with other forensic assessment tools.

This chapter will use data from the 6 sites that participated in the pilot study included: Waypoint Centre for Mental Health Care (Penetanguishene); Royal Ottawa Health Care Group (Brockville & Ottawa); Centre for Addiction and Mental Health (Toronto); Providence Continuing Care (Kingston); Thunder Bay Regional Health Sciences Centre (Thunder Bay); and St. Joseph's Healthcare Centre Hamilton (Hamilton). There were 2,372 interRAI Forensic Supplements and corresponding RAI-MH assessments completed between February 2008 and June 2013. There were 2,024 unique individuals assessed with a gender distribution consisting of 1,609 male and 276 female forensic inpatients. There were 139 cases where gender was not identified and therefore could not be included in total gender distribution; however, these cases were included in the total sample analysis.

## 5.4 Measures

### 5.4.1.1 Dependent Variable

### 5.4.1.2 Freedom of Movement Scale

The dependent variable, Freedom of Movement (FoM) scale, measures the levels of restriction from seclusion/confinement to room to the least restriction (unaccompanied leave) among forensic inpatients. Freedom of movement consists of 5 distinct ordinal levels: restricted to room; confined to unit; no outside leaves; accompanied leaves; and unaccompanied leaves. The reference group for the present analyses is restricted to room.

### 5.4.2 Independent Variables

The selection of independent variables was guided by a review of the findings in the literature and by the results reported in previous chapters. The independent variables found to be significant in the FoM total sample models were examined using this pilot data. Variables found in the interRAI Forensic Supplement were also examined to determine which variables were statistically significant after taking into account the variables known to influence easing of restrictions.

#### 5.4.2.1 Sociodemographic Characteristics

*Female Gender*

The RAI-MH sex variable, labeled 'female gender' for purposes of this research, consists of three response options: male, female and other. Because the 'other' response category is an underused response option, there were not enough cases to warrant 'other' being its own gender category. Males represent a large majority of the forensic inpatient population. For purposes of this analysis, 'male' and 'other' were recoded into one variable (female gender=0) and was used as the reference group and 'female' (female gender=1) was the comparison group. This binary measure of female gender was also used to stratify the logistic regression models to examine gender influences on factors that predict freedom of movement.

*Age*

Age was collapsed into four groups: 18-24, 25-44, 45-64, and 65+. The reference group was 18-24.

*Marital Status*

Marital status was collapsed into two groups: “Not partnered” (never married, separated, divorced or widowed) and ‘partnered’ (married or in common-law relationship). Not partnered was the reference group while partnered was the comparison group.

*Psychiatric Diagnoses*

Psychiatric diagnoses documents the top 3 specific psychiatric diagnosis in order of importance. All diagnoses are based on DSM-IV provisional diagnostic criteria. For this particular analysis, psychiatric diagnosis was recoded into a series of binary measures (Yes/No) for each diagnosis. Not having the given diagnosis was the reference group for each dummy variable.

5.4.2.2 Clinical Characteristics

*Day of Stay*

To determine day of stay the assessment reference date was subtracted from the date stay began. The specific categories for day of stay are less than 45 days, 45-179 days, 180-1094 days and 1095+ days. The reference group was less than 45 days.

*Insight into Mental Health*

Insight into mental health deals with the person’s level of awareness of his or her mental health problems. The categories for degree of insight into mental health are Full, Limited, and None. The reference group is ‘full’ degree of insight into mental health.

*Confidant*

The RAI-MH item ‘person reports having no confidant’ was recoded to align with interRAI Mental Health suite standards where this item is worded as ‘reports having a confidant’ (Yes/No). For purposes of this analysis, the reference group is “No” as in the person reports having no confidant (someone to confide in).

*Persistent Anger*

Persistent anger with self or others assesses the presence of the observed indicator (persistent anger) within the last 3 days. The coding categories for persistent anger with self or others includes: not exhibited, present but not exhibited, exhibited 1-2 times and exhibited daily. The reference group is persistent anger with self or others not exhibited within the last 3 days.

5.4.2.3 Harm to Self or Others

*Suicide Plan*

Suicide plan is a binary measure (Yes/No) that identifies if the person has formulated a plan to end his or her own life within the last month. The reference group is having no suicide plan.

*Most Recent Self-Injurious Act (within last month)*

Most recent self-injurious act considers whether the person has engaged in self-injurious behaviour within the last month. This variable was recoded into a binary measure (Yes/No) to measure whether the event occurred regardless of the recency of the event. The reference group is no self-injurious act within the last month.

*Violence to others*

The violence to others variable measures the most recent instance of violence. For the analysis in this chapter, violence to others was recoded into a binary measure (Yes/No) to identify persons at risk of becoming violent towards others. The reference group is 'No' instance of violence towards others.

#### 5.4.2.4 RAI-MH Clinical Scales

Eleven clinical outcome scales derived from the RAI-MH were included in the bivariate analysis. The specific scales examined included: Aggressive Behaviour Scale (ABS) (Perlman & Hirdes, 2008); Risk of Harm to Others (RHO); Severity of Self-Harm (SoS); Self-Care Index (SCI); Depressive Severity Index (DSI); Positive Symptom Scale (PSS); Mania; Social Withdrawal; ADL Hierarchy; Instrumental Activities of Daily Living (IADL) Capacity Scale; and Cognitive Performance Scale (CPS) (Bula, C.J., & Wietlisbach, V., 2009; Hartmaier et al., 1995; Morris et al., 1994; Yamauchi & Ikegami, 1999). These scales were recoded into categorical variables in the analyses. All scales were recoded based on cut-off points presented in a paper by Hirdes et al., (in press). Refer to Appendix A for more details on the RAI-MH scales and the categories for each level of the scales. Overall, higher scores on the scale indicate greater loss or severity of a condition (Hirdes et al., 2011).

#### 5.4.2.5 Mental Health Clinical Assessment Protocols (CAPs)

The interRAI assessments combine a comprehensive, multidisciplinary evaluation of an individual's strengths, preferences, and needs with a series of Clinical Assessment Protocols (CAPs) that inform clinical decision-making as part of the care planning process (Martin et al., 2009). Each CAP contains an issue statement, goals of care, triggers, guidelines and additional resources (Hirdes et al., 2011). The issue statement describes why the domain area is an important area of focus in mental health care (Hirdes et al., 2011). Goals of care highlight the specific targets within the CAP to support the patient's recovery and the CAP triggers are intended to either reduce risk of decline or increase the potential for improvement in the specific CAP domain area (Hirdes et al., 2011). The CAP guidelines are intended to help inform the care planning process and along with clinical judgement and incorporating the patient's preferences, help to inform the treatment plan (Hirdes et al., 2011). Below is a list of the CAPs that were found to be significant in the bivariate analysis.

*Social Relationships*

This CAP aims to address factors leading to disruption in social relationships that may ultimately result in isolation of the person from family, friends and the greater community. This CAP is triggered to either reduce social isolation and family dysfunction (Level 2) or to improve close friendships and family functioning (Level 1). The not triggered group is the reference group.

*Traumatic Life Events*

The Traumatic Life Events CAP is comprised of two triggering levels: triggered to address immediate safety concerns; and triggered to reduce the impact of the prior traumatic life events. The not triggered group is the reference group.

*Substance Use*

The Substance Use CAP is based on the CAGE and consists of two groups: triggered where the aim is to reduce or eliminate substance use (current use); and triggered to maintain abstinence (prior use) Triggered for prior substance use (Level 1) and current substance use (Level 2). The not triggered group is the reference group.

*Control Interventions*

The Control Interventions CAP is triggered to eliminate the need for control interventions within two specific groups: persons in an emergency psychiatric situation and persons not in an emergency psychiatric situation. The not triggered group is the reference group.

5.4.2.6 interRAI Forensic Supplement Items

*RIIDE Scale*

The interRAI Forensic Supplement has a number of mental state indicators that measure the presence and frequency of the following behaviours: remorselessness, impulsivity, inappropriately blaming others, denying or minimizing harm done to others, and expressions supportive of criminal activity. The coding categories for these mental state indicators include: not exhibited, present but not

exhibited, exhibited 1-2 times and exhibited daily. These behaviours were combined into a summative scale where scores range from 0-15. The reference group is RIIDE scale=0. The RIIDE scale had a Cronbach alpha of 0.84 indicating good internal consistency.

*Age at First Police Intervention*

Determines the person's age when he/she first came into contact with the police for both violent and non-violent behaviours. The coding categories include: child (0-12); adolescent (13-18); and adult (19+). The reference group was "no police intervention".

*Severity of Crime*

The severity of crime is a measure of the severity of criminal behaviour the person has been convicted of throughout his/her lifetime based on the both the type and number of different criminal convictions (Brown et al.,2010). The categories within the severity of crime variable include: violence causing death or serious physical harm to victim; sexual assault or other sex offence against a person; assault; property offence; drug offence; traffic offence; and other. Severity of crime is a binary variable (Yes/No) with the reference group being "no" as in the person had no convictions of this type.

*Any Predatory, Violent Crime that was Targeted at Child(ren) 12 years of age of Under a Female of Any Age*

This variable is a binary measure (yes/no) of any history of predatory, violent crime that was targeted at a female or a child under the age of 12 (Brown et al., 2010). The reference group was no history of such crimes.

*Use of Weapon(s) During Criminal Activity*

Use of weapon(s) during criminal activity codes for the most recent instance of the event occurring. The coding categories include: never; more than 1 year ago; 31 days to 1 year ago; 8 to 30 days ago; 4 to 7 days ago; and in the last 3 days. The reference group is never used a weapon during a criminal activity.

*Behaviour Problem that was Persistent before the Age of 12*

The behaviour problem that was persistent before the age of 12 variable codes for any history of these behaviours occurring under the age of 12. This is a binary measure (yes/no) and the reference group was no history of the behaviour problems before age 12.

