

INCIDENCE OF SUICIDALITY AND SECLUSION AND RESTRAINT IN INPATIENT  
PSYCHIATRIC CARE FOR PEOPLE WITH SCHIZOPHRENIA

By

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## Dedication

It is very difficult to study suicide and know that you cannot solve it. At times, it felt too difficult. I could not have done this without the support of my family, friends, and colleagues.

Thank you:

- To my family and fiancé, for their endless love and support through all my endeavors.
- To Ginger, for her unwavering loyalty and companionship.
- To my committee, for all their guidance and thoughtfulness.
- To Donna, who pioneered the 3-article dissertation and mentored me through mine.
- And not least, to my cohort, mentors, and mentees. Thank you for becoming my friends.

This has been a wonderful adventure for me. And in so many ways, I am much better for it.

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## Chapter 1: Introduction

The current dissertation sought to examine policies and practices that affect the psychiatric care and safety of people with schizophrenia. These included policies related to state- and census-region expenditures in outpatient mental health care and national policies that regulate the use and documentation of restraint and seclusion in psychiatric hospitalization. Additionally, characteristics of inpatient psychiatric treatment for individuals with schizophrenia who present for suicidal self-injury or intent were evaluated. Through an analysis of two national data sets and records of state mental health care funding, the relationship between these policies and the clinical practices they support were assessed from a value-critical perspective, over the course of three articles.

In the first article, a policy analysis model was tested and published in the *Journal of Policy Practice*. This article examined the national regulation of the use of restraint and seclusion in inpatient psychiatric hospitalization. The intended effects of this regulation have only recently been measured and made available for public use. These measures are included in the second article, as one of the three major sources of data for the proposed dissertation.

In the second article, the relationship between state mental health care funding and the use of restraint and seclusion in inpatient psychiatric hospitalization was examined. This article also studied the relationship between state mental health care funding and discharge procedures related to the use of multiple antipsychotic medications and follow-up care post-discharge at days. Measures of the use of restraint and seclusion and discharge procedures were expected to represent a single measure of “quality of care”, to be tested via confirmatory factor analysis (CFA). Finally, a structural equation model (SEM) was planned, to determine if state mental health care funding predicts quality of care, as defined in the CFA. A review of the evidence that

the use of seclusion and restraint are especially deleterious for people with schizophrenia is provided, using principles from the theory of allostasis and stress diathesis as a conceptual framework.

In the third and final article, the relationship between outpatient mental health care funding and the length and cost of inpatient hospitalization for people with schizophrenia, including those who presented with suicidal self-injury or intent, was examined. This involved studying the association between census-region funding and rates of voluntary to involuntary admission, and the number of admissions for people who presented with suicidal self-injury. Additionally, the rate of restraint and seclusion in each of the 9 census regions was examined and compared with region outpatient mental health treatment funding. Finally, the correlation between the rate of use of seclusion and restraint and rate of admission for suicidal self-injury or intent was tested at the census region level.

A theoretical model based on principles from the theories of allostasis and stress diathesis was proposed, and was tested over the course of the second and third articles. The model predicted that for people with schizophrenia, exposure to stressful events including inpatient psychiatric hospitalization and restraint and seclusion may lead to type 2 allostatic overload; allostatic overload is known to exacerbate psychopathology and may also lead to suicidality. Current sources of data do not permit testing the theoretical model in full, therefore the proposed model underwent partial testing. The theoretical model served as the framework for the dissertation, as a whole.

Results of this research lend to policy recommendations and alternatives in line with social work values. Recommendations for future research include longitudinal analysis of the effects of national policy regulating the use of restraint and seclusion using new data that is



released annually. Additionally, longitudinal analysis of the effects of state mental health policy and funding on inpatient hospital admissions for psychiatric care may lend valuable insights into more efficient, cost-effective, and least-restrictive care for people with schizophrenia, with potential life-saving implications.

### **Statement of the Problem**

For people with schizophrenia, onset of the disease is often unexpected, swiftly debilitating, and marked by uncharacteristic and erratic behavior (American Psychiatric Association [APA], 2013). These and other features of the illness may lead to disproportionate negative implications for treatment compared to people with other mental illnesses, including: lower rates of adherence to care; more stigma; increased suicidality; increased risk of involuntary psychiatric hospitalization; and increased risk of being perceived as dangerous or aggressive (Denenny, Bentley, & Schiffman, 2014; Novick et al., 2010; Palmer, Pankratz, & Botswick, 2005; Skodlar, Tomori, Parna, 2008; Stier & Hinshaw, 2007). Such perceptions of dangerousness or aggressiveness may increase the incidence of physical restraint or seclusion while in inpatient care for this population (Margetic, Margetic, & Ivanec, 2013; Steinert, Bergbaur, Schmid, & Gebhardt, 2007). This dissertation focused on the relationship between state and national policy on mental health care funding and the use of restraint and seclusion, incidence of inpatient psychiatric hospitalization, and incidence of restraint and seclusion for this population.

People with schizophrenia have some of the lowest rates of treatment adherence among people with mental illness (Abdullah Koolmees et al., 2015; Prince, 2005). For people with schizophrenia and psychosis outpatient mental health care including evidence-based treatment models such as Assertive Community Treatment (ACT) and Coordinated Specialty Care (CSC)

has proven to be cost-effective, to lead to better treatment adherence, and to improve social, occupational, and quality-of-life outcomes compared to other forms of treatment, including the use of emergency rooms for crisis management (Coldwell & Bender, 2007; Dixon et al., 2015; Lambert et al., 2010; Rosenheck et al., 2016; Torrey, 2013; Treatment Advocacy Center, 2015). Fragmented care and treatment non-adherence on an outpatient basis frequently lead to re-hospitalization for this population (Prince, 2005; Schrag et al., 2006; Valenstein et al., 2002). Comprehensive care in outpatient settings is especially important, given that treatment adherence is arguably the most effective way to prevent the leading cause of excess mortality related to the diagnosis: suicide (Malone, Marriott, Newton-Howes, Simmonds, & Tyrer, 2007; Novick et al., 2010).

Historically, justifications for the seclusion and physical restraint of psychiatrically hospitalized patients have stereotyped individuals with mental illnesses such as schizophrenia as ‘dangerous’ to themselves and others (Huckshorn, 2004a). It can be argued, however, that it is the policies that regulate the use of seclusion and physical and chemical restraints that are dangerous. The relationship among restraint, seclusion, traumatization, and in some cases, post-traumatic stress disorder, is well documented (Huckshorn, 2004b; The Hogg Foundation, 2009). The use of seclusion and restraint in inpatient care has been found to increase with perceptions of patient characteristics of dangerousness and aggressiveness, which are discriminatorily heightened in some cases for individuals with schizophrenia (Denenny et al., 2014; Stier & Hinshaw, 2007). Seclusion and restraint may also be used more frequently with individuals who are admitted to care on an involuntary basis, compared to those who present voluntarily for treatment (Husum, Bjørngaard, Finset, & Ruud, 2010).

## **Rationale for the Dissertation**

This dissertation examined the effect of national regulation (article 1) and state and census-region expenditures on mental health care (article 2) on the rate of use of restraint and seclusion in inpatient psychiatric hospitalization. It also examined the relationship between state and census-region expenditures on mental health care (article 3) and rates and costs of inpatient psychiatric hospitalization for people with schizophrenia, specifically those who present with suicidal self-injury or intent. The theoretical model proposed for this dissertation posits that stressful events including inpatient hospitalization and seclusion and restraint may lead to allostatic overload, increasing the risk and incidence of suicidality for this population.

It is not possible to test the complete proposed theoretical model using currently available data. However, partial model analysis is possible. The proposed dissertation used two major data sets, one on incidence of restraint and seclusion and another on inpatient hospitalization for suicidal ideation or intent. A 3-article dissertation was conducted because disparities in the unit of measurement of location variables between the two major data sets belie concurrent analysis.

The results of a partial analysis of the theoretical model produced research and policy recommendations that could save lives, reduce costs associated with emergency mental health care, and minimize traumatic experiences for this population. Results also provide support for the addition of two new variables, risk of suicide and risk of violence, to the data set on restraint and seclusion. These two variables were preliminarily assessed in 2014, with positive results, and may add to the robustness and content validity of the restraint data set (Blair et al., 2015; Parks, 2014). However, they have not yet been added to the final survey.

## Overview of the Literature

### Restraint and Seclusion

Tolson and Morley (2012) argue that ethical providers of mental health care should view the use of physical restraint and seclusion as a breakdown of successful treatment. The Hogg Foundation for Mental Health, a state-level non-profit organization, has outlined the “harsh reality and dangers” of seclusion and restraint, which include power struggles that fundamentally erode the therapeutic relationship between patients and their providers (The Hogg Foundation, 2009, p. 2). Huckshorn (2004b) found that “consumers of mental health services find seclusion and restraint use to be punishing, nontherapeutic, and traumatizing, and that the personal experience of seclusion and restraint negatively affects treatment outcomes” (p. 7). Additionally, Fisher (2003) found that restraint and seclusion of psychiatric patients reinforced negative behaviors, disrupted therapeutic relationships, and “can restimulate feelings surrounding past episodes of rape or abuse, common in the consumer population” (p. 77).

#### **Definition of restraint and seclusion.**

According to the Centers for Medicare and Medicaid Services’ Hospital Conditions of Participation (CoPS); Final Rule (2006) seclusion is defined as “involuntary confinement of a patient alone in a room or area from which the patient is physically prevented from leaving” (p. 71404). Restraint includes any

... manual method, physical or mechanical device... that immobilizes or reduces the ability of a patient to move his or her arms, legs, body, or head freely; or a drug or medication... used as a restriction to manage the patient’s behavior or restrict the patient’s freedom of movement and is not standard treatment or dosage for the patient’s condition. (Hospital CoPs; Final Rule, 2006, p. 71427)

### **Definition of chemical restraint.**

For people with schizophrenia who are experiencing their first episode of psychosis, anti-psychotics may serve as a chemical restraint, beyond their use as a normal course of treatment (§574.0415; 574.101; Mattingly & Small, 2014). In many cases, a physician is obligated to disclose in the individual's treatment records if the purpose of administering an anti-psychotic medication is intended to restrain an individual, in addition to treating their symptoms (Gross, Mitchell, & Hayes, 2003; 42 C.F.R § 482.13). However, some authors find that this practice of disclosure is frequently ignored (Knox & Holloman, 2011; United States General Accounting Office, 1999). Further, authors of a Cochrane review found that there is no evidence that the “common practice” use of antipsychotic medication ‘as required’ is effective; rather, the authors suggest that physicians and staff may rely on this technique out of habit (Chakrabarti, Whicher, Morrison, & Douglas-Hall, 2007, p. 1).

### **Regulation of the use of restraint and seclusion.**

National regulation on the use of restraint and seclusion is limited to those public hospitals that accept Medicare and Medicaid reimbursement. This excludes private hospitals and Veteran's Affairs (VA) hospitals. Since the establishment of the Medicare program, via an amendment to the Social Security Act in 1965, Hospital Conditions of Participation (CoPS) for Medicare reimbursement have been in place (Centers for Medicare and Medicaid Services [CMS], 2015a). In 1999, an interim final rule was published with a section on Patients' Rights, in response to significant “Congressional and public interest” concerning psychiatrically hospitalized patients (Hospital CoPs; Final Rule, 2006, p. 71379). The resulting Patients' Rights amendment was published in 2006 as 42 C.F.R § 482 (CMS, 2015a; Hospital CoPs; Final Rule, 2006). According to the discussion in the CoPs' Final Rule (2006), the sections which generated

the most public discussion and comments were those concerned with the use of seclusion and restraint.

Ten years after their implementation, there is no evidence that the actual impact of the Patient's Rights section of the CoPs has met any of the goals stated in the Final Rule, including reducing in the number of patient deaths, reducing the instances of inappropriate or unnecessary uses of restraint and seclusion, and reducing trauma and abuse of psychiatrically hospitalized patients. This is largely because there was no plan concurrently implemented to monitor the use of restraint and seclusion, along with the regulatory policy. Data that measured these aims of the CoPs Patient's Rights amendment were not collected until 2013.

The root of the problem may be that the use of seclusion and restraint techniques for psychiatrically hospitalized individuals, at least occasionally, are considered obligatory in professional and laymen opinion. Theories of trauma and previous research suggest that the use of restraints and seclusion are counter-therapeutic for people with mental illness; however, the overwhelmingly prevalent stigmatization of individuals with mental illness seems to demand the ability of professionals to utilize them (The Hogg Foundation, 2009; Huckshorn, 2004b; Fisher, 2003). This is despite findings that the "evidence that physical restraints prevent harm is miniscule to nonexistent" (Tolson & Morley, 2012, p. 311).

### **Suicide for People with Schizophrenia**

Suicide has been on the lists of top-ten causes of death in the US since the 1980s. In each year since 1999, nearly 50,000 people died of suicide (Centers for Disease Control [CDC], 2013). In the general public, rates of diagnosis of schizophrenia are slightly higher than 1% (APA, 2013). Despite the low prevalence rates, the manifestation of schizophrenia during

adolescence and young adulthood may influence the correspondingly high rate of suicide for that population (APA, 2013; CDC, 2014; Mann, Brent, & Arango, 2001).

The results of several studies suggest that more than 40% of people with schizophrenia experience suicidal ideation at some point in their lives (Fenton, McGlashan, Victor, & Blyler, 1997; Gill et al., 2015). Further, as many as 1 in 4 make a suicidal gesture with intent (Fenton et al., 1997). Estimates of the rate of completed suicide for people with schizophrenia, according to autopsy and retroactive case examination, range from 5-7% (Brown, 1997; Fenton et al., 1997; Palmer et al., 2005). As such, suicide is reported to be the leading cause of excess mortality for people with schizophrenia (Brown, 1997).

Individuals with schizophrenia who experience suicidal ideation ranked solitude and inability to interact with others as the single largest contributing factor to their suicidal ideation, in one qualitative study (Skodlar et al., 2008). Quantitative, post-mortem studies have supported that loneliness, psychotic symptoms, and involuntary admission to psychiatric hospitalization greatly increased the risk of suicide post-hospitalization (Roy & Draper, 1995). Other risk factors for suicidality for people with schizophrenia are depressive symptomology related to their diagnosis and paranoia (Brugnoli et al., 2012; Fenton et al., 1997; Lopez-Morinigo et al., 2015).

A range of thoughts and behaviors define the spectrum of suicidality. Suicidal ideation is defined by thoughts of suicide (Beck, Kovacs, & Weissman, 1979). Severity of suicidal ideation and gestures are categorized by feasibility and severity, according to an individual's means, plans, and intent (Beck et al., 1979; Osman et al., 2001). The two primary methods of detection of suicidality are observation and self-report inventories, of which there are dozens. However, there is little research on the validity and reliability of clinical scales for people with

psychotic features (Peterson, 2015). Depending on the setting in which suicidal ideation is identified, interventions may be physical (restrain and seclusion), psychological (counseling), or biological (psychopharmaceuticals), or some combination.

### **Treatment Environment: Inpatient Hospitalization**

The first psychiatric hospitals opened in the fifteenth century in England, and in the late eighteenth century in the US (Allderidge, 1979; National Institute of Health [NIH], 2006; Testa & West, 2010). Given the lack of existing treatment options, patients at those facilities were offered no actual psychiatric care (Testa & West, 2010). Rather, ‘disturbed’, ‘insane’, and ‘mad’ individuals were restrained in shackles and kept away from the public; often, these individuals were granted life sentences (Allderidge, 1979; NIH, 2006; Testa & West, 2010). In the following centuries, the number of individuals committed to psychiatric hospitals for long-term “care” inflated rapidly; this was the era of institutionalization.

### **Deinstitutionalization.**

In 1963, the Community Mental Health Act (CMHA) (Public Law 88-164) was passed and signed by into law by President Kennedy. The objective of the CMHA was to provide grants for the construction of outpatient treatment centers (Public Law 88-164, 1963). In his address to Congress, President Kennedy (1963) proposed:

A wholly new... approach to care for the mentally ill. This approach relies primarily upon the new knowledge and new drugs acquired and developed... which make it possible for most of the mentally ill to be successfully and quickly treated in their own communities and returned to a useful place in society. These breakthroughs have rendered obsolete the traditional methods of treatment which imposed upon the mentally



ill a social quarantine, a prolonged or permanent confinement in huge, unhappy mental hospitals where they were out of sight and forgotten. (para. 14)

In just over 35 years, the number of available hospital beds within psychiatric hospitals dropped from over 500,000 in 1953, to only 30,000 in 1990 (Sheffield, 2013; Testa & West, 2010).

### **Involuntary inpatient hospitalization for suicide.**

One of the primary policies that must be considered in a discussion of inpatient hospitalization for individuals with schizophrenia is that of involuntary or ‘civil’ commitment to inpatient treatment. The right of the state to enforce custody, or the involuntary treatment of any condition, is granted in the legal principle of *parens patriae*, which translates from Latin: “parent of the country” (Legal Information Institute, n.d.; Parens Patriae, n.d.; Testa & West, 2010).

*Parens patriae* was first used to grant power to the state in English Common Law in the 1500s (Parens Patriae, n.d.; Thomas & Fraser, 1826). The courts may invoke this principle in order to take individuals who are considered unable to act in their own best interest into state custody (Legal Information Institute, n.d.; O’Connor v. Donaldson, 1975; Testa & West, 2010). In cases where *parens patriae* is used to take individuals with mental illness into custody, the court may choose between ordering inpatient or outpatient mental health treatment based upon evidence presented at the individual’s due process hearing (Texas Department of Family and Protective Services [DFPS], 2009).

In the 1960s, courts’ interpretations of the principle *parens patriae*, in the context of civil commitment, were becoming more restricted (Anfang & Appelbaum, 2006; Testa & West, 2010). States began instituting “dangerousness” criteria in 1964, where in addition to being found mentally ill, an individual had to present a danger to themselves or others before being taken into custody (Anfang & Appelbaum, 2006; Testa & West, 2010).

In the United States, policies on involuntary commitment are regulated at the state level; though variation from the most to least restrictive states is slight (Treatment Advocacy Center, 2011). On the more restrictive side, some states require additional documentation beyond proof that an individual poses an imminent risk of harm to self or others. For example, California requires documentation of two prior instances of noncompliance with psychiatric treatment within the past 36 months, in addition to proof related to an imminent risk of danger to self or others, prior to issuing judgment on court-mandated inpatient treatment (Treatment Advocacy Center, 2011). Arizona, on the less restrictive side, only mandates that an imminent danger be posed by an individual's inability to provide for his or her own basic needs (Treatment Advocacy Center, 2011).

Due process of law is accorded to the individual under consideration for commitment; they are entitled to a trial and legal representation (§574.031 & §574.032). However, law enforcement officers can take an individual into custody and escort them to a hospital for emergency assessment if they are currently exhibiting life-threatening behavior (§574.001). These emergency detentions typically last from 3-5 days, and an admitting psychiatrist must see the patient within 48 hours (§574.001; §573.011; §574.064; Stone, 2012; Treatment Advocacy Center, 2011).

#### **Length of stay and readmission.**

Several agencies and authors, including Medicaid, use readmission to hospitalization within a certain time frame (60, 90, or 365 days) as a measure of the efficacy of inpatient treatment (Claassen, Kashner, Gilfillin, Larkin, & Rush, 2005; Druss, Bruce, Jacobs, & Hoff, 1998; James, 2013; Schrag et al., 2006; Valenstein et al., 2002). Studies show that for people with schizophrenia discharged from psychiatric hospitalization, approximately one-third are re-

hospitalized within six months, almost one-half within one year, and almost three-quarters within 5 years of initial discharge (Druss et al., 1998; Olfson et al., 1999). A 10-year longitudinal study found that the two most significant predictors of readmission for psychiatric patients were positive Medicaid status and psychotic symptomology (Druss et al., 1998). Authors concluded that hospitals were treating a “sicker group of patients with shorter lengths of stay” (Druss et al., 1998, p. 427). They suggested that the rate of readmission of psychotic patients indicates inadequate initial lengths of stay are unexceptional (Druss et al., 1998). However, perhaps more frequent, but less lengthy involuntary commitments were desirable, from a social justice perspective. These considerations must also be weighed, given the significant increase in cost associated with readmission (Druss et al., 1998; James, 2013; Schrag et al., 2006).

#### **Antipsychotic medications and polypharmacy.**

In 1954 the advent of chlorpromazine, the first highly effective medication for symptom reduction in schizophrenia and psychosis, contributed to the rise of deinstitutionalization (Testa & West, 2010). Since then, dozens of new typical and atypical antipsychotic medications have been produced. Antipsychotic polypharmacy is the practice of prescribing more than one antipsychotic medication to a patient during the same period. This is undesirable from a clinical perspective because it magnifies the significant risks and side effects associated with each of the prescribed antipsychotics, but has not shown to be effective in extending their benefits (Burghart, 2013; Ortiz, Hollen, & Schacht, 2016). However, antipsychotic polypharmacy is a very common practice. It affects nearly 1 in 4 people with schizophrenia who are discharged from psychiatric hospitalization (Ortiz et al., 2016). This practice violates the “strong” recommendation made by the World Health Organization (WHO) to prescribe only one antipsychotic at a time to individuals with schizophrenia (WHO, 2012).

Approximately 10-30% of people with schizophrenia experience treatment resistance over multiple trials of antipsychotic monotherapy (Burghart, 2013; Essali, Haasan, Li, & Rathbone, 2009). In the event of multiple failed trails of monotherapy, clozapine is frequently prescribed to augment another antipsychotic medication (Cipriani, Boso, & Barbui, 2009; Kudva & Gupta, 2016). Although clozapine has relatively the best empirical evidence for use in augmenting prescription of another antipsychotic medication, the evidence is objectively weak (Cipriani, Boso, & Barbui, 2009; Kudva & Gupta, 2016). Prescription of clozapine plus another antipsychotic medication is the only type of polypharmacy recommended per guidelines issued by the Joint Commission (Burghart, 2013). However, clozapine resistance for people with schizophrenia is high, at between 30-70% of individuals (Cipriani, Boso, & Barbui, 2009; Kudva & Gupta, 2016). In addition, a Cochrane Review found that in several randomized control trials individuals with schizophrenia prescribed clozapine discontinued use of their medication more often than individuals being treated with other antipsychotic medications, largely due to clozapine's adverse side effects, especially sedation (Essali et al., 2009). Therefore, it may have a restraint-like effect, itself.

A randomized clinical trial found that clozapine, when prescribed as monotherapy, is better at reducing hostility and aggression among patients with schizophrenia compared to other antipsychotic medications, including risperidone and haloperidol (Citrome et al., 2001). Other studies have similarly found that clozapine is effective in reducing hostility and aggression (Chengappa et al., 2002; Chiles, Davidson, & McBride, 1994; Glazer & Dickson, 1998; Volavka, 1999). However, these benefits must be weighed after consideration of the sedative side effects and the high rate of treatment resistance to clozapine monotherapy.

## **Treatment Environment: Outpatient Mental Health Treatment**

### **Least restrictive treatment.**

In 1966, the Washington D.C. court of appeals established that an individual has the right to receive court-appointed treatment in the least-restrictive suitable setting “as near to the home as possible... where familiar surroundings offer the best possible link with his usual life” (Lake v. Cameron, 1966, Footnote 9). This meant the court could mandate treatment for as few as 24 hours, including treatment in settings such as at-home counseling, in half way homes, outpatient treatment facilities, nursing homes, or inpatient hospitalization (Cameron v. Lake, 1966, Footnote 5).

Policies that mandate outpatient or assertive outpatient treatment are infrequently invoked as a first course of action in cases of suicidal behavior, compared to those mandating inpatient treatment; however, outpatient treatment is generally suggested following hospitalization and may be the best initial approach for individuals with less intense suicidal ideation, without plans, means, or intent to act on suicidal ideation (Gliatto & Rai, 1999; DFPS, 2009; Testa & West, 2010; Texas Health and Safety Code §573 and §574).

### **Outpatient treatment for suicidality.**

Staff at outpatient mental health treatment facilities that are funded appropriately can identify suicidality, in many instances, and address it before hospitalization is necessary (The Joint Commission, 2016). However, many communities lack the resources to implement effective and comprehensive suicide assessment and prevention (The Joint Commission, 2016; Yoon & Bruckner, 2009). Overall, many of the risk factors for suicide for people with schizophrenia, including social withdrawal and depressive symptoms, can be addressed in outpatient community mental health settings (Abbass et al., 2014; Malone et al., 2007).

However, this may require more comprehensive care and wrap-around services than many communities are equipped to deliver, including housing assistance and crisis management services. On a positive note, one qualitative study found that the development of resilience- and recovery- oriented community mental health care over the past 25 years has been improving quality of care and quality of life outcomes for people with schizophrenia (Stein et al., 2014). A central theme identified in the study was the *development of partnerships* between people with schizophrenia and community outpatient mental health treatment staff (Stein et al., 2014).

### **State funding for outpatient, community mental health care.**

Deinstitutionalization was a revolutionary period, which has defined the milieu of modern treatment of mental illness. Unfortunately, the promises of the CMHA were never fulfilled (Sheffield, 2013; Smith, 2013; Torrey, 2013). While it had admirable goals, and some meritorious effects, there is a consensus that acknowledges that the CMHA caused a harried, exponential decrease in psychiatric hospital beds; this reduction had myriad unintended consequences, primarily a flux in homelessness and incarceration among the most seriously and persistently mentally ill (Sheffield, 2013; Smith, 2013; Treatment Advocacy Center, 2015). In the end, only half of the outpatient centers proposed in the CMHA were built; those that were built never received adequate funding (Smith, 2013). This left many communities with inadequate resources to treat and rehabilitate individuals with mental illness within the community (Sheffield, 2013).

Yoon and Bruckner (2009) conducted a 16-year longitudinal analysis to determine specifically whether community mental health expenditures had increased during the period of the deinstitutionalization movement. Additionally, they questioned whether community mental health expenditures could mediate the established relationship between the deinstitutionalization

movement, including the reduction in psychiatric beds, and rates of suicide (Yoon & Bruckner, 2009). They found that increasing community mental health funding could curtail the effect of deinstitutionalization on suicide rates; however, they found that “the growth of funding for community mental health remained below the level of need” (Yoon & Bruckner, 2009, p. 1400). This is in stark contrast to the effect of deinstitutionalization in Finland. There, researchers found that suicide rates post-hospitalization dropped significantly between cohorts of individuals hospitalized pre- and post- deinstitutionalization (Pirkola, Sohlman, Heila, & Wahlbeck, 2007). This effect was also statistically significant for individuals with schizophrenia (Pirkola et al., 2007). Researchers attributed this to the possibility that in the transition to community mental health care, providers improved their focus on discharge planning and managed more successful patient transitions to outpatient facilities (Pirkola et al., 2007).

The underfunding and understaffing of outpatient treatment centers undeniably contributes to the difficulty in verifying continuation of care post hospital discharge (CDC, 2015; The President’s New Freedom Commission on Mental Health [PNFCMH], 2003). Further, due to long wait lists at outpatient facilities and a severe lack of funding for support services, including supported housing, education, and vocational rehabilitation, individuals with the most severe schizophrenic and suicidal symptoms may never be able to meet their daily living needs (PNFCMH, 2003).

State funding for outpatient mental health treatment programs and centers, including Assertive Community Treatment (ACT) programs, varies significantly (National Association of State Mental Health Program Directors Research Institute [NRI], 2013). In many states, community mental health centers in the locality where a discharge from psychiatric hospitalization occurs are responsible for initiating follow-up care post hospitalization (Centers

for Medicare and Medicaid Services [CMS], 2016). Follow-up care within 7 and 30 days post psychiatric discharge is considered a key indicator of mental health care quality by the National Committee for Quality Assurance ([NCQA], 2014).

### **Follow up care.**

Continuation of care in an outpatient setting, following a hospitalization for suicidal ideation or behaviors, is difficult to ensure (Prince, 2005; Schrag, 2006; Valenstein et al., 2002). Rates of nonadherence to medication and other outpatient treatment for individuals with schizophrenia discharged from psychiatric hospitalization range from 25-35% (Abdullah-Koolmees et al., 2015; Prince, 2005). These rates are alarming, given that continuation of care is arguably the best and most effective way to prevent the leading cause of excess mortality related to the diagnosis: suicide (Malone et al., 2007; Novick et al., 2010). Several studies have shown the importance of follow-up care, and made recommendations for procedures to monitor and enforce it (Malone et al., 2007; Maples et al., 2012; Novick et al., 2010; Prince, 2005).

### **ACT teams.**

ACT teams serve to closely monitor the wellbeing of individuals who have been released from hospitalization, in order to intervene if relapse seems imminent (Coldwell & Bender, 2007). They cost more than less intensive case management services at outpatient mental health treatment centers, however, the savings in emergency department visits has been shown to result in a net savings (Coldwell & Bender, 2007; Torrey, 2013; Treatment Advocacy Center, 2015). Individuals with schizophrenia who are part of ACT teams are more medication adherent, which plays a role in reducing suicidality and ideation (Abdullah-Koolmees et al., 2015; Maples et al., 2012; Novick et al., 2010).

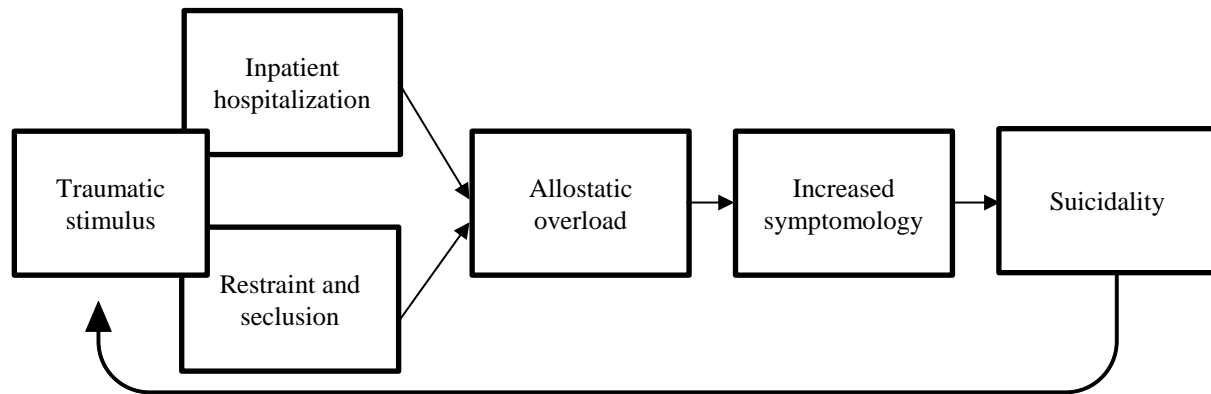


Though studies suggest that many outpatient treatment programs are more cost effective than inpatient hospitalization, Slade et al. (2013) examined whether ACT, one of the most time and resource intensive outpatient programs, would only be cost-effective for patients who spent significant time in inpatient hospitalization during the year prior to entering services. Their study compared people with schizophrenia and bipolar disorder who engaged with ACT services with propensity-matched individuals who did not. They found that while ACT services cost 5% more than treatment as usual, this level of treatment resulted in 65.7% fewer inpatient mental health hospitalization days (Slade et al., 2013). It is important to note, though, that ACT services are primarily reserved for patient recently discharged from inpatient care (National Alliance on Mental Illness [NAMI], 2016).

### **Theoretical Foundation**

This dissertation tested research questions derived from a theoretical model based on principles from the psychological and physiological theories of allostasis and diathesis-stress (Meehl, 1962; Sterling & Eyer, 1988). These theories indicate that exposure to stressful events leads to type 2 allostatic overload (McEwen & Wingfield, 2003). In type 2 overload, social interactions or restraint and seclusion trigger a hormonal response that results in deteriorated psychopathology (McEwen & Wingfield, 2003). The stressful event threshold is much lower for individuals who are genetically predisposed to mental illness (van Heering, 2012). Additionally, there are several models of suicidal behavior based on the theory of diathesis-stress (van Heeringen, 2012). These include the cognitive stress-diathesis model, where the perception of “no escape” from a situation is a major impetus of suicide (van Heeringen, 2012). This dissertation posits that inpatient psychiatric hospitalization and restraint and seclusion may be included in the type of stressful events that lead to allostatic overload (see Figure 1). Figure 1

shows a preliminary model of the relationship between traumatic stimuli (here, restraint and seclusion and inpatient hospitalization), allostatic overload, increased symptomology, and suicidality. Current data do not allow for testing this theoretical model. However, the proposed model will undergo partial testing (see Figure 5), and will serve as the framework for the dissertation, as a whole.



*Figure 1.* Preliminary model linking stressful events (here, restraint and seclusion and inpatient hospitalization) to allostatic overload. Type 2 allostatic overload is known to increase symptoms and may exacerbate suicidality.

Individuals with schizophrenia may be at an increased risk of subjugation to seclusion or restraint in psychiatric hospitalization because they are more likely to be perceived as hostile or aggressive by staff, without merit (Margetic et al., 2013; Steinert et al., 2007). Restraint and seclusion, along with the adverse effects of these practices, may result in a negative feedback loop, where restraint and seclusion beget more restraint and seclusion and contribute to physiological and psychological decline (see Figure 2). Additionally, studies have found that individuals who are restrained or secluded while in inpatient care have a higher rate of

readmission to inpatient hospitalization (Substance Abuse and Mental Health Service Administration [SAMHSA], 2015).

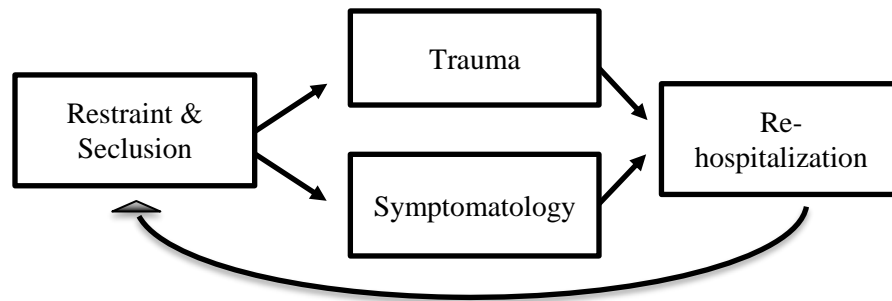


Figure 2. Negative feedback loop between restraint and seclusion, symptomatology, and re-hospitalization.

### Diathesis-Stress Theory

The neural diathesis-stress theoretical model of schizophrenia is widely accepted; it suggests that psychosocial and environmental factors contribute to the development and diagnosis of schizophrenia, in combination with genetic predisposition to the disease (Corcoran et al., 2003; Jones & Fernyhough, 2007; Meehl, 1962). The term *diathesis* refers to a level of vulnerability, typically indicating genetic vulnerability (Ingram & Luxton, 2005). However, it has also come to encompass social and cognitive states or predispositions (van Heeringen, 2012). The term *stress* “encompass[es] a number of facets”, including significant negative life events, socioeconomics, and minority status (Ingram & Luxton, 2005, p. 33). However, stress, by definition in this context, must also inhibit healthy adaptation and present a barrier to homeostasis (Selye, 1963).

Eugen Bleuler invented the term “schizophrenia” in 1908; later, in 1963, he became the first proponent of the bio-psycho-social and diathesis-stress models of schizophrenia, although his descriptions of these have been translated from German (Ingram & Luxton, 2005; Maatz, Hoff, & Angst, 2015). The diathesis-stress model was first posited in the 1960s, specifically by

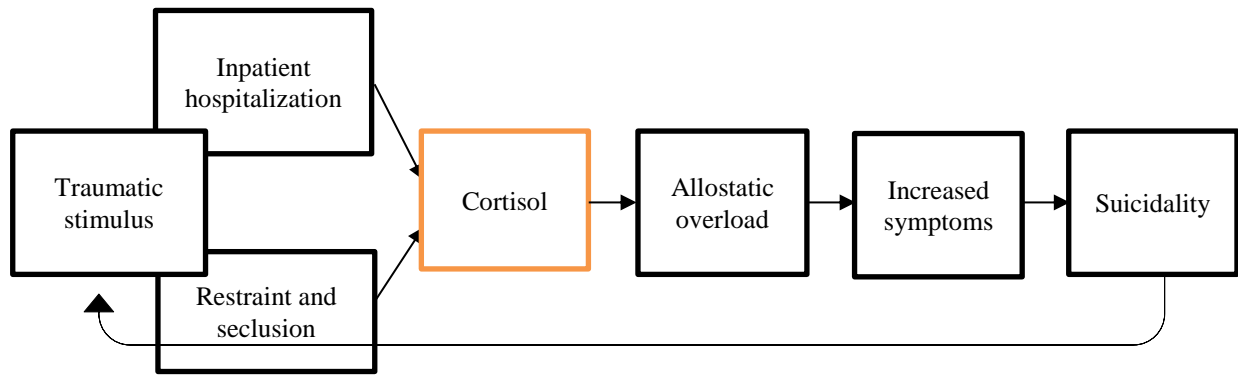
researchers and clinicians who studied schizophrenia (Ingram & Luxton, 2005). David Rosenthal thought that this theory might explain differences in phenotypes amongst the Genain sisters, quadruplets with schizophrenia whose symptoms and levels of functioning varied notably (Rosenthal, 1963). Earlier, Meehl (1962) described the specific adverse effects of stress and negative environmental cues for those with genetic and psychological predispositions to schizophrenia, though he did not coin the term.

In contemporary studies, researchers have shown that cortisol production is the mediator of stress (see Figure 3), which may either activate or exacerbate symptoms of schizophrenia, in accordance with the diathesis-stress model (Jones & Fernyhough, 2007). The metabolic networks of individuals with schizophrenia are altered, compared to individuals without mental illness; specifically, cortisol (a hormone released by the adrenal gland in response to stress) metabolism is increased, which increases an individual's vulnerability to stress (Corcoran et al., 2003; Jones & Fernyhough, 2007; Steen et al., 2011). Some research has shown that raised levels of cortisol precede psychotic symptoms, indicating that stress hormones may cause symptoms, rather than being primarily an effect of them (Jones & Fernyhough, 2007; Lenzenweger & Dworkin, 1998).

### **Neurobiological etiology/diathesis of schizophrenia**

It is also important to acknowledge the neurobiological etiology of schizophrenia. The heterogeneity of the disorder and the difficulty identifying Mendelian variants suggests that schizophrenia may be a more complicated disorder than other neurodegenerative disorders (Ross, Margolic, Reading, Pletnikov, & Coyle, 2006). In addition to the damaging effect of psychosocial stress, biological exposures in utero (including rubella, influenza, nutritional deficiencies, and lead exposure) and birth complications (hypoxia) have been shown to increase diathesis to schizophrenia (Brown, 2011). Most recently, researchers have found that the C4

gene located on the 6<sup>th</sup> chromosome, responsible for synaptic pruning during adolescence, may be involved in the development of schizophrenia; this might help explain why the disorder seems to activate around the time of adolescence and early adulthood (Sekar et al., 2016).



*Figure 3.* Revision of preliminary model, depicting cortisol as a mediator of the relationship between stressful events (restraint and seclusion and inpatient hospitalization) and allostatic overload.

### **Allostatic Load Theory**

Homeostasis is the term for a set of physiological processes that are regulated by homeostats; through these, our bodies maintain a relatively stable set of parameters for certain conditions, including blood pressure, blood sugar, heart rate, and temperature (Canon, 1932). Our body attempts to address any spikes or fluctuations in these conditions by engaging other related mechanisms to bring about constancy (Canon, 1932). Allostasis is a complementary term, and refers to physiological and behavioral changes the body makes to adjust for stressful events (McEwen & Wingfield, 2003).

The term allostasis translates to “stability through change” and describes “adaptation in the face of potentially stressful challenges [involving] activation of neural, neuroendocrine, and neuroendocrine-immune mechanisms” (McEwen, 1998, p.1). Chief among these mechanisms is the hypothalamic–pituitary–adrenal (HPA) axis. The HPA axis is sensitive to changes and the

accumulation of stress over time; it may become hyper-responsive in the event of sustained stress or increases in cortisol levels (Copstead-Kirkhorn & Banasik, 2013). The level of stress invoked by early life events are also very important in defining the level at which the HPA axis is reactive later in life (Finn, Nepomnaschy, Muehlebein, & Ponzi, 2011).

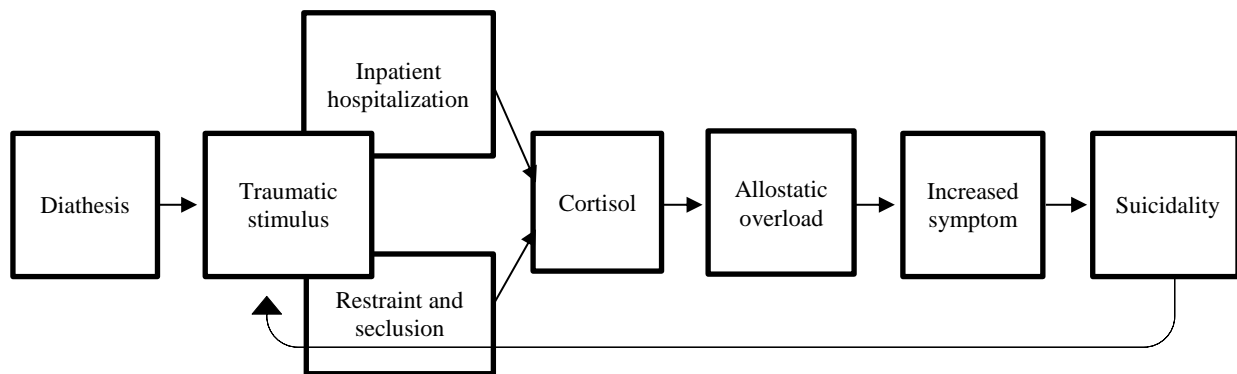
In the short term, allostasis is an adaptive process. However, allostatic ‘load’ is defined as the ongoing and incremental burden of maintaining allostasis (McEwen, 1998; McEwen & Wingfield, 2003). In the process of doing so, the mechanisms that maintain equilibrium, including the HPA axis, are switched on and off again in the face of each stressful event (McEwen & Wingfield, 2003). In schizophrenia, the cumulative effect of stressful life events and cortisol may be relevant to risk of psychosis, or “triggers” for psychosis (Corcoran, 2003). This relates back to diathesis-stress model, which suggests that there must be an environmental cue or impetus for development of the disease, beyond a simple genetic predisposition, and that the threshold for triggering mental illness and suicide for people with a genetic predisposition to schizophrenia may be lower than in the general population.

The accumulation of stress over the lifetime contributes to allostatic load; however, in cases where the HPA axis or other mechanisms are hyper-reactive to stress, or when stress presents an impediment to overall adaptability, allostatic overload may occur (McEwen & Wingfield, 2003). In type I allostatic overload, the demand for physiological and psychological energy exceed supply, requiring the organism to enter “survival mode” (McEwen & Wingfield, 2003, p. 11). In type II allostatic overload, the system is unable to cope with social conflict, dysfunction, or captivity and suffers psychopathology, additional psychopathology, or psychological deterioration (Corcoran et al., 2003; McEwen & Wingfield, 2003; Singer, 2008). The definition of stress, in theories of allostasis and diathesis-stress, indicates that negative

stimuli must present an impediment to homeostasis. In schizophrenia, continued allostatic overload may lead to pyramidal neuronal death, and hippocampal shrinkage (Singer, 2008). Abnormalities in hippocampal composition and size have been noted consistently in schizophrenia (Corcoran et al., 2003; Harrison, 2004; Heckers & Konradi, 2002).

### Proposed Model

The proposed model (see Figure 4) of suicide behavior for people with schizophrenia, based on theories of diathesis-stress and allostasis, posits that cortisol is the mediator of stress and a trigger and exacerbator of schizophrenia symptoms. Unique to this model is the specification of types of stressful events; here, stressful events that may lead to allostatic overload include involuntary psychiatric hospitalization and restraint and seclusion while in inpatient care. Allostatic overload, in turn, increases psychopathology and symptom severity. Models of diathesis stress suggest that this may lead to suicidality or suicide. Each of these steps in the model have been supported in the literature, however, increases in cortisol as a result of restraint and seclusion has been modeled in rats.



*Figure 4.* Proposed model of suicide behavior for people with schizophrenia, depicting diatheses as antecedent to traumatic stimulus. Traumatic stimuli, including restraint, seclusion, and inpatient hospitalization are mediated by cortisol, leading to allostatic overload.

This model was not testable based on available data; however, partial analysis was possible and was conducted over the second and third articles. First, the proposed model (Figure 4) was expanded to include operational, measureable points. Second, Figure 4 shows both types of proposed traumatic stimuli (inpatient hospitalization and restraint and seclusion) in a streamlined format. However, disparities in the level of measurement of key data (location) necessitated separate analysis of these two variables, in two papers (see Figure 5). Finally, the effect of state policy on this model was examined. The effect of national policy was discussed in paper 1. Because of the level of measurement of the location data in the two data sets, state-level policy may be the best predictor of changes in the model.

The second and third articles of this dissertation considered restraint and seclusion (paper 2) and voluntary and involuntary psychiatric hospitalization (paper 3) as potential stressful events that may lead to allostatic overload and suicidality. In the second article, features of inpatient care including restraint and seclusion and antipsychotic polypharmacy were examined as a measure of quality of care for people with schizophrenia (see Figure 5). However, the effect of restraint and seclusion on suicidality was not testable given current sources of data (denoted in gray). In the third article, the rate and prevalence of suicidality in people with schizophrenia who were admitted to inpatient hospitalization was examined based on the voluntary or involuntary nature of their admission (see Figure 5). Additionally, length and cost of stay were examined. Rates of seclusion and restraint from paper 2 were used to test the correlation between restraint and seclusion and suicidality upon inpatient admission, because the data did not support testing a causal relationship.



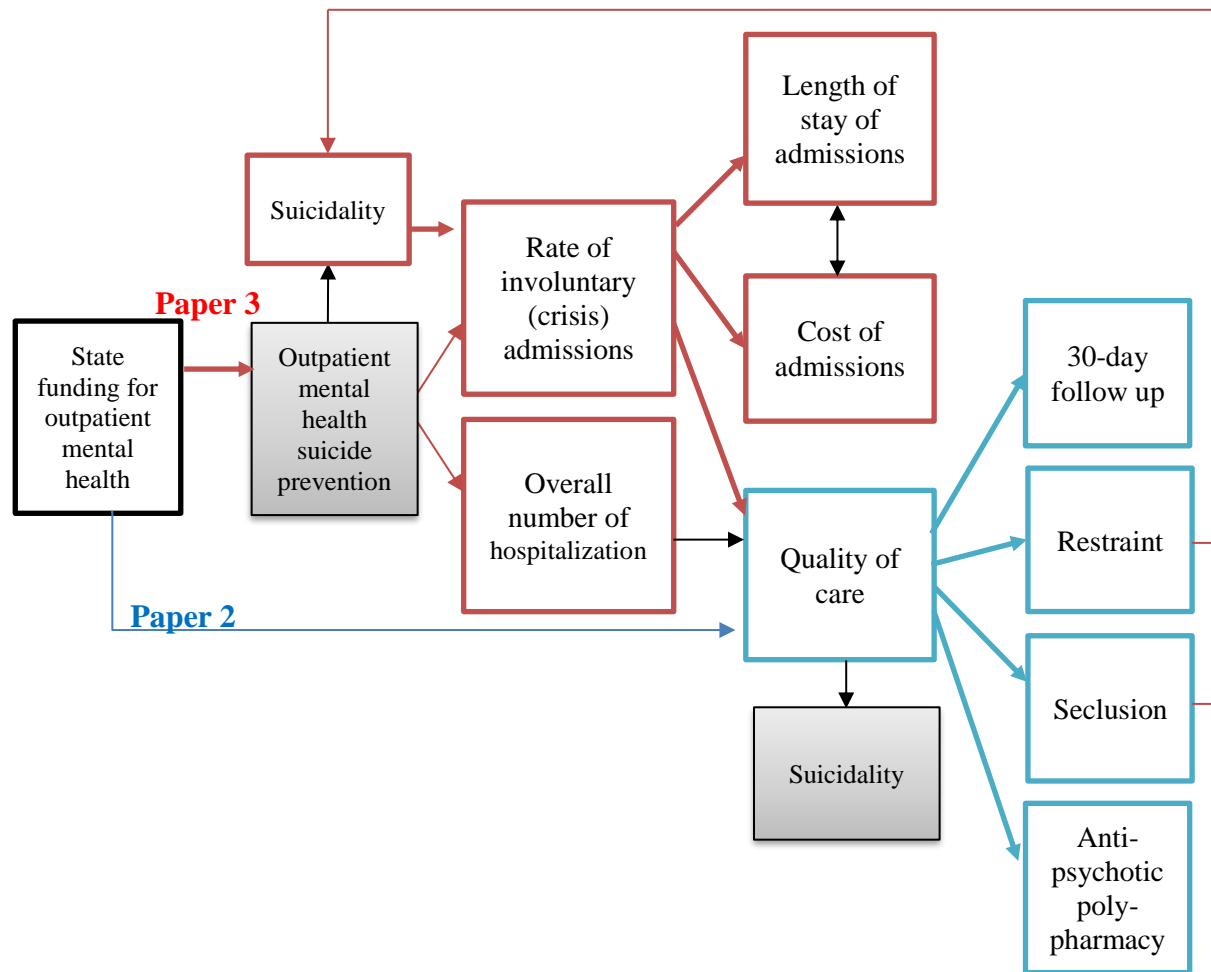


Figure 5. Operationalized model with testable variables and relationships. Restraint and seclusion (paper 2) and inpatient hospitalization (paper 3) were analyzed over the course of two papers. Items in blue were examined in paper 2. Items in red were examined in paper 3. Gray boxes denote untestable part of the model.

### Gaps in the Literature

The link between restraint and seclusion and symptoms of trauma is well documented (Fisher, 2003; Hospital CoPs; Final Rule, 2006; Tolson & Morley, 2012; The Hogg Foundation, 2009). It is also known that in some instances, hospital staff falsely perceive individuals with schizophrenia as aggressive or hostile (Margetic et al., 2013; Steinert et al., 2007). However, the

effect of this misperception on the rate of use of restraint and seclusion for this population is unknown. This is especially important, because physiologically, people with schizophrenia are at an increased risk of psychological decompensation due to physiological deficits in the ability to reabsorb cortisol in the face of stressful events (Corcoran et al., 2003; Jones & Fernyhough, 2007; Steen et al., 2011; Webster, Knable, O'Grady, Orthmann, & Weickert, 2002). Prolonged stress and repeated exposure may induce type II allostatic overload, thereby increasing symptomatology. Additionally, allostatic overload may also lead to suicidal ideation or intent (McEwen, 2000). Therefore, research is needed to determine if people with schizophrenia are more likely to be subjected to seclusion and restraint, and what the consequences of this may be.

Trends in the overall use of restraint and seclusion have not yet been identified. This is because measurement of them has only begun recently. So far, only one year of complete data on their use has been released to the public. This data does not elucidate the potential relationship between diagnosis and restraint or seclusion use. However, it does identify co-occurring rates restraint and seclusion and of antipsychotic polypharmacy upon discharge, which may indicate the proportion of individuals with treatment resistant schizophrenia at a given hospital. Although a lack of longitudinal data impedes estimating the effect of national policy on the use of seclusion and restraint, it is possible to examine the relationship between state policy and differences in the rate of their use. Levels of state funding for outpatient mental health are thought to be correlated with the rate of use of restraint and seclusion. Other features of quality of care at the inpatient level are thought to vary with outpatient state mental health funding. These associations are important because changes in the quality of inpatient care, especially the use of restraint and seclusion, should be considered when making decisions about funding for outpatient care at the state-level.

Many programs of outpatient mental health treatment reduce the incidence and costs of inpatient hospitalization. The literature suggests that increased funding for outpatient, community-based, mental health treatment may be linked to more positive treatment outcomes specifically for people with schizophrenia, as well as increased cost efficiency and reductions in suicide rates overall. Outpatient mental health treatment is also often tasked with disseminating suicide assessment, management, and prevention strategies. However, the association between state funding for outpatient mental health treatment and the rate and cost of involuntary hospitalization for suicidal ideation or intent for people with schizophrenia is unknown. The average cost and length of stay of inpatient admission for people with schizophrenia may also provide valuable insight to clinicians and researcher; it may be that this these are correlated with state outpatient mental health funding. Finally, whether rates of seclusion and restraint are correlated with inpatient admission for suicidal ideation or injury needs to be examined, as this may provide further insight into the potentially damaging effect of seclusion and restraint for this population.

## **Research Questions and Hypotheses**

### **Paper 1**

In the first paper of this dissertation, this researcher examined whether national policy on the use of seclusion and restraint goes far enough to prevent trauma, abuse, and death of patients with mental illness who are psychiatrically hospitalized. Paper 1 is comprised of a policy analysis of the Medicare and Medicaid Hospital Conditions of Participation (CoPs). Specifically, sections *e. Standard: Restraint or seclusion*; *f. Standard: Restraint or seclusion: Staff training requirements*; and *g. Standard: Death reporting requirements* of 42 CFR 482.13 were analyzed. Paper 1 proposed a unique policy analysis model to examine the background, goals, and

objectives of the policy. Additionally, the intended impact of the policy, value criteria and power struggles that are related to the policy were examined. Finally, the difference between the intended impact and the actual impact of the policy was calculated.

## **Paper 2**

In the second article of this dissertation, the relationship between state policy on outpatient mental health funding and the use of restraint and seclusion, antipsychotic polypharmacy, and follow-up care 30-days post-discharge was examined. A confirmatory factor analysis (CFA) was planned, to examine the construct validity of these four variables and determine if they formed a cohesive measure of “quality of care” via CFA. Additionally, a structural equations model (SEM) was planned, to investigate the effect of state funding for outpatient mental health care on differences in hospital quality of care. The CFA and SEM were not carried out, due to issues with data quality.

1) It was hypothesized that restraint and seclusion would be utilized less frequently in states where mental health funding at the outpatient level is higher. Specifically, it was thought that state mental health funding would be negatively correlated with the use of restraint and seclusion.

2) It was hypothesized that the rate of seclusion and restraint would be higher in states and hospitals where antipsychotic polypharmacy is more frequently practiced. Specifically, it is thought that rates of use of seclusion and restraint would be positively correlated with rates of antipsychotic polypharmacy.

3) It was hypothesized that the rate of follow-up care within 30- days of discharge from psychiatric hospitalization would be lowest in states where funding per capita on the outpatient

level is low. Specifically, it was thought that state mental health funding would be positively correlated with both rates of follow-up care.

4) It was hypothesized that the four features of inpatient and discharge care (restraint and seclusion, antipsychotic polypharmacy, follow up within 30 days) would form a cohesive measure of quality of care. A CFA was planned to test this.

5) Finally, it was hypothesized that variations in levels of state outpatient mental health funding would predict variations in the quality of care measure previously specified. A SEM was planned to test this.

### **Paper 3**

In the third and final article of this dissertation, the association between outpatient mental health care funding and the rates and costs of inpatient hospitalization for people with schizophrenia, including those who presented with suicidal self-injury, was examined. The third article sought to address the following research questions:

1) What is the average length of stay for individuals with schizophrenia who are hospitalized voluntarily and involuntarily? What is the average length of stay for individuals who are hospitalized involuntarily and involuntarily for suicidal ideation or injury? Is there a significant difference in length of stay between the two types of hospitalization for each group?

2) What is the average cost of stay for individuals with schizophrenia who are hospitalized voluntarily and involuntarily? What is the average cost of stay for individuals who are hospitalized involuntarily and voluntarily for suicidal ideation or injury? Is there a significant difference in cost of stay between the two types of hospitalization for each group?

3) Is census region funding of outpatient mental health treatment related to the rate of involuntary admissions to inpatient hospitalization for people with schizophrenia, overall, and for those who present with suicidal self-injury?

4) Is census region funding of outpatient mental health treatment associated with the rate of admissions to inpatient hospitalization for people with schizophrenia who present with suicidal self-injury or ideation?

5) Is census region funding for outpatient mental health treatment associated with the cost of stay for individuals with schizophrenia who are psychiatrically hospitalized?

6) Is there an association between the rate of inpatient admission for suicidal self-injury and rate of seclusion and restraint?

## **Methodology**

### **Paper 1: Policy Analysis Model**

The first paper analyzed the Hospital Conditions of Participation (CoPs) that regulate hospitals accepting Medicare and Medicaid. The specific sections of 42 CFR 482.13 analyzed were: *e. Standard: Restraint or seclusion*; *f. Standard: Restraint or seclusion: Staff training requirements*; and *g. Standard: Death reporting requirements*.

The set of CoPs regarding Patients' Rights were analyzed from a value-critical, process-oriented perspective. This paper proposed a six-point framework as uniquely suited to evaluating 42 CFR 428.13. The analysis incorporated aspects of different social and health policy analysis models and used the National Association of Social Workers [NASW] Code of Ethics as value criteria. Carlson and Dalenberg's (2000) conceptual framework of trauma and evidence of prior abuse and traumatization of patients suggest alternatives to restraint and seclusion and modifications to the identified policy.

First, the paper presented the background of the problem and the historical significance of the use of seclusion and restraints for people with mental illness. Second, it examined the goals and objectives of the policy from the Hospital CoPs; Final Rule (2006), in terms of their clarity, measurability, and concern with outcomes. Third, the paper discussed the intended impact of the policy as it was phrased in the Final Rule, especially its intent to reduce the potential for patient abuse and death. The fourth and fifth criteria for analysis were value criteria and power struggles. These subjective criteria mediated the difference between intended impact and the actual impact of the policy, the sixth and final element of analysis. The final section examined the risks of re-traumatization that accompany the use of seclusion and restraint techniques for individuals with mental illness.

### **Papers 2 and 3: Secondary Data Analysis**

#### **Sample.**

The sample for articles 2 and 3 of this dissertation were drawn from two national data sets. Additionally, data from the National Association of State Mental Health Program Directors Research Institute (NRI) on state mental health funding for community mental health treatment was utilized.

*The new IPFQR dataset.* National policy has regulated the use of restraint and seclusion in inpatient psychiatric hospitalization since 2006 (Hospital CoPs; Final Rule, 2006). However, there was no effort to measure the effects of this policy for several years. In 2014, the first IPFQR was released to the public, including partial data from fiscal years 2012-2013. The next year, in 2015, the updated report included the remaining 8 months of data from the fiscal year 2013. Finally, in 2016 data from the entire 2014 fiscal year was reported (Parks, 2014; Storm, 2015; The Patient Protection and Affordable Care Act [ACA], 2010).

The Inpatient Psychiatric Facility Quality Reporting (IPFQR) is implemented by the Centers for Medicare and Medicaid Services (CMS) (Parks, 2014; Storm, 2015). This report is a part of the CMS's "Hospital Compare" data repositories, where patients can examine differences in quality measures between multiple facilities before choosing one from which to get their health care (Blair et al., 2015; Parks, 2014). The IPFQR includes measures of "timely and effective care" for psychiatric inpatients on the state and facility level; included in these measures are variables on the total hourly use of restraint and the total hourly use of seclusion for each of the included 1,627 hospitals, as well as the aggregated state and national hours of use (Blair et al., 2015).

*The latest NIS dataset.* The National Inpatient Survey (NIS) is a part of the Health Care Utilization Project (HCUP). The HCUP is "the largest publicly available all-payer inpatient health care database in the United States" (HCUP, 2015, para. 1). HCUP is sponsored by the Agency for Research Health and Quality (ARHQ). This dataset includes records of patient-level discharge data for over seven million individuals from the 4,363 hospitals who participate. However, this data is reported at the census-region level, not at the hospital or state level of measurement. The HCUP includes a stratified sample of 20% of hospital discharges, which are representative of over 94% of discharges from US hospitals, overall (HCUP, 2015).

HCUP includes a self-weighting sample. The sample is weighted to ensure representativeness based on: hospital (de-identified in the sample), census division, hospital ownership (public or private), urban versus rural location, hospital teaching status (teaching hospital or not), number of beds, diagnosis-related group (DRG), and month of the hospital stay (HCUP, 2015). Weights are provided, to make national and regional estimates; however, this was not the aim of the articles in this dissertation.



*The NRI data on state funding.* State funding for mental health care varies tremendously. Funding for specific programs and initiatives is highly diverse, and some treatment or prevention programs only exist in a handful of states. NRI data on the total of state mental health agency funding at community-based programs was utilized for the current dissertation. This includes each state's outpatient mental health funding, exclusive of budgets for inpatient hospitalization and research and administration. In the NRI databases, each category (inpatient, outpatient, residential, and research and administration) of mental health funding has been reported state-by-state as a raw figure, as a function of total state budgets, and as a per-capita figure. This dissertation utilized the per-capita figure of outpatient mental health funding for each state.

### **Procedures.**

Articles two and three of this dissertation employed secondary data analysis. To access data from the HCUP required data use agreement training, which was completed in June of 2016. The location of each patient discharge in the NIS is reported on the census-region level, rather than on the state or hospital facility level. This meant that data from the NIS and the IPFQR datasets could not be linked at the state level, which was more desirable since it is on the state level that policies on mental health treatment funding are implemented. HCUP state-level data is made available for purchase, individually, for 31 states; however, purchasing each state that is available would be prohibitively expensive, as costs per state range from \$35 to \$2,535 for students, depending on the dataset (HCUP, 2016).

There are 9 census-defined regions of the country, most of which are comprised of states that are not normally distributed in terms of mental health policy and expenditures. To combined the two datasets at the census-region level and test one hypothesis would be problematic.

Rather, this dissertation analyzed data from the two datasets in two papers, which were prepared for publication. Each paper combined data, to present the most comprehensive estimation of the effects of state and national policy and clinical practice for the population under study.

### **Data analysis.**

*Paper 2.* To answer the first three research questions, four correlations were estimated. Variables in each correlation were examined for normality, outliers, linearity, and homoscedasticity. Spearman's Rho correlation coefficients were estimated, instead of Pearson's, where variables were not normally distributed. Statistical significance of each correlation was also examined. To answer the fourth and fifth research questions, a confirmatory factor analysis (CFA) and structural equation model (SEM) were planned. These were not carried out, however, due to issues with data quality.

The first correlation examined state funding and the frequency of use of restraint and seclusion. In the second correlation, the relationship between seclusion and restraint and antipsychotic polypharmacy was examined. In the third and fourth correlations, the relationship between state outpatient mental health funding and follow-up care at the 30-day mark was examined. Finally, a CFA was constructed, but not implemented, using the STATA statistical package. The CFA was planned to determine if the four measurement items, rate of seclusion, restraint, polypharmacy, and follow-up at 30 days, load onto a single construct "quality of care". Had the measurement model been found to be a good fit, then a SEM would have been conducted to determine if variations in state mental health funding were able to explain variations in quality of care, as defined in the CFA.

*Paper 3.* To answer the first research question, the average length of stay of hospitalization for people with schizophrenia, both voluntarily and involuntarily admitted, was

reported. Additionally, the average length of stay for individuals with schizophrenia who presented with suicidal self-injury was reported. Two Mann-Whitney U-tests were conducted to determine if there was a significant difference in length of stay for the two populations, because data were not normally distributed, and because one sample (involuntarily admitted) was significantly larger than the other (voluntarily admitted) for both pairs.

To answer the second research question, the average and median cost of hospitalization for people with schizophrenia, both voluntarily and involuntarily admitted, was reported. Additionally, the average cost of stay for individuals with schizophrenia who were hospitalized for suicidal ideation or injury was reported. Two Mann-Whitney U-tests were conducted to determine if there was a significant difference in cost of stay for the two populations, because data were not normally distributed, and because one sample (involuntarily admitted) was significantly larger than the other (voluntarily admitted) for both pairs.

To answer the third research question, two correlations were estimated, between the region-wide rate of involuntary admissions to the level of census region funding for outpatient mental health treatment for people with schizophrenia, overall, and for those who present with suicidal self-injury.

To answer the fourth research question, one correlation was estimated, between the rate of admissions to inpatient hospitalization for people with schizophrenia who present with suicidal ideation or injury and the level of state outpatient mental health treatment.

To answer the fifth research question, one correlation was estimated, between the cost of stay for people with schizophrenia and funding for state outpatient mental health treatment.

To answer the sixth research question, one correlations was estimated, between the rate of inpatient admission for suicidal self-injury for people with schizophrenia and the rate of seclusion and restraint.

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Chapter 2: Patient Abuse and Trauma: A Policy Analysis of the Regulation of Seclusion and  
Restraint in Mental Health Care

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### **Abstract**

Historically, justifications for the seclusion and physical restraint of hospital patients have stereotyped individuals with mental illness as “dangerous” to themselves and others (Huckshorn, 2004a). It can be argued, however, that it is the policies that regulate the use of seclusion and physical and chemical restraints that are dangerous. This article analyzes the Patients’ Rights section of the Hospital Conditions of Participation (CoPs), Part 482 of CFR 42, including subsections: e. Standard: Restraint or seclusion; f. Standard: Restraint or seclusion: Staff training requirements; and g. Standard: Death reporting requirements. The set of CoPs regarding Patients’ Rights are analyzed from a value-critical, process-oriented perspective. This article proposes the following six-point framework as uniquely suited to evaluating 42 CFR 428.13: 1) introduction to the background and historical significance of the problem; 2) evaluation of the clarity and measurability of the goals and objectives of the policy; 3) overview of the intended impact of the policy; 4) examination of the value criteria; 5) examination of existing power struggles for those impacted by the policy; and 6) examination of the actual impact of the policy. Results of the policy analysis suggest that the policy does not go far enough to reach its stated goals and objectives in full. In the conclusions, suggestions for further protection of patients’ rights are provided. Examples of alternatives to restraint and seclusion are discussed. Finally, the grave importance of reshaping the culture of mental health care, in terms of life-and-death consequences, is considered.

*Keywords:* Patients’ rights; psychiatric hospitalization; restraint; seclusion

Patient Abuse and Trauma: A Policy Analysis of the Regulation of Seclusion and Restraint in  
Mental Health Care

**Introduction**

Historically, justifications for the seclusion and physical restraint of psychiatrically hospitalized patients have stereotyped individuals with mental illness as “dangerous” to themselves and others (Huckshorn, 2004a). It can be argued, however, that it is the policies that regulate the use of seclusion and physical and chemical restraints that are dangerous. For example, Fisher (2003) found that restraint and seclusion of psychiatric patients reinforced negative behaviors, disrupted therapeutic relationships, and “can restimulate feelings surrounding past episodes of rape or abuse, common in the consumer population” (p. 77).

This article analyzes the Hospital Conditions of Participation (CoPs) that regulate hospitals accepting Medicare and Medicaid. The title of the Code of Federal Regulations (CFR) under consideration is 42, relating to issues of “Public Health” (United States Government Publishing Office [GPO], 2016). Part 482 of CFR 42, authored by the Centers for Medicare and Medicaid Services (CMS), outlines the CoPs (GPO, 2016). CMS is the agency that has congressional authority to create regulations related to 42 CFR. According to the CMS, these CoPs dictate “health and safety standards,” deemed “the foundation for improving quality and protecting the health and safety of [Medicare and Medicaid] beneficiaries” (CMS, 2013, para. 1).

Since the establishment of the Medicare program, via an amendment to the Social Security Act in 1965, Hospital CoPs for Medicare reimbursement have been in place (CMS, 2015a). First drafts of the CoPs covered a variety of requirements, including maintenance of records, state budgeting, and staff licensure (McGeary, 1990). Upon implementation of the preliminary standards set by lawmakers in 1966, consumer-rights groups petitioned for higher



standards that would mandate concern for patients' rights and protections (McGeary, 1990). Following several unsuccessful attempts to amend the CoPs in the 1970s, significant changes were made under the Reagan administration in 1986, with a focus on deregulation and minimizing governmental oversight (McGeary, 1990).

Finally, in 1997, a proposed rule (62 FR 6672) was published in the Federal Register by the CMS, to amend the entire set of CoPs; among revisions, a provision on patients' rights was included. Following this, in 1999 an interim final rule (64 FR 36070), exclusively concerning patients' rights, was published. Notably, in this rule, the CoPs section on Patients' Rights were considered, amended, and published separately from the other sections of the CoPs, in response to significant "Congressional and public interest" in this specific topic, especially concerning psychiatrically hospitalized patients (Hospital CoPs; Final Rule, 2006, p. 71379). The Final Rule, with consideration of comments to the interim rule by the public, was published in 2006, and went into effect as 42 C.F.R § 482 in 2007 (CMS, 2015a; Hospital CoPs; Final Rule, 2006). Whereas both the proposed and interim rules established standards for Patients' Rights to include privacy, safety, and confidentiality of records, according to the discussion in the CoPs' Final Rule (2006), the sections in the proposed and interim rules which generated the most public discussion and comments were those concerned with the use of seclusion and restraint, part 482.13 sections e. and f. and g.

The specific sections of 42 CFR 482.13 analyzed here are e. Standard: Restraint or seclusion; f. Standard: Restraint or seclusion: Staff training requirements; and g. Standard: Death reporting requirements. The Final Rule, with rationale for the CFR, is available at the Federal Register, 71 F.R. 71378–71428 (Hospital CoPs; Final Rule, 2006). In addition, the CFR is

available electronically, at the U.S. Government Publishing Office website (GPO) (Hospital CoPs, 2006; U. S. Government Publishing Office, 2016).

### **Policy Analysis Model**

The set of CoPs regarding Patients' Rights are analyzed from a value-critical, process-oriented perspective. This article proposes the following six-point framework as uniquely suited to evaluating 42 CFR 428.13 (see Figure 1). This analysis incorporates aspects of different social and health policy analysis models, including Chambers and Bonk (2013), Ginsberg and Miller-Cribbs (2005); Haskins and Gallagher (1981), Segal (2007), and Weiner (2005). It assesses as value criteria the National Association of Social Workers [NASW] Code of Ethics. Carlson and Dalenberg's (2000) conceptual framework of trauma and evidence of prior abuse and traumatization of patients suggest alternatives to restraint and seclusion and modifications to the identified policy.

First, the article presents the background of the problem and the historical significance of the use of seclusion and restraints for people with mental illness. Second, it examines the goals and objectives of the policy from the Hospital CoPs; Final Rule (2006), in terms of their clarity, measurability, and concern with outcomes. Third, the article discusses the intended impact of the policy as it was phrased in the Final Rule, especially its intent to reduce the potential for patient abuse and death. The fourth and fifth criteria for analysis are value criteria and power struggles. These subjective criteria mediate the difference between intended impact and the actual impact of the policy, the sixth and final element of analysis. The final section examines the risks of re-traumatization that accompany the use of seclusion and restraint techniques for individuals with mental illness.

### **Statement and Background of the Problem**

In analyzing social welfare and health policy, Segal (2007) recommends beginning with a definition of the problem and introducing the history and etiology of the policy that mediates or attempts to mediate the problem. The use of seclusion and restraint techniques in the course of treatment for mental illness has been cited for centuries (Abderhalden, Hahn, Bonner, & Galeazzi, 2006; Fisher, 2003; Roberts, 1967). In the late 18<sup>th</sup> century, Philippe Pinel and Jean-Baptiste Pussin began espousing the merits of “moral treatment” of patients in mental asylums in France. This method involved a greater degree of concern with sociological factors and discouraged the use of shackles that bound patients for the better part of days or weeks (Pinel, 1806). Later, John Conolly recommended abolishing physical restraints in mental asylums in England (Conolly, 1830; Roberts, 1967). This was the beginning of the non-restraint movement, and “the first symbolic step toward the humanization of [mental health] care” (Abderhalden et al., 2006, p. 71).

The problem the Hospital CoPs attempts to mediate is the potential for trauma and abuse, especially those resulting in death, which may be driven by misuse of restraint and seclusion techniques. Further, the CMS acknowledges, “even when a restraint or seclusion is needed, the patient may feel dehumanized, isolated, or depressed as a result” (Hospital CoPs; Final Rule, 2006, p. 71382). The CFR is addressed to all hospitals that participate in Medicare and Medicaid programs; however, the Hospital CoPs; Final Rule (2006) indicates that the intent of the policy is primarily to curtail the death and abuse of patients with mental illness. Estimates of the size of the problem are difficult to enumerate. The Hospital CoPs; Final Rule (2006) cites an FDA estimate “of at least 100 deaths per year from improper use of restraints” (p. 71381). Prior to the mandates introduced in the current legislation, the director of the U.S. Government

Accountability Office testified to the Senate Committee that because of the lack of accurate reporting “across all types of facilities that serve individuals with mental illness or mental retardation . . . the exact number of deaths in which restraint or seclusion was a factor is not known” (Hospital CoPs; Final Rule, 2006, p. 71381).

The subset of Hospital CoPs under consideration includes amendments to the prior regulation of seclusion and restraint. These revisions clarify the rules regulating the use of seclusion and restraint from 1998; sections f. and g. are introduced, concerning requirements for staff training and reporting deaths linked to the use of seclusions and restraints. According to the Hospital CoPs; Final Rule (2006) seclusion is defined as “involuntary confinement of a patient alone in a room or area from which the patient is physically prevented from leaving” (p. 71404). Restraint includes any

. . . manual method, physical or mechanical device . . . that immobilizes or reduces the ability of a patient to move his or her arms, legs, body, or head freely; or a drug or medication . . . used as a restriction to manage the patient’s behavior or restrict the patient’s freedom of movement and is not standard treatment or dosage for the patient’s condition. (Hospital CoPs; Final Rule, 2006, p. 71427)

### **Goals and Objectives**

The goals and objectives of the Hospital CoPs appear in the Final Rule (2006). These aims are evaluated by their clarity, measurability, and concern with outcomes, to use terms introduced in Chambers and Bonk’s (2013) model of policy analysis. Broadly speaking, CFR 482.13 “focuses on patient safety and the protection of patients from abuse” related to the use of restraints and seclusion in hospitals that accept Medicaid and Medicare (Hospital CoPs; Final Rule, 2006, p. 71378). The beliefs that underlie the current legislation are that “the patient has

the right to be free from unnecessary restraint or seclusion, that using a restraint for convenience, punishment, retaliation, or coercion is never acceptable, and that each patient should be treated with respect” (Hospital CoPs; Final Rule, 2006, p. 71380).

The CFR is noted in the Final Rule as attempting to strike a balance between its broad goal of patient protection and unwillingness to implement mandates that are unnecessarily burdensome (Hospital CoPs; Final Rule, 2006). Specific objectives, or “provisions,” outlined in the Hospital CoPs include: 1) procedures governing the ordering of restraint or seclusion during the course of treatment; 2) a prohibition on standing and “pro re nata” (PRN) orders for the restraint and seclusion of patients; 3) a mandate for staff consultation with the treating physician in the event that seclusion and restraint is used without an existing physician order; 4) defining the temporal- and behavior-based conventions for discontinuation of the use of restraint and seclusion; 5) requirements for the assessment, monitoring, and evaluation of the restrained and/or secluded patient; 6) conventions governing the use of restraint and/or seclusion for behavior management; 7) requirements for staff training in the use of restraint and/or seclusion; and 8) mandates for reporting the death of a patient when the use of restraint or seclusion was reasonably believed to have been a factor in the death. (Hospital CoPs, 2006)

These objectives vary considerably in terms of their clarity and measurability. The first objective states that restraint or seclusion must be medically ordered by the “physician or licensed independent practitioner, who is responsible for the care of the patient” (Hospital CoPs, 2006, p. 71394). The second objective states that the use of restraint or seclusion is not to be a general order for treatment but that medical permission must be specifically sought in the event of a crisis. These are both clear and measurable, and will be evident in a patient’s medical records. However, if restraint and seclusion are used only in the case of imminent harm to self or

others, then instances of their use will likely fall under the third provision, which relates to emergency use of restraint and seclusion techniques prior to their approval and order by the patient's physician. This objective states that if restraint or seclusion is used in emergency circumstances, prior to being ordered by the patient's physician, that the attending physician must be consulted "as soon as possible" (Hospital CoPs, 2006, section e. 7.). This might be the most important of the first three provisions, as it follows the most volatile trajectory. On one hand, the necessity of consulting the attending physician is clear; however, the term "as soon as possible" could be clarified by adding that consultation during the course of the use of restraint or seclusion would be more timely and helpful than consultation after restraint or seclusion has been removed.

The next three objectives are notable for the deference they pay to each hospital, because they use subjective terms and are difficult to measure. The fourth objective states that an individual must be released from restraint or seclusion at "the earliest possible time, regardless of the length of time identified in the [medical] order" (Hospital CoPs, 2006, section e. 9.). This is ambiguous and lacks any objective, measurable component. The fifth provision is even more lenient, and states that the restrained or secluded patient must be "monitored by a physician, other licensed independent practitioner or trained staff . . . at an interval determined by hospital policy" (Hospital CoPs, 2006, section e. 10). This lacks any measurable component and fails to present a national standard of care. Finally, in the event that the restraint or seclusion was used to manage violent or aggressive behavior that posed an imminent risk, the Hospital CoPs (2006) states that a physician or registered nurse must see the patient within one hour after the intervention began. The only rationale for seclusion and restraint provided for by the rest of the Hospital CoPs is to prevent individuals from harm. The distinction between routine harm and

imminent danger calls for a time limit on assessment and monitoring. It would seem, though, that the requirement as to who will monitor restrained or secluded patients is so lax that at least a measurable time limit before establishing face-to-face contact with a doctor or nurse could be universally ordered. However, the Hospital CoPs; Final Rule states that the CMS “[has] repeatedly responded to inquiries regarding the criteria for differentiating between . . . emergency situations . . . versus the non-emergency use of restraint. Most of the individuals to whom we spoke indicated that this distinction was clear and understandable” (2006, p. 71383).

The most concerning aspect of the first six objectives of Hospital CoPs is the lack of hard evidence cited in the decision-making process. One commenter cited in the Final Rule (Hospital CoPs; Final Rule, 2006) made remarks to this extent

Since [the authors of the regulation] are demanding a new type of treatment protocol, I suggest that the burden is [theirs] to demonstrate in a controlled trail that [their] solution will indeed be more effective . . . To do less is to subject all patients to a cruel mass experiment. (p. 71410)

The final two objectives discussed in this analysis are staff training and death reporting requirements. Staff training according to the Hospital CoPs (2006) must include, information on: alternatives to restraint and seclusion, including de-escalation techniques and least restrictive alternatives; “training in how to recognize and respond to signs of physical and psychological distress”; and behavioral indicators of the need for restraint and seclusion, as well as those that indicate it is no longer needed (Hospital CoPs, 2006, section f, 2, iv.). In addition, staff training at orientation and “demonstration of competency” must be documented in employee records (Hospital CoPs, 2006, section f, 4). These points for training content are inclusive, relevant, and stated in clear and measurable terms. However, while it does require ongoing training in the use

of these techniques, section f does not specify the timeframe (i.e., every 12 months) in which recurrent training is necessary. There is a lack of clarity and measurability, to this end.

Unfortunately, the CMS expressed a belief that mandatory debriefings of all staff and patients involved in restraint or seclusion, and a review of each incident by a multidisciplinary team would be “unnecessarily burdensome” (Hospital CoPs; Final Rule, 2006, p. 71385). For this objective, overall, the content of staff training is clear and measurable, but the frequency of follow-up training and recertification is not. It is important to remember that if restraint and seclusion are used as infrequently as is absolutely necessary, routine reassessment of staff skills could prevent death and injury, more so than any of the other objectives.

Finally, requirements for reporting deaths related to the use of restraint and seclusion include every death that occurs (1) while the patient is in restraint or seclusion; (2) within 24 hours after the patient has been released from restraint or seclusion; and (3) within 7 days of the use of restraint or seclusion “where it is reasonable to assume that use of restraint or . . . seclusion contributed directly or indirectly to a patient’s death” (Hospital CoPs, 2006, section g, 1,iii). The first two requirements are both clear and measurable; it is obvious when a patient has died during the use of restraint or seclusion, and within 24 hours if the action was reported in the patient’s chart. However, the third circumstance of death that necessitates reporting uses subjective language “reasonable to assume” (Hospital CoPs, 2006, section g, 1,iii). From one provider to the next, what is considered reasonable to assume will vary a great deal. For example, one commenter on the Final Rule (2006) cited an incident in which a patient died during an asthma attack that the medical examiner ruled was brought on by stress after being physically restrained. However, the staff at the hospital ultimately ruled that the man died of natural causes. The addition of the requirements for staff training and death reporting to the Final



Rule are crucial to the Hospital CoPs's intended impact, discussed in the next section. Overall, whereas the first two objectives are clear and measurable, several of the others fail to present a national standard of care, use unclear or subjective terms, and lack any measurable component.

### **Intended Impact**

Chambers and Bonk (2013) and Haskins and Gallagher's (1981) models of analysis argue that the intended impact of a policy should be analyzed in terms of measurability and clarity, in the same way as the goals and objectives. Two thirds of the current Hospital CoPs analyzed here consist of additions to the previous rule. In introducing to the prior policy elements that require staff training and reporting of patient deaths, the intent was to include more patient protection. The intent of the amendments to the policy was to clarify terms and definitions of seclusion and restraint techniques.

The Hospital CoPs provides considerable flexibility to hospital administrators and staff. The CMS stated that this was to prevent hospitals from refusing care to specific patients deemed to have "significant problems" (Hospital CoPs; Final Rule, 2006, p. 71386). Either state or hospital statutes are deferred to in the majority of the objectives, to this end.

The Hospital CoPs is delimited in that it is only able to govern hospitals that participate in Medicaid and Medicare. An additional limitation is that "twenty percent of the hospitals that participate in Medicare and Medicaid are non-accredited . . . [So implementers] have the responsibility to ensure that all participating hospitals have certain protections in place" (Hospital CoPs; Final Rule, 2006, p. 71384). The proposed impact of the policy is to reduce the number of deaths and abuses of patients in the course of using restraint and seclusion. According to the CMS, the prevalence of the use of these techniques merit regulation.

An additional intent of the requirements for reporting in the event of a patient's death is to allow for federal monitoring. This, too, has admitted limitations; the CMS note that it is not in the best interest of the hospital or hospital staff to report deaths that are or may be related to the use of restraint and seclusion. Further, the CMS stated, we believe that while deaths are a focal point, it is important not to discount patient injuries. If deaths are under reported, injury data are even more elusive. Estimating the psychological and social impact of restraint or seclusion is more challenging still (Hospital CoPs; Final Rule, 2006, p. 71382).

This speaks to the policy makers' concern for outcomes, though only to the extent that they acknowledge a greater problem than they can address and their inability to initiate comprehensive reform.

### **Value Criteria**

Value criteria promote the adequacy and efficiency of the regulations in addressing the problem, as suggested in the Ginsberg and Miller-Cribbs (2005), Haskins and Gallagher (1981); Segal (2007), and Weiner (2005), and models of analysis. A range of value criteria can be used to evaluate the goals, objectives, and intended impact of the Hospital CoPs. The National Association of Social Workers' Code of Ethics [NASW] (2008) and principles of biomedical ethics and values related to trauma-informed care provide the criteria for this analysis.

The NASW Code of Ethics (2008) provides social workers with a standard to guide their conduct and activities, including in the arenas of advocacy and policy development. As social workers, we must primarily consider the Code's values in our pursuit of social justice and for the protection of vulnerable populations. Values espoused in the Code of Ethics can be used as criteria for determining both the merit of current legislation, and the principles to consider in recommendations for future legislation. In addition, the Code of Ethics (2008) obligates social

workers to engage in political action that advances the values and principles it promotes. Section 6.04(b) of the Code of Ethics (2008) dictates that through social and political action, social workers must “act to expand choice and opportunity for all people, with special regard for vulnerable . . .and exploited people and groups”.

The ethical principle of “Dignity and Worth of the Person” in the NASW Code of Ethics (2008) delineates the necessity for social workers to promote a consumer’s right to self-determination. The use of restraints and seclusion are specifically intended to usurp persons’ right to self-determination over a short time. They may also undermine a social worker’s ability to promote the long term, positive decision-making and coping skills. In addition, the Code states “social workers should not engage in physical contact with clients when there is a possibility of psychological harm to the client as a result of the contact” (NASW, 2008, 1.10). Research suggests that the use of manual physical restraint by a social worker violates this directive (Fisher, 2003; Nissen, Rorvik, Haugslett, & Wynn, 2013; Richter & Whittington, 2006; Tolson & Morley, 2012).

From the medical perspective, ethical principles of beneficence and respect for autonomy relate to the use of restraint and seclusion (Barker & Baldwin, 1991). Respect for autonomy is based on the belief that an individual should be able to make decisions about their own treatment, including declining treatment options (Beauchamp & Childress, 2001). Beneficence permits the provider make some decisions on the best care for individuals, to “act for the benefit of others” (Beauchamp & Childress, 2001, p. 166). These two principles ideally harmonize in medical ethics. They occasionally must be weighed, though, in terms of most versus least harm.

The Hospital CoPs does not necessitate it, but hospitals may require patients sign a release form at intake that permits the use of seclusion and restraint during the course of their

treatment. In the event that such a form is used, patients should be thoroughly briefed on the circumstances in which they would be placed in restraint or seclusion. This would resolve concerns with informed consent and disclosure, principles espoused by various health professions (Beauchamp & Childress, 2001; NASW, 2008).

Value criteria are subject to some degree of individual or administrative interpretation. When they conflict, there is often a suggested model for weighing principles and decision making. However, a growing body of evidence supports the use of alternatives to restraint and seclusion. Some authors argue that the use of restraint and seclusion should be curtailed, due to the lack of evidence that the use of restraint and seclusion prevents harm, and the abundance of evidence of their detrimental effect on the therapeutic relationship (Fisher, 2003; Huckshorn, 2004a, 2004b; Tolson & Morley, 2012).

### **Power Struggles**

In Segal's model for policy analysis, authors consider whether "race, ethnicity . . . or any other personal attributes play a role" in the problem prompting regulation (Segal, 2007, p. 132). If it is found to be so, analysis should focus on "who seems to have power and who does not" (Segal, 2007, p. 132). The Hospital CoPs are intended to apply to all patients who are hospitalized at a facility where Medicaid and Medicare are accepted. Despite this, the Final Rule explicitly mentions individuals with mental illness as especially affected by the problem of overuse and abuse of restraint and seclusion (Hospital CoPs; Final Rule, 2006).

Individuals with mental illness face discrimination and stigmatization and constitute a vulnerable group. In the event that they need or want to be hospitalized, their decision-making capacities may be questioned as a function of their mental health. "Psychiatric consumers often arrive on the [hospital] ward from the bottom rung of society . . . the power to determine

‘deviance’ lies with others” (Fisher, 2003, p. 77). The Hogg Foundation for mental health outlined the “harsh reality and dangers of seclusion and restraint” which include power struggles that fundamentally erode the therapeutic relationship between patients and their providers (The Hogg Foundation, 2009, p. 2). Ethical providers should view the use of seclusion and restraint as a breakdown of successful treatment, with mutual respect as value-criteria (Tolson & Morley, 2012). To this extent, authors have found that “adult consumers of mental health services find seclusion and restraint use to be punishing, nontherapeutic, and traumatizing, and that the personal experience of seclusion and restraint negatively affects treatment outcomes for many consumers” (Huckshorn, 2004b, p. 7). Given that the problem is more prevalent in a vulnerable population, evidence for interventions that could incite trauma should be especially compelling.

### **Actual Impact**

All of the policy analysis models used in this article recommend an evaluation of the actual impact of the legislation, including any potential negative consequences of the policy under scrutiny. The actual impact of the current legislation is conceptualized as the difference from the intended impact, and the result of utilizing value criteria and examining the power struggles inherent in the use of restraint and seclusion. The lack of impact had by the Hospital CoPs, evidenced by the continued traumatization of patients, is also presented.

One intended impact of 42 CFR 482.13, delineated in the Final Rule, was to reduce the number of hospital-patient fatalities and injuries due, or related, to the use of seclusion and restraint (Hospital CoPs; Final Rule, 2006). As such, the regulation included a requirement and mechanism for nationwide reporting of these types of deaths and injuries. However, the CMS acknowledged that it would be impossible to measure the effect of the intended impact since

there were no official or accurate reports of the number of deaths and injuries prior to the ruling (Hospital CoPs; Final Rule, 2006).

In the Final Rule (Hospital CoPs; Final Rule, 2006), the CMS cite an investigative report by The Hartford Courant, in which the deaths of 142 hospital patients who died over a 10-year period, from 1988 to 1998, “while or shortly after being restrained or secluded” were examined (Weiss, 1998, para. 3). Because there was no requirement to report such deaths to the CMS at the time of the investigation, the newspaper commissioned a statistician from the Harvard School of Public Health, who estimated that the actual number of restraint- and seclusion-related deaths that occur during psychiatric hospitalization might be 10 times greater, or 1,420 individuals over the 10-year period (Hospital CoPs; Final Rule, 2006; Weiss, 1998). In the 8-year period following the investigative report by the newspaper, between the Interim Final Rule in 1998 and the Final Rule in 2006, 165 deaths were recorded and conveyed to the CMS under the newly mandated reporting requirements (Hospital CoPs; Final Rule, 2006). However, a private investigation by the U.S. Department of Health and Human Services (HHS) (2006) found that during part of this time, from 1999 to 2004, 44% of hospital deaths related to restraint and seclusion were not ever reported to CMS by the hospital, and further, that over 60% of those reported were not reported in a timely manner, as specified in the Final Rule.

Since its 2006 enactment, no studies have been conducted to examine the actual impact of the new legislation, in relation to its goal to reduce patient deaths. Although the Hospital CoPs require hospitals to report deaths due or related to the use of restraint and seclusion to the CMS and state disability Protection and Advocacy (P&A) groups, this data is not made available to the public, ostensibly to protect the privacy and confidentiality of the deceased patients (Hospital CoPs; Final Rule, 2006).

Another goal of the Hospital CoPs; Final Rule (2006) was to eliminate the use of unnecessary and inappropriate restraint and seclusion; again, though, this is difficult to measure and enforce. In 2013, the CMS introduced the Inpatient Psychiatric Facility Quality Reporting Program (IPFQRP) to track the frequency of the use of restraint and seclusion (Medicare.gov, 2016). Hospitals accepting Medicare must now report to CMS the total number of hours they put psychiatric patients in restraint and seclusion (Medicare.gov, 2016). However, as this article is being prepared, only the data for the year 2013 has been made available, so there is no opportunity for year-to-year comparison yet (CMS, 2015b). In addition, the number of deaths due or related to the use of restraint and seclusion is not included in the IFQRP data (CMS, 2015b). Finally, the number of hours that a hospital uses restraint and seclusion for psychiatric patients is still not an accurate measure of the actual impact of the legislation because it does not examine the necessity or appropriateness of the use of these techniques, as the language of the regulation suggests.

Perhaps the greatest deficiency in the legislation is the admission that it “does not prohibit the use of any particular type of restraint” (Hospital CoPs; Final Rule, 2006, p. 71388). It does not need to provide an unnecessary burden to eliminate the use of mechanisms that have proven to be inherently dangerous. Reports of physical takedowns that ended with patients being placed in positions “spread-eagle,” extremely vulnerable, and similar to the physical posturing of being “hogtied” clearly evidence the need for some regulation of what types of restraint should not be used (Nissen, Rorvik, Haugslett, & Wynn, 2013, p. 261). A report from an agency in Indiana found that in instances of patient death, only 7% of the techniques of restraint and seclusion that were utilized were deemed “appropriate by standards for managing a person’s aggressive behavior” (Equip for Equality, 2011, p. 7).

In their conceptual framework of traumatic experiences, Carlson and Dalenberg (2000) identify the “three defining features of traumatic events, including negative valence, lack of controllability and suddenness” (p. 4). In the DSM-IV-TR diagnostic criteria for Post-Traumatic Stress Disorder, a definition of a traumatic event is included, which involves “a threat to the physical integrity of self. . .” and a response including feelings of helplessness (American Psychiatric Association, 2000, pp. 463–468). The experience of being placed restraint or seclusion can meet the criteria of a traumatic event, then, especially if the patient is in a highly sensitive state. The use of seclusion and restraint can also “trigger existing symptoms of post-traumatic stress disorder or other mental illness” (The Hogg Foundation, 2009, p. 2).

Abderhalden et al. (2006) cite numerous studies which indicated coercive treatment, including restraint and seclusion, resulted in patients’ “feelings of chaos, loss of control, rights, and dignity . . . sensations of helplessness, powerlessness, and failure” (p. 81). Further, the potential for trauma is not limited to the use of mechanisms and techniques of restraint. Research has shown that “isolation induces a state of oversensitivity to external stimuli, hallucinations, and delusions” when used for long periods or under especially stressful circumstances (Abderhalden et al., 2006, p. 80). The effects of trauma and traumatic symptoms have been associated with a variety of maladaptive coping techniques and additional exacerbations of mental illness symptoms. This includes a correlation with subsequent non-suicidal self-injury (Smith, Kouros, & Meuret, 2014).

Unfortunately, there is no evidence that the actual impact of the policy has met any of the stated goals, by reducing in the number of patient deaths, the instances of inappropriate or unnecessary uses of restraint and seclusion, or reducing trauma and abuse of psychiatrically hospitalized patients. Mounting evidence suggests that such a policy would need to eliminate the use of physical restraints to meet that end.



### **Conclusions, Implications, and Suggestions**

The root of the problem may be that the use of seclusion and restraint techniques for psychiatrically hospitalized individuals, at least occasionally, are considered obligatory in professional and laymen opinion. Theories of trauma and previous research suggest that the use of restraints and seclusion are counter-therapeutic for people with mental illness; however, the overwhelmingly prevalent stigmatization of individuals with mental illness seems to demand the ability of professionals to utilize them (The Hogg Foundation, 2009; Fisher, 2003; Huckshorn, 2004a). This is despite findings that the “evidence that physical restraints prevent harm is miniscule to nonexistent” (Tolson & Morley, 2012, p. 311).

Suggestions for policy alternatives are abundant, and have been tested and found effective in other countries and at some U. S. institutions. For examples of successful policy initiatives, Whittington, Baskind, and Paterson (2006) found that “many national health agencies around the world have adopted explicit policies to reduce reliance on seclusion and restraint, and replace them with more skillful interventions at the less coercive and intrusive end of the ladder of interventions” (p. 153). Such interventions include using de-escalation procedures and verbal communication to reduce imminent threats of harm to self or others. Additionally, hospital staff need training to communicate with patients, to identify triggers for patient aggression during intake assessments. Staff can enlist patients to help participate in their own treatment planning for safety and de-escalation in the event of a crisis (Stokowski, 2007).

Stokowski (2007) points out that very often, restraint and seclusion are used following threats of aggression or harm, when the threat has actually already passed. Once the threat of harm has passed, the restraint or seclusion is a form of punishment, rather than a protective measure. Often, the best solution to imminent threats of harm to others is to clear everyone from

the immediate area (Stokowski, 2007). Once the threat has been de-escalated in this way, it is possible to intervene to calm the patient, rather than place the individual in restraint or seclusion (Stokowski, 2007). Likewise, it would be unsafe to charge at someone who is threatening self-harm to place the patient in restraint or seclusion. So it is likely that the staff member has already de-escalated the situation, whether or not the member is aware of it. Perhaps most importantly, Gatens (2007) points out that it may be an interaction with a staff member or staff member behavior that triggers agitation and aggression from a patient. In this case, the best method for intervention is awareness of which behavior is becoming a stressor, making modifications if possible, or explaining staff behavior to the patient and discussing the patient's reaction (Gatens, 2007). It is important to stress the relationship between staff behavior and patient aggression, since aggression may be the product of confusion or fear, and not anger.

An important first step to addressing the shortcomings of the current legislation would be to implement a national staff training program based on empirical evidence for risk and restraint reduction, and to mandate the time interval between staff recertification. Frequent recertification is especially important since restraint and seclusion should be used very infrequently. A standardized program would be helpful to reshape the way professionals think about patient behavior and to change the culture of mental health care and psychiatric hospitalization. Two important principles must be stressed in staff training: (1) restraint and seclusion indicate a failure of the treatment process, and (2) restraint and seclusion are not compulsory features of mental health treatment.

New efforts to measure the prevalence of use of restraint and seclusion in hospitals through the IPFQRP are promising. However, there has been no effort to measure the impact of the current policy in terms of reducing unnecessary and excessive restraint and seclusion. As a

result, we are unable to establish whether the aims of the policy are being met. In this effort, the U. S. would also need to implement better and more stringent methods of documentation, beyond those necessitated only by the death of the individual. If one of the aims of the policy were to reduce instances of unnecessary or excessive use of restraint and seclusion then quality control checks implemented by each state's Protection and Advocacy agency, the agencies established to protect the rights of individuals with disabilities, would be beneficial. These could be focused on hospitals that are known to use restraint and seclusion at the highest rates. It might also be useful to seek guidance from staff in hospitals that are documented to use restraint and seclusion the least.

At the very least, the Hospital CoPs should include objectives that prohibit certain types of restraint and seclusion. A current movement in the UK has been an effort to disallow facedown restraint of patients. This is because the risk for patient asphyxiation while being restrained in a facedown position significantly exceeds that of other restraint methods (Mind, 2013). Procedures of restraint that vary considerably by provider, including those that involve the weight of a staff person's body being placed on the patient, should not be sanctioned either.

A host of individuals and agencies are supporting initiatives for further positive change (Hospital CoPs; Final Rule, 2006). Comments on the Hospital CoPs interim rule included those from "hospital administrators and staff, attorneys, mental health clinics, professional associations, accrediting bodies, state agencies. . . patient protection and advocacy groups, and members of the general public" highlighting the diversity of the policy stakeholders (Hospital CoPs; Final Rule, 2006, p. 71380). A Hogg Foundation report stated

Reducing seclusion and restraint . . . is possible with changes in policies, procedures, training and work environments . . . by taking relatively simple, cost-effective steps,

including using more verbal de-escalation and calming techniques, inviting consumers to share their experiences with seclusion and restraint and alternative methods during new employee orientation, and debriefing staff after conflicts with clients. (2009, p. 1)

In addition, Huckshorn (2004a) calls for “commitment, energy, effort, passion, skill, and creativity” in order to “cause a culture change in mental health treatment settings from one of control to one of partnership” (p. 7). In conclusion, this type of policy analysis is necessary because it makes apparent that stigmatization of a vulnerable population may be grossly overriding best-and evidence-based practices and promulgating entirely avoidable instances of patient abuse and inciting or exacerbating patient trauma.

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Chapter 3: State Funding, Use of Restraint, Seclusion, Antipsychotic Polypharmacy, and Follow-up Care for People with Schizophrenia

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### **Abstract**

The Centers for Medicare and Medicaid Service's Hospital Compare dataset contains several measures of quality of care, from the Inpatient Psychiatric Facilities Quality Report, of significance to individuals with schizophrenia. These include the measures of rate of restraint, seclusion, antipsychotic polypharmacy, and follow-up care from inpatient psychiatric hospitalization. This study examines these measures and their relationship to state funding for outpatient mental health treatment, which is theoretically linked to quality of inpatient care. A confirmatory factor analysis was proposed to test construct validity of this measure. Structural equations modeling was proposed to test the relationship between state funding and quality of care. Correlations between outpatient funding and quality of care measures were estimated. Results suggest that the measures and data collection processes need revision. Some measures were missing large amounts of data. Missing value analysis was conducted. Hospitals in better-funded states were more likely to report on some quality of care variables. Thus, data quality belied confirmatory factor analysis and structural equations modeling. Measures are updated each year, so additional research on future versions of the dataset are necessary.

*Keywords:* schizophrenia, psychiatric hospitalization, seclusion, restraint, quality of care

State Funding, Use of Restraint, Seclusion, Antipsychotic Polypharmacy, and Follow-up Care  
for People with Schizophrenia

Research has shown that the use of physical restraint and seclusion in psychiatric care may induce trauma and cause significant psychological harm to the recipient (Fisher, 2003; The Hogg Foundation, 2009). In rare instances, restraint and seclusion result in death (Hospital Conditions of Participation [Hospital CoPs], Final Rule, 2006). From a physiological standpoint, individuals with schizophrenia are at an increased risk of decompensating in the face of stress caused by seclusion and restraint because cortisol levels are notably higher at baseline, compared to people without mental illness and to people with depression; additionally, cortisol absorption may be delimited by a reduced number of glucocorticoid receptors in some layers of the frontal cortex (Corcoran et al., 2003; Jones & Fernyhough, 2007; Steen et al., 2011; Webster, Knable, O'Grady, Orthmann, & Weickert, 2002). In rats, restraint and seclusion have been shown to increase stress and lead to increased corticosterone levels (Sanchez, Ladd, & Plotsky, 2001).

Individuals with schizophrenia may be at an increased risk of subjugation to seclusion or restraint in psychiatric hospitalization because they are more likely to be discriminatorily perceived as hostile or aggressive by staff (Margetic, Margetic, & Ivanec, 2013; Steinert, Bergbaur, Schmid, & Gebhardt, 2007). Increased risk of restraint and seclusion, along with their adverse effects may result in a negative feedback loop, where restraint and seclusion beget more restraint and seclusion and contribute to physiological and psychological decline. Additionally, it has been shown that individuals who are restrained or secluded have a higher rate of re-hospitalization (Substance Abuse and Mental Health Service Administration [SAMHSA], 2015).

### **Regulations of the Use of Restraint and Seclusion**

A national set of patient's rights for recipients of Medicaid and Medicare was established in 2006 (Hospital CoPs; Final Rule, 2006). These included regulations on the use of restraint and seclusion, with the expressed intent to protect individuals with mental illness (Hospital CoPs; Final Rule, 2006). However, there was no way to measure the effect of this legislation for several years. In response to portions of the Patient Protection and Affordable Care Act (PPACA), the Centers for Medicaid and Medicare Services (CMS) finally instituted a pay-for-reporting program in 2012, titled the Inpatient Psychiatric Facilities Quality Reporting Program (IPFQR) (Parks, 2014; Storm, 2015; PPACA, 2010). The IPFQR are published annually; the first full year of data was made available in 2016, from the fiscal year 2014 (Parks, 2014). The first IPFQR included six measures, including use of restraint and seclusion (Blair et al., 2015). Since then, additional quality measures have been added, including the ratio of patients discharged on multiple antipsychotic medications and the rate of follow-up care post-discharge (Parks, 2014).

**Antipsychotic polypharmacy and chemical restraint.** For people with mental illness antipsychotics may serve as chemical restraint, beyond the normal course of treatment (§574.0415; 574.101; Mattingly & Small, 2014). Generally, a physician is obligated to disclose if the purpose of administering an antipsychotic is intended to restrain an individual (Gross, Mitchell, & Hayes, 2003; 42 C.F.R § 482.13). However, some authors find that this is frequently ignored (Knox & Holloman, 2011; United States General Accounting Office, 1999). Further, authors of a Cochrane review found that there is no evidence that the “common practice” use of antipsychotic medication ‘as required’ is effective; rather, authors suggest that physicians and staff may rely on it out of habit (Chakrabarti, Whicher, Morrison, & Douglas-Hall, 2007, p. 1).

Antipsychotic polypharmacy is the practice of prescribing more than one antipsychotic medication to a patient during the same period. This is undesirable because it magnifies the risks associated with each of the antipsychotics, but has not shown to extend both their benefits (Ortiz, Hollen, & Schacht, 2016). Such prescribing practices are very common, affecting nearly... nearly 25% of people with schizophrenia discharged from psychiatric hospitalization (Ortiz et al., 2016). This goes against the strong recommendation made by the World Health Organization (WHO) to prescribe only one antipsychotic to individuals with schizophrenia (WHO, 2012).

### **Outpatient Treatment and Follow-Up Care: Costs, Benefits, and State Funding**

The cycle between restraint, seclusion, and increased symptomatology and trauma has negative implications for treatment outcomes. This may result in more frequent re-hospitalization, which has significant psychological and financial costs (CMS, 2016). Much research focuses on ways to prevent psychiatric re-hospitalization, because repeated inpatient care is linked with negative clinical outcomes and higher financial cost than outpatient treatment (see Heslin & Weiss, 2015). State mental health funding on the outpatient level for many programs reduces the cost of treating mental illness through hospitalization, including Assertive Community Treatment (ACT) programs (SAMHSA, 2014; Treatment Advocacy Center, 2016).

ACT and other outpatient treatment programs provide valuable follow-up care, especially for people with schizophrenia who may have additional difficulty readjusting to life after hospitalization (Loch, 2014; Slade et al., 2013). Continuation of care in an outpatient setting, following a hospitalization is difficult to ensure (Prince, 2005; Schrag, 2006; Valenstein, 2002). Rates of nonadherence to medication and other outpatient treatment for individuals with schizophrenia discharged from psychiatric hospitalization range from 25-35% (Abdullah et al., 2015; Prince, 2005). This is alarming, given that continuation of care is arguably the best and

most effective way to prevent the leading cause of excess mortality related to the diagnosis: suicide (Malone, Marriott, Newton-Howes, Simmonds, & Tyrer, 2007; Novick et al., 2010).

The underfunding and understaffing of outpatient treatment centers undeniably contributes to the difficulty in verifying continuation of care post discharge (Centers for Disease Control [CDC], 2015; The President's New Freedom Commission on Mental Health [PNFCMH], 2003). State funding for outpatient mental health treatment programs and centers, including ACT programs, varies significantly (National Research Institute [NRI], 2013). In many states, community mental health centers in the locality where a discharge occurs are responsible for initiating follow-up care post hospitalization (Centers for Medicare and Medicaid Services [CMS], 2016). Follow-up care within 30 days of hospital discharge is considered a key indicator of mental health care quality by the National Committee for Quality Assurance (NCQA) (2014).

### **Theories of Diathesis-Stress and Allostasis**

The neural diathesis-stress theoretical model of schizophrenia is widely accepted; it suggests that psychosocial and environmental factors contribute to the development and diagnosis of schizophrenia, in combination with genetic predisposition (Corcoran et al., 2003; Jones & Fernyhough, 2007). The metabolic networks of individuals with schizophrenia are altered compared to individuals without mental illness; specifically, cortisol (a hormone released in response to stress) metabolism is increased, which increases vulnerability to stress (Corcoran et al., 2003; Jones & Fernyhough, 2007; Steen et al., 2011). Some research suggests that raised levels of cortisol precede psychotic symptoms, indicating that stress hormones may cause symptoms, rather than being primarily an effect of them (Lenzenweger & Dworkin, 1998).

The accumulation of stress over the lifetime contributes to allostatic load, or overload, whereby the system is unable to cope and suffers additional psychopathology or psychological

deterioration (Corcoran et al., 2003; Singer, 2008). Continued allostatic load may lead to pyramidal neuronal death, and hippocampal shrinkage (Singer, 2008). Abnormalities in hippocampal composition and size have been noted consistently in schizophrenia (Corcoran et al., 2003; Harrison, 2004; Heckers & Konradi, 2002).

### **The Current Study**

This study sought to examine the relationship between state mental health care funding and the use of restraint and seclusion in inpatient psychiatric hospitalization. Additionally, the relationship between state mental health care funding and discharge procedures related to the use of antipsychotic medication and follow-up care post-discharge was reviewed. The effect of national policy on the use of restraint and seclusion in inpatient psychiatric hospitalization is still unknown. The stated aim of the policy was to reduce the instance of abuse and death related to the practice (Hospital CoPs; Final Rule, 2006). Results from the IPFQR now make it possible for researchers to examine the rate of use for psychiatrically hospitalized patients at the facility, state, and national level. However, current data does not support longitudinal analysis of trends in the use of restraint and seclusion on the IPFQR, as only one year of complete records have been released. It is possible to analyze the effect of other mental health policy on the use of restraint and seclusion, and to make comparisons across states.

Additionally, data from the IPFQR does not support examining the demographics and diagnoses of individuals who are most at risk for seclusion and restraint. However, it is possible to analyze the relationship between the rate of use of restraint and seclusion in inpatient hospitalization with trends in the prescription of multiple antipsychotic medication at discharge. This may approximate the number of individuals with treatment-resistant psychosis who are treated at the facility. Though some people with schizophrenia are on one or fewer antipsychotic

medications, very few people who do not have schizophrenia are prescribed more than one antipsychotic at discharge (Ortiz et al., 2016).

The Hospital Compare dataset contains several measures of hospital quality, which vary each year. These were derived from The Joint Commission's Hospital Based Inpatient Psychiatric Services (HBPIS) measure set. The IPFQR includes measures of rate of restraint, seclusion, antipsychotic polypharmacy, and follow-up care within 30 days. These may a reliable measure of "quality of care." However, to date, only one other study has examined these measures, using a sample of accredited hospitals surveyed by The Joint Commission. Shields and Rosenthal (2016) compared performance on the quality measures by hospital ownership. In contrast, the current study hypothesized that state outpatient mental health care may be a predictive feature of these quality of care measures.

### **Hypotheses**

1) State funding for outpatient mental health treatment may reduce the rate of hospitalization and re-hospitalization thereby minimizing the use of restraint and seclusion associated with hospitalization for individuals with schizophrenia. It was hypothesized that restraint and seclusion would be utilized less in states where mental health funding was higher.

2) People with schizophrenia are more likely to be perceived as hostile or aggressive, and may be at greater risk of being restrained or secluded. Data from the IPFQR does not support testing the correlation between diagnosis and risk of restraint and seclusion. However, it is possible to examine the correlation between the use of antipsychotic polypharmacy and the rate of restraint and seclusion. It was hypothesized that the rate of restraint would and seclusion be higher in states where antipsychotic polypharmacy was used more frequently.



3) In states where there is little funding for outpatient mental health, there may be fewer resources for follow-up care. This may mean less robust outpatient treatment options and fewer community mental health centers, which are responsible for follow-up care. It was hypothesized that follow-up care within 30 days would be lowest in states where funding per capita was low.

4) It was hypothesized that the measures theoretically linked to quality of care (restraint, seclusion, antipsychotic polypharmacy, and follow-up post discharge) would compose a measure, “quality of care,” with good construct validity, comprised of a single factor.

5) Finally, it was hypothesized that the level of state outpatient mental health care funding would predict variations in the quality of care measure previously specified.

## **Methodology**

### **Data Sources**

#### **Inpatient Psychiatric Facilities Quality Report (IPFQR).**

This study used data from the 2014 Inpatient Psychiatric Facility Quality Report (IPFQR). The 2014 IPFQR was made available in 2016; it is part of the Hospital Compare project sponsored by the CMS. The 2014 data is the most recently released year of data, and the first year of complete data. It is a pay-for-reporting program; hospitals that do not participate receive a 2% reduction in reimbursement for care from CMS. It includes information from 1,627 psychiatric hospitals.

#### **National Association of State Mental Health Program Directors Research Institute (NRI) report.**

This study also used data from the 2013 NRI report on state mental health funding for community mental health treatment. This report includes each state’s outpatient mental health funding, exclusive of state budgets for inpatient hospitalization and research and administration.

The 2013 report is the most recently released data. The NRI details the level of each state's funding on mental health services, including on inpatient, outpatient, and residential facility services. Florida and New Mexico do not report their state outpatient mental health funding.

### **Measures**

The IPFQR includes hospital information, as well as the following measures of interest:

- 1) the total number of hours that all inpatients were maintained in physical restraint
- 2) the total number of hours that all inpatients were held in seclusion
- 3) number of patients discharged on multiple antipsychotic medications with and without justification
- 4) rate of discharges who subsequently had an outpatient visit within 30 days of discharge (outpatient visit with MD, DO, LMSW, LCSW, LPC, or neurologist)

The NRI report includes a breakdown of state mental health agency funding for community-based programs. NRI reports this data for each state as a raw figure, as a function of total state budgets, and in per-capita form. This study also utilized the per-capita figure, because it takes the state population under consideration.

### **Data Analysis**

To answer the first three research questions, several correlations were estimated. All variables were examined for normality, to determine their appropriateness for use in parametric or nonparametric tests. Confidence intervals and statistical significance of each correlation were examined. Bootstrapping was performed to improve confidence intervals. New Mexico and Florida were excluded from analyses because data on state funding was not available.

To answer the fourth and fifth research questions, a CFA and SEM were planned. The four measurement items were hypothesized to load onto a single factor, as a construct "quality of

care”. If the measurement model was found to be a good fit, SEM would be conducted to determine if variations in state mental health funding could explain variations in quality of care.

### Results

Data on state funding and follow up care were found to be normally distributed, based on examination of a p-p plot and descriptive statistics. Data on the rate of use of restraint, seclusion, and antipsychotic polypharmacy were all found to be positively skewed, due to a high rate of “0” responses. Because of the skew of these data, to answer the first three research questions, Spearman’s Rho correlation coefficients were estimated, rather than Pearson’s. Spearman’s Rho correlation is a nonparametric monotonic function of a parametric correlation (Field, 2013). It reduces the level of measurement of a skewed variable into rank data and estimates its relationship to another variable, which is appropriate in the presence of skew and kurtosis; this is in contrast to parametric correlations, which require normality and continuous data (Field, 2013). Summary statistics for the variables under examination are listed in Table 1.

Measure	Mean	SD
State funding	131.84	78.48
Hours restraint	216.79	767.84
Hours seclusion	158.19	616.15
Polypharmacy	58.74	124.44
30-day follow up	55.67	13.17

*Table 1.* Summary statistics of measures on IPFQR

The use of restraint and seclusion were both statistically significantly correlated to state funding (Table 2). However, the relationships ran contrary to prediction. State funding and the use of both restraint  $r_s = .264, p < .001$ , and seclusion  $r_s = .113, p < .001$  were positively correlated. Both correlations were small, but statistically significant below the  $p < .001$  level. As expected, restraint and seclusion were highly correlated with one another,  $r_s = .544, p < .001$ . The  $N = 1,536$  for these correlations, after exclusion of 5 outliers and cases with missing data.

Measure					
State funding	1	.264**	.113**	---	.152**
Restraint	.264**	1	.544**	.217**	---
Seclusion	.113**	.544**	1	.177*	---
Antipsychotic polypharmacy	1	.217**	.177*	1	---
Follow up care	.152**	---	---	---	1

\*\* indicate statistical significance  $p < .001$

\* indicate statistical significance  $p < .01$

Table 2. Correlations between measures on IPFQR and state funding for outpatient mental health care.

The relationship between restraint, seclusion, and polypharmacy was positive, as expected (Table 2). Higher rates of restraint were linked to higher rates of discharge on multiple antipsychotic medications,  $r_s = .217, p < .001$ . Higher rates of seclusion were also associated with increased antipsychotic polypharmacy,  $r_s = .177, p < .001$ . These correlations were also small, but statistically significant. The  $N = 766$  for these correlations, due to a large amount of missing data on the medication variable.

The relationship between state funding and follow up care at 30 days was also positive, as expected (see Table 2). Higher rates of state funding were linked to higher rates of follow up care post-discharge,  $r_s = .152, p < .001$ . This effect size was small, but statistically significant. The  $N = 1,262$  for this correlation, also due to a large amount of missing data for this variable.

Data on antipsychotic polypharmacy were missing from approximately half the sample. Data on the rate of follow up care within 30 days from discharge were missing from approximately 17% of the sample. Missing value analysis was conducted. Two dummy variables were created for missing status. Two  $t$ -tests were conducted to determine if data on the antipsychotic and follow-up variables were missing completely at random based on dummy group membership (0, 1). The dependent variable was state funding for outpatient treatment.

Missing data for both of these variables was found to be significantly related to state funding. Hospitals that reported the use of antipsychotic polypharmacy at discharge were located

in states with statistically significantly higher outpatient mental health funding ( $M = \$131.84$ ,  $SD = 78.53$ ) than those that were missing data ( $M = \$118.39$ ,  $SD = 74.72$ );  $t(1,535) = -3.42$ ,  $p < .01$ . Additionally, hospitals that reported the rate of follow-up care within 30 days of discharge were also located in states with statistically significantly higher outpatient mental health funding ( $M = \$128.15$ ,  $SD = 77.94$ ) than those that were missing data ( $M = \$106.01$ ,  $SD = 67.68$ );  $t(1535) = -4.37$ ,  $p < .001$ . Given these detriments to the quality of the data, CFA and SEM were determined to be inappropriate (Grace-Martin, 2012). Multiple imputation was also determined to be inappropriate given the relationship between the dependent variable and missingness. Thus, research cannot address the fourth and fifth research questions in this study.

### Discussion

Results of this study lend insight to the importance of outpatient mental health funding and national policy on seclusion and restraint for people with schizophrenia and other mental illnesses who are psychiatrically hospitalized. Restraint and seclusion were nationally unregulated in inpatient hospitalization until 2006. Since then, the only part of the regulation that was federally monitored was patient death reporting on instances stemming from the use of restraint. The IPFQR is step forward in measuring quality of care. However, results of the current analysis suggest that there is room for improvement of the measures.

The use of seclusion and restraint in psychiatric hospitalization may have devolved from the primary source of mental health “treatment.” However, in many institutions they are still considered an occasionally obligatory practice. This includes the use of antipsychotic medication as a chemical restraint. In the current study, 710 psychiatric hospitals each discharged an average of 59 patients per year on multiple antipsychotics. This figure disproportionately represents hospitals in states where outpatient funding is high, which may indicate an even greater problem.

Additionally, 1,520 hospitals surveyed each discharged approximately 56 people who would not receive follow up care within 30 days. For people with schizophrenia, the rate of nonadherence to medication post discharge is strikingly similar to the rate of antipsychotic polypharmacy, around 25%, (Abdullah et al., 2015; Ortiz et al., 2016). Discontinuation is especially concerning because continuation of care is critical to prevent suicide post-discharge, when an individual is most likely to die from it (Malone et al., 2007; Novick et al., 2010). The CDC (2015) and the PNFCMH (2003) have suggested that underfunding outpatient treatment centers reduces follow-up care after hospitalization. The predicted relationship between funding and follow-up care was affirmed in this analysis. Thus, greater funding for outpatient mental health care may have life-saving benefits. This conclusion requires additional research, however.

In the current study, the relationship between antipsychotic polypharmacy and restraint and seclusion also ran in the predicted direction. Polypharmacy was used as a proxy variable to estimate the number of individuals with schizophrenia at a given hospital. Thus, restraint and seclusion may be used more frequently at hospitals with a greater number of individuals with treatment resistant schizophrenia. This also suggests that hospitals that perform poorly on these three measures of quality of care vary together. However, the overall model could not be tested due to conditionally missing data.

Contrary to prediction, in the current study restraint and seclusion were positively correlated with state funding for outpatient mental health care. Because there was no previous measure of the rate of use of restraint and seclusion during hospitalization, this hypothesis was based on theory and is not yet evidence-based. Thus, this relationship warrants future research.

**Limitations**

One limitation of this study was that antipsychotic polypharmacy was used as a proxy variable for psychiatric diagnosis. A recent study found that 80% of individuals discharged from inpatient hospitalization on multiple antipsychotic medications had schizophrenia or a psychotic disorder (Ortiz et al., 2016). However, it is also important to consider that the relationship between seclusion and restraint and the use of antipsychotic polypharmacy may be influenced by symptom severity and factors outside of diagnosis, including the presence of psychotic symptoms in patients with other mental illnesses.

The relationship between several variables were small, around .1, and thus might be considered less meaningful. Interestingly, the relationship between each tested pair was stronger with restraint than seclusion. Another limitation is that the IPFQR and the national policy regulating the use of restraint and seclusion during hospitalization are only required of hospitals that accept the conditions of Medicare and Medicaid. The findings may not hold true for hospitals that are not required to report. The largest limitation to the study was that data were missing conditionally. This is an important finding and should influence both future research and data collection. It also significantly limited the available statistical interpretations.

**Recommendations**

Shield and Rosenthal (2016) found that, in a smaller sample published by the Joint Commission, covariance between several of these measures on the HBIPS were weak. Their conclusion is that either quality of care is a “multidimensional construct,” or that the measure is unreliable. The current study was unable to determine the number of factors the measures under study comprised due to data quality issues. However, the correlation between restraint, seclusion, and antipsychotic polypharmacy was examined. The effect sizes were small but significant. Such

research is a critical step in designing the best measures of quality of care for the psychiatrically hospitalized. Results of these two studies suggest that further investigation is necessary to determine the best way to measure quality of care provided by psychiatric hospitals.

Two recommendations for future research are longitudinal analysis and confirmatory factor analysis. Longitudinal analysis can identify policy shifts that positively impact all individuals who are psychiatrically hospitalized. The effects of changes to state and national policy related on the use of restraint and seclusion can now be estimated. Additionally, it is possible to estimate the effects of other policies, including funding, on the use of these practices.

Finally, the IPFQR purports to be a measure of quality. However, conditionally missing data belies the ability to test the construct validity of its items. Thus, there is room for improvement in data collection and maintenance. States with lower state funding for mental health outpatient care may need assistance or guidance in data collection. It may also be helpful to provide education and training on the importance of data collection and procedural fidelity.

In summary, the implementation of the IPFQR measures, including measures of the use of restraint, seclusion, and antipsychotic polypharmacy, are an important advancement given the prior lack of measurement of their use. Future explorations of the IPFQR are critical, given the data quality issues and limitations in the first version.



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Chapter 4 : Suicide Self Injury and Involuntary Hospitalization Status for People with  
Schizophrenia

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**Abstract**

Suicide is a large social problem that disproportionately affects individuals with schizophrenia. Involuntary hospitalization has been linked with longer lengths of stay and higher rates of suicide post-discharge. Studies suggest that outpatient treatment can reduce suicides, but outpatient centers do not receive adequate funding to meet this end. This study examined diagnosis, cost and length of stay, outpatient mental health funding, and restraint and seclusion for individuals with schizophrenia, including a subsample who presented with suicidal self-injury, from the National Inpatient Survey. Results indicate that funding is associated with involuntary status for both groups, but not suicide injury at admission.

### Suicide and Involuntary Hospitalization for People with Schizophrenia

Suicide and suicidal ideation are large social problems that affect many individuals with and without mental illness, in addition to the families and friends of suicide victims. The magnitude of the problem is grave: suicide has been on the lists of top-ten causes of death in the US since the 1980s (CDC, 2016). In each year since 1999, approximately 45,000 people died of suicide (CDC, 2016). Suicide is known to affect specific populations at higher rates than others. It is the leading cause of excess mortality for people with schizophrenia (Brown, 1997; Limosin, Loze, Philippe, Casadebaig, & Rouillon, 2007).

Studies have found that over 40% of people with schizophrenia experience suicidal ideation at some point in their life (Fenton, McGlashan, Victor, & Blyler, 1997; Gill et al., 2015). Further, as many as one in four people with schizophrenia make a suicidal gesture with intent (Fenton et al., 1997). Estimates of the rate of completed suicide for people with schizophrenia, according to autopsy and retroactive case examination, range from five to seven percent (Brown, 1997; Fenton et al., 1997; Palmer, Pankratz, & Botswick, 2005). In the general public, rates of diagnosis of schizophrenia are slightly higher than 1% (APA, 2013). Despite the low prevalence rates, the manifestation of schizophrenia during adolescence and young adulthood may influence the correspondingly high rate of suicide for that population (APA, 2013; CDC, 2014; Mann, Brent, & Arango, 2001).

In a qualitative study, individuals with schizophrenia who experienced suicidal ideation ranked solitude and inability to interact with others as the single largest contributing factor to their suicidal ideation, (Skodlar, Tomori, & Parnas, 2008). In quantitative, post-mortem studies loneliness, psychotic symptoms, and involuntary admission to psychiatric hospitalization were found to greatly increase the risk of suicide post-hospitalization (Roy & Draper, 1995). Other



risk factors for suicidality for people with schizophrenia are depressive symptomatology related to their diagnosis and paranoia (Brugnoli et al., 2012; Fenton et al., 1997; Lopez-Morinigo et al., 2015). The two primary methods of detection of suicidality are observation and self-report inventories, of which there are dozens. However, more research is needed into the validity and reliability of clinical scales for people with schizophrenia and psychotic features (Peterson, 2015). Depending on the setting in which suicidal ideation is identified, interventions may be physical (restrain and seclusion), psychological (counseling), or biological (psychopharmaceutical), or a combination.

### **Involuntary Hospitalization Criteria For Suicidality**

In the United States, policies on involuntary commitment are regulated at the state level; though variation from the most to least restrictive states is slight (Treatment Advocacy Center, 2011). In most states, on the scale from suicidal ideation to behavior, a person must have plans, viable means, and intent in order to be held as an inpatient involuntarily (§574.034; Treatment Advocacy Center, 2011). On the more restrictive side, some states require additional documentation beyond proof that an individual poses an imminent risk of harm to self or others.

### **Implications for Length of Stay and Re-hospitalization**

A systematic review of the effects of involuntary admission to psychiatric hospitalization, relative to voluntary admission, found that involuntary admission was linked to longer lengths of stay in several samples of individuals with schizophrenia (Kallert, Glockner, & Schutzwahl, 2008). Involuntary hospitalization was also linked with more frequent readmission (Kallert et al., 2008). Most disturbingly, prior involuntary admission was linked with much higher rates of suicide compared with prior voluntary hospitalization (Kallert et al., 2008; Roy & Draper, 1995).

Several agencies and authors, including Medicaid, use readmission to hospitalization within a certain time frame (60, 90, or 365 days) as a measure of the efficacy of inpatient treatment (James, 2013; Schrag et al., 2006; Valenstein et al., 2002). Studies show that for people with schizophrenia discharged from psychiatric hospitalization, approximately one-third are re-hospitalized within 6 months, almost one-half within one year, and almost three-quarters within 5 years of initial discharge (Druss et al., 1998; Olfson et al., 1999). A ten-year longitudinal study found that the 2 most significant predictors of readmission for psychiatric patients were positive Medicaid status and psychotic symptomatology (Druss et al., 1998). Authors concluded that hospitals are treating a “sicker group of patients with shorter lengths of stay” (Druss et al., 1998, p. 427). They suggest that the rate of readmission of psychotic patients indicates inadequate lengths of stay are unexceptional (Druss et al., 1998). Further, several studies conclude that brief hospitalization was unable to treat the underlying issues that generated the hospitalization (see Loch, 2014). However, less lengthy involuntary commitments are more desirable from a social justice perspective. These considerations must also be weighed, given the significant increase in cost associated with readmission (Druss et al., 1998; James, 2013; Schrag et al., 2006).

### **Outpatient Treatment for Suicidality**

Policies that mandate outpatient or assertive outpatient treatment are infrequently invoked as a first course of action in cases of suicidal behavior; however, outpatient treatment is generally suggested following hospitalization and may be the best approach for individuals with less intense suicidal ideation, without plans, means, or intent to act on suicidal ideation (Gliatto & Rai, 1999; Texas Department of Family Protective Services [DFPS], 2009; Testa & West, 2010; Texas Health and Safety Code §573 and §574). Staff at outpatient mental health treatment

facilities that are funded appropriately can identify suicidality, in many instances, and address it before hospitalization is necessary (The Joint Commission [TJC], 2016). However, many communities lack the resources to implement effective and comprehensive suicide assessment and prevention (TJC, 2016; Yoon & Bruckner, 2009). Overall, many of the risk factors for suicide for people with schizophrenia, including social withdrawal and depressive symptoms, can be addressed in outpatient community mental health settings (Abbass et al., 2014; Malone, Marriott, Newton-Howes, Simmonds, & Tyrer, 2007). However, this may require more comprehensive care and wrap-around services than many communities are equipped to deliver. On a positive note, one qualitative study found that the development of resilience- and recovery-oriented community mental health care over the past 25 years has been improving quality of care and quality of life outcomes for people with schizophrenia (Stein et al., 2014).

Continuation of care in an outpatient setting post-hospital discharge is arguably the best and most effective way to prevent suicide (Malone et al., 2010). To this end, several studies have shown the importance of follow-up care, and made recommendations for procedures to monitor and enforce it at the state and community level (Malone et al., 2007; Maples et al., 2011; Novick et al., 2010; Prince, 2005). Several studies have found that programs to educate communities on suicide are necessary to reduce externalized and internalized stigma and to normalize help-seeking behavior (Batterham, Calear, & Christensen, 2013a; Batterham, Calear, & Christensen, 2013b; Reynders, Kerkhof, Molenberghs, & Van Audenhove, 2015). Individuals with schizophrenia who are part of ACT teams are more medication adherent, which plays a role in reducing suicidality (Abdullah et al., 2015; Maples et al., 2012; Novick et al., 2010).

### **Funding for Outpatient Mental Health Care**

While it had admirable goals, and some meritorious effects, there is a consensus that acknowledges that the Community Mental Health Act (CMHA) (Public Law 88-164, 1963) caused a harried, exponential decrease in psychiatric hospital beds; this has had myriad unintended consequences, primarily a flux in homelessness and incarceration among the most seriously and persistently mentally ill (Loch, 2014; Sheffield, 2013; Smith, 2013; Treatment Advocacy Center, 2015). In the end, only half of the outpatient centers proposed in the CMHA were built; those that were built never received adequate funding (Smith, 2013). This left many communities with inadequate resources to treat and rehabilitate individuals with mental illness within the community (Sheffield, 2013).

Yoon and Bruckner (2009) conducted a 16-year longitudinal analysis to determine specifically whether community mental health expenditures increased in the face of the deinstitutionalization movement. Additionally, they questioned whether community mental health expenditures could mediate the established relationship between the deinstitutionalization movement, including the reduction in psychiatric beds, and rates of suicide (Yoon & Bruckner, 2009). They found that increasing community mental health funding could curtail the effect of deinstitutionalization on suicide rates; however, they found that “the growth of funding for community mental health remained below the level of need” (Yoon & Bruckner, 2009, p. 1400). This is in stark contrast to the effect of deinstitutionalization in Finland. There, researchers found that suicide rates post-hospitalization dropped significantly between cohorts of individuals hospitalized pre- and post- deinstitutionalization (Pirkola, Sohlman, Heila, & Wahlbeck, 2007). This effect was also statistically significant for individuals with schizophrenia. Researchers attributed this to the possibility that in the transition to community mental health care, providers

improved their focus on discharge planning and managed more successful patient transitions to outpatient facilities (Pirkola et al., 2007).

The underfunding and understaffing of outpatient treatment centers undeniably contributes to the difficulty in verifying continuation of care post hospital discharge (CDC, 2015; The President's New Freedom Commission on Mental Health [PNFCMH], 2003). Further, due to long wait lists at outpatient centers and a severe lack of funding for support services, including housing, education, and vocational rehabilitation, individuals with the most severe schizophrenic and suicidal symptoms may never be able to meet their daily living needs (PNFCMH, 2003).

### **Research Questions and Hypotheses**

Although research suggests that individuals with schizophrenia who are most at risk may be treated with insufficient lengths of stay, the average length of stay for individuals with schizophrenia who present to hospitalization with suicidal ideation or intent is not known (Druss, 1998). Studies examining the effect of the nature of hospital admission, voluntary or involuntary, on length of stay have garnered mixed results; most of these studies are older and do not apply specifically to people with schizophrenia (Kallert et al., 2008). However, several conclude that involuntary hospitalization results in longer length of stay. Additionally, the cost of inpatient treatment for this population has not been estimated.

There has been a shift in treating mental illness since deinstitutionalization, from the inpatient to outpatient setting. It may be valuable for researchers and policy makers to understand the association between funding for outpatient treatment and the rate and cost of inpatient psychiatric hospitalization for this population, which is generally more expensive than outpatient treatment. This may have implications for reducing suicide post-discharge for people with schizophrenia, when they are statistically most vulnerable. Additionally, from the

perspective of social work values and social justice, it is important to understand whether funding for outpatient treatment is associated with reductions in rates of involuntary admission. The association between state funding for outpatient treatment and the use of restraint and seclusion is also important to understand, from a social justice perspective. Reduction of involuntary admission, restraint, and seclusion should be priorities for policy makers.

To address these gaps in the literature, this study examined the association between key variables related to inpatient hospitalization for people with schizophrenia, with a focus on those who present for or with suicidal self-injury.

1) What is the average length of stay for individuals with schizophrenia who are hospitalized voluntarily and involuntarily? What is the average length of stay for individuals who are hospitalized involuntarily and involuntarily for suicidal ideation or injury? Is there a significant difference in length of stay between the two types of hospitalization for each group?

2) What is the average cost of stay for individuals with schizophrenia who are hospitalized voluntarily and involuntarily? What is the average cost of stay for individuals who are hospitalized involuntarily and voluntarily for suicidal ideation or injury? Is there a significant difference in cost of stay between the two types of hospitalization for each group?

3) Is census region funding of outpatient mental health treatment related to the rate of involuntary admissions to inpatient hospitalization for people with schizophrenia, overall, and for those who present with suicidal self-injury?

4) Is census region funding of outpatient mental health treatment associated with the rate of admissions to inpatient hospitalization for people with schizophrenia who present with suicidal self-injury or ideation?

5) Is census region funding for outpatient mental health treatment associated with the cost of stay for individuals with schizophrenia who are psychiatrically hospitalized?

6) Is there an association between the rate of inpatient admission for suicidal self-injury and rate of seclusion and restraint?

## **Methodology**

### **Data Sources**

#### **The National Inpatient Survey (NIS).**

The NIS is a part of the Health Care Utilization Project (HCUP). The HCUP is “the largest publicly available all-payer inpatient health care database in the United States” (HCUP, 2016, para. 1). HCUP is sponsored by the Agency for Research Health and Quality (ARHQ). This dataset includes records of patient-level discharge data for over seven million individuals from the 4,363 hospitals who participate. The HCUP includes a stratified sample of 20% of hospital discharges; this sample is statistically representative of over 94% of discharges from US hospitals, or over 35 million discharges overall (HCUP, 2016).

#### **National Association of State Mental Health Program Directors Research Institute (NRI) report.**

This study used state outpatient mental health funding data from the 2013 NRI report. This is the most recently reported year. The NRI provides detailed summaries of state funding for mental health services, including inpatient funding, outpatient funding, and funding for residential services for 48 states. New Mexico and Florida do not report state outpatient funding.

### **Measures**

Several measures from the NIS were examined, including: admission type (voluntary or involuntary), location of hospital (nine census regions), total cost of stay, total length of stay in

days, ICD-9 CM diagnoses codes for schizophrenia, and external causes of injury and poisoning codes to determine if suicide self injury was a presenting problem.

To derive census region funding, NRI data on the amount of state mental health funding at community-based programs was used. This includes each state's outpatient mental health funding, exclusive of budgets for inpatient hospitalization and research and administration. Outpatient funding has been reported as a per-capita figure. This study used the per-capita figure of outpatient mental health funding for each state. For states that comprised each of the 9 census regions, the amount of funding was averaged to determine census-region funding.

### **Data Analysis**

To answer the first two research questions, length and cost of stay were estimated for both populations (schizophrenia and schizophrenia with self-injury). The differences between groups (voluntary and involuntary) for each population was examined for statistical significance via Mann Whitney U tests. To answer the subsequent research questions, correlation analysis was used to determine the direction and magnitude of associations. All analyses were performed using SPSS 24 package.

### **Results**

The sample size for the total population of adults with schizophrenia was  $N = 58,967$ . Sixteen cases were removed from the original sample, comprised of children aged 8-17. The sample size for the sub-population of individuals with schizophrenia who were admitted with suicide self-injury was  $N = 784$ . The distribution of individuals with diagnoses within the 295.0-295.9 range on the Internal Classification of Diseases, 9<sup>th</sup> revision, Clinical Modification (ICD-9-CM) is shown in Table 1. The ICD-9-CM was used in 2013 to classify disease codes, including those of mental illnesses. The ICD-10 has been used since 2015.



Chi-square ( $X^2$ ) test of independence was conducted to determine if there were differences in rates of suicide self-injury (coded dichotomously) among diagnosis groups. Latent, residual, schizophreniform, and simple schizophrenia diagnoses were combined to minimize the number of expected counts below 5. This preserved the “catatonic” code, which has distinctive features. Diagnosis groups did have different rates of suicidal self-injury  $X^2(7, N = 3,509) = 55.92, p < .001, V = .13$ . For example, people with schizoaffective disorder presented to hospitalization with higher rates of suicide self-injury than was expected; they were 1.81 times more likely to present with suicide injury, compared to people with a diagnosis of paranoid schizophrenia.

Both populations had high rates of involuntary admission, though the sample of individuals with suicide self-injury was slightly higher (90.8%) than the overall sample (88.6%). Gender ratio was not different between the two populations. The racial composition of the population with suicide self-injury was slightly different than the overall schizophrenia sample; the suicide population was comprised of more Caucasian people and fewer African American people than the overall sample. Table two shows the rate of voluntary admission for the overall schizophrenia population, and the population with suicide self-injury, respectively.

Table three includes information on the age, cost, and length of stay for individuals in each group. Age of admission, cost of stay, and length of stay were roughly equivalent in the total population and sub-population with suicide injury.

Table four shows the average outpatient mental health treatment funding for states comprising each of the nine census regions, as well as the average outpatient mental health treatment funding in the US. Funding ranged significantly, from \$48.68 to \$252.28 per capita.

Notably, all southern census regions, including West South Central, Mountain, East South Central, and South Atlantic, spent below the US average of \$131.38 per capita.

### **Research questions 1 & 2**

Mann-Whitney tests were used to estimate the significance of differences between rank scores of the two groups in each population (schizophrenia and self-injury). The homogeneity of variances assumption of an independent samples t-test was violated for the cost of stay distribution for one population (those with suicide injury) and for length of stay distribution of the other (total schizophrenia). Additionally, one group (involuntary admitted) was more than 1.5 times larger than the other group (voluntarily admitted), for both populations. Population graphs for each variable were examined to determine if each of the distributions were the same shape. This was found to be true in all cases; thus, results of the *U*-test can infer if differences between median scores of each group comparison are significant (Laerd Statistics, 2015).

For the total population of individuals with schizophrenia, both cost and length of stay were significantly different between the two admission status groups. Median length of stay was greater for those admitted involuntarily (*Mean rank* = 30,234.04) than for those admitted voluntarily (*Mean rank* = 29,271.17),  $U(58,762) = 180,895,771$ ,  $z = 4.39$ ,  $p < .001$ . Cost of stay was also higher for individuals involuntarily admitted (*Mean rank* = 29,159.81) than for those admitted voluntarily (*Mean rank* = 28,080.75),  $U(58,071) = 164,900,918$ ,  $z = -4.94$ ,  $p < .001$ . Thus, both null hypotheses, that the two groups would not differ significantly, were rejected.

For the population of individuals with schizophrenia who presented with suicidal self-injury, *neither* cost nor length of stay were significantly different between the two admission status groups. Length of stay was approximately the same between those admitted involuntarily (*Mean rank* = 390.78) than for those admitted voluntarily (*Mean rank* = 404.19),  $U(783) =$

26,141.50,  $z = .478$ ,  $p = .633$ . Cost of stay was higher for individuals involuntarily admitted (*Mean rank* = 392.75) than for those admitted voluntarily (*Mean rank* = 350.52). However, the difference was not significant,  $U(777) = 164,900,918$ ,  $z = -1.492$ ,  $p = .136$ . Thus, the researcher failed to reject both null hypotheses that the two group medians would not differ significantly.

### **Research Question 3**

Data on region funding and involuntary admission for both populations were normally distributed. However, reducing these variables down to census-region transformed continuous variables into categorical data ( $N = 9$ ). Therefore, Spearman's Rho correlation coefficients were estimated between the rate of involuntary admissions to the level of region funding for both populations. Spearman's correlation is a nonparametric monotonic function of a parametric correlation (Field, 2013). It works to establish the association between two ordinal level variables, by computing and comparing their ranks. This is in contrast to parametric correlations, which require continuous level of measurement (Field, 2013).

Both correlations were significant, with large effect sizes (Table 5). Contrary to expectation, for both populations census funding was positively correlated with involuntary admission status. For all individuals with schizophrenia, the correlation between involuntary admission and funding was  $r_s = .971$ ,  $p < .001$ . Scatterplots indicate that the relationship was linear. For individuals with schizophrenia with suicide self-injury, the correlation between involuntary admission and funding was  $r_s = .700$ ,  $p < .05$ . Scatterplots indicate that the relationship was also linear. This indicates that higher funding for outpatient treatment at the census-region level was associated with higher rates of involuntary admission for both populations.

### **Research Question 4, 5, & 6**

Spearman's Rho correlation coefficients estimated between the region-wide rate of admission for suicide self-injury and level of census region funding ( $N = 9$ ) were not significant. The correlation between funding and suicide self-injury was  $r_s = -.183$ ,  $p = .63$ . Higher funding for outpatient treatment at the census-region level was not associated with the rate of admission for suicide self-injury (versus admission with no suicide injury). Visual analysis of a scatterplot confirmed a weak negative relationship, with one significant outlier. Removal of the outlier resulted in a stronger effect size  $r_s = -.21$ , and despite the lower sample size, a lower alpha  $p = .61$ . Though this was still very far from significant.

Spearman's Rho correlation coefficients estimated between the cost of inpatient hospitalization and level of census region funding for outpatient mental health care was positive  $r_s = .231$ ,  $p < .001$ . This indicates that higher funding for outpatient treatment at the census-region level was associated with higher inpatient treatment costs. Visual analysis concluded that the relationship was linear and very strong. The effect size was small because of 1 outlier on the cost of stay data (census region 8). Eliminating the outlier resulted in a stronger effect size, but the lower  $N$  increased the alpha to just over the .05 limit of significance,  $r_s = .69$ ,  $p = .058$ .

Spearman's Rho correlation coefficients estimated between the proportion of inpatient admission for suicidal self-injury and rate of seclusion and restraint was not significant  $r_s = -.25$ ,  $p = .52$ . Analysis of the scatterplot suggested a weak negative relationship with 1 visible outlier. Removal of the outlier lowered the alpha and increased the effect size to  $r_s = -.55$ ,  $p = .16$ . Further analysis revealed that in census-regions where rate of suicide admission was higher, the use of restraint was nearly significantly lower  $r_s = -.57$ ,  $p = .056$ , but the rate of seclusion was higher  $r_s = .22$ ,  $p = .29$ . This contradiction may explain the total insignificance.

### Discussion

The differences in rates of suicide injury by diagnosis may support prior findings that depressive symptomatology is the greater risk factor for suicide intent (Evren & Evren, 2004; Skodlar et al., 2008). In the current study, individuals with schizoaffective disorder were more likely to present with suicide injury than projected. Schizoaffective disorder is characterized by a primary diagnosis of schizophrenia, with the additional symptoms or previous episodes of a mood disorder (APA, 2013). The diagnosis is controversial amongst clinicians because it does not appear to have a genealogical distinction and has low-stability (Malaspina et al., 2013). It is also possible that there is a clinical bias toward diagnosis of schizoaffective-disorder that affects individuals with psychotic symptoms who present with suicide injury.

The overall rate of involuntary admission was high, at about 90%. Cost and length of stay were both significantly higher for involuntarily admitted individuals in the overall sample of people with schizophrenia. This trend did not hold for the sub-sample of individuals with suicide injury. It may be that smaller group of individuals with self-injury have a more homogenous course of treatment compared to the overall population. Further research is needed to understand this; the captured phenomenon may have been limited to crisis stabilization and release, because longer courses of therapeutic and behavioral treatment for suicide and ideation are not homogenous (Linehan, 1997; Ellis, Rufino, Allen, Fowler, & Jobes, 2015)

The relationship between census region funding and the rate of involuntary hospitalization ran contrary to expectation. Higher census funding for outpatient mental health treatment was strongly associated with higher rates of involuntary admission for both populations. However, the relationship was stronger for the overall population than for the population with suicide injury. The correlation may have been especially strong overall (.917)

because the rate on involuntary admission was so high (90%). It may be that higher funded census regions are doing more to identify individuals with schizophrenia who are in crisis. Results in either direction would not imply causality. It is important to understand this relationship further. A cost-benefit analysis is needed, to determine if involuntary hospitalization for these individuals results in better treatment outcomes, and if so, which ones. This is important, because several studies have shown that involuntary psychiatric hospitalization for people with schizophrenia is associated with some negative outcomes, including higher rates of re-admission and suicide post-discharge (Kallert et al., 2008; Roy & Draper, 1995).

Census-region funding was not statistically significantly related to rates of suicidal self-injury at admission. However, there was a negative trend. Census region funding was moderately related to cost of inpatient treatment. Interestingly, the relationship between cost of inpatient care and outpatient funding at the census region level was positive. This was fitting in light of the findings from research question 3, that rates of admission for involuntary hospitalization were higher in census regions with outpatient mental health care funding. It is a controversial though, given that the preponderance of the evidence suggests outpatient treatment saves money and costs less than inpatient care. For example, Marcus & Olfson (2008) found that increasing adherence to care post discharge for people with schizophrenia would result in \$109 million in cost savings from inpatient care. The cost-savings comparison between inpatient and outpatient treatment might also need to account for emergency room expenses, not solely inpatient costs, as in the current study.

Finally, rates of suicide self-injury were not significantly related to rates of seclusion and restraint. However, this overall effect was likely a result of opposing relationships between restraint and seclusion, individually, in relation to suicide. Further research on the differences in

use of restraint and seclusion for this population might clarify this, given that there is none currently available. For people with schizophrenia with high depressive symptoms, seclusion may be more frequently employed. There is much research on the use of seclusion, termed solitary confinement or segregation, for incarcerated individuals experiencing suicidality, with recommendations to end the practice (Arrigo & Bullock, 2008; Kaba et al., 2014). A qualitative study of individuals who presented to the emergency room at one hospital reported that for patients experiencing suicidality, seclusion escalated suicidal symptoms (Strike et al., 2008).

### **Limitations**

The primary limitation in this study was the level of measurement of location data, at the census-region level. Maintaining confidentiality of patients is difficult at higher levels of measurement, especially for some people with very rare conditions or in rural areas. However, higher levels of measurement, either state or facility-level, would generate stronger conclusions about the measured relationships. Power is also limited in small samples. The study did use data from a nationally representative sample, though; results compliment findings from the majority of studies that examine patient-characteristics from a sample of individuals at a single hospital.

### **Conclusions**

Given the significantly increased rate of suicide for people with schizophrenia, more research is needed to determine the main risk factors. The current study identified differences among schizophrenia diagnoses, which support previous findings that depressive symptoms might be most influential. The current study also estimated the length and cost of stay for this population, and for the sub-population who were hospitalized for self-injury. Several studies have suggested that shorter lengths of stay may result in more frequent readmission, so future research on readmission in the context of these lengths of stay is needed. Finally, several studies

have suggested that outpatient treatment can address social withdrawal, treat depressive symptoms, improve quality of life outcomes, and inhibit suicide rates for people with schizophrenia, (Abbass et al., 2014; Malone et al., 2007; Stein et al., 2014; Yoon & Bruckner, 2009). However, outpatient treatments centers require additional resources to sufficiently serve these needs (Yoon & Bruckner, 2009). Research on the most effectual approaches of outpatient treatment and funding to meet these ends will have life-saving implications.



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## Appendix A

Diagnosis	Number	Percent
Schizoaffective	29,852	50.62
Paranoid	20,401	34.6
Unspecified	5,035	8.54
Latent & Residual	1,685	2.86
Disorganized	791	1.34
Other	469	.8
Schizophreniform	413	.7
Catatonic	297	.5
Simple schizophrenia	24	.00
<b>Total</b>	<b>58,967</b>	<b>99.96</b>

*Table 1.* Distribution of different diagnoses under the 295.0-295.9 range on the Internal Classification of Diseases, 9<sup>th</sup> revision, Clinical Modification (ICD-9-CM).



Total Schizophrenia	Characteristic of admission	Number	Percent
	Non-elective admission	52,029	88.23
	Elective admission	6,733	11.4
Schizophrenia with self-injury	Characteristic of admission	Number	Percent
	Non-elective admission	712	90.8
	Elective admission	71	9.1

*Table 2.* Rate of involuntary admission for both populations.

Population		Mean	SD	N
Total Schizophrenia	Age at admission	43.49	14.14	58,578
	Total charges	31,414.11	77,234.51	57,891
	Length of stay	11.15	15.19	58,566
Schizophrenia with self-injury	Age at admission	39.32	13.08	784
	Total charges	34,844.61	67,821.31	778
	Length of stay	11.05	18.37	784

*Table 3.* Average age, length of stay, and cost of stay for both population (research questions 1 and 2).

Census region funding (\$)	Mean	SD	Census region funding (\$)	Mean	SD
1- New England	201.44	100.46	6- ES Central	67.78	15.42
2- Middle Atlantic	252.28	39.82	7- WS Central	48.68	6.82
3- EN Central	97.31	25.79	8- Mountain	117.74	68.38
4- WN Central	115.36	34.99	9- Pacific	180.76	79.21
5- S Atlantic	123.00	83.04	<b>Overall</b>	131.38	79.42

Table 4. Census region funding (\$) for outpatient mental health treatment.

Measure	$R_s$ - Correlation coefficient		
Census funding	1.0	.917**	.700*
Involuntary in total schizophrenia. population	.917**	1.00	.783*
Involuntary in population with suicide injury	.700*	.783*	1.00

\*\* indicates significance below  $p < .001$ .

\* indicates significance below  $p < .05$ .

*Table 5.* Correlations between census level funding measured from the NRI data and involuntary admission rate in both populations from the NIS data (hypotheses 3 and 4).

## Chapter 5: Discussion

People with schizophrenia suffer real, sometimes deadly consequences as a result of pervasive public and clinical misperceptions of their disorder. They experience more negative treatment outcomes, stigma, and are disproportionately affected by suicide compared to individuals with other mental health diagnoses (Denenny Bentley & Schiffman, 2014; Novick et al., 2010; Palmer, Pankratz, & Bostwick, 2005; Skodlar, Tomori, & Parna, 2008; Stier & Hinshaw, 2007). This may be partly due to debilitating symptoms, including uncharacteristic or erratic behavior and paranoia (American Psychiatric Association [APA], 2013). But there is also evidence that they are at an increased risk of faultily being perceived as hostile or aggressive (Margetic, Margetic, & Ivanec, 2013; Steinert, Bergbauer, Schmid, & Gebhardt, 2007). Significant work is needed to remediate the detrimental representations of people with schizophrenia as dangerous and violent by the media and other sources that practice fear mongering (Owens, 2012).

This dissertation summarized the relationship between policy and features of clinical care for this population. Relationships that were thought to affect the care and safety of people with schizophrenia were examined over the course of three articles. The first article examined the regulation of the use of restraint and seclusion during psychiatric hospitalization. It was found that the use of restraint and seclusion, though regulated, remained unmeasured. The second article examined the relationship between state outpatient mental health care funding and the use of restraint and seclusion and other quality of care indicators during hospitalization and within 30 days of discharge. It was found that the measurement of quality of care, including restraint and seclusion, remains elusive. The third article analyzed the relationship between outpatient

funding and the length and cost of hospitalization, and rate of involuntary hospitalization for people with schizophrenia, including those who presented with suicidal self-injury.

The features of care of people with schizophrenia in psychiatric hospitalization were examined in the three articles in this dissertation, each using a different methodological approach:

1. A policy analysis of the Hospital Conditions of Participation (Hospital CoPs) that regulate the use of restraint and seclusion
2. A measurement paper of the Inpatient Psychiatric Facility Quality Report (IPFQR) that measures the use of restraint and seclusion in psychiatric facilities
3. A quantitative analysis of features of care of and voluntary status of inpatient admissions for schizophrenia, including those with suicide injury, from the National Inpatient Survey (NIS)

This final chapter discusses the related themes of each paper. This chapter concludes with future recommendations for policy, practice, and research, and final remarks.

### **Data Quality**

Data quality was problematic in the second and third article. In the second article, relationship between state funding and two of four quality of care measures was untestable due to large amounts of missing data. This was found to be related to the level of state funding. The IPFQR is new; only one other study has examined measures from it, and found them to have weak covariance (Shields & Rosenthal, 2016). The current study found that there were data quality issues that made factor analysis and structural equations modeling untenable (Grace-Martin, 2012). This has implications for future generations of the IPFQR. The report is conducted annually, and potential new items are reviewed each year (Parks, 2014; Storm, 2015).

Thus, item revision based on research and evidence based practice is possible. Additionally, data collection procedures can be revised so that more complete quality of care data can be made available. The rate and nature of missing data may suggest that facilities need additional education and training on data collection procedures and the importance of measuring quality of care, overall. It can also be amended to more closely measure the Hospital CoPs, examined in the first article.

In the third article for this dissertation, the relationship between census funding and voluntary admission, cost, length, and suicide injury variables were mixed. Measurement at the census region level was less desirable than state or facility-level data, because relationships at lower levels of measurement cannot be measured as precisely (Field, 2013). However, visual trends in such a small sample were still evident for several relationships examined, with significant alphas. This included the relationship between restraint and seclusion, measured in the second article, to suicide admission rate, measured in the third article.

### **Seclusion and Restraint**

There is a much evidence to support that a relationship exists between restraint, seclusion, and traumatization (Huckshorn, 2004a; The Hogg Foundation, 2009). Unfortunately in prior studies, the use of seclusion and restraint during inpatient hospitalization was found to increase for individuals with schizophrenia (Denenny et al., 2014; Stier & Hinshaw, 2007). There may also be a link between seclusion and restraint and involuntary hospital admission (Husum, Bjørngaard, Finset, & Ruud, 2010).

All three articles for the current dissertation examined the use of seclusion and restraint during psychiatric hospitalization for people with schizophrenia. The first article examined the policy that first regulated their use, the Hospital CoPs. The second article examined their use as

a part of an overall measure of quality of care, part of the IPFQR. The third article examined their use in relationship to suicidality and involuntary hospitalization, from the NIS data set. These articles make an important contribution to the existing literature; they identify points for remediation in policy and clinical practice which have implications that reduce trauma and may save lives.

The first and second article for this dissertation found that seclusion and restraint are still prominently used; hospitals surveyed in the IPFQR used an average of 217 hours of restraint and 158 hours of seclusion each year. Additionally, the first article discussed investigative reports that exposed substantial faults in hospital patient death reporting in the time after the Hospital CoPs were first established. In the second article, the distribution of the use of restraint and seclusion was not normal. Surprisingly, restraint and seclusion were more frequently used in hospitals in states where outpatient mental health care funding was high. Higher state funding may have been reflective of greater numbers of individuals in crisis receiving care. The use of restraint and seclusion also was linked to the rate of involuntary admission; this, in turn, has financial implications, because in the third article it was found that involuntary admission was linked with longer costs and lengths of stay for people with schizophrenia.

The first study for this dissertation found that 10 years after their implementation, there is no evidence that the actual impact of the Patient's Rights section of the CoPs has met any of the goals stated in the Final Rule, including: 1) reducing in the number of patient deaths; 2) reducing the instances of inappropriate or unnecessary uses of restraint and seclusion; and 3) reducing trauma and abuse of psychiatrically hospitalized patients. This is because there was no plan to concurrently monitor the use of restraint and seclusion. Data that measured use of restraint and seclusion, which are regulated by the Hospital CoPs Patient's Rights amendment, were not



collected on a national level until 2013 (Parks, 2014; Storm, 2015). Data on patient deaths from restraint and seclusion have been reported since the interim final rule in 1999, but are not made publicly available (Hospital CoPs; Final Rule, 2006). And a private investigation by the U.S. Department of health and Human Services (2006) found that 44% of deaths were not reported and over 60% were not reported in a timely manner.

The second article for this dissertation found that the use of seclusion and restraint were both significantly related to state funding for outpatient mental health treatment. They were also significantly correlated with antipsychotic polypharmacy, which suggests that they are used more in hospitals with higher rates of people with schizophrenia. This is especially problematic, because as was shown in the introduction and theory section of this dissertation, people with schizophrenia have a lower ability to reabsorb cortisol during and after stressful events, leaving them more vulnerable to decompensation (Corcoran et al., 2003; Jones & Fernyhough, 2007; Steen et al., 2011; Webster, Knable, O'Grady, Orthmann, & Weickert, 2002). This limitations in cortisol reabsorption may contribute to allostatic overload, and in turn, suicidality (McEwen, 2000).

Many of the studies that examine the relationship between diagnosis and risk for restraint and seclusion were not conducted in the US (Steinert et al., 2010). Other countries have different regulations on the use of restraint and seclusion, so they may not be generalizable; this also may be why there is substantially more literature on the subject in other countries (Lepping, Masood, Flammer, & Noorthoorn, 2016). Additionally, many articles with this focus are conducted with small sample sizes at a single hospital (Steinert et al., 2010). This dissertation offers some evidence on the relationship between the diagnosis and rate of use via a proxy variable, antipsychotic polypharmacy, in a national sample. Additional research is needed to

determine if people with schizophrenia are more likely to be subjected to seclusion and restraint in the US, and what the consequences of this may be.

A preponderance of the evidence suggests that the use of restraint and seclusion during hospitalization erodes the therapeutic relationship and provide no therapeutic benefits (Fisher, 2003; Huckshorn, 2004b; Huckshorne, 2004a; The Hogg Foundation, 2009; Tolson & Morley, 2012). Perhaps the greatest deficiency in the legislation, under study in the first article, was that it “does not prohibit the use of any particular type of restraint” (Hospital CoPs; Final Rule, 2006, p. 71388). This is concerning, because some types of restraints are inherently more dangerous, including those in which a staff member places their body weight on the restrained individual. The first article also found a growing body of evidence supports the use of alternatives to restraint and seclusion. Unfortunately, there was no evidence that the actual impact of the policy met any of the stated goals. Mounting evidence suggests that such a policy would need to eliminate the use of physical restraints to meet that end.

The measure of restraint and seclusion in the IPFQR is not a direct assessment of the impact of the policy under study in the first article of this dissertation, in terms of reducing unnecessary and excessive restraint and seclusion (Hospital CoPs, 2006). However, the current rate of use in hospitals can be helpful in determining if quality control checks implemented by each state’s Protection and Advocacy agency, the agencies established to protect the rights of individuals with disabilities, would be beneficial (Hospital CoPs; Final Rule, 2006). These could be focused on hospitals that are known to use restraint and seclusion at the highest rates. It might also be useful to seek guidance from staff in hospitals that are documented to use restraint and seclusion the least. The IPFQR is step forward in measuring quality of care. However, results of

the current analysis from papers one and two suggest that there is room for improvement of the measures, and for data collection procedures.

### **Antipsychotic Polypharmacy**

Antipsychotic polypharmacy is an adverse clinical practice (Burghart, 2013; Ortiz, Hollen, & Schacht, 2016). Unfortunately, it is widely used and affects approximately 25% of people with schizophrenia discharged from hospitalization (Ortiz et al., 2016). The second article of this dissertation examined the use of antipsychotic polypharmacy in relation to state funding, restraint, and seclusion. Antipsychotic polypharmacy was used as a proxy to indicate the proportion of individuals with schizophrenia at each hospital (Upton & Cook, 2014). The relationship between restraint, seclusion, and polypharmacy was positive. Higher rates of restraint and seclusion were linked to higher rates of discharge on multiple antipsychotic medications. This suggests that hospitals that perform poorly on these three measures of quality of care vary together. However, the overall model could not be tested due to conditionally missing data (Grace-Martin, 2012).

The largest variable missing data was the medication variable, at almost 50%. Hospitals that reported discharged about 60 people per year on multiple antipsychotic medications. And this over represented hospitals in states where outpatient mental health funding is high; so actual rates may be even greater. Given results of the two t-tests conducted as part of the missing value analysis, there may be significant bias in reporting (Grace-Martin, 2012). If polypharmacy is paired with low rates of follow-up post discharge, then the established rates of medication non-adherence cannot be surprising (Abdullah-Koolmees et al., 2015; Prince, 2005).

## **Outpatient Funding**

Mental health care providers employed at outpatient mental health treatment centers can identify and address suicidality in many instances (The Joint Commission, 2016). However, many communities lack the resources to implement effective and comprehensive suicide assessment and prevention (The Joint Commission, 2016; Yoon & Bruckner, 2009). Yoon and Bruckner (2009) found that community mental health funding could reduce rates of suicide in the community, but that centers remained underfunded post-deinstitutionalization. Though many outpatient treatment programs are more cost effective than inpatient hospitalization, some types of outpatient treatment are more expensive (Slade et al., 2013). Specifically, Assertive Community Treatment (ACT) services cost 5% more than treatment as usual (Slade et al., 2013).

Both the second and third articles of this dissertation used outpatient mental health funding to examine trend in inpatient psychiatric hospitalization. In the second article for this dissertation, it was found that state funding for outpatient mental health care was normally distributed. Results of the second article indicated that the use of restraint and seclusion were both correlated with state funding. However, the relationship was positive, which was contrary to prediction. There was no previous national measure of the rate of use of restraint and seclusion during hospitalization, so the study's hypothesis that the restraint and seclusion would be negatively correlated with state funding was based on theory. Thus, this relationship warrants future research. It is possible that higher funding at the outpatient level resulted in greater numbers of severe and persistently ill consumers with previous traumatization receiving treatment, and subsequently presenting for inpatient care (Hammer, Springer, Beck, Menditto, & Coleman, 2011; Reddy & Spaulding, 2010). There is also preliminary evidence that suggests

that there are higher rates of people with schizophrenia in urban areas, where outpatient funding may also be higher (Kirkbride, Perez, & Jones. 2015).

Results of the third article for this dissertation found that the average outpatient mental health treatment funding for states comprising each of the 9 census regions ranged significantly, from \$48.68 to \$252.28 per capita. Like state funding in the second article, census-region funding was normally distributed, which is logical because it was simply reduced to a lower level of measurement. Notably, all southern census regions, including West South Central, Mountain, East South Central, and South Atlantic, spent below the US average of \$131.38 per capita. Correlations between the cost of inpatient hospitalization and level of census region funding for outpatient mental health care was positive, indicating that higher funding for outpatient treatment at the census-region level was associated with higher inpatient treatment costs. Much research suggests that outpatient spending on higher intensive services can save money on inpatient hospitalizations (Coldwell & Bender, 2007; Torrey, 2013; Treatment Advocacy Center, 2015). Findings from the third article were not a measure cost savings, though.

The findings from the third paper that increased census funding was related to higher costs of stay at the inpatient level, along with evidence from the second paper that higher state funding was associated with more frequent use of restraint and seclusion, might reflect greater numbers of people with schizophrenia who are in crisis receiving care. Again, it is possible that higher funding on the outpatient level results in greater numbers of more ill consumers receiving treatment. Unfortunately, this suggests that higher rates of people with schizophrenia in crisis are involuntarily hospitalized and subjected to restraint and seclusion in those states and regions. Additionally, research suggests that higher density urban areas may attract people with high-risk

psychosis, which may be clustered in non-southern states (Kirkbride, Perez, & Jones. 2015; O'Donoghue et al., 2015).

### **Follow-up Care**

Research suggests that underfunding outpatient treatment centers contributes to difficulty ensuring care is received after an individual is discharged from hospitalization (CDC, 2015; The President's New Freedom Commission on Mental Health [PNFCMH], 2003). Unfortunately, rates of nonadherence to medication and other outpatient treatment for individuals with schizophrenia are especially high (Abdullah-Koolmees et al., 2015; Prince, 2005). Unlike the hypotheses on restraint and seclusion and state funding which were based on theory, evidence existed to support the third hypothesis in the second article of this dissertation: that follow up care and state funding would be positively correlated (CDC, 2015; Pirkola, Sohlman, Heila, & Wahlbeck, 2007; PNFCMH, 2003).

Results from the second article of this dissertation found that data on follow up care within 30 days of discharge was normally distributed amongst states. The relationship between state funding and follow up care at 30 days was also positive, as expected. Higher rates of state funding were linked to higher rates of follow up care post-discharge. Overall, the previously identified trend in the literature was supported. The 1,520 hospitals surveyed each discharged an average of 56 people who would not receive follow up care. This is alarming, because an individual is most likely to die from suicide in the time immediately following a psychiatric hospitalization (Kasckow, Felmet, & Zisook, 2011; Malone et al., 2007; Novick et al., 2010). Findings from the third article suggest that census funding was associated with higher rates of involuntary admission. So it is encouraging to find that follow up care happens more often in regions where involuntary admission is more frequent.

## Quality of Care

There was too much missing data to determine if the selected elements from the IPFQR formed a cohesive measure of quality of care. Data on antipsychotic polypharmacy were missing from approximately half the sample. And data on the rate of follow up care within 30 days from discharge were missing from approximately 17% of the sample. Although listwise deletion would not have reduced power in such a large sample, it was deemed inappropriate because the posed independent variables, state outpatient funding, was statistically significantly related to the rate of missingness. Hospitals that reported their rate of use of antipsychotic polypharmacy at discharge were located in states with higher outpatient mental health funding than those that were missing data. Additionally, hospitals that reported the rate of follow-up care within 30 days of discharge were also located in states with statistically significantly higher outpatient mental health funding than those that were missing data. Given this, confirmatory factor analysis and structural equations modeling were determined to be inappropriate (Grace-Martin, 2012; Kang, 2013). Multiple imputation was also determined to be inappropriate given the relationship between the dependent variable and missingness (Field, 2013; Grace-Martin, 2012; Kang, 2013).

Measures on the IPFQR vary each year, and are scheduled to change (Blair et al., 2015; Parks, 2014). So future research may not be able to measure the construct validity of the items posed in article two of this dissertation. However, it is important to determine the validity of measures on the future iterations of the IPFQR (Sheilds & Rosenthal, 2016). Additionally, it is important to understand the conditions of missing data on future iterations, as these may point to areas where data collection procedures can be improved (Kang, 2013). This also has implications for the data set used in the third article of this dissertation because the measures of

quality of care extend to all inpatient admissions from psychiatric hospitalization, including some of those recorded in the NIS, though the samples do not entirely overlap.

### **Involuntary Hospitalization**

In the United States, policies on involuntary commitment are regulated at the state level (Treatment Advocacy Center, 2011). Findings from the third article of this dissertation suggest that almost 90% of all inpatient psychiatric admissions for people with schizophrenia were involuntary. This is highly concerning, because previous research has suggested that involuntary admission is linked with several negative outcomes, including longer lengths of stay, more frequent readmission, and higher rates of suicide post hospital discharge (Kallert, Glockner, & Schutzwahl, 2008; Roy & Draper, 2005). However, in the current dissertation there was no finding that suicide injury was related to involuntary admission. This was likely because the rate of involuntary admission was so high, overall. Additionally, both cost and length of stay were significantly higher for those admitted involuntarily, compared to those admitted voluntarily. This trend did not hold for individuals who presented with suicide injury, which was contrary to expectation. Still, the literature suggests that existing lengths of stay are not long enough to prevent readmission (Druss et al., 1998; Loch, 2014).

The strongest correlations in the dissertation, as a whole, was between census funding and involuntary admission status for both suicide and non-suicide injury populations. This relationship was positive and very strong. For individuals with schizophrenia with suicide self-injury, the correlation between involuntary admission and funding was less linear, but still highly significant. This indicates that higher funding for outpatient treatment at the census-region level was associated with higher rates of involuntary admission for both. It may be that higher funded census regions are doing more to identify individuals with schizophrenia who are in crisis



(Knapp, Novick, Genkeer, Curran, McDaid, 2003). Again, this trend aligns with findings from the second study, that restraint and seclusion occurred more in states where spending was higher.

## **Suicide**

Much previous research has pointed to depressive symptoms as the most dangerous factor for people with schizophrenia, in terms of suicide risk (Brugnoli et al., 2012; Fenton, McGlashan, Victor, & Blyler., 1997; Lopez-Morinigo et al., 2015; Roy & Draper, 1995; Skodlar et al., 2008). Results of article three of this dissertation suggest that the rate of suicide self-injury among diagnosis groups of schizophrenia did vary significantly. Most drastically, people diagnosed with schizoaffective disorder presented with much higher rates of suicide self-injury than was predicted. People with paranoid schizophrenia were much less likely to present with suicide self-injury than predicted by chi-square analysis. This is interesting, because schizoaffective disorder is characterized by episodes or symptoms of a mood disorder, specifically bipolar disorder or depressive disorder (American Psychiatric Association, 2013). There may be a bias to this diagnosis for people who present with suicide self-injury.

Yoon and Bruckner (2009) and The Joint Commission (2016) both found that many communities lack the resources to implement effective and comprehensive suicide assessment and prevention. In the third article of this dissertation, there was no relationship between suicide self-injury and funding for outpatient mental health services at the census region level. Some of the most effective programs for outpatient suicide prevention specifically for people with schizophrenia have been introduced in the past 5 years (Mueser & Cook, 2014; Randall et al., 2016). So the effects of their implementation would not have been measured in the current study. However, this means that the rate uncovered in the current analysis may serve as a

baseline to determine if future rates drop, given the prevalence of new funding for these outpatient programs (Mueser & Cook, 2014; Randall et al., 2016; ).

The correlation between the rate of inpatient admission for suicidal self-injury and rate of seclusion and restraint was negative, but not significant. Further analysis found that restraint was less often used, and seclusion was more often used for this population, thus, the overall relationship may have been distorted because of the mixed effects within. Future research may be able to focus exclusively on the difference in these two relationships, and tie-in them in to the findings of significant associations between involuntary admission, cost of stay, and antipsychotic polypharmacy, from the second and third article of this dissertation.

### **Limitations**

One limitation of this dissertation, in the second article, was that antipsychotic polypharmacy was used as a proxy variable to identify hospitals with higher proportions of individuals with schizophrenia (Upton & Cook, 2014). Although a significant majority of individuals discharged from inpatient hospitalization on multiple antipsychotic medications have schizophrenia or a psychotic disorder, there is a minority who have other disorders (Ortiz et al., 2016). It is also important to consider that seclusion and restraint and the use of antipsychotic polypharmacy may both be influenced by factors outside of diagnosis, including the presence of psychotic symptoms in patients with other mental illnesses like bipolar disorder, depression, or personality disorders.

For the third article, the largest limitation was the measurement of census-region data on funding and seclusion and restraint. Maintaining confidentiality is difficult at higher levels of measurement, especially for some people with very rare conditions or in rural areas. However,

higher levels of measurement, either state or facility-level, would generate stronger conclusions about the measured relationships.

For both the second and third articles, the relationship between some variables were small. Interestingly, in the second paper, the relationship between each tested pair was stronger for restraint than seclusion. An overall limitation of the IPFQR and the national policy regulating the use of restraint and seclusion during hospitalization is that they are only applicable to hospitals that accept the conditions of Medicare and Medicaid. The findings may not hold true for hospitals that are not required to report, including private hospitals with higher overall funding and patients with a higher socioeconomic status. The limitation of conditionally missing data in the second study should influence both future research and data collection. However, it also limited the available statistical interpretations in the second article.

### **Future Recommendations**

In terms of policy recommendations, the Hospital CoPs should include objectives that prohibit certain types of restraint and seclusion. In the UK, there has been an effort to eliminate facedown restraint of patients because the risk for patient asphyxiation significantly exceeds that of other restraint methods (Mind, 2013). In addition, Huckshorn (2004b) calls for “commitment, energy, effort, passion, skill, and creativity” in order to “cause a culture change in mental health treatment settings from one of control to one of partnership” (p. 7). In order to prevent avoidable patient deaths, prohibitions on certain restraints that are inherently more dangerous are necessary. Additionally, it is possible to tie research directly into policy, if the measures from the IPFQR move to address the specified objectives in the Hospital CoPs.

Trends in the overall use of restraint and seclusion have not yet been identified. This is because measurement of them has only recently begun. So far, only one year of complete data

on their use has been released to the public. In the future, longitudinal research examining the IPFQR is recommended to identify points of intervention and policy remediation. Shield and Rosenthal (2016) found that covariance between several of these measures on the HBIPS were weak. Their conclusion is that either quality of care is a “multidimensional construct,” or that the measure is unreliable. The current study was unable to determine the number of factors the measures under study comprised due to data quality issues.

## **Conclusions**

This dissertation summarized the relationship between policy and features of clinical care for people with schizophrenia over the course of three articles. The results of a partial analysis of the theoretical model produced research and policy recommendations that have important financial, psychological, and social implications. The three article dissertation format was chosen because of disparities in the unit of measurement of location variables between the two major sources of data. However, it was possible to analyze restraint and seclusion in all three articles. And associations between restraint and seclusion, antipsychotic polypharmacy, cost of stay, and length of stay to census and state funding for outpatient mental health care were made.

Unfortunately, the first article for this dissertation found that there is no evidence that the actual impact of the policy regulating the use of restraint and seclusion has met any of its aims. In the second article, the importance of the implementation of the first IPFQR was discussed; it is a great advancement to begin to measure the impact of the Hospital CoPs, but significant modifications are needed to ensure that the goals of the Hospital CoPs are being appropriately measured. Finally, in the third article, examined features of care that were not measured in the IPFQR, including suicidality, cost and length of stay, and involuntary admission status.

Restraint and seclusion measured in the second paper were each differently correlated with suicidal admission status in the third paper.

Recommendations from the current dissertation for future research on the IPFQR may add to the robustness and content validity of the restraint data set (Blair et al., 2015; Parks, 2014). The two studies conducted on these measures so far have not found they are valid. This is concerning for practical reasons, because the endeavor of measurement itself is costly. But it also has a significant social cost, in terms of traumatization and poor quality of care for people with mental illness. The current dissertation also found that there is a need to educate facilities on the importance of the IPFQR, and ways to maintain data collection fidelity. Additionally, there is a need for education on ways to prevent restraint and seclusion, because their use is still considered intermittently compulsory. Finally, better inpatient admission procedures are needed, to enlist people with schizophrenia in their own care, to reduce involuntary admission and the negative correlations and outcomes associated with it. There is evidence that the stigmatization of a vulnerable population may be overriding evidence-based practices and promulgating avoidable instances of patient abuse and inciting or exacerbating patient trauma. The research in this dissertation is a critical step in designing measures of quality of care for people with schizophrenia who are psychiatrically hospitalized.

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