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Evaluating the Impact of Integrative Mental Health Treatment in Veterans with Post-Traumatic Stress Disorder

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EVALUATING THE IMPACT OF INTEGRATIVE MENTAL HEALTH TREATMENT IN VETERANS WITH POST-TRAUMATIC STRESS DISORDER

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It takes the strength and courage of a warrior to ask for help.

- US Department of Veterans Affairs

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ABSTRACT

High numbers of US Veterans experience post-traumatic stress disorder (PTSD), which may occur in combination with chronic pain and depression, and they may face stressful challenges to daily living. Despite the need, many Veterans do not seek care following a PTSD diagnosis. In the US, mental health issues fuel over 70% of primary care visits, and individuals with PTSD often seek treatment in the primary care setting. Integrated mental health (IMH) models of treatment bring mental health professionals into the primary care setting, allowing Veterans to receive comprehensive treatment during primary care visits. The IMH treatment model may bridge the gap for Veterans with PTSD who need care and those who actually receive it. The present study examined the impact that IMH has on Veterans with PTSD receiving care from the Veterans Affairs (VA) health care system. Using several methods of data collection (e.g., medical chart reviews, VA administrative databases, a mailed survey of patient perception of patient-centered care) the present quasi-experimental evaluation study examined a national sample of Veterans with PTSD, to evaluate the impact of IMH treatment (as compared to usual mental health care) on: physical health, mental health, PTSD, health services utilization, patient perceptions of key patient-centered care constructs, provider recommendations for treatment, and considerations of patient preferences for treatment. Outcomes were compared for Veterans receiving IMH vs. usual mental health care, to assess treatment program impacts; a multivariate logistic regression model was conducted

to assess variables independently associated with IMH treatment receipt, and; mediation analyses examined whether the relationship between IMH treatment and receipt of 'adequate' mental health care is driven by patient perceptions of two important patient-centered care constructs (patient activation; shared medical decision-making). Collectively, the results of this project indicate that, among Veterans with PTSD receiving VA health care, IMH treatment receipt is associated with: increased outpatient and primary care visits; decreased psychotropic medication use; increased recommendations for complementary and alternative medicine (CAM) (e.g., meditation, mindfulness and relaxation practices, yoga) treatment modalities; more discussion of patient preferences for mental health treatment during more VA primary care and mental health encounters; better patient perceptions of physical health status; greater patient activation (e.g., engagement in health care), and; better patient perceptions of shared medical decision-making. However, no meditational relationships were detected. Combining behavioral health care with traditional primary care through an integrative mental health treatment model may be most effective in increasing health care engagement, shared decision-making, and discussion of patient preferences for mental health care among Veterans with PTSD. As such, these treatment efforts may be effective in increasing the number of Veterans who receive appropriate, needed health care, as well as increasing care-related satisfaction. However, data indicate that some targeted improvement efforts geared toward educating providers about the importance of discussing and considering patient's preference for treatment, as well as implementing systematic collection of standardized measures of symptom severity for common mental health concerns among Veterans receiving VA health care, may be warranted.

Collectively, integrating mental health care providers into the primary care setting may be a good strategy for encouraging Veterans with PTSD to seek out and stay the course of the treatment they need.

CHAPTER ONE

POST-TRAUMATIC STRESS DISORDER: THE HISTORY

Long before it received an official name and host of diagnostic criteria, individuals who experienced or bore witness to traumatic events both experienced and discussed what is now known as Post Traumatic Stress Disorder (PTSD) (Trimble, 1985). Prior to the conceptualization of PTSD as an official diagnosis, the psychological sequelae following exposure to trauma was referred to as various ailments; for instance, negative psychological reaction following battles as early as the Russian-Japanese War and World War I were documented as having often been referred to as 'shell shock', 'war neurosis,' 'exhaustion,' or 'combat fatigue' (Mott, 1919; Andreasen, 2004; Croq, 2000) – a problem that could be overcome through will-power, 'manliness' and a renewed sense of duty to one's country/military (Bogacz, 1989).

In 1952, the DSM-I was released and contained the first standardized diagnosis of what would become present-day PTSD: Gross Stress Reaction (Andreasen, 2010; Andreasen, 2004; American Psychiatric Association (APA), 1952). This disorder, however, was not included in the subsequent DSM II (Andreasen, 2010; Andreasen, 2004), which instead contained a diagnosis called Adjustment Reaction of Adult Life (APA, 1968). After decades of returning Vietnam Veterans suffering from what was casually referred to as 'Post-Vietnam Syndrome', the American Psychiatric Association (APA) instituted a task force to place an official name and set of diagnostic criteria to the

disorder; as such, PTSD was formally introduced in the DMS-III (Andreasen, 2004; APA, 1980). During this time, the diagnostic criteria for PTSD had undergone several phases of revisions.

The DSM I criteria for a diagnosis of Gross Stress Reaction, albeit brief, specified that individuals who did not previously have any previous psychological afflictions may suffer from this stress disorder after being subjected to great psychological or physical stress (APA, 1952), however, the criteria specified that if the adverse psychological reaction lasted longer than a few days to a few weeks, a different diagnosis must be determined (Andreasen, 2010). Due to a lengthy period of the US not being involved in war, 'PTSD' was not included in the DSM II (Andreasen, 2010; Croq, 2000). However, the diagnosis for "Adjustment Reaction of Adult Life" included brief descriptions of what are now considered combat-related hypervigilance and hyper-arousal, as well as reactions to several other stressors (e.g., car accidents, plane crashes) (APA, 1968).

In light of a great number of Vietnam Veterans suffering from psychological symptoms for which (collectively) there was no official diagnosis, as well as a plethora of published literature reporting symptoms of the psychological ramifications of exposure to extreme stressors/trauma (Kral, 1951; Klein, Zellermayer, & Shanan, 1963; Adler, 1943; Adler, 1945; Modlin, 1960; Symonds, 1943; Andreasen, 1974; Andreasen, 2010), the APA introduced PTSD as an official diagnosis in the DSM III (APA, 1980). The sets of diagnostic criteria for PTSD from the DSM III through the DSM IV-TR were relatively similar in that they all specified that the afflicted individual must have experienced a traumatic event, and clustered symptoms into three groups: re-experiencing,

avoidance/numbing, and hyper-arousal. However, because of the specifications for each symptom cluster, what constituted a traumatic stressor became more detailed with each version of the DSM (APA, 1980; APA, 1987; APA, 1994,; APA, 2000). Additionally, the specification that symptoms must cause "clinically significant distress or impairment in social, occupational, or other important areas of functioning" was added to the diagnostic criteria in the DSM IV (APA, 1994; APA, 2000).

In the early days, suggested treatment for what would now be considered PTSD included moving the individual from the front lines to the back of marching combat troops to promote psychiatric recovery (Croq, 2000). Shortly thereafter, approaches to treatment/attempts at therapeutic interventions evolved to methods such as administration of electroconvulsive therapy (Croq, 2000), finding the afflicted individuals gainful employment upon their return from the war (Mott, 1919), and providing 'simple treatments' near the front lines of battle with a clear expectation of the afflicted individual returning to combat [referred to as *forward treatment*]. This 'forward treatment' method was widely used for cases of PTSD arising during times of combat from the WWI era through the Vietnam War (Croq, 2000).

CHAPTER TWO

POST-TRAUMATIC STESS DISORDER: THE PRESENT

Since PTSD was first introduced as an official diagnosis in 1980, with the release of the DSM-III (APA, 1980), the disorder has received an increasing amount of attention from the medical community, media, and government officials. In the face of the current conflicts in Iraq and Afghanistan, where combat operations are unique both in respect to demands on the troops and service members returning home in increasing numbers with more severe injuries than in any prior conflict (Tanielian, 2008), the issue of appropriately diagnosing and treating PTSD has become increasingly important.

Diagnostic Criteria

With the release of the DSM-V, both the classification and diagnostic criteria for PTSD has been revised. Whereas previous versions of the DSM classified PTSD under the umbrella category of anxiety disorders (APA, 2000), this diagnosis has now been re-classified as a Trauma-and-Stress-or-Related Disorder (APA, 2013). Additionally, the diagnostic criterion has been expanded from the previous three-factor model of symptom clusters (e.g., re-experiencing, avoidance and hyper-arousal; APA, 2000) to a four-factor model (e.g., *intrusion, avoidance, negative alterations in cognitions/mood, alterations in arousal and reactivity*; APA, 2013). Further, the diagnostic revision added a specification for a dissociative sub-type of the disorder, as well as a sub-type for children (6 years of

age or younger), and removed the need for specification of ‘acute’ or ‘chronic’ (APA, 2013).