*Promiscuity*

Promiscuity is a binary measure (yes/no) that codes for the presence of promiscuity within the last 90 days. The reference group was no promiscuous behaviour occurring in the last 90 days.

*Failure to Comply with Conditions of any Release(s) Resulting in Re-incarceration or Re-hospitalization*

This independent variable measures compliance with conditions of prior releases. The coding categories include: no prior release; prior release, compliant; and prior release, non-compliant. The reference group is ‘no prior release’.

*Removed from Home before Age 18 by Child Protection Agency or Court*

This life event independent variable is a binary measure (yes/no) that indicates if the person was removed from home before the age of 18 by social or government agency. The reference group is no this event did not occur.

*Exploitive Relationships*

The items in exploitive relationships are binary measures (yes/no) that determine if the following behaviours occurred or not: manipulative, lacking empathy and taking advantage of others. The reference group is there is no presence of the indicator.

*Peer Group Includes Individuals with Persistent Antisocial Behaviour*

This independent variable codes for the presence of a peer group that includes individuals with persistent antisocial behaviour. This is a binary measure where the reference group is “no” the peer group does not consist of persons with persistent antisocial behaviour.

*Effective Problem Solving for Stressful Situations*

Effective problem solving for stressful situations codes for the presence of an inability to be resilient in the face of stress. As a binary measure (yes/no), the reference group is ‘no’, as in the person is resilient in the face of stress.

*Person has Unrealistic Plans for Discharge, Release, or Transfer to Lower Security Level*

This independent variable codes for the presence of unrealistic plans for discharge, release, or transfer to lower security level. The reference group is ‘no’, as in the person has realistic plans.

## 5.5 Data Analysis

Ordinal logistic regression was performed to identify the independent associations between freedom of movement and the explanatory variables. Independent variables found to be statistically significant in the ordinal logistic regression models

in chapter 3, were included in the ordinal logistic regression models using the interRAI Forensic Supplement pilot data. Only total sample models were examined as there were not enough women in the pilot data to ensure statistical power in the stratified models. Both of the final total sample ordinal logistic regression models including the individual level characteristics and then the facility level characteristic models were run using the interRAI Forensic Supplement pilot data.

The final model included both individual and facility level characteristics based on RAI-MH variables as well as interRAI Forensic Supplement items. All items in the interRAI forensic supplement, with the exception of the identification and assessment information, were added to the model to determine if they were statistically significant in the ordinal logistic regression model. Non-significant variables were deleted sequentially from the models until only significant variables remained. Variables were included in the ordinal logistic regression models that demonstrated both statistical significance ($p < .05$) and clinical relevance in the association of freedom of movement in forensic mental health hospitals. Because the DESCENDING option was used in the proc logistic statement the odds ratio is the effect of the independent variable on the odds of being in a higher category rather than a lower category (Huber, 2012; Stokes et al., 2002).

Freedom of Movement is an ordinal variable and therefore the proportional odds assumption was utilized. The proportional odds model forces the 5 ordinal categories (of the Freedom of Movement scale) into binary comparisons by combining categories. Dichotomizing the freedom of movement variable would lower the power of the hypothesis test (Huber, 2012; Stokes et al., 2002). Due to the complexity of the ordinal logistic regression models, interaction effects among variables were not examined in the final models.

The proportional odds assumption tests the null hypothesis that the slope coefficients are equal across the cumulative logits for each predictor variable (Huber, 2012). When the p value is not significant at the 0.05 the assumption of equal slopes is not rejected and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002).

Effect plots on the logit scale for the final ordinal regression models at both the individual and facility level models were prepared to visually inspect the proportional odds assumption. The cumulative logit plots are graphs of each predictor variable to determine if the slopes are parallel. If the slopes are parallel the proportional odds assumption is true (Huber, 2012; Stokes et al., 2002).

Analyses were undertaken for each of the final models to measure explanatory power. Accuracy of the model prediction was determined using the c-statistic (or area under the curve AUC). The c-statistic in the Freedom of Movement model is the probability of an observation with fewer restrictions having a cumulative

probability than observations with greater restrictions (Huber, 2012; Stokes et al., 2002). Regression diagnostics were undertaken for each of the final models to ensure appropriate data fit.

## 5.6 Results

There were 2,024 individuals assessed with interRAI Forensic Supplements and corresponding RAIH-MH assessments included in the study. Figure 5.1 highlights the frequency distribution across the Freedom of Movement scale. Less than 5% of forensic patients had been restricted to room and just over 20% had been granted unaccompanied leaves. Almost half of the forensic patients in this sample were confined to unit.

**Figure 5.1 Frequency Distribution of Freedom of Movement Scale among a Pilot Sample of Ontario Forensic Patients**

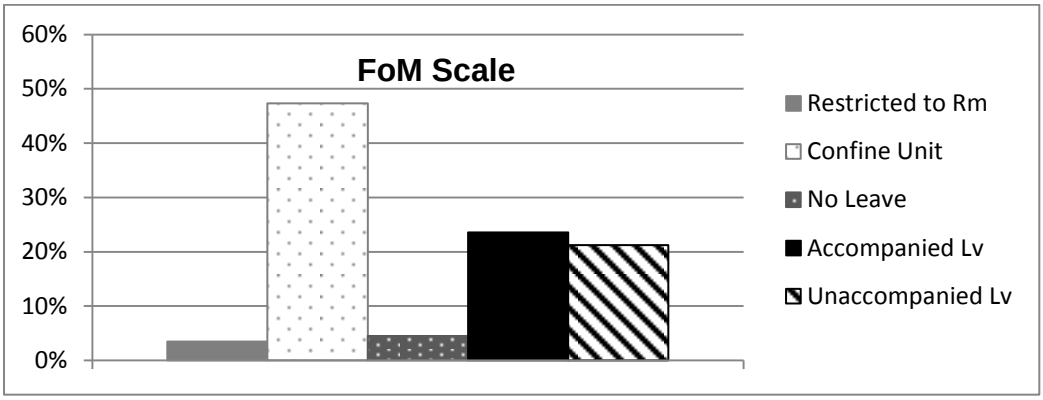



Table 5.1 shows the sociodemographic characteristics of the forensic supplement pilot study sample. A higher percentage of male forensic patients had been granted unaccompanied leaves compared to female forensic patients (20% vs. 12%, respectively). Interestingly, 21% of forensic patients who had been granted unaccompanied leaves did not have a partner. Different age groups seemed to have

different patterns of association with Freedom of Movement. For example, a higher percentage of those granted unaccompanied leaves were in the 45-64 age group compared to the other age groups. The majority of forensic patients with a mood disorder were confined to unit. Where 32% of forensic patients with a personality disorder had no leave from hospital and 30% were confined to unit. 30% of forensic patients who had multiple hospitalizations were granted unaccompanied leaves.

Table 5.2 shows the number of forensic supplements completed by the 6 participating facilities as part of the pilot study the inclusion criteria for the study. By far the largest number of assessments are from a single facility.

**Table 5.2 Facility Comparisons of Completed interRAI FS and RAI-MH Assessments in an Ontario Pilot Sample (2008-2013)**

| | **# of Completed Assessments** |
|---|---|
| Facility 1 | 1,686 |
| Facility 2 | 45 |
| Facility 3 | 56 |
| Facility 4 | 116 |
| Facility 5 | 70 |
| Facility 6 | 51 |
| **TOTAL** | **2,204** |

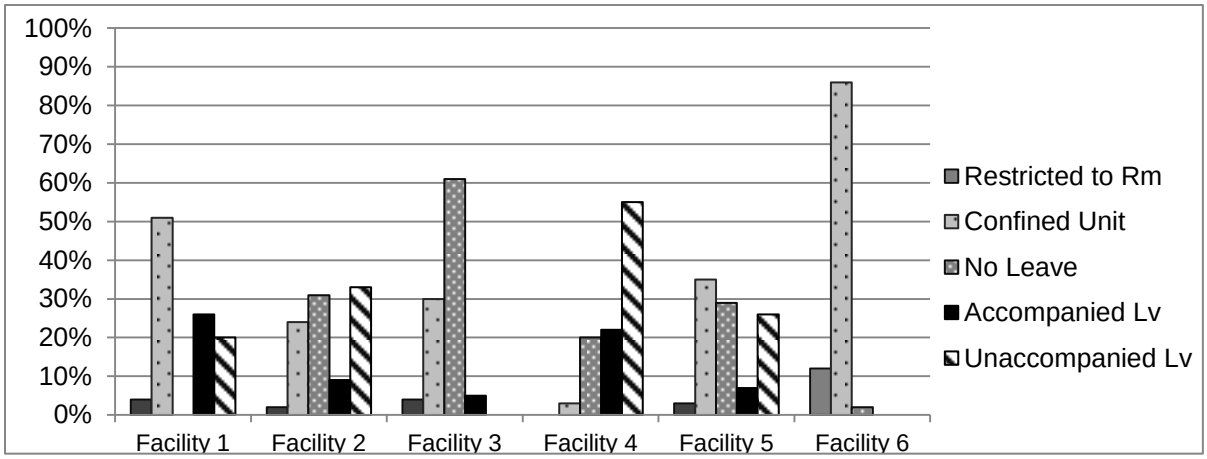
Figure 5.2 shows the facility level differences in the distribution of the Freedom of Movement scale among forensic mental health hospital settings. For example, Facility 4 had over 50% of the patients within this sample being granted unaccompanied leaves, whereas Facility 3 did not grant any unaccompanied leaves

during the pilot study period. However, one must be careful in interpreting these results. The fact that over 60% of patients in facility 3 had no leave could be more a reflection of the type of forensic patients within this particular hospital there are simply differences in policies. For example, Facility 3 could house longer stay forensic patients and represent a more secure facility within the province. One must take the diversity of forensic patients into account when interpreting facility level differences (again highlighting the importance of examining individual differences as well as facility level). Nonetheless there are still notable differences in the easing of restrictions within forensic mental health inpatient settings. For example, Facility 1 had over 50% being confined to unit and yet there was also a rather large proportion of patients that were granted both accompanied and unaccompanied leaves compared to other hospitals. Facility 6 had over 80% of patients confined to unit and no patients received either accompanied or unaccompanied leave among those included in the sample.

**Table 5.1 Rate of Freedom of Movement by Sociodemographic Characteristics among Ontario Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Female Gender** | | | | | | |
| Male | 3.4 (55) | 48.3 (776) | 3.9 (64) | 23.9 (354) | 20.5 (329) | *0.001* |
| Female | 5.1 (14) | 58.3 (161) | 1.8 (5) | 22.5 (62) | 12.3 (34) | *17.89 (4)* |
| **Age** | | | | | | |
| 18-24 | 9.8 (23) | 58.6 (137) | 3.9 (9) | 16.7 (39) | 11.1 (26) | *<.0001* |
| 25-44 | 3.1 (32) | 51.3 (525) | 4.0 (41) | 22.8 (233) | 18.8 (192) | *131.3 (4)* |
| 45-64 | 1.6 (9) | 35.4 (199) | 5.7 (32) | 24.3 (137) | 33.0 (186) | |
| 65+ | 2.4 (2) | 46.4 (39) | 8.3 (7) | 34.5 (29) | 8.3 (7) | |
| **Marital status** | | | | | | |
| Not Partnered | 3.5 (59) | 48.9 (818) | 3.8 (64) | 23.2 (300) | 20.6 (344) | *0.001* |
| Partnered | 4.7 (10) | 56.4 (119) | 2.4 (5) | 27.5 (58) | 9.0 (19) | *18.4 (4)* |
| **Psychiatric Diagnoses** | | | | | | |
| Personality Disorder | 4.2 (3) | 29.6 (21) | 32.4 (23) | 11.3 (8) | 22.5 (16) | *<.0001 136.2 (4)* |
| Substance Use Disorder | 3.7 (27) | 47.8 (348) | 3.9 (28) | 23.4 (170) | 21.3 (155) | *0.83 1.5 (4)* |
| Schizophrenia | 3.5 (48) | 42.0 (579) | 4.6 (64) | 25.1 (346) | 24.9 (343) | *<.0001 60.2 (4)* |
| Mood Disorder | 4.9 (14) | 60.6 (172) | 2.8 (8) | 16.6 (47) | 15.1 (43) | *<.0001 29.2 (4)* |
| Anxiety Disorder | 2.3 (1) | 55.8 (24) | 4.7 (2) | 23.3 (10) | 14.0 (6) | *0.74 1.93 (4)* |
| **Multiple Hospitalizations** | | | | | | |
| No | 3.5 (59) | 50.1 (857) | 0.82 (14) | 25.9 (443) | 19.8 (339) | *<.0001* |
| Yes | 3.6 (10) | 30.0 (83) | 27.3 (76) | 9.4 (26) | 29.6 (82) | *432.1 (4)* |

**Figure 5.2 Facility Comparisons of Freedom of Movement among a Pilot Sample of Ontario Forensic Patients**




Given that there are clear facility level differences in the freedom of movement of forensic mental health inpatients, it is important to determine the possible reasons for these differences. It is important to understand the extent to which these Facility differences are accounted for by the characteristics of their patient population versus policy and practice differences.

### 5.6.1 Multivariate Analysis Results

Ordinal logistic regression analysis was used to examine factors that predict freedom of movement in the pilot sample. Explanatory variables were tested in the model based on a chi-square statistical significance of 0.05 at the bivariate level or based on clinical relevance. Explanatory variables that were added to the model that were ultimately found to *not* be statistically significant in the multivariate model for this sample included: staff report persistent frustration in dealing with patient; intimidated of others or threatened violence; impaired capacity – transportation

IADL; medication refusal; psychiatric intensive care unit; acute control medications; and having a suicide plan.

As well, there were a few variables that even though they were statistically significant at the bivariate level were not included in the final model because they were collinear with other variables included in the model. For example, CPS was removed because it is used to calculate SCI. Similarly, the Substance Use CAP was removed from the model and instead the CAGE was included. Finally, Control Interventions CAP was not used because the algorithm for the CAP includes variables that are part of the dependent variable.

There are four intercepts in each of the models discussed below, with the reference group for the intercept being restricted to room. The four intercepts can be interpreted as follows: intercept 1 compares the probability of unaccompanied leaves, accompanied leaves, no leaves and confinement to unit to all others; intercept 2 compares the probability of unaccompanied leaves, accompanied leaves and no leaves to all others; intercept 3 compares the probability of unaccompanied leaves and accompanied leaves to all others; and finally, intercept 4 compares the probability of unaccompanied leaves to all others.

*Individual Characteristics:*

To determine how the freedom of movement model would perform in other forensic mental health settings, the final ordinal logistic regression model with individual characteristics was run using the interRAI Forensic Supplement Pilot data. Table 5.4 highlights the results of this analysis. Variables that were not found to be

**Table 5.3 Summary of Ordinal Logistic Regression Model of Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| | TOTAL |
|---|---|
| **Facility Characteristics** | |
| **Facility** – *1 (REF)* | |
| 2 | +* |
| 3 | +* |
| 4 | + |
| 5 | +* |
| 6 | - |
| **Sociodemographic Characteristics** | |
| **Age** - *18-24 (REF)* | |
| 25-44 | + |
| 45-64 | + |
| 65+ | + |
| **Schizophrenia Diagnosis** - *No (REF)* | |
| Yes | + |
| **Mental Health Clinical Characteristics** | |
| **Insight into Mental Health** - *Full (REF)* | |
| Limited | -* |
| None | - |
| **RAI-MH Clinical Scales** | |
| **Aggressive Behaviour Scale** – *0 (REF)* | |
| 1-3 | - |
| 4+ | - |
| **CAGE** – *0-1 (REF)* | |
| 2+ | - |
| **IADL** - *0 (REF)* | |
| 1-4 | + |
| 5+ | + |

*^ interaction effect with female gender; * - overall variable is statistically significant but individual parameter estimate for ordinal variable is not significant; ns – overall variable is not statistically significant*

**Table 5.3 Summary of Ordinal Logistic Regression Model of Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| | **TOTAL** |
|---|---|
| **interRAI Forensic Supplement Items** | |
| **Age at First Police Intervention** – *No Intervention (REF)* | |
| Child (0-12) | **+*** |
| Adolescent (13-17) | **+*** |
| Adult (18+) | **-** |
| **Use of Weapon During Criminal Activity –** *Never (REF)* | |
| More than 1 year ago | **+** |
| 31 days to 1 year ago | **-** |
| 8-30 days | **-** |
| 4-7 days | **-** |
| In last 3 days | **-** |
| ***RIIDE Scale*** | **-** |

*^ interaction effect with female gender; * - overall variable is statistically significant but individual parameter estimate for ordinal variable is not significant; ns – overall variable is not statistically significant*

**Table 5.4 – Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -2.27 (0.27) | --- | <.0001 |
| *Intercept 3* | -1.04 (0.27) | --- | 0.0001 |
| *Intercept 2* | -0.82 (0.27) | --- | 0.002 |
| *Intercept 1* | 2.95 (0.29) | --- | <.0001 |
| **Age** | | | |
| 18-24 (REF) | 0 | 1.00 | |
| 25-44 | 0.66 (0.15) | 1.93 (1.44 - 2.58) | <.0001 |
| 45-64 | 1.30 (0.16) | 3.66 (2.67 – 5.00) | |
| 65+ | 0.71 (0.25) | 2.04 (1.24 – 3.35) | |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | <.0001 |
| Yes | 0.58 (0.10) | 1.78 (1.46 – 2.18) | |
| **Has Confidant** | | | |
| No (REF) | 0 | 1.00 | 0.04 |
| Yes | 0.29 (0.14) | 1.34 (1.02 – 1.77) | |
| **CAGE** | | | |
| 0-1 (REF) | 0 | 1.00 | <.0001 |
| 2+ | -0.58 (0.12) | 0.56 (0.44 – 071) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.55 (0.11) | 0.57 (0.46 – 0.72) | |
| 4+ | -0.10 (0.16) | 0.37 (0.27 – 0.50) | |

**Table 5.4 – Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Persistent Anger** | | | |
| Not exhibited (REF) | 0 | 1.00 | 0.002 |
| Not exhibited, put reported to be present | -0.27 (0.13) | 0.76 (0.59 – 0.98) | |
| Exhibited on 1-2 of last 3 days | -0.46 (0.14) | 0.63 (0.48 – 0.84) | |
| Exhibited daily in last 3 days | -0.60 (0.20) | 0.55 (0.37 – 0.81) | |
| **IADL** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-4 | 0.27 (0.12) | 1.30 (1.03 – 1.65) | |
| 5+ | 0.58 (0.12) | 1.78 (1.42 – 2.23) | |
| **Insight into Mental Health** | | | |
| Full (REF) | 0 | 1.00 | <.0001 |
| Limited | -0.26 (0.17) | 0.77 (0.55 – 1.07) | |
| None | -0.77 (0.19) | 0.47 (0.32 – 0.67) | |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=162.59 (DF=45)* **c statistic**=0.70

statistically significant in the model included the Traumatic Life Events and Social Relationships CAPs. Also, due to missing data across two facilities the following variables were not included in the model: female gender; marital status; mania; sos; sci; and day of stay.

Forensic patients in the 45-64 age group had 3.66 greater odds of being in a higher level of freedom of movement compared to those in the 18-24 age group. In fact all age groups are at greater odds of being in higher levels of freedom of movement compared to 18-24 year olds.

Forensic patient with a diagnosis of schizophrenia had increased the odds of being in a higher level of freedom of movement compared to those without a diagnosis of schizophrenia. As well, forensic patients with a confidant had 1.34 greater odds of being in a higher level of freedom compared to those without a confidant.

Similar to the findings in chapter 3, having a substance use problem decreased the odds of being in a higher level of freedom of movement.

Aggressive behaviour; persistent anger; and no degree of insight into mental health problems all decrease the odds of being in a higher level of freedom of movement. Forensic patients with an IADL score of 1-4 had 1.30 greater odds of being in a higher level of freedom of movement compared to those with a score of 0.

The model for examining freedom of movement among the forensic inpatients had a c statistic of 0.70 which indicates good explanatory power.

**Table 5.5 – Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -1.75 (0.27) | --- | <.0001 |
| *Intercept 3* | -0.51 (0.27) | --- | 0.06 |
| *Intercept 2* | -0.23 (0.27) | --- | 0.4 |
| *Intercept 1* | 3.83 (0.30) | --- | <.0001 |
| **Age** | | | |
| 18-24 (REF) | 0 | 1.00 | |
| 25-44 | 0.56 (0.16) | 1.74 (1.27 – 2.39) | <.0001 |
| 45-64 | 1.01 (0.18) | 2.76 (1.95 – 3.89) | |
| 65+ | 0.53 (0.29) | 1.71 (0.98 – 2.99) | |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | 0.001 |
| Yes | 0.42 (0.12) | 1.52 (1.20 – 1.91) | |
| **CAGE** | | | |
| 0-1 (REF) | 0 | 1.00 | 0.002 |
| 2+ | -0.42 (0.13) | 0.66 (0.51 – 0.86) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.67 (0.12) | 0.51 (0.40 – 0.65) | |
| 4+ | -1.01 (0.16) | 0.36 (0.26 – 0.50) | |
| **IADL** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-4 | 0.35 (0.13) | 1.41 (1.09 – 1.84) | |
| 5+ | 0.59 (0.13) | 1.81 (1.41 – 2.32) | |

**Table 5.5 – Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **Insight into Mental Health** | | | |
| Full (REF) | 0 | 1.00 | 0.0004 |
| Limited | -0.05 (0.19) | 0.95 (0.65 – 1.38) | |
| None | -0.54 (0.22) | 0.59 (0.38 – 0.89) | |
| **Age at First Police Intervention–Nonviolent crime** | | | |
| No intervention (REF) | 0 | 1.00 | <.0001 |
| Child (0-12) | 0.02 (0.34) | 1.02 (0.52 – 1.99) | |
| Adolescent (13-17) | 0.04 (0.16) | 1.04 (0.76 – 1.43) | |
| Adult (18+) | -0.52 (0.14) | 0.60 (0.46 – 0.78) | |
| **Use of Weapon During Criminal Activity** | | | |
| Never (REF) | 0 | 1.00 | <.0001 |
| More than 1 year ago | 0.56 (0.12) | 1.76 (1.40 – 2.21) | |
| 31 days to 1 year ago | -1.00 (0.21) | 0.37 (0.25 – 0.56) | |
| 8-30 days | -1.30 (0.30) | 0.27 (0.15 – 0.49) | |
| 4-7 days | -2.13 (0.69) | 0.12 (0.03 – 0.46) | |
| In last 3 days | --- | --- | |
| **RIIDE scale** | -0.12 (0.02) | 0.89 (0.85 – 0.92) | <.0001 |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=257.62 (DF=57)* **c statistic**=0.74

*Individual Characteristics + interRAI Forensic Supplement Items*

To determine if the interRAI Forensic Supplement items had an influence on the individual level differences found among freedom of movement in forensic mental health inpatient settings, they were added to the ordinal logistic regression model noted in Table. 5.5.

When adding the forensic items to the model, the direction of the association between freedom of movement and substance use problems based on CAGE score of 2+ changed. Forensic patients with substance use problems had decreased odds of being in a higher level of freedom compared to those without substance use problems.

All other independent variables included in the model had similar odds of increasing or decreasing the odds of being in a higher level of freedom of movement as the previous total sample model.

Forensic patients who were adults at age of first police intervention had decreased odds of being in a higher level of freedom compared to those with no police intervention. Similarly, forensic patients who had used a weapon(s) during criminal activity with greater recency had decreased odds of being in a higher level of freedom of movement. Forensic patients scoring higher on the RIIDE scale had decreased odds of being in a higher level of freedom of movement. Adding the interRAI Forensic Supplement items to the RAI-MH only model provided additional explanatory power given the 0.04 improvement in the c-statistic.

The model for examining freedom of movement among the forensic inpatients had a c statistic of 0. 74 indicating good explanatory power.

*Individual + Facility Characteristics*

To determine if there were facility level differences along with individual level differences found among freedom of movement in forensic mental health inpatient settings, facility was added to the model similar to the analysis performed in chapter 3. Table 5.5 highlights the results of this ordinal logistic regression model.

Assessment data provided by facility 4 did not include female gender and marital status (not partnered vs partnered). When the facility variable was added to the ordinal logistic regression model, facility 4 did not appear as it was automatically removed from the model due to missing data for these particular explanatory variables. As well, mania, SOS, SCI and day of stay covariates were missing from facility 1 resulting in facility 2 being the facility reference group in place of facility 1. Therefore, female gender; marital status; mania; SOS; SCI; and day of stay were removed from the model to ensure that the facility level difference found among facility 1 and 4 would be captured within the model (see Table 5.5).

Table 5.6 highlights in the final model of individual and facility level characteristics among this pilot forensic inpatient sample. Variables found to be significant in this model include: facility (<.0001); age (<.0001); diagnosis of schizophrenia (0.0001); substance use problems (0.01) aggressive behaviour (<.0001); functional impairment (IADL) (<.0001); insight into mental health (<.0001);

age at police first intervention (<.0001); use of weapon during criminal activity (<.0001); and RIIDE scale (<.0001).

The facility variable is statistically significant in the model with differences found among the odds of being in a higher level of freedom of movement across facilities. For example, forensic patients in Facility 6 had decreased odds of being in a higher level of movement compared to forensic patients in Facility 1 after controlling for individual covariates.

All other independent variables included in the model had similar odds of increasing or decreasing the odds of being in a higher level of freedom of movement as the previous total sample model.

The proportional odds assumption for the freedom of movement final ordinal logistic regression models were all statistically significant (p=<.0001). Since the p value is significant at the 0.05 significance level it would lead one to reject the assumption of equal slopes and the proportional odds assumption is validated (Huber, 2012; Stokes et al., 2002). However, the score test for the proportional odds assumption tends to be rejected when there are many predictor variables and the sample size is large which is the case in this analysis (Huber, 2012; Stokes et al., 2002). To further investigate the proportional odds assumption, cumulative logit plots were run and are available upon request. All predictor variables in the cumulative logit plots have reasonably parallel lines indicating that the proportional odds assumption is in fact true and therefore the assumption of equal slopes is rejected

**Table 5.6 –Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| *Intercept 4* | -1.85 (0.28) | --- | <.0001 |
| *Intercept 3* | -0.59 (0.28) | --- | 0.04 |
| *Intercept 2* | -0.29 (0.28) | --- | 0.2 |
| *Intercept 1* | 3.89 (0.31) | --- | <.0001 |
| **Facility** | | | |
| Facility 1 (REF) | 0 | 1.00 | |
| Facility 2 | 0.40 (0.31) | 1.49 (0.82 – 2.72) | <.0001 |
| Facility 3 | 0.03 (0.31) | 1.03 (0.56 – 1.89) | |
| Facility 4 | 1.23 (0.22) | 3.41 (2.20 – 5.26) | |
| Facility 5 | 0.48 (0.25) | 1.61 (0.98 – 2.64) | |
| Facility 6 | -2.05 (0.37) | 0.13 (0.06 – 0.26) | |
| **Age** | | | |
| 18-24 (REF) | 0 | 1.00 | <.0001 |
| 25-44 | 0.58 (0.16) | 1.79 (1.23 – 2.46) | |
| 45-64 | 1.00 (0.18) | 2.71 (1.91 – 3.84) | |
| 65+ | 0.57 (0.29) | 1.78 (1.01 – 3.12) | |
| **Schizophrenia Diagnosis** | | | |
| No (REF) | 0 | 1.00 | 0.0001 |
| Yes | 0.46 (0.12) | 1.58 (1.25 – 2.00) | |
| **CAGE** | | | |
| 0-1 (REF) | 0 | 1.00 | 0.01 |
| 2+ | -0.36 (0.14) | 0.70 (0.54 – 0.92) | |
| **Aggressive Behaviour** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-3 | -0.65 (0.13) | 0.52 (0.41 – 0.67) | |
| 4+ | -1.06 (0.17) | 0.35 (0.25 – 0.48) | |

**Table 5.6 –Ordinal Regression Model for Freedom of Movement among Ontario Forensic Patients Using interRAI Forensic Supplement Pilot Data**

| Covariate | Parameter Estimate (S.E) | Odds Ratio (95% CI) | p value |
|---|---|---|---|
| **IADL** | | | |
| 0 (REF) | 0 | 1.00 | <.0001 |
| 1-4 | 0.38 (0.14) | 1.46 (1.11 – 1.92) | |
| 5+ | 0.59 (0.13) | 1.80 (1.39 – 2.32) | |
| **Insight into Mental Health** | | | |
| Full (REF) | 0 | 1.00 | 0.0002 |
| Limited | -0.12 (0.20) | 0.89 (0.60 -1.31) | |
| None | -0.61 (0.22) | 0.54 (0.35 – 0.83) | |
| **Age at First Police Intervention–Nonviolent crime** | | | |
| No intervention (REF) | 0 | 1.00 | |
| Child (0-12) | 0.24 (0.35) | 1.27 (0.64 – 2.51) | <.0001 |
| Adolescent (13-17) | 0.09 (0.16) | 1.10 (0.80 – 1.51) | |
| Adult (18+) | -0.53 (0.14) | 0.59 (0.45 – 0.77) | |
| **Use of Weapon During Criminal Activity** | | | |
| Never (REF) | 0 | 1.00 | |
| More than 1 year ago | 0.35 (0.12) | 1.41 (1.11 – 1.80) | <.0001 |
| 31 days to 1 year ago | -0.99 (0.21) | 0.37 (0.25 – 0.56) | |
| 8-30 days | -1.28 (0.31) | 0.28 (0.15 – 0.51) | |
| 4-7 days | -2.23 (0.70) | 0.11 (0.03 – 0.42) | |
| In last 3 days | --- | --- | |
| **RIIDE scale** | -0.10 (0.02) | 0.91 (0.87 – 0.95) | <.0001 |

**Proportional Odds Assumption:** *p=<.0001* $X^2$*=1524.13 (DF=72)* **c statistic***=0.76*

and the proportional odds of assumption is validated (Huber, 2012; Stokes et al., 2002).

The model for examining freedom of movement among the forensic inpatients had a c statistic of 0.76 indicating good explanatory power. In addition, facility was a significant predictor of Freedom of Movement when controlling for a large number of individual level covariates.

## 5.7 Discussion

There are a variety of clinical, functional and behavioural factors that were predictive of freedom of movement among forensic inpatients. This shows that aggressive and violent behaviour are not the only factors predictive of decreasing the odds of easing restrictions in forensic mental health settings. In fact, there are many other clinical factors such as substance use problems and lack of insight into mental health problems that also decreased the odds of easing restrictions. These trends were also found among the ordinal logistic regression models analyzed in chapter 3.

Forensic patients with a schizophrenia diagnosis had increased odds of being in a higher level of freedom of movement. This may reflect a degree of familiarity in the forensic mental health patient population given that 68% of the sample having a diagnosis of schizophrenia.

As well, greater impairment in functional capacity (IADL) increased the odds of easing of restrictions. This could be a reflection of the greater intensity of the reintegration process among this population, in that this group would need greater 'practice' of skills to help improve IADL capacity before full release into the

community. As outlined in chapter 2, leaves often incorporate a patient's treatment goals for example grocery shopping or using public transportation (Walker et al., 2013).

There are clear facility level differences among freedom of movement of forensic inpatients. Due to the complexity within the forensic mental health patient population as well as the diversity across hospitals in regards to types of facilities (secure hospital versus acute forensic unit) it emphasizes the necessity to incorporate freedom of movement within any benchmarking discussions in forensic mental health.

It is important to examine both the individual and facility level characteristics when examining freedom of movement among forensic mental health patients. As a matter of fact, both the final models of freedom of movement in this chapter (c=0.76) as well as in chapter 3 (c=0.75) emphasized the importance of examining both individual and facility level characteristics when determining the odds of easing of restrictions. The slightly higher c statistic indicates a slightly better fit of the model suggesting the importance of examining the additional interRAI Forensic Supplement items age at first police intervention non-violent; use of weapon during criminal activity and the RIIDE scale when examining the freedom of movement among forensic mental health inpatients.

*Implications for Treatment*

Many mental health and behavioural issues that decrease the odds of easing restrictions among forensic inpatients can be targeted through treatment interventions which are guided by the care planning process.

Aggressive behaviour, substance use problems and lack of insight into mental health problems were all noted to lead to increased levels of restrictions among forensic mental health patients. These mental health and behavioural issues can be targeted in treatment to support the person's recovery and progress within the process of easing restrictions. For example, anger management, addictions and psychosocial treatments can be targeted interventions for persons demonstrating these concerns to help increase the odds of easing restrictions among them.

Targeting antisocial behaviours such as impulsivity, remorselessness, blaming others for problems, supportive of criminal behaviour and denying harm done to others in treatment interventions can also reduce increased levels of restrictions. While these are difficult behaviours to treat, continued focus on these behaviours during the treatment process can possibly help support the easing of restrictions.

*Implications for Policy*

Benchmarking is necessary to account for both the facility level and individual level differences associated with freedom of movement in forensic mental health settings. CIHI can develop a quarterly benchmarking reporting system on the freedom of movement scale as a whole and/or across levels within the scale (for

example, unaccompanied leaves) to allow for within and between hospital comparisons.

The fact that this research emphasizes the importance of examining both individual and facility level characteristics when determining a person's freedom of movement within forensic mental health settings strongly suggests the need for a forensic mental health quality indicator that risk adjusts for these individual and facility level differences to truly measure the quality of care provided. A potential forensic mental health quality indicator could be developed using the freedom of movement scale with two potential variations: one examining elopement attempts and one without. However, further research is needed to determine the thresholds for the denominator and numerator used for calculating the FoM quality indicator. As well, investigation into the idea of sex-adjusted risk adjustment to see if this approach is warranted in the methodology associated with the development of forensic mental health quality indicators.

The RIIDE scale provides a new summary measure that might be helpful in explaining difficulties in the forensic mental health population. Future research should test the utility of the RIIDE scale for predicting clinical discharge, events, or resource use.

*Implications for Research*

Future research needs to incorporate gender-based analysis in the understanding of the factors predictive of freedom of movement using the interRAI Forensic Supplement and RAI-MH. Because some of the participating facilities in

this pilot study did not include the female gender variable in their data, a gender-based analysis of the individual and facility level characteristics predictive of freedom of movement could not be conducted. The behaviours incorporated in the RIIDE scale of which includes: impulsivity, remorselessness, blaming others for problems, supportive of criminal activity and denying harm done to others are difficult treat behaviours. Increasing our understanding of these behaviours and any potential gender differences associated with them can help improve interventions specific to treat these behaviours.

The initial analysis of the interRAI Forensic Supplement items demonstrated that there are items from this new tool that can be added to further support the use of scales and CAPs specific to forensic mental health populations. For example, adding the use of weapons during criminal activity as a variable with the RHO scale to capture both historical and recent use of weapons in predicting ones risk of harm to others. Another example would be adding the Severity of Crime to the Criminal Activity CAP to get a better understanding of the versatility and severity of the criminal behaviour. However, further research is needed to further investigate the incorporation of these items in the scales and CAPs. The effect that these revised scales and CAPs would have on the freedom of movement among forensic mental health inpatients is worth investigating further as well.

# Chapter 6
# Final Discussion

Persons suffering from mental illness in the forensic system are a heterogeneous group that require specialized services to meet their diverse needs (Mental Health Commission of Canada, 2012; Dupuis, MacKay & Nicol, 2013; Tasca et al., 2011; Penney et al., 2013; Jansman-Hart et al., 2011; MacPhail & Verdun-Jones, 2013; Seto, Harris, Rice, 2004; Chaimowitz, 2012; Tasca et al., 2012; Nowatzi & Grant, 2011). To further complicate matters, persons with a mental illness and involvement in the criminal justice system can face increased stigmatization and this can create barriers towards successful reintegration into the community (CAMH, 2013; Tasca et al., 2012; Chaimowitz, 2012; Jansman-Hart et al., 2011)

Since gender has been shown to have separate and interacting effects on mental health and criminogenic needs (Nowatzki & Grant, 2011; Ramsay, Welch, Youard, 2001; WHO 2008; Archambault, Joubert, Brown, 2013; Eaton et al., 2012); understanding gender differences in forensic mental health can provide care that meets a person's individual needs and is sensitive to their social context (Nowatzki & Grant, 2011)..Good risk management targets individual level characteristics; however, the criminal justice system tends to focus on recidivism outcomes rather than dealing with dynamic changes in clinical, social, and functional components of risk management. Further, while public safety is a high priority, basing decisions solely on security and reduction of risk, do not support the recovery or rehabilitation

of the clinical, social and functional needs of the forensic mental health population (Tasca et al., 2012). Instead of viewing approaches based on patient recovery as competing strategies to those that emphasize patient safety, it should be recognized that efforts to help persons recover from mental illness are themselves pathways to personal and public safety.

There were notable gender differences found in the easing of restrictions among forensic mental health patients. For example, men had greater odds of being restricted to room which is contrary to other findings that reported that women were more likely to be restricted to room compared to men (Happell & Koehn, 2010; Mason, 1998). More specifically, female inpatients with more aggressive behaviour are more likely to be confined to the unit whereas male inpatients demonstrating the same level of aggression are more likely to be restricted to room. Essentially, tighter restrictions are being placed on male forensic inpatients when similar aggressive behaviours are being exhibited compared with female forensic inpatients.

According the literature, having a partner (married or significant other) is usually considered a social resource that is a protective factor in easing restrictions (Hser, Huang, Teruya, & Anglin, 2004; Vlassof, 2007). However, having a partner decreases the odds of being granted unaccompanied leaves among male forensic inpatients. In contrast, among female forensic inpatients marital status is not a significant predictor of unaccompanied leaves. Research has suggested that having a social network such as having a spouse/partner helps support the recovery of the person; therefore suggesting the importance of strengthening and building these

social supports in the treatment process to help support recovery of the person. As well, another possible explanation for these gender differences could account for the fact that partners are potential victims in previous crimes and security measures may be in place preventing a person from contacting partners.

Although risk assessment instruments (for example, HCR-20, VRAG, PCL-R) were developed based on male populations, many have been since tested on female samples with variable results for predictive validity . The results do not warrant a *gender-specific* assessment tool, but rather demonstrate the need for *gender-sensitive* interventions. Such interventions are targeted to meet the person's individual needs while considering the effects of gender-related factors that may differentially affect outcomes of interest. As well, this thesis demonstrates that factors influencing the freedom of movement (FoM) among forensic mental health patients include not only indicators of violence, aggressive behaviour and risk of harm to others, but in fact include many clinical, social and functional characteristics. For example, substance use problems, lack of insight into mental health problems, functional impairment, higher scores on the RIIDE scale and being an adult at age of first police intervention for non-violent crime were found to decrease the odds of being in a higher level of freedom of movement (easing of restrictions) among forensic inpatients. Although public safety is one the factors to consider when easing a person's restrictions, it is not the only factor considered by forensic mental health teams.

This thesis also highlights the importance of examining both facility and individual level characteristics when understanding FoM in forensic mental health settings. The final models for freedom of movement in chapter 3 (0.75) and chapter 4 (c=0.77) both found individual and facility level characteristics were associated with accounted easing/tightening of restrictions among forensic mental health inpatients. In addition, the slightly higher c-statistic obtained when using the interRAI Forensic Supplement with items like age at first police intervention for non-violent crime; use of weapon during criminal activity and the RIIDE scale indicates a slightly better explanatory power of the model.

*Implications for Treatment*

The Aggressive Behaviour Scale (ABS) seemed to be a stronger predictor of aggression in the models due to the dynamic nature of the variables included in the scale compared to the Risk of Harm to Others (RHO) scale which is comprised of both static and dynamic risk factors. As well, there was notable gender differences in the restrictions placed on male and female forensic patients who demonstrated similar ABS scores. Therefore, ABS scores are a strong predictor in the odds of easing a person's restrictions and targeting aggressive behaviour can support the easing of restrictions.

Given the ABS is comprised of dynamic factors that are amenable to change these scores can be variable over time. In contrast, while a person's RHO score may remain at a steady state of 4 due to historical risk; this does not mean that there has been no improvement in risks. For example, in a recent presentation by Debra Wicks

at the Canadian RAI conference in Winnipeg Manitoba (October, 2014) she discussed data from a secure forensic mental health facility which demonstrated that although patients had remained in a steady state of an RHO score of 4 there had been improvements in other domains (for example, decline in the use of seclusions). This therefore emphasizes the complexity of the forensic mental health patient population and the need to look at the interaction of RHO scores with other factors to determine the true influence on outcomes such as freedom of movement.

The RAI-MH assessments provide a comprehensive record that can establish triggers specific to the individual that escalate behaviour associated with increased risk of tightening restrictions and allow for the development of individualized care plans to develop strategies to minimize these triggers. As well, the fact that RAI-MH assessments are completed at different points time (on a quarterly basis) the clinical team can assess changes in the person's risk factors and adjust the care plan accordingly. In addition, the RAI-MH covers domains beyond risk of violence to include areas of clinical, functional and social domains that are key to support the recovery of forensic patients and domains that are often missing from assessment tools used in forensic mental health settings (Shinkfield & Ogloff, 2014); providing a more comprehensive care plan to meet the person's individual care needs. Compared with other risk assessment tools that focus on static risk factors, it may be argued that interRAI instruments (RAI-MH and interRAI FS) are more recovery oriented in their approach.

*Implications for Policy*

Benchmarking is necessary to examine facility level and individual level differences associated with freedom of movement in forensic mental health settings. CIHI can develop a quarterly benchmarking reporting system on the freedom of movement scale as a whole and/or across levels within the scale (for example, unaccompanied leaves) to allow for within and between hospital comparisons. Development of quality indicators specific for forensic mental health is important but further research is required.

Forensic mental health hospitals can impose mandatory staff training on the policies surrounding the process of easing restrictions with particular emphasis on the emergency protocols in the event a person goes absent without leave (AWOL) and the process for re-evaluating the person's level of restrictions upon return to hospital. A part of this training should incorporate alternative methods and specific strategies to employ to reduce the use of restrictions (for example, restricted to room). Specific emphasis should be placed on early intervention strategies and de-escalation techniques (Macguire et al., 2011).

Since there is no formal protocol in place for assessment of a forensic mental health patient upon leave using the RAI-MH (which is mandatory across all psychiatric hospitals in Ontario since 2005) along with the interRAI FS would allow for a comprehensive clinical assessment of the patient to determine any potential risk factors that may impede a person's recovery on leave. In fact, the RAI-MH along with interRAI FS items provide a comprehensive record that can establish

triggers specific to the individual that escalate behaviours (for example, substance use problems, insight into mental health problems) associated with increased risk of tightening of restrictions and allow for individualized care plans to develop strategies to minimize these triggers.

Legislative changes can have huge implications in how treatment of forensic mental health patients is provided. For example, as of July 11, 2014 when Bill C-14 came into effect across Canada, may affect a forensic mental health inpatients freedom of movement. The changes that Bill C-14 introduced include: putting public safety first; creating a high-risk designation for persons deemed NCR; and enhancing victim's rights (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013). Therefore, aspects of public safety and victims' rights will play a more integral part in the decision-making process of easing restrictions among persons deemed NCR. Specifically, the new high-risk NCR designation could limit a person's ability to progress toward greater the freedom of movement by restricting them to a hospital until the court revokes their designation (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013) This designation can be extended to a period of up to 3 years before the review board can review the person's progress. Prior to the legislation changes, annual reviews were conducted on the patient`s treatment progress. As well, persons deemed high-risk NCR cannot be granted unaccompanied leaves and accompanied leaves can only be granted in special circumstances and with the

proper safeguards in place to protect the public (Government of Canada - Department of Justice, 2013; House of Commons Canada, 2013).

Placing arbitrary restrictions on a person based on a court ruling regardless of the treatment progress they make during this time period can have negative impacts on a person's recovery and overall treatment progress (CAMH, 2013). These legislative restrictions not only interfere with the treatment of the person, but it also decreases the person's ability to make a successful transition into the community. So although the impacts of Bill C-14 on the treatment and recovery of forensic patients deemed 'high-risk accused' NCR are still to be determined the legislative barriers they create for clinical teams in providing care to forensic mental health inpatients is clear.

*Implications for Research*

Gender-based analysis is becoming a leading area of research focus in forensic mental health. After all, there is very little (if any) research that provides a gender-based analysis of factors predictive of outcomes such as restricted to room, unaccompanied leaves and freedom of movement within forensic mental health populations. Although analysis from this thesis provides an enhanced understanding of the influences GBA can have on these outcomes, further research is still needed. For example, a gender-based analysis of the FoM scale in Ontario forensic inpatient and Michigan prison population data to determine how factors differ across forensic settings. As well, due to the fact that the behaviours that comprise the RIIDE scale are difficult to treat, understanding potential gender differences in these behaviours

and their impact on the easing of restrictions can help inform treatment interventions and policy. Also, it would be interesting to look at how these environmental restrictions, their frequency or their titration relates to other outcomes such as rehospitalisation and/or recidivism. There have been recent shifts in the forensic mental health system emphasizing the need to focus on clinical, social, functional and criminogenic factors in assessment and treatment planning. However, our understanding of how these factors are interconnected when assessing outcomes in forensic settings still needs further development; especially with respect to potential gender differences. This research found gender differences associated with several criminogenic risk factors such as substance abuse, history of trauma, residential instability, mental diagnosis and psychiatric symptoms. And although factors related to education, employment and financial stability were not found to be statistically significant in the logistic regression models, it is still suggested that further investigation is warranted. Further understanding in how these factors not only relate to freedom of movement along with any interaction effects found among factors is needed.

There are known legal and legislative barriers that can create challenges in providing the mental health care that these forensic inpatients need but that does not prevent the clinical teams from continuing to support the person throughout their recovery; nor does it prevent the researcher from finding new ways to inform policy and practice. In an applied health care setting, using evidence to inform practice is a mantra to follow but if we do not let the evidence inform the change needed within

the forensic mental health system then we are providing a disservice in care. If the current methods are not working, then maybe it's time for a change. Therefore, we need to let the evidence inform the change.

*Strengths and Limitations*

A major strength of this research is that it was based on a multi-facility analysis, whereas most of the literature is based on studies of single facilities. Also, the sample size was large enough to allow for the study of gender differences. In fact, this study included one of the largest samples of women in forensic mental health services research to date. The sample was also representative of forensic mental health patients in Ontario because it included all facilities and all patients assessed using the RAI-MH between October 7, 2005 and March 31, 2011. Unlike other studies in the field, this thesis research is rooted in actual the use of practice-based clinical data gathered as part of normal practice rather than those based on one-time studies by research staff. . The RAI-MH includes a multitude of individual characteristics (clinical, social, and functional) that are collected providing a comprehensive picture of the patients and their individual needs.

Another strength of this research is the use of dynamic variables from the interRAI Forensic Supplement. Although there are a few static variables to provide context for criminal history, many of the items are dynamic. Of the 13 assessment questions in the interRAI Forensic Supplement, 6 are dynamic in nature using multiple response levels related to changeable behaviours .

There are also some limitations with this research. For example, the sample of the interRAI Forensic Supplement pilot study included too few female forensic patients to permit gender-based analysis. This study was cross-sectional in nature, so changes over time could not be examined. It is recommended longitudinal studies be conducted to examine how changes in risk factors may affect a patient's freedom of movement. Another limitation is the inconsistent approaches to how gender is determined across facilities when completing the RAI-MH. It is difficult to determine if the patient's gender was determined based on biological sex or what gender the patient identifies themselves as. There may still be unmeasured facility differences and it is suggested that future studies examine these unmeasured differences to a greater degree. Multi-level modeling should be explored in future research.

*Recommendations*

Based on the findings of this research, minor changes are recommended to the interRAI MH and interRAI Forensic Supplement to better meet the needs of forensic mental health patients and to enhance gender-based analysis. In order to better assess the effects of legal designations on outcomes within forensic mental health settings and how these patient types differ, it is recommended that an item is added to the interRAI Forensic Supplement that identifies type of forensic legal designations (for example, Not Criminally Responsible due to Mental Disorder (NCRMD); unfit to stand trial).

To better assess the effects of gender on outcomes within mental health settings, it is recommended that an item be added to the interRAI MH (RAI-MH) that

captures the patient's identification. This would add to the current 'sex' item that is intended to capture a patient's biological sex. Further, the item that notes what gender a patient identifies as could be used to inform proper placement within the facility to ensure that patients' safety and security needs are met.

As the interRAI Forensic Supplement moves from pilot stage to a finalized supplement, several steps may be taken to enhance successful implementation. In the initial phase of implementation forensic hospitals should involve interRAI champions in the process. These hospitals would help demonstrate the utility of the tool and their success and challenges with full implementation can then be used to inform implementation in other hospitals . After implementation, continued training and support be provided to the forensic mental health staff to enhance understanding and utility of the CAPs and clinical scales to support patient care. Training efforts should be supported by both CIHI and interRAI and should include success stories that can be shared during CIHI webinars.

## APPENDIX A - Description of RAI-MH Clinical Scales

| Clinical Scale | Description | Score (range) |
|---|---|---|
| Aggressive Behaviour Scale (ABS) | Measures the frequency and diversity of aggressive behaviours. Items include verbal abuse, physical abuse, social inappropriate/disruptive, resists care. Higher scores indicate greater frequency and diversity of aggressive behaviours. | **(0-12)** |
| Risk of Harm to Others (RHO) | A measure that reflects the risk of harm to others. Items include aggressive behaviour scale, positive symptom scale long, violence summary scale, sleep problems, insight into mental health, delusions, and difficulty sleeping. Higher scores indicate increased risk of harm to others. | **(0-6)** |
| Severity of Self-harm Scale (SoS) | A measure that reflects the risk of harm to self. Items include history of suicide attempts, positive symptoms scale, depressive severity index, family concerned re: self-injury, cognitive performance scale and suicide plan. Higher scores indicated increased risk of self-harm. | **(0-6)** |
| Self-Care Index (SCI) | A measure that reflects risk of inability to care for self due to psychiatric symptoms. Items include decline in cognitive skills for decision-making, insight into mental health, making self-understood, abnormal thought process, poor hygiene, mania, social withdrawal (anhedona), positive symptom scale, and decreased energy. Higher scores indicate decreased ability to care for self due to psychiatric symptoms. | **(0-6)** |
| Depressive Severity Index | Alternate measure to the DRS, measuring depressive symptoms. Items include sad/pained facial expression, negative statements, self-deprecation, guilt/shame, hopelessness. Higher scores indicate more depressive symptoms. | **(0-15)** |
| Positive Symptom Scale *(long)* | Measures the frequency of positive symptoms. Items include hallucinations, command hallucinations, delusions, abnormal thought process, inflated self-worth, hyperarousal, pressured speech, and abnormal/unusual movements. Higher scores indicate higher levels of positive symptoms. | **(0-24)** |
| Mania | Measures the frequency of mania symptoms. Items include inflated self-worth, hyperarousal, irritability, increased sociability/hypersexuality, pressured speech, labile effect, and sleep problems due to hypomania. Higher scores indicate more manic symptoms. | **(0-20)** |
| Social Withdrawal (Anhedonia) | Measures reflect frequency of symptoms related to anhedonia. Items include anhedonia, withdrawal from activities of interest, lack of motivation, and reduced social interaction. Higher scores indicate greater levels of social withdrawal. | **(0-20)** |

## APPENDIX A - Description of RAI-MH Clinical Scales

| Clinical Scale | Description | Score (range) |
|---|---|---|
| CAGE | Screens for substance use. Items in the scale include felt the need to **C**ut down on substance use, **A**ngered by criticism from others, **G**uilt about substance use, and "**E**ye-opener" (drinking/using substances in the morning. A score of 2 or higher indicates a potential problem with substance use. | **(0-2)** |
| ADL Hierarchy | Measures functional performance, reflecting a person's ability to care out activities of daily living. Items include personal hygiene, locomotion, toilet use and eating. | **(0-6)** |
| Cognitive Performance Scale (CPS) | Describes a person's cognitive status. Includes daily decision-making, short-term memory, expression (i.e., making self-understood), and self-performance in eating. Higher scores indicate greater severity in cognitive impairment. | **(0-6)** |

*Copied with permission from the interRAI Mental Health Clinical Assessment Protocols (CAPs): For Use with Community and Hospital-Based Mental Health Assessment Instruments Version 9.1 Canadian Edition, 2011.*

## Appendix B - Applying the RNR Model to interRAI MH and interRAI FS Instruments

| Major Risk/Need Factor | Indicators | interRAI indicators |
|---|---|---|
| Antisocial Personality Pattern | Impulsive, adventurous, pleasure seeking, restlessly aggressive and irritable | Extreme behavior disturbance (MH)<br>Lacks Empathy (FS)<br>Manipulative (FS)<br>Remoreslessness (FS)<br>Takes Advantage of others (FS)<br>Promiscuity (FS)<br>Irritability (MH)<br>Violence (MH)<br>Aggressive behavior (MH)<br>Resists Care (MH) |
| Procriminal Attitudes | Rationalizations for crime, negative attitudes towards the law | Denies or minimizes harm done others (FS)<br>Inappropriately blames others (FS)<br>Expressions supportive of criminal activity (FS) |
| Social Supports for Crime | Criminal friends, isolation from prosocial others | Peer group includes individuals with persistent antisocial behavior (FS) |

# Appendix B - Applying the RNR Model to interRAI MH and interRAI FS Instruments

| Major Risk/Need Factor | Indicators | interRAI indicators |
|---|---|---|
| Substance Abuse | Abuse of alcohol and/or drugs | Alcohol (MH)<br>Number of days in the last 30 consumed alcohol to point of intoxication (MH)<br>Time since use of following substances (MH)<br>Person has a diagnosis of substance-related disorder (MH)<br>CAGE (MH)<br>Substance Use CAP (MH) |
| Family/Marital Relationships | Inappropriate parental monitoring and disciplining, poor family relationships | Removed from home before age 18 by child protection agency or court (FS)<br>Conflict laden or severed relationship (MH)<br>Belief that relationship with immediate family is disrupted/dysfunctional (MH)<br>Reports having no confidant (MH)<br>Does not have strong and supportive relationship with family (MH)<br>No available social support (MH) |

# Appendix B - Applying the RNR Model to interRAI MH and interRAI FS Instruments

| Major Risk/Need Factor | Indicators | interRAI indicators |
|---|---|---|
| School/Work | Poor performance, low levels of satisfaction | Failed or dropped out of school (MH)<br>Risk of unemployment or disrupted education (MH)<br>Education and Employment CAP |
| Prosocial Recreational Activities | Lack of involvement in prosocial recreational/leisure activities | Participation in social activities of long standing interest (MH)<br>Social Relationships CAP (MH) |

**Note: History of antisocial abuse was not included in the Andrews and Bonta (2007) article – perceived rationale behind this is that the items are static in nature and therefore cannot be changed – does not allow for interventions to help reduce risk of recidivism.*

## APPENDIX C - Bivariate Analysis of Rate of Freedom of Movement among Ontario Forensic Patients

**Table 4.3 Rate of Freedom of Movement by Sociodemographic Characteristics among Male Forensic Patients**

| **Characteristic** | **Freedom of Movement** % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Age** | | | | | | |
| 18-24 | 8.5 (62) | 34.5 (253) | 39.8 (292) | 4.1 (30) | 13.1 (96) | |
| 25-44 | 4.8 (147) | 28.1 (864) | 37.9 (1,166) | 6.5 (199) | 22.8 (701) | *<.0001* |
| 45-64 | 3.3 (50) | 25.8 (386) | 35.7 (533) | 8.6 (129) | 26.6 (397) | *116.5 (12)* |
| 65+ | 1.7 (4) | 33.6 (79) | 37.9 (89) | 11.1 (26) | 15.7 (37) | |
| **Marital status** | | | | | | |
| Not Partnered | 4.7 (238) | 27.6 (1,391) | 37.6 (1,895) | 7.2 (361) | 22.9 (1,153) | *<.0001* |
| Partnered | 4.9 (25) | 37.6 (192) | 37.8 (193) | 4.5 (23) | 15.3 (78) | *23.1 (4)* |
| **Psychiatric Diagnoses** | | | | | | |
| Personality Disorder | 6.8 (80) | 29.7 (351) | 35.0 (414) | 8.3 (98) | 20.3 (240) | 0.0001 22.9 (4) |
| Substance Use Disorder | 4.8 (184) | 23.1 (889) | 38.9 (1,497) | 7.5 (287) | 25.7 (989) | <.0001 71.7 (4) |
| Schizophrenia | 4.3 (101) | 32.6 (773) | 31.9 (756) | 6.9 (164) | 24.4 (579) | <.0001 210.1 (4) |
| Mood Disorder | 4.1 (38) | 34.9 (326) | 33.2 (310) | 7.0 (65) | 20.9 (195) | <.0001 23.8 (4) |
| Anxiety Disorder | 3.9 (11) | 19.7 (56) | 37.3 (106) | 17.3 (49) | 21.8 (62) | <.0001 54.8 (4) |

**Table 4.3 Rate of Freedom of Movement by Harm to Self or Others Characteristics among Male Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Suicide Plan** | | | | | | |
| No | 4.6 (116) | 27.9 (712) | 35.6 (908) | 7.3 (185) | 24.7 (631) | *<.0001* |
| Yes | 18.0 (9) | 32.0 (16) | 34.0 (17) | 0 | 16.0 (8) | *24.0 (4)* |
| **Most Recent Self-Injurious Act** *(within last month)* | | | | | | |
| No | 4.6 (251) | 28.5 (1,567) | 37.6 (2,063) | 6.9 (381) | 22.4 (1,230) | *<.0001* |
| Yes | 21.1 (12) | 28.1 (16) | 43.9 (25) | 5.3 (3) | 1.8 (1) | *44.0 (4)* |
| **Violence to Others** *(within last month)* | | | | | | |
| No | 4.0 (215) | 28.5 (1,542) | 37.8 (2,042) | 7.1 (381) | 22.6 (1,222) | *<.0001* |
| Yes | 32.7 (48) | 27.9 (41) | 31.3 (46) | 2.0 (3) | 6.1 (9) | *272.6 (4)* |
| **Multiple Hospitalizations** *(lifetime)* | 4.5 (58) | 33.8 (437) | 41.4 (535) | *7.2 (535)* | *13.2 (170)* | |
| No | 4.8 (205) | 26.9 (1,146) | 36.5 (1,553) | *6.8 (291)* | *24.9 (1,061)* | *<.0001* |
| Yes | | | | | | *85.2 (4)* |
| **Refusal of Medication** *(in last 3 days)* | | | | | | |
| No | 3.5 (175) | 28.8 (1,426) | 37.0 (1,830) | 7.1 (349) | 23.7 (1,172) | *<.0001* |
| Yes | 14.8 (88) | 26.2 (156) | 43.2 (257) | 5.9 (35) | 9.9 (59) | *195.0 (4)* |

**Table 4.3 Rate of Freedom of Movement by Mental Health Clinical Characteristics among Male Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Psychiatric Intensive Care Unit** *(in last 3 days)* | | | | | | |
| No | 4.4 (238) | 28.6 (1,552) | 37.7 (2,041) | 7.0 (378) | 22.4 (1,212) | *<.0001* |
| Yes | 19.7 (25) | 24.4 (31) | 36.2 (46) | 4.7 (6) | 15.0 (19) | *34.8 (4)* |
| **Has Confidant** | | | | | | |
| No | 5.8 (34) | 30.7 (179) | 42.6 (249) | 6.3 (37) | 14.6 (85) | *0.01* |
| Yes | 4.6 (229) | 28.3 (1,404) | 37.0 (1,839) | 7.0 (347) | 23.1 (1,146) | *13.9 (4)* |
| **Impaired capacity – transportation IADL** | | | | | | |
| No | 3.6 (158) | 31.5 (1,380) | 34.7 (1,520) | 5.2 (226) | 25.1 (1,102) | *<.0001* |
| Yes | 9.0 (105) | 17.5 (203) | 48.8 (568) | 13.6 (158) | 11.1 (129) | *345.6 (4)* |
| **Frustrated Staff** | | | | | | |
| No | 3.8 (188) | 27.6 (1,355) | 38.8 (1,906) | 6.8 (335) | 23.0 (1,131) | *<.0001* |
| Yes | 12.0 (75) | 36.0 (226) | 28.4 (178) | 7.7 (48) | 16.0 (100) | *120.6 (4)* |
| **Patient Hostile Towards Staff/Patients** | | | | | | |
| No | 3.8 (187) | 27.7 (1,375) | 38.6 (1,916) | 7.2 (356) | 22.8 (1,130) | *<.0001* |
| Yes | 13.2 (76) | 35.6 (206) | 29.1 (168) | 4.7 (27) | 17.5 (101) | *131.2 (4)* |

**Table 4.4 Rate of Freedom of Movement by Sociodemographic Characteristics among Female Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Age** | | | | | | |
| 18-24 | 6.3 (7) | 47.8 (53) | 26.1 (29) | 9.0 (10) | 10.8 (12) | |
| 25-44 | 3.6 (19) | 35.2 (187) | 30.3 (161) | 10.4 (55) | 20.5 (109) | *0.006* |
| 45-64 | 2.4 (8) | 30.8 (105) | 30.5 (104) | 7.9 (27) | 28.5 (97) | *27.9 (4)* |
| 65+ | 0 | 30.0 (9) | 30.0 (9) | 13.3 (4) | 26.7 (18) | |
| **Marital status** | | | | | | |
| Not Partnered | 3.5 (30) | 34.5 (298) | 30.2 (261) | 10.1 (87) | 21.9 (189) | |
| Partnered | 2.7 (4) | 38.7 (58) | 28.0 (42 | 6.0 (9) | 24.7 (37) | *0.4* |
| | | | | | | *3.8 (4)* |
| **Psychiatric Diagnoses** | | | | | | |
| Personality Disorder | 8.2 (21) | 37.9 (97) | 27.3 (70) | 7.4 (19) | 19.1 (49) | <.0001 28.5 (4) |
| Substance Use Disorder | 2.2 (15) | 30.1 (204) | 30.9 (209) | 9.8 (66) | 27.0 (183) | 0.0004 20.6 (4) |
| Schizophrenia | 2.8 (10) | 43.7 (155) | 28.7 (102) | 7.0 (25) | 17.8 (63) | <.0001 43.6 (4) |
| Mood Disorder | 3.3 (10) | 36.1 (108) | 33.8 (101) | 9.7 (29) | 17.1 (51) | 0.11 7.5 (4) |
| Anxiety Disorder | 4.2 (3) | 27.8 (20) | 36.1 (26) | 18.1 (13) | 13.9 (10) | 0.03 10.9 (4) |

**Table 4.4 Rate of Freedom of Movement by Sociodemographic Characteristics among Female Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Suicide Plan** | | | | | | |
| No | 2.7 (12) | 34.5 (156) | 28.1 (127) | 10.0 (45) | 24.8 (112) | *0.008* |
| Yes | 22.2 (2) | 33.3 (3) | 0 | 11.11 (1) | 33.3 (3) | *13.9 (4)* |
| **Most Recent Self-Injurious Act** | | | | | | |
| *(within last month)* | 2.4 (24) | 35.3 (349) | 30.1 (298) | 9.6 (95) | 22.6 (224) | *<.0001* |
| No | 40.0 (10) | 28.0 (7) | 20.0 (5) | 4.0 (1) | 8.0 (2) | *107.1 (4)* |
| Yes | | | | | | |
| **Violence to Others** *(within last month)* | | | | | | |
| No | 2.8 (28) | 35.1 (346) | 29.8 (294) | 9.5 (94) | 22.7 (224) | *<.0001* |
| Yes | 20.7 (6) | 34.5 (10) | 31.0 (9) | 6.9 (2) | 6.9 (2) | *30.2 (4)* |
| **Multiple Hospitalizations** | | | | | | |
| *(lifetime)* | 3.4 (7) | 38.5 (80 ) | 32.7 (68) | 12.0 (25) | 13.5 (28) | *0.001* |
| No | 3.4 (27) | 34.2 (276) | 29.1 (235) | 8.8 (71) | 24.5 (198) | *12.5 (4)* |
| Yes | | | | | | |

**Table 4.4 Rate of Freedom of Movement by Harm to Self or Others Characteristics among Female Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Refusal of Medication** *(in last 3 days)* | | | | | | |
| No | 2.7 (24) | 33.2 (301) | 30.7 (278) | 9.4 (85) | 24.1 (218) | *<.0001* |
| Yes | 9.2 (10) | 50.5 (55) | 22.9 (25) | 10.1 (11) | 7.3 (8) | *34.8 (4)* |
| **Psychiatric Intensive Care Unit** *(in last 3 days)* | | | | | | |
| No | 3.1 (31) | 35.1 (347) | 29.9 (296) | 9.5 (94) | 22.4 (221) | *0.2* |
| Yes | 12.0 (3) | 32.0 (9) | 28.0 (7) | 8.0 (2) | 20.0 (5) | *5.9 (4)* |
| **Has Confidant** | | | | | | |
| No | 5.6 (6) | 47.7 (51) | 28.0 (30) | 6.5 (7) | 12.2 (13) | *0.008* |
| Yes | 3.1 (28) | 33.6 (305) | 30.1 (273) | 9.8 (89) | 23.5 (213) | *13.9 (4)* |
| **Impaired capacity – transportation IADL** | | | | | | *<.0001* |
| No | 2.6 (21) | 38.6 (317) | 29.0 (238) | 6.1 (50) | 23.8 (196) | *81.3 (4)* |
| Yes | 6.7 (13) | 20.2 (39) | 33.7 (65) | 23.8 (46) | 15.5 (30) | |

**Table 4.4 Rate of Freedom of Movement by Mental Health Clinical Characteristics among Female Forensic Patients**

| Characteristic | Freedom of Movement % (n) | | | | | |
|---|---|---|---|---|---|---|
| | *Restricted to Room* | *Confine* | No Leave | *Accompanied Leave* | *Unaccompanied Leave* | *p* $X^2$ *(DF)* |
| **Frustrated Staff** | | | | | | |
| No | 2.1 (18) | 32.7 (277) | 31.4 (266) | 10.5 (89) | 23.3 (197) | *<.0001* |
| Yes | 9.5 (16) | 47.0 (79) | 22.0 (37) | 4.2 (7) | 17.3 (29) | *43.5 (4)* |
| **Patient Hostile Towards Staff/Patients** | | | | | | |
| No | 2.4 (21) | 32.5 (281) | 30.8 (266) | 10.4 (90) | 23.8 (206) | *<.0001* |
| Yes | 8.6 (13) | 49.7 (75) | 24.5 (37) | 4.0 (6) | 13.3 (20) | *39.2 (4)* |

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