PTSD is characterized distinctly by its causal factor and first diagnostic criterion (criterion A): exposure to a traumatic stressor; the DSM V specifies that the stressor (e.g., “death, threatened death, actual or threatened serious injury, or actual or threatened sexual violence”) may be experienced directly or indirectly (witnessed, as a function of one’s job or through a close friend/family member) (APA, 2013). Further diagnostic criteria is as follows: re-experiencing of the trauma; continual avoidance of memory-inducing stimuli regarding the event; altered affect; consistent and out of character hyper-arousal or changes in reactivity; and significant distress or impairment in social, occupational, or other important areas of functioning (APA, 2013). As opposed to the DSM-IV-TR criteria, the DSM-V criteria does not require that “intense fear, helplessness or horror happen right after the trauma,” and the criteria no longer classifies the unexpected passing of a family member or friend as a traumatic event (APA, 2000; APA, 2013).

The minimum symptom duration to meet diagnostic criteria is one month, however, a diagnostic specification of delayed expression is given if the individual is diagnosed 6 months or longer after the trauma was experienced, regardless of when (s)he began experiencing symptoms (APA, 2013). Further, a diagnostic specification of “with dissociative symptoms” (e.g., depersonalization or derealization) may be given (APA, 2013).

Traumatic Stressors (Detailed)

A variety of traumatic stressors can lead to the development of PTSD, and there is no dichotomous distinction concerning whether an event is or is not traumatizing; rather, the capacity for a stressor to be traumatizing exists on a continuum (Wilson, 2004). As asserted by Carlson & Dalenberg (2000), in order for an event to act as a traumatic stressor it must merely be sudden, negative, and lacking in subjective control for the individual. As such, PTSD can develop from a vast array of personal, collective, or witnessed experiences.

In their 1996 study of a representative sample of Detroit residents, Breslau and colleagues (1998) presented a comprehensive assessment of events considered to be traumatic stressors, based on diagnostic criteria as defined by the DSM. Their work provides a comprehensive overview of potential causes of traumatization, and is comprised of the following: "is/was in military combat; raped or other kinds of sexual assault; held captive, tortured, or kidnapped; shot or stabbed; mugged, held up, threatened with a weapon; badly beaten up; in serious car or motor vehicle crash; involved in any other kind of serious accident or injury; fire, flood, earthquake, or other natural disaster; diagnosed with a life-threatening illness; one's child diagnosed as having a life-threatening illness; witnessed someone being killed or seriously injured; unexpectedly discovered a dead body; sudden, unexpected death of a close friend or relative; *learned that a close friend/relative. . .* was raped or sexually assaulted; was seriously physically attacked; was seriously injured in a motor vehicle crash; or was

seriously injured in any other accident" (Breslau, Kessler, Chilcoat, Schultz, Davis, & Andreski, 1998, p. 4).

Similarly, but more recently, as part of a series of broad mental health surveys, the World Health Organization (WHO) utilized a list of 29 potential traumatic experiences. These various types of traumas formed clusters of trauma: being "exposed to organized violence" (e.g., being a civilian or relief worker in a combat zone); having "participated in organized violence" (e.g., combat); "interpersonal violence" (e.g., having been abused as a child, having been mugged); having been a victim of "sexual-relationship violence" (e.g., having been raped or sexually assaulted); having endured "other life-threatening traumatic experiences" (e.g., accidents, natural disasters); and having endured "network traumatic experiences" (e.g., unexpected death or trauma of a loved one) (Kessler, 2014).

Military Service

Despite the wide range of potentially traumatizing events that are not specifically related to military membership/service, serving in the military is associated with increased risk of having a traumatic experience (Institute of Medicine (IOM), 2008). In fact, the United States Department of Veterans Affairs (VA) and Department of Defense (DoD) (VA/DoD, 2010) have identified general participation in military operations (above and beyond combat in a designated war zone) as an additional service-related vehicle of trauma exposure. Traumatic stressors that are specific to participating in combat operations include, but are not limited to,: "intense emotional demands; extreme fatigue, weather exposure, hunger, sleep deprivation; extended exposure to danger, loss,

emotional/physical strain; exposure to environmental hazards, such as toxic contamination" (VA/DoD, 2010, pp. 17).

When an individual experiences a traumatic event, the initial psychological/physiological reaction is referred to as an Acute Stress Reaction (ASR) (APA, 2000; VA/DoD, 2010). While symptoms of an ASR are reminiscent of PTSD, ASRs are often temporary and will not necessarily lead to a diagnosable case of PTSD. If symptoms of an ASR last for longer than two days, and are characterized by one symptom from each of the (previously three) PTSD symptom clusters (e.g., re-experiencing, avoidance/numbing, hyper-arousal) and three symptoms of dissociation, a diagnosis of Acute Stress Disorder (ASD) is given. ASD can transition into PTSD if symptoms are present for one month or longer following traumatization (APA, 2000; VA/DoD, 2010).

Additionally, individuals serving in combat operations may experience a Combat or Operations Stress Reaction (COSR), which is specifically related to the stress of military service (in the presence or absence of a distinct trauma) (VA/DoD, 2010). ASD symptom onset can occur immediately, or as long as several days following the exposure to trauma, and include (but are not limited to) alterations in mood/energy, depression, peritraumatic dissociation, substance use, and hyper-arousal. COSR-specific symptoms focus mainly on alteration in [military-related] occupational functioning, such as productivity, focus, and motivation (VA/DoD, 2010).

Symptom Presentation

The presentation of PTSD symptoms is not uniform across the clinical population; individuals who meet criteria for a PTSD diagnosis can present with a range of subsets of symptom clusters, in varying levels of severity (IOM, 2008; IOM, 2014). As outlined by the most recent version of the DSM, there are four main symptom clusters associated with PTSD: *intrusion, avoidance, negative alterations in cognitions/mood, alterations in arousal and reactivity* (APA, 2013). PTSD symptom manifestation can be psychological and/or physiological in nature (Wilson, 2004). In addition to having experienced a traumatic stressor, in order to be given a PTSD diagnosis, an individual must present with the following symptoms:

Intrusion

The cluster of intrusion symptoms is criterion B for diagnosis in the DSM. Five forms of intrusion are presented in the DSM, with the specification that the symptom(s) happen "persistently" (APA, 2013). The DSM outlines the following potential symptoms under this cluster: intrusion can occur in the form of memories of the event (which must be "recurrent, involuntary and intrusive"), dreams about the event (e.g., nightmares/night terrors), physiological or psychological reliving of the trauma (e.g., flashbacks), maladaptive psychological reactions to stimuli related to the event (e.g., anxiety, terror), and maladaptive physiological reactions to stimuli related to the event (e.g., increased heart-rate, difficulty breathing) (APA, 2013, p. 467; Wilson, 2004).; An individual must present with *at least one* to meet diagnostic criteria (APA, 2013).

Avoidance

The cluster of avoidance symptoms is criterion C for diagnosis in the DSM. The DSM outlines two potential avenues through which avoidance can manifest: psychological avoidance of trauma-related stimuli (e.g., "memories, thoughts, or feelings"); or, physical avoidance of trauma-related stimuli or stimuli that elicit memories of the traumatic event (e.g., "people, places, conversations, activities, objects, or situations") (APA, 2013). An individual must present with *at least one* to meet diagnostic criteria, with the caveat that the individual must not have displayed the behaviors prior to being exposed to the traumatic event (APA, 2013).

Negative Alterations in Cognitions and Mood

The negative alterations in cognitions and mood symptom cluster is criterion D for diagnosis in the DSM. The DSM outlines seven potential symptoms under the negative alterations in cognitions and mood umbrella: amnesia related to the event (unrelated to substance use or brain injury); negative, consistent and typically unwarranted thoughts or feelings about oneself specifically or society in general; consistent and unrelenting self-blame related to the trauma; negative and consistent feelings about the trauma, such as shame, guilt or anger; loss of interest in "significant activities" that were previously enjoyable; feeling disconnected from others; inhibited ability to experience positive emotions (APA, 2013). An individual must present with *at least two* symptoms to meet diagnostic criteria, with the caveat that the symptoms must have been non-existent or markedly less intense prior to exposure to the traumatic event (APA, 2013).

Alterations in Arousal and Reactivity

The alterations in arousal and reactivity symptom cluster is criterion E for diagnosis in the DSM. The DSM outlines five potential symptoms under this cluster. Alterations in arousal and reactivity can be experienced through: anger/irritability; behavior that would be considered reckless or self-destructive; hypervigilance; increased fear-potentiated startle; difficulty concentrating; sleep disturbance (APA, 2013). An individual must present with *at least two* symptoms to meet diagnostic criteria, with the caveat that the symptoms must have been non-existent or markedly less intense prior to exposure to the traumatic event (APA, 2013).

Criterion F-H (Duration, Functional Significance & Exclusion)

In addition to the specific symptom cluster diagnostic requirements, in order for a diagnosis of PTSD to be given, the individual must have experienced symptoms for at least one month, and these symptoms must have caused a significant impairment in the individual's social or occupational functioning (APA, 2013). Additionally, it must be ruled out that symptom presentation is caused by use of controlled or illicit drugs, or other psychological illnesses (APA, 2013).

Epidemiology and Risk/Resilience

According to results from the U.S. National Comorbidity Survey-Replication, the lifetime prevalence of PTSD in members of the general population in the U.S. is approximately 6.8%, with a greater estimated prevalence in women (9.7%) than men (3.6%) (Gradus, 2014). Specific to the current conflicts, a survey conducted by the RAND Corporation in 2008 reported a PTSD prevalence of 13.8% among individuals

who had served in the OEF/OIF combat operations (Gradus, 2014). Other research has reported PTSD prevalence rates in individuals having served in the OEF/OIF operations to be as low as 10% and as high as 20% (National Center for PTSD, 2009; IOM, 2014). Further, PTSD prevalence of 10.1% has been reported among Gulf War Veterans, and 8.1% - 15.2% (female, male, respectively) of Vietnam Veterans (Gradus, 2014). Not every individual exposed to a traumatic stressor develops PTSD. In fact, literature suggests that only about one-tenth (Breslau, 2009) to one-third (IOM, 2008) of individuals exposed to a traumatic stressor will formally develop the disorder.

Risk Factors

Several risk factors for the development of PTSD, both in general and specific to service members and Veterans have been identified in the literature. For instance, having an unstable childhood, as well as history of physical or sexual abuse in childhood have been tied with the development of combat-related PTSD (Castro, 2014). Being of lower socioeconomic status, intelligence, and education, having a history of previous trauma/exposure(s) to violence, female gender, having substance abuse problems, experiencing peritraumatic dissociation at the time of exposure to a traumatic stressor, the severity of the traumatic event (e.g., combat exposure), having poor coping mechanisms, having completed a greater number of deployments, undergoing family/life stressors during deployment, and being divorced are commonly reported variables that increase risk for or are highly associated with the development of PTSD (VA/DoD, 2010; Brewin, Andrews, & Valentine, 2000; Shea, Reddy, Tyrka, & Sevin, 2013; Pietrzak, Pullman, Cotea, & Peter, 2012; Possemato, McKenzie, McDevitt-Murphy, Williams, & Ouimette,

2014; Phillips, LeardMann, Gumbs, & Smith, 2010; Kline et al., 2013; Booth-Kewley, Larson, Highfill-McRoy, Garland, & Gaskin, 2010; Hourani et al., 2012; Thomas, Wilk, Riviere, McGurk, Castro, & Hoge, 2010; Ozer, Best, Lipsey, & Weiss, 2008; Tolin, & Foa, 2006). Additionally, results from the Millennium Cohort Study (a prospective study of active duty service members and Veterans that comprises the largest study of this nature ever conducted within the US military; Castro, 2014) indicate that combat exposure during deployment results in three times the amount of new cases of PTSD among service members (vs. those who were not deployed and those who were deployed but did not experience combat) (Smith, Ryan, Wingard, Slymen, Sallis, & Kritz-Silverstein, 2008). Some research has even indicated that there may be a genetic predisposition for developing PTSD (American Public Health Association (APHA), 2013).

Factors that come into play after the traumatic event is experienced, such as life stressors, including unemployment) and poor social support (along with the trauma exposure) can contribute to the likelihood that an individual will develop PTSD (VA/DoD, 2010; Polusny, Erbes, Murdoch, Arbisi, Thuras, & Rath, 2011; Brewin et al., 2000; Pietrzak et al., 2012; Possemato et al., 2014). Additionally, several military service-specific factors are associated with the development of PTSD, such as history of military sexual trauma while in the service (Castro, 2014) and insufficient deployment training (Schultz, Glickman, & Eisen, 2014; Polusny et al., 2011). For cohorts of service members who participated in the OEF/OIF operations reported risk factors for the development of PTSD include lengthy deployments, higher levels of exposure to combat,

traumatic brain injury, decreased unit support, being a reservist/National Guard member, and being unmarried (National Center for PTSD, 2011; Polusny et al., 2011; Shen, Arkes, Kwan, Tan, & Williams, 2010). Recent research has also ascertained that, even for individuals in non-combat roles, being deployed to a combat theatre increases risk for post-deployment mental health issues (Peterson, Wong, Haynes, Bush, & Schillerstrom, 2010), and that severity or chronicity of PTSD may be increased if the traumatic event experienced was created by human acts/behaviors (e.g., combat) (APHA, 2013).

Protective Factors

Studies have also shown a number of factors that are associated with a decreased risk of developing PTSD after exposure to traumatic stressor. For instance, recent research conducted with OEF/OIF Veterans suggests that returning service members who have greater social support, both among their friends and family and among their unit members, are at a decreased risk of developing PTSD (Pietrzak & Southwick, 2011; Han et al., 2014; Hourani et al., 2012; Pietrzak, Johnson, Goldstein, & Southwick, 2009). Additionally, having served as active duty (vs. National Guard), being in a committed relationship (married to or living with a partner), having a higher level of perceived control, and having few, if any, problems with psychosocial functioning are associated with increased odds of resilience to developing PTSD following combat exposure (Pietrzak & Southwick, 2011; Han et al., 2014). Recent literature also suggests that pre-deployment resiliency training may be effective at increasing psychological resilience (Lester, Harms, Herian, Krasikova, & Beal, 2011) and in turn, mitigating the effects of

combat-related trauma on individuals' psyches (Hourani et al., 2011; Pietrzak et al., 2009).

PTSD and Health

Risky Health Behaviors

Recent literature has also indicated that individuals with PTSD are more likely to engage in risky health behaviors, including engaging in physical altercations which may lead to physical injury (Widome, Kehle, Carlson, Laska, Gulden, & Lust, 2011), lack of exercise (APHA, 2013; Zen, Whooley, Zhao, & Cohen, 2012), tobacco use (APHA, 2013; Zen et al., 2012), dangerous driving (Sayer, Noorbaloochi, Frazier, Carlson, Gravely, & Murdoch, 2010), medication nonadherence (Zen et al., 2012), and misuse of alcohol (McDevitt-Murphy, Williams, Bracken, Fields, Monahan, & Murphy, 2010). However, the link between PTSD and poor physical health/increased comorbidities remains even when such factors are controlled for (Vaccarino et al., 2013).

Mental Health

Literature shows that having PTSD is associated with an increased susceptibility to having a host of comorbid psychological illnesses and poor health-related quality of life (APHA, 2013). Specifically, PTSD is associated with higher frequencies of anxiety disorders (e.g., generalized anxiety disorder, panic disorder, phobias, obsessive-compulsive disorder), depression, bipolar disorder, eating disorders, several personality disorders, psychotic disorders (i.e., schizophrenia) (APHA, 2013), and sexual dysfunction (Breyer, Cohen, Bertenthal, Rosen, Neylan, & Seal, 2014). Additionally, PTSD is associated with substance use disorders, both alcohol and drug-related (APHA, 2013).

The association between PTSD and comorbid mental health disorders is especially strong in Veterans with a history of military sexual trauma (Maguen, Cohen, Ren, Bosch, Kimerling, & Seal, 2012). Recent literature has also shownan association between PTSD symptom severity and decreased patient-reported mental health status (Asnaani, Reddy, & Shea, 2014). Additionally, individuals with PTSD and comorbid mental health conditions tend to experience greater symptom severity and worse outcomes, both in terms of health (psychological and physiological) and treatment (APHA, 2013).

Physical Health

PTSD has been associated with frequent physiological comorbidities and poor health (Pacella, Hruska, & Delahanty, 2013; APHA, 2013; Schnurr, & Green, 2004; Wagner, Wolfe, Rotnitsky, Proctor, & Erickson, 2000). Individuals with PTSD suffer in high numbers from chronic pain (APHA, 2013; Pacella et al., 2013; Moeller-Bertram, Keltner, & Strigo, 2012), obesity and metabolic syndrome (APHA, 2013; Pagoto et al., 2012; Heppner, Lohr, Kash, Jin, Wang, & Baker, 2012), diabetes (APHA, 2013; Agyemang, Goosen, Anujuo, & Ogedegbe, 2012), dementia (APHA, 2013), gastrointestinal issues (Pacella et al., 2013; Schnurr, Spiro, & Paris, 2000), musculoskeletal disorders (Schnurr et al., 2000), skin disorders (Schnurr et al., 2000), and heart-related diseases, including coronary heart disease, hypertension, myocardial infarction, hyperlipidemia and cerebrovascular disease (APHA, 2013; Pacella et al., 2013; Vaccarino et al., 2013; Coughlin, 2011). Additionally, large numbers of individuals with PTSD concurrently suffer from traumatic brain injuries (TBI) (APHA, 2013).

Treatment

According to the Institute of Medicine (2008), a wide range of treatment methods are currently practiced for ameliorating the severity of PTSD symptoms. Individuals may be treated via medication, therapy, support groups, or even various forms of complementary and alternative medicine (CAM) (e.g., meditation, mindfulness and relaxation practices, yoga). Treatment modalities may be administered alone, or in combination with one another (IOM, 2008).

Medication

Seven classes of pharmacological treatments (and a 'miscellaneous' group of drugs) have been identified in the literature as having been utilized in the treatment of PTSD (IOM, 2008). These umbrella categories of medication are as follows: alpha-adrenergic blockers (e.g., prazosin), anticonvulsants, novel antipsychotics, benzodiazepines, monoamine oxidase inhibitors (MAOIs), selective serotonin reuptake inhibitors (SSRIs), and other anti-depressants such as tricyclic antidepressants (TCAs), noradrenergic and specific serotonergic antidepressants (NaSSAs), and serotonin and norepinephrine reuptake inhibitors (SNRIs) (IOM, 2008).

According to VA/DoD clinical practice guidelines, however, only SSRIs and SNRIs are highlighted as being effective means of treatment for the disorder and recommended for front-line use, with TCAs (fair evidence) suggested as an alternative if several treatment rounds of SSRIs and SNRIs prove ineffective or cause significant side-effects (VA/DoD, 2010; VA/DoD, 2013). Additionally, mirtazapine, nefazodone and monoamine oxidase inhibitors have been rated as having only fair evidence to support

effectiveness in PTSD treatment (VA/DoD, 2013). A number of other medications have been rated as ineffective or having insufficient evidence to support recommendation for use, and recent VA/DoD clinical practice guidelines specify that benzodiazepines may actually be harmful when used as treatment for PTSD (VA/DoD, 2013).

Therapy

The majority of therapy methods employed in PTSD treatment use variations of cognitive behavioral therapy (CBT) techniques, and include: exposure therapies, eye movement desensitization and reprocessing (EMDR), cognitive restructuring, and coping skills therapy (IOM, 2008). According to the VA/DoD (2010), these forms of therapy are similar in that they all focus specifically on the trauma, and share many elements; for example, having the individual face the memories and events related to the trauma, determining and altering learned and maladaptive cognitions that are a product of the trauma, and teaching relaxation techniques (VA/DoD, 2010).

Despite the level of overlap that is present, different methods of therapy treatment do possess unique elements. For instance, exposure therapies are centered around the individual directly confronting the traumatic event through methods such as in-vivo (i.e., a person who is afraid of flying actually boarding an aircraft and flying), imagined, written, or orated techniques (VA/DoD, 2010; VA/DoD, 2013). Cognitive restructuring therapies, on the other hand, focus more directly on talking through the learned cognitions that developed following trauma exposure, and changing those maladaptive thoughts to adaptive ones (VA/DoD, 2010; VA/DoD, 2013). Finally, EMDR combines

both exposure and cognition-identification elements with training the individual to alternate corresponding eye movements (VA/DoD, 2010; VA/DoD, 2013).

An additional form of therapy used in the treatment of PTSD, which encompasses a bundle of techniques used to combat anxiety, is stress inoculation training (SIT). SIT teaches individuals to manage reactions of anxiety and maladaptive stress through techniques such as breathing and relaxation training, thought stopping and positive thinking (VA/DoD, 2010; VA/DoD, 2013). This treatment bundle entails some CBT techniques, relaxation skills focused on breathing and muscles, and elements of exposure therapy, as well (VA/DoD, 2013).

Exposure, cognitive restructuring and SIT are all strongly recommended and identified as being significantly beneficial in the treatment of PTSD by the VA and DoD, with other forms of therapy (e.g., group and family therapy, hypnosis) suggested as being moderately beneficial but not suited as primary methods of intervention (VA/DoD, 2010; VA/DoD, 2013). Recent clinical practice guidelines suggest that front-line treatment should begin with a psychotherapeutic approach in tandem with an SSRI or SNRI; additionally, prazosin may be added to the treatment regimen at any point to help ameliorate sleep difficulties/nightmares (VA/DoD, 2013).

The VA requires availability of cognitive processing therapy and prolonged exposure therapy for all Veterans who may need them, and offers many other treatment options (including CAM treatment modalities) throughout facilities in the VA system of care. Additionally, the VA requires PTSD screening for all Veteran patients at least once

a year for the first five years they are receiving care in the VA health care system (IOM, 2014).

Complementary and Alternative Treatment Modalities (CAM)

While VA/DoD clinical practice guidelines rate CAM modalities as not having enough evidence to recommend them for front-line treatment, modalities that promote relaxation (such as yoga, mindfulness, acupuncture, etc.) are suggested for supplemental use to aid in treatment of hyper-arousal symptoms (VA/DoD, 2013). Additionally, these guidelines suggest that CAM modalities may be considered for amelioration of comorbid conditions such as chronic pain, and may also be useful in individuals who are resistant to treatments recommended as front-line options (VA/DoD, 2013).

Patient Preferences for Treatment

As there are multiple treatment options, both front-line recommendations and CAM treatment modalities, different patients may prefer to receive a specific treatment or treatment regime over the available alternatives. Taking patients' preferences and values into consideration when prescribing a treatment plan is an integral component of providing care that is patient-centered (IOM, 2001; Barry, & Edgman-Levitan, 2012). When treatment is aligned with patient preferences, patient are more engaged in their care (Kwan, Dimidjian, & Rizvi, 2010) and are more likely to be adherent to treatment (Thompson, & McCabe, 2012). Further, aligning treatment with patient preferences has been associated with improvements in treatment outcomes (Lin et al., 2005) and reduced health care costs (Mulley, Trimble, & Elwyn, 2012) and is a goal of the VA (Veterans Health Administration (VHA), 2014).

Recent literature has indicated that there may be an association between treatment preferences, and both adherence to and effectiveness of treatment in PTSD cohorts (Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008). In the VA, engaging patients in the decision-making process regarding treatment for PTSD is recommended and encouraged. In fact, a recent study conducted by Mott and colleagues (2014) found that an intervention geared toward engaging Veteran patients with PTSD in treatment-decision making and aligning treatment regiments with patient preferences resulted in increased initiation of evidence-based psychotherapy and treatment retention (compared with Veterans with PTSD receiving usual care) (Mott, Stanley, Street, Grady, & Teng, 2014). This study highlights the importance of involving Veterans with PTSD in care-related decision-making, and taking their preferences into consideration when deciding upon and initiating a treatment plan.

Health Services Utilization

Given that having PTSD may decrease immune system function (APHA, 2013) and individuals with PTSD tend to suffer from mental and physiological comorbidities (APHA, 2013), it is not surprising that use of health services by this population tends to be high. Veterans with PTSD have significantly greater health services utilization, above and beyond both Veterans without mental health conditions and Veterans with mental health conditions other than PTSD (Cohen, Gima, Bertenthal, Kim, Marmar, & Seal, 2010). Even when controlling for factors that could have an impact on health such as smoking status and physical injury related to the trauma, individuals with PTSD are

reported to utilize health care services (not including those related to mental health) significantly more than non-PTSD cohorts (Buckley, Green, & Schnurr, 2004).

Specifically, younger Veterans with a PTSD diagnosis are reported to use outpatient health services at the VA more frequently than those without PTSD, and increased symptom severity is also related to greater health-care utilization in Veterans without documented service-connected disabilities (Calhoun, Bosworth, Grambow, Dudley, & Beckham, 2002). Similarly, literature has reported that OEF/OIF Veterans with PTSD seek non-mental health related medical services in the VA significantly more than both those with other mental health diagnoses and those without any mental health issues (Cohen, Gima, Bertenthal, Kim, Marmar, & Seal, 2010).

Despite seeing higher use of health services, in general, in the PTSD population, receipt of adequate mental health treatment is dismally low among Veterans with PTSD entering the VA system of care (Seal et al., 2010). In fact, recent estimates have suggested that up to half of service members (Hoge et al., 2014; Quartana et al., 2014) and high numbers of Veterans (Ouimette et al., 2011; Tanielian, Jaycox, Adamson, & Metscher, 2008) with PTSD do not seek out needed mental health services, and that initiation of evidence-based psychotherapy among Veterans with PTSD entering the VA system of care is extremely low (Shiner et al., 2013).

CHAPTER THREE

STIGMA, MENTAL ILLNESS, AND CARE SEEKING

Stigma Theory and Mental Illness

Perceived stigma associated with mental illness is an enormous barrier to mental health treatment receipt among military personnel (Hoge et al., 2014; Greene-Shortridge, Britt, & Castro, 2007) and Veterans (American Psychological Association, 2014) with psychological concerns. This is concordant with the underlying stigma theory, which postulates that, in order to avoid the stigma associated with mental illness, individuals who need mental health care either avoid full participation in care or avoid seeking care entirely (Corrigan, 2004). Literature describing the social psychology behind stigma, and the effects of perceived stigma on utilization of mental health services, offers several potential explanations for why stigma acts as a barrier for treatment seeking behavior.

'Stigma' is a social phenomenon in which broad cognitive categories are created about particular constructs, and are linked to negative stereotypes about that construct; specifically, stigma has been defined as "the co-occurrence of its components – labeling, stereotyping, separation, status loss, and discrimination" (Link, & Phelan, 2001). There are two main attributions? of mental illness that are associated with the stigmatization of mental illness: (1) 'stability,' or how easily changed or treated the illness is and (2) 'controlability', or how at-fault the individual is for incurring their illness (Corrigan et al., 2000). Several common stereotypes that the label of mental illness illicits have been

identified, including that individuals who have psychological disorders are to blame for their illness, are violent, and are incompetent (Corrigan, 2004). As stereotypes are cognitive shortcuts that are often processed in the form of quick judgments about large groups of people, stereotypes tend to lead to prejudice, discrimination and the elicitation of negative emotions (Corrigan, & Watson, 2002).

Thus, being stigmatized leads individuals to experience loss in two important domains: self-esteem and social opportunities. Self-esteem is negatively affected in that the afflicted individual grows to believe and internalize the stereotypes associated with mental illness and social opportunities are negatively affected in that the individual is either socially isolated, or regarded with hostility (Greene-Shortridge et al., 2007; Corrigan, 2004; Corrigan, 1998). When individuals do not seek treatment for their mental illness, they may be doing so to avoid stigmatization both internally and socially which they may believe will help avoid loss of self-esteem and social discrimination. Therefore, stigma is an important vehicle that is preventing individuals with mental health issues from seeking out needed treatment and/or adhering to a treatment regimen (Corrigan, 2004).

Stigma As A Barrier for Treatment Seeking in Veterans and Service Members

Recent literature has suggested that there is a vast disparity in the rates of service members and Veterans with PTSD who are in need of mental health care and those who receive this needed care (Tanielian, Jaycox, Adamson, & Metscher, 2008, Quartana et al., 2014; Ouimette et al., 2011). Stigma associated with seeking mental health care has been cited among the greatest potential barriers to treatment of PTSD in the Veteran

population (IOM, 2008). In fact, as few as 23-40% of soldiers and Marines who served in the OEF/OIF directives and screened positive for mental health issues post-deployment reported having sought out mental health care; these individuals were also found to be at increased odds for fear of stigmatization associated with seeking mental health care (Hoge, Castro, Messer, McGurk, Cotting & Koffman, 2004). For instance, of those Soldiers and Marines who screened positive for mental health issues post-deployment, 65% reported believing that seeking mental health care would lead them to be seen as weak, 63% believed they would be treated differently by work superiors as a consequence, 59% believed it would cost them the confidence of their co-workers, and 41% simply found the idea too embarrassing (Hoge et al., 2004).

Several reasons relating to societal and self-stigmatization have been highlighted in the literature as reasons that Veterans and service members do not seek out mental health care for PTSD, including: desire to avoid a label of being mentally ill (Mittal, Drummond, Blevins, Curran, Corrigan, & Sullivan, 2013), not being emotionally ready (Stecker, Shiner, Watts, Jones, & Conner, 2013), believing treatment is not necessary (Stecker et al., 2013) and that one should be able to deal with one's own problems (Garcia, Finley, Ketchum, Jakupcak, Dassori, & Reyes, 2014), having concerns about treatment (e.g., not being understood by providers) (Stecker et al., 2013), believing that seeking treatment is a sign of weakness (Garcia et al., 2014), believing one is at fault for having PTSD (Mittal et al., 2013), and directly perceiving treatment seeking/receipt as stigmatizing (Ouimette et al., 2011; Stecker et al., 2013). Additionally, embarrassment is a commonly cited reason among these cohorts for not seeking mental health care, as are

ruining chances for promotions within the military and altering the views of one's peers (APA, 2014, Hoge et al., 2004). Recent literature has also suggested a potential link between receipt of mental health treatment and subsequent perceptions of mental health care associated stigma in OEF/OIF/OND Veterans with PTSD (DeViva et al., 2015).

CHAPTER FOUR

INTEGRATED MENTAL HEALTH

Integrated Mental Health and Patient-Centered Care

In the United States, mental health issues fuel over 70% of primary care visits (National Association of State Mental Health Program Directors (NASMHPD), 2012), and individuals with PTSD often seek care in the primary care setting (Stein, McQuaid, Pedrelli, Lenox, & McCahil, 2000). As alluded to previously, the Institutes of Medicine defined patient-centered care as "care that is respectful of and responsive to individual patient preferences, needs, and values, and ensure[s] that patient values guide all clinical decisions" (IOM, 2001). Important aspects of patient-centered care include chronic care delivery that is aligned with the chronic care model (Gabbay, Bailit, Mauger, Wagner, & Siminerio, 2011; Agency for Healthcare Research and Quality (AHRQ), 2010), engaging patients in their health care (Bechtel, & Ness, 2010; Epstein, & Street, 2011), including patients in shared medical decision-making (Lee, & Emanuel, 2013; Barry, & Edgman-Levitan, 2012), ensuring that providers exude empathy and communicate clearly and effectively with their patients (Bechtel et al., 2010; Epstein et al., 2011), and making sure patients receive timely, accessible care that meets their needs and preferences, and leaves them satisfied (Barry et al., 2012; Bechtel et al., 2010). According to the Agency for Healthcare Research and Quality (AHRQ), effectively managing patient's mental health concerns is integral to patient-centered care delivery (Croghan, & Brown, 2010), and an

effective, patient-centered strategy includes integrating mental health treatment into primary care (i.e., 'integrated mental health').

Integrated mental health models of treatment bring mental health professionals into the primary care setting, allowing Veterans to receive comprehensive treatment during primary care visits (Veterans Health Administration Support Service Center (VSCC), 2011). This treatment model allows patients to receive behavioral health care without needing to follow-up on a referral or having to seek treatment at a specialty care clinic (Karlin, & Zeiss, 2010). The IMH treatment model may reduce stigma associated with mental health care seeking and expand access options to to care (Collins, Hewson, Munger, & Wade, 2010; WHO, 2008), potentially bridging the gap for Veterans with PTSD who need care and those who actually receive it (Corso, Bryan, Morrow, Appolonio, Dodendorf, & Baker, 2009; WHO, 2008). Both the VA and DoD have recently begun to implement integrated mental health models of care delivery into practice (IOM, 2014).

Models of Integrated Care Delivery

Care Management and Co-Located Collaborative Care

The VA, the largest integrated health care system in the country (VHA, 2013), began a roll-out of the Primary-Care Mental Health Integration (PC-MHI) initiative (e.g., integrated mental health treatment) in fiscal-year '07 (Post, Metzger, Dumas, & Lehmann, 2010); PC-MHI care models have been rolled out at a number of VA facilities (but not all). PC-MHI programs typically have two components: (1) *care management*, in which a care manager (typically a nurse or a social worker) monitors patient's adherence

to mental health treatment, follows up with patients, and attempts to increase engagement in and adherence to mental health care, and/or (2) *co-located collaborative care*, in which mental health providers are actually embedded into primary care teams, and provide mental health care to patients in the primary care setting; allowing patients with mental health concerns to be seen by mental health providers directly in the primary care setting, so that the mental health treatment seems like it is part of primary care. Most programs have a combination of both components (co-located, collaborative care – CCC) (Possemato, 2011).

Examples of care management and co-located collaborative care successfully implemented within the VA and DoD are as follows: the Behavioral Health Laboratory, a VA PC-MHI initiative, utilizes the care management model where health care workers conduct diagnostic interviews, refer patients to specialty mental health clinics, and follow up with patients regarding their mental health treatment - all via telephone (Pomerantz, & Sayers, 2010). The Behavioral Health Consultation (BHC) model, which has been utilized in active duty military settings, utilizes a co-located, collaborative care model in which primary care providers send patients to mental health providers embedded in the primary care setting; the mental health providers conduct diagnostic assessments and brief interventions where appropriate, and provide treatment recommendations to patient's primary care providers (who ultimately remain responsible for final care decisions) (Corso, Bryan, Morrow, Appolonio, Dodendorf, & Baker, 2009). Similarly, the Three Component Model (3CM) used by the Re-engineering Systems for the Primary Care Treatment of PTSD (RESPECT-PTSD; RESPECT-Mil) programs is a blended

model of integrated care, comprised of both co-located, collaborative care and care management used by the DoD, where a psychiatrist is available to carry out consultations for primary care providers and manages care managers, on-site care managers follow up with patients about their mental health care and are available to answer any questions patients may have, and primary care providers/staff are provided with education regarding mental health care needs and provision (Engel et al., 2008; Schnurr et al., 2013).

Brief Interventions Designed for Use in Primary Care

In addition to models of integrated mental health care delivery, several brief interventions are discussed in the literature as appropriate for use in integrated mental health settings, though providing such services in the primary care setting is a somewhat new phenomenon (Funderbunk & Shepardson, 2015; Butler et al., 2008). One example of this type of intervention is Behavioral Activation (BA); BA is based on the tenets of cognitive behavioral therapy, but focuses on re-engaging patients with PTSD in the activities that they were conditioned to avoid following trauma exposure (Jakupcak, Wagner, Paulson, Varra, & McFall, 2010). Another example is a brief Written Emotional Disclosure (WED)/Combat Writing intervention (Possemato, 2011), which involves having patients compose written narratives of their traumatic experiences. To facilitate use in the primary care setting, these interventions are typically short in terms of length and number of sessions required.

Differences Between Traditional and Integrated Mental Health Care

As opposed to usual/traditional mental health care, where a patient is referred to a mental health provider/clinic and must follow up on a referral (or seek out a visit of their own volition), PC-MHI visits typically begin with a seamless "warm hand-off" from a patient's primary care provider to a mental health provider located in close proximity in the primary care setting, if the patient's primary care provider believes that individual has mental health concerns (based on results of brief mental health screenings done by the primary care provider or other indications given by the patient), and the patient is agreeable to seeing the co-located mental health provider.

Visits in this setting (as compared to specialty (usual care/traditional) mental health settings), are typically shorter in duration, and patients are usually seen by the mental health provider in this setting a fewer number of times (Dundon, Dollar, Schohn, & Lantinga, 2011; Possemato, 2011); individuals who require more intensive care are then referred out to specialty mental health clinics (usual/traditional care). This type of focused, succinct treatment model may greatly improve mental health treatment retention, while simultaneously opening up specialty mental health treatment resources to individuals who require more intensive care (Pomerantz et al., 2010).

Use and Outcomes of Integrated Mental Health

Recent literature has supported the efficacy of integrated mental health in improving symptoms, (e.g., mental health, general health, quality of life) for cohorts with various mental health issues such as depression (Kroenke, Shen, Oxman, Williams, & Dietrich, 2008; Fortney et al., 2007; Chowdhury, Kulcsar, Gilchrist, & Hawkins, 2012)

and generalized anxiety disorder (Roy-Byrne et al., 2010; Chowdhury et al., 2012). For instance, receiving integrated mental health treatment has been associated with improvements in important health outcomes such as glycated hemoglobin, low-density lipoprotein (LDL) cholesterol, and systolic blood-pressure levels in patients with chronic conditions (e.g., diabetes, coronary heart disease (CHD), or both) and comorbid depression (Katon et al., 2010). Further, a recent review of integrated mental health studies in individuals with mental health disorders (mainly depression and anxiety, though this review also identified research focused on the use of integrated mental health in ADHD, alcohol abuse and somatization cohorts) conducted by the AHRQ found that integrated mental health treatment models resulted in greater improvements in depression and anxiety symptoms (over usual care), improved quality of life, and higher treatment satisfaction (Butler et al., 2008).

Integrated Mental Health in Veterans/Service Members

Literature suggests that integrated mental health may increase likelihood of patients receiving an initial (full) diagnostic evaluation for mental health and/or social services needed (e.g., beyond the brief screening evaluations that are required for all patients) (Seal, Cohen, Bertenthal, Cohen, Maguen, & Daley, 2011). Integrated mental health program participation may also improve mental health care continuation among Veterans with mental health diagnoses initiating VA care (Bohnert, Pfeiffer, Szymanski, & McCarthy, 2013). Integrated mental health is associated with treatment retention in mental health care (Tsan, Zeber, Stock, Sun, & Copeland, 2012), adherence to pharmacological treatment in Veterans with depression (Fortney et al., 2011) and

increased utilization of specialty mental health services (Wray, Szymanski, Kearney, & McCarthy, 2012), as treatment modalities may still fall under the specialty care umbrella and/or patients may be more likely to follow up on referrals for care in specialty mental health clinics, indicating use of needed/prescribed services. Additionally, recent studies have found that integrated mental health treatment models may optimize recognition and diagnosis of mental health disorders (Zivin et al., 2010), and reach typically underserved populations in behavioral health care (Johnson-Lawrence et al., 2012) in the Veteran population.

Integrated mental health treatment delivery has been shown to decrease pain and depression severity in Veteran patients with chronic pain receiving care from the VA (Dobscha et al., 2009). Further, a study by Cucciare and colleagues (2013) found that a brief behavioral health intervention delivered in primary care to Veterans with substance abuse (specifically, alcohol) may foster improvements in use of appropriate coping mechanisms, depression severity, and mental health status (as compared to usual care) (Cucciare, Boden, & Weingardt, 2013).

Integrated Mental Health and Veterans/Service Members with PTSD

Among the factions that comprise the DoD, all service branches are implementing integrated mental health programs in order to reduce barriers to mental health care for members of the military (including those with PTSD) (IOM, 2014). Additionally, as mentioned, the VA health care system began rolling out integrated mental health care in facilities throughout the national health care system in FY07 (Post, Metzger, Dumas, &

Lehmann, 2010). Despite the need, however, limited evidence exists about the effects of integrated mental health treatment delivery in Veterans and service members with PTSD.

Gellis et al. (2010) examined mental health diagnoses, PTSD symptom severity, depression severity, and health status in 201 OEF/OIF Veterans with PTSD receiving care from the Behavioral Health Laboratory (BHL) at the Philadelphia and Lebanon VA Medical Centers (VAMCs). The Veterans in the study sample (receiving care via the BHL) were classified as having full (e.g., meet diagnostic criteria as outlined by the DSM) (59.7%) or partial (e.g., have PTSD symptoms but do not meet full DSM diagnostic criteria; 'sub-threshold' PTSD) (18.4%) PTSD, or minimal/no PTSD symptoms (despite having experienced trauma (21.9%)). Physical health status was similar across PTSD groups, but composite mental health scores were worse in Veterans with full PTSD (vs. partial and no PTSD). Veterans with full PTSD reported significantly worse depression symptoms than those with partial PTSD (whose depression scores were also worse than Veterans with no PTSD). Presence of comorbid panic disorder and bipolar disorder were associated with PTSD classification (Gellis, Mavandadi, & Oslin, 2010).

Similarly, Kornfield and colleagues (2012) examined PTSD symptom severity, severity of comorbid depression, and health status in Veterans with sub-syndromal PTSD receiving IMH care through the BHL at the Philadelphia VAMC. This cohort of Veterans, who received care via the IMH treatment model, did not meet full diagnostic criteria for PTSD, but scored between 40-60 on the PTSD Checklist – Civilian Version (PCL-C) and reported having experienced trauma. Outcomes were examined overall, and

comparisons were made between OEF/OIF/Operation New Dawn (OND) Veterans and non-OEF/OIF/OND Veterans. Comorbid depression was reported in approximately 44% of the sample, however, it was less prevalent in the OEF/OIF/OND cohort (36.7%) than the non-OEF/OIF/OND cohort (47.9%). Of the overall sample, only 28% endorsed avoidance symptoms, 80% endorsed arousal symptoms, and 86% endorsed re-experiencing symptoms. A greater proportion of the OEF/OIF/OND Veterans endorsed arousal symptoms, while a lesser proportion endorsed avoidance symptoms; there were no differences in frequency of re-experiencing symptom cluster endorsement. Not surprisingly, OEF/OIF/OND Veterans reported better physical health scores than the non-OEF/OIF/OND cohort, while mental health was similar across Veterans groups (Kornfield, Klaus, McKay, Helstrom, & Oslin, 2012).

Brawer and colleagues (2011) conducted a retrospective chart review of 471 OEF/OIF Veterans who received consults to the OEF/OIF-specific PTSD clinic at the St. Louis VAMC between 01/01/2009 and 06/30/2010. Outcomes examined were consult completion, consult accuracy (diagnostic and administrative accuracy), length of engagement in care prior to consultation, and PTSD symptom severity and depression severity (at time of consult). Veterans whose consults were placed by PC-MHI providers were compared to those who received consults from PCPs, specialty mental health, or providers from other parts of the hospital (e.g., emergency department, medical clinics). Veterans referred by PC-MHI providers (vs. other provider types) did not differ in terms of PTSD and depression severity, and number of clinic visits prior to consultation. Significantly more Veterans referred to the OEF/OIF PTSD clinic by PC-MHI providers

(vs. PCPs) completed their consults and had accurate consults administratively, however, no differences in diagnostic accuracy of consults placed by PC-MHI providers (vs. PCPs) were found (Brawer et al., 2011).

Similarly, Possemato et al. (2011) conducted retrospective chart reviews to examine need for treatment (positive VA mental health screens), physical and psychiatric health conditions, service use and prescribed medications in Veterans with PTSD receiving PC-MHI services compared to those receiving specialty mental health or primary care services only. PTSD was most commonly addressed in PC-MHI sessions (main focus in 72% of session), with mood (42%) and anxiety (13%) disorders the next most common. Veterans who started in PC-MHI and switched to specialty mental health (vs. those who stayed in PC-MHI) were more likely to be Vietnam Veterans, service connected, had more psychiatric diagnoses and PTSD visits, and were prescribed more medication (Possemato et al., 2011).

Additionally, Vojvoda and colleagues (2014) conducted a retrospective cohort administrative database analysis comparing Veterans with PTSD who received integrated mental health treatment in primary care to those who received care through specialty mental health clinics. Contradictory to previous studies, results indicated that most Veterans were seen in specialty mental health clinics, and the authors postulate that stigma may not, in fact, be driving Veterans with PTSD to seek out mental health care in the primary care setting. Results did, however, show that more Veterans receiving their care in specialty mental health clinics were receiving pharmacological treatment (vs.

Veterans receiving integrated mental health care) (Vojvoda, Stefanovics, & Rosenheck, 2014).

Recently, Bohnert et al. (2016) also conducted a retrospective cohort administrative database study, wherein records for over 21,000 Veterans who screened positive for PTSD and received either primary care, PCMHI, or specialty mental health care on the day of screening. Findings indicate that being seen by a PCMHI provider on the day of a positive PTSD screen was associated with greater odds of being diagnosed with PTSD, and initiating treatment for PTSD (Bohnert, Sripada, Mach, & McCarthy, 2016).

Further, Hoerster and colleagues (2015) adapted the Translating Initiatives for Depression into Effective Solutions (TIDES) model of care management for Veterans with depression for use in OEF/OIF Veterans with PTSD (TIDES/PTSD). The care management program was delivered via telephone to 17 OEF/OIF Veterans with PTSD. Results indicated high patient satisfaction, and decreased PTSD symptom severity, following participation in the program (Hoerster et al., 2015).

A small number of studies have also examined outcomes for Veterans who received integrated mental health treatment through a treatment model adapted from the RESPECT-D framework, an integrated treatment model (3CM) that was shown to be effective in treating depression. Schnurr et al. (2013) found no differences in PTSD or depression severity change in Veterans who received 3CM compared to those who received usual care. However, Veterans who participated in the intervention had higher mental health care utilization and rates of filling prescriptions for antidepressant

medication. While many Veterans rated the care they received through 3CM highly, the intervention arm was associated with lower perception of PTSD-specific care.

Among a cohort of active duty military personnel, however, Engel and colleagues (2008) found that, in individuals who received 3CM treatment, clinically significant reductions in PTSD symptom severity were realized in 67% of participants at 6-10 week follow-up and 81% at 12-week follow-up, and clinically significant reductions in depression were realized in 48% of participants at 6-10 week follow-up and 63% at 12-week follow-up. Only about 21% of this sample, however, had PTSD, indicating that findings may not be entirely generalizable to the PTSD population.

Additionally, a handful of studies have examined outcomes among active duty military personnel receiving collaborative mental health/primary care. Cigrang and colleagues (2011) reported that, among active duty OEF/OIF personnel, PTSD and depression severity, along with global mental health functioning, improved following integrated mental health treatment. In fact, of those who completed treatment, half no longer met diagnostic criteria for PTSD at follow-up. Currently, the first randomized controlled trial examining implementation of integrated mental health in service members with PTSD and/or depression is underway, and will provide outcomes and impact of internally facilitated vs. externally facilitated integrated mental health (Engel et al., 2014).

A number of studies have also examined the effects of brief mental health interventions designed for use in and administered in primary care for cohorts of Veterans/service members with PTSD. Corso et al. (2009) examined two brief

interventions (5 sessions of combat writing or impact statement compared with usual care) delivered in an integrated mental health setting on PTSD symptoms and global mental health in active duty military personnel. Significant reductions in PTSD severity and global mental health following treatment were realized. Specifically, individuals who received the impact statement intervention experienced significant reductions in PTSD symptoms and global mental health, written emotional disclosure participants experienced a reduction in PTSD symptoms (but non-significant) and, surprisingly, a decline in global mental health (but also non-significant), and usual care receipt resulted in no symptoms change for PTSD or global mental health.

Additionally, several studies have examined outcomes among Veterans with PTSD who received brief mental health interventions delivered in (or designed to be delivered in) primary care settings. Harmon et al. (2014) examined the effectiveness of a brief (three to four 20-minute sessions) trauma intervention with cognitive-behavioral therapy components delivered in a VA PC-MHI clinic. Of their sample, approximately 82% were diagnosed with PTSD. No significant improvements in PTSD severity were found, but decreases in severity of depression and anxiety were realized. Additionally, improvements in subsequent specialty mental health treatment engagement were reported.

Jakupcak and colleagues (2010) examined the effects of a behavioral activation (BA) intervention provided in the primary care setting on PTSD severity in OEF/OIF Veterans with PTSD and depression. The BA intervention consisted of 8 treatment sessions. Significant decreases in PTSD symptoms over time, as measured by both the

Clinician-Administered PTSD Scale (CAPS) and the PCL-Military Version (PCL-M), were seen in Veterans who received the BA intervention; these effects were true for both Veterans who completed all 8 sessions of the intervention and those who completed only 4 sessions. Of the 5 Veterans who completed all 8 sessions, symptom reduction was maintained at 3-month follow-up in 4. Reduction in depression severity and increase in reported quality of life were reported for study participants, but were not significant. Additionally, reported satisfaction with care was high among Veterans who received this treatment.

Similarly, Plagge and colleagues (2013) examined the effectiveness of an integrated treatment intervention with BA (IMPROVE) for OEF/OIF/OND Veterans with PTSD and comorbid chronic pain. Comparing pre-treatment to post-treatment levels, Veterans reported decreases in PTSD symptom severity, pain severity, and pain interference. Veterans who completed the intervention also reported improvements in depression, quality of life and satisfaction with life, and pain catastrophizing and kinesiophobia. Veterans also reported high levels of satisfaction with treatment.

Possemato et al. (2011) reported PTSD and depression severity, problematic alcohol use, health status and participant satisfaction in a group of OEF/OIF Veterans who participated in a brief intervention comprised of written emotional disclosure delivered via telehealth. No significant differences were found in outcomes from pre-to-post-intervention, however, authors mention that a lack of sufficient power may have caused inability to detect meaningful differences even if they were there.

CHAPTER FIVE

STUDY OBJECTIVES

The primary purpose of this study was to examine the impact of a novel model of mental health care delivery, integrating mental health into primary care, on outcomes of Veterans with PTSD receiving care from the VA health care system. This model of care has been cited as a potential way to reduce stigma attached to seeking mental health care, which in turn may increase health care seeking, treatment engagement, and expand access options to care. In the literature, integrated mental health treatment models have shown positive impacts on mental and physiological health outcomes, and appropriate health care utilization, in civilian cohorts with mental illnesses, as well as Veterans and service members with psychological health concerns. Some recent research has indicated that this treatment model may have positive mental and physical health, and appropriate health care utilization, effects on individuals with PTSD, including Veterans and service members. Despite the importance, however, evidence of the impact of this relatively new and potentially beneficial model of health care delivery in Veterans and service members with PTSD is scarce. Using several methods of data collection (e.g., medical chart reviews, VA administrative databases, surveys) the overall goal of the present study was to assess the impact of integrated mental health care (as compared to usual mental health care) on important health, treatment utilization and patient-centered care outcomes in a

national sample of Veterans with PTSD who received treatment in the VA health care system and were new users of mental health care.

Hypotheses

Hypothesis 1

Veterans with PTSD receiving integrated mental health care (vs. Veterans with PTSD receiving usual mental health care) will have more appropriate mental health care utilization, better physical and mental health outcomes, lower pain, and lesser PTSD symptoms.

Hypothesis 1a. Veterans with PTSD receiving integrated mental health care (vs. Veterans with PTSD receiving usual mental health care) will have more appropriate mental health care utilization. More appropriate mental health care utilization was defined as: more needed mental health visits, prescribed pharmacology use, fewer hospitalizations, but more primary care visits. *Literature indicates that receiving IMH care is associated with mental health care continuation among Veterans with mental health diagnoses initiating VA care (Bohnert, Pfeiffer, Szymanski, & McCarthy, 2013), treatment retention in mental health care (Tsan, Zeber, Stock, Sun, & Copeland, 2012), adherence to pharmacological treatment in Veterans with depression (Fortney et al., 2011) increased utilization of specialty mental health services (Wray, Szymanski, Kearney, & McCarthy, 2012), decreased preventable hospitalizations among Veterans with mental illness (Pirraglia, Kilbourne, Lai, Friedmann, & O'Toole, 2011), increased primary care and specialty medical care visits, but no differences in ER visits, among Veterans with depression (Engel, Malta, Davies, & Baker, 2011).*

Hypothesis 1b. Veterans with PTSD receiving integrated mental health care (vs. those receiving usual mental health care) will have better physical health (e.g., fewer visits with poor health indicators, higher self-reported physical health (VR-12) scores (where available) and lower pain scores (as recorded in the patient's medical record). Poor health indicators were defined as diastolic blood pressure ≥ 90 and systolic blood pressure ≥ 140 (hypertension); Hemoglobin A1c ≥9% (diabetes); LDL ≥ 130 (Hyperlipidemia). Less pain was defined as the average pain rating (0-10 scale) provided by patients during their medical visits, as recorded in the patient's medical record. *Literature indicates that receiving care via the IMH treatment model has been associated with improvements in important health outcomes such as glycated hemoglobin A1c, cholesterol, and blood-pressure levels in patients with chronic conditions (e.g., diabetes, coronary heart disease (CHD) or both) and comorbid depression (Katon et al., 2010). Additionally, literature indicates that IMH treatment delivery has been shown to decrease pain in Veteran patients (Dobscha et al., 2009).*

Hypothesis 1c. Veterans with PTSD receiving integrated mental health care will have lower depression symptom severity (where applicable), and higher self-reported mental health scores (VR-12; where available) than Veterans with PTSD receiving usual mental health care. Depression severity was defined as the patient's last recorded PHQ-9 score (as recorded in the patient's medical record, when available). *Literature indicates that receiving care via the IMH treatment model may help to relieve symptoms of depression in Veteran patients receiving VA health care (Dobscha et al., 2009).*

Hypothesis 1d. Veterans receiving integrated mental health care will endorse fewer PTSD symptoms, and have lower overall symptom severity, than Veterans receiving usual mental health care. For this hypothesis, PTSD symptoms were derived from provider progress notes recorded in the patient's medical record, as classified by the DSM V diagnostic criteria, and may have included symptoms of avoidance, intrusion, negative alterations in cognitions and mood, and/or alterations in arousal and reactivity. Symptom severity was defined as PTSD-Checklist (PCL) scores, as recorded in the patient's medical record, where available. *Literature indicates that treatment receipt via an IMH model reduces PTSD symptom severity in active duty military personnel (Engel et al., 2008; Cigrang et al., 2011).*

Hypothesis 2

Patient perceptions of patient-centered care constructs will be higher among Veterans with PTSD receiving integrated mental health care than those receiving usual mental health care Patient perceptions of patient-centered care constructs were defined as patient's CEPEP survey responses for the following constructs: care alignment with the chronic care model as measured by the Patient Assessment of Chronic Illness Care scale, treatment engagement as measured by the Patient Activation Measure, provider empathy and patient-provider communication as measured by the Consultation And Relational Empathy measure, overall experience with the health care facility as measured by the Global Practice Experience measure, shared decision-making as measured by the Combined Outcome Measure for Risk Communication and Treatment Decision Making Effectiveness, and respect for choices and support as measured by the Press-Ganey

questions. *Though literature examining patient-centered care outcomes in relation to IMH treatment receipt is sparse, hypothesized differences between cohorts in this study are expected because the IMH treatment model is a patient-centered model of mental health care delivery, indicating that Veterans with PTSD receiving IMH care should receive care that is more patient-centered compared to Veterans receiving usual mental health care.*

Hypothesis 3

Veterans receiving integrated mental health care will be recommended to more psychotherapy and CAM treatment options by their providers, whereas Veterans receiving usual mental health care will be recommended to more pharmacology treatment options. *Literature indicates that more Veterans with PTSD receiving their care in specialty mental health clinics were prescribed pharmacological treatment (vs. Veterans receiving integrated mental health care), as evidenced by greater number of psychotropic prescriptions filled (Vojvoda, Stefanovics, & Rosenheck, 2014).*

Hypothesis 4

As one of the central tenets of PCC within the VA health care system is that health care will be personalized, proactive, and take into account what matters most to patients, patient preferences for treatment will be taken into consideration by providers more often for Veterans receiving integrated mental health care (vs. usual mental health care). Assessment of patient preferences for treatment were made based on a comprehensive assessment of the content of progress notes across the course of treatment; an example of a patient preferences is if a patient tells their provider that they

do not wish to participate in pharmacological treatment because they medication they are on gives them side-effects; the provider may either accommodate the patient's preference (e.g., recommend an alternative, non-pharmacological treatment option) or recommend treatment that is not concordant with what the patient wants (e.g., insist the patient stays the course of the medication).

Hypothesis 5

Patient perceptions of two important patient-centered care constructs associated with health services utilization, including mental health services (e.g., shared decision-making; patient activation) will mediate the relationship between type of mental health treatment (integrated vs. usual care) and receipt of necessary recommended PTSD treatment (9 or more visits within 1 year of treatment initiation).

CHAPTER SIX

METHODS

This quasi-experimental study used mixed methods to evaluate the impact of integrative mental health treatment delivery on physical health, mental health, PTSD, health services utilization, patient perceptions of patient-centered care, provider recommendations for treatment, and considerations of patient preferences for treatment.

Under the supervision of Dr. LaVela, a team of Health Services Research and Development (HSR&D) researchers at the VA conducted a large-scale, national evaluation study to examine the spread and reach of patient-centered care innovations in the VA system of care [*Center for Evaluation of Practices and Experiences of Patient-Centered Care (CEPEP)*, PEC 13-002, PI: LaVela]. This project was classified as a Quality Improvement project by the VA Central IRB.

A portion of the current study involved a survey comprised of measures of several patient-centered care constructs, which was mailed to Veterans who had received care at one of 8 VA health care facilities nation-wide, from mid-FY12 (May 2012) through 11/15/2012. This study drew upon Dr. LaVela's evaluation. The population for the current study began with the larger general Veteran cohort to which CEPEP surveys were mailed (our initial pool of eligible Veteran patient participants).

Participants

Of the 16,425 Veterans that comprised the final CEPEP sample, individuals that were included in the cohort of participants for the present study were identified using the following method (please see Table 1):

(1) Veterans who had two documented PTSD diagnoses (2 instances of the ICD-9 code 309.81 in their medical record, which is the diagnosis code for PTSD) from the beginning of FY12 (October 1, 2011) – 12/31/2012 were identified using VA Inpatient and Outpatient administrative data.

(2) Integrative Mental Health users were identified as individuals who had a documented clinic stop of 534 or 539 in either the primary or credit position, or credit pairs 527/534, 182/534, 323/531, from the beginning of FY12 – 12/31/2012. Clinic stop codes are used within the VA to document and track patients' use of specific outpatient health services, and can be coded as a single number or a pair of numbers, where the first number is said to be in the primary position and the second number is said to be in the credit position; when a code is in the primary position, this indicates that the primary reason for the visit was use of that particular service. When the code is in the credit position, this indicates that the use of that service was the secondary reason for the visit. The first integrated mental health care visit in that time frame was used as the index visit, and all subsequent mental health visits were considered 'integrated' care.

(3) 'Usual Mental Health Care' users were identified as individuals who had a documented clinic stop code of 502-599 (the clinic stop codes for mental health care visits, e.g., care received at mental health clinics) from the beginning of FY12 (October

1, 2011) – 12/31/2012, excluding 586 and 587 (residential care) and any credit pair of a stop code in the 500s with 534 or 539 in the credit position (such that no individuals who were in the integrated mental health group were included in the usual care group). The first mental health visit in that time frame was used as the index visit; of our pre-identified cohort of eligible study participants, 112 Veterans were excluded because they had no Mental Health care during the timeframe.

(4) Individuals were identified as 'new users' of mental health care if they had not had a previous mental health visit in the two years preceding, leaving 311 Veterans eligible Veterans (126 integrated mental health care users and 185 usual mental health care users); Veterans who had used both integrated mental health and specialty mental health services were considered to fall into the integrated mental health care group, as all care subsequent to integrated mental health care initiation should be integrated.

Table 1. Sample Derivation

CEPEP sample with 2 PTSD flags	
PTSD	2213
No PTSD	13960
CEPEP sample with 2 PTSD flags by mental health care use	
Integrated Mental Health	551
Usual Mental Health Care	2027 *1550
CEPEP sample with 2 PTSD flags and no mental health care use in 2 years prior to index date	
Integrated Mental Health	126
Usual Mental Health Care	289 *185

*Represents Usual Mental Health Care only

(5) In order to better ensure that groups for comparison were equivalent, and to rule out potential selection effects which may have been present due to the quasi-experimental nature of the study, patients in the usual mental health care group were matched on age and number of comorbid mental health conditions to patients in the

integrated mental health care group. Comorbid mental health conditions were identified by ICD-9 codes in the range of 290-319 present in the patient's medical record, which is the range of ICD-9 codes used to document diagnosis of mental health conditions. The final sample was 234 Veteran patients (117 in each group). *[Please see Figure 1 for a flow-chart delineating the population selection process]*

Procedure and Materials

Data for the current study were obtained from several sources: VA administrative data, medical record chart review, and the mailed national patient survey conducted as part of the CEPEP evaluation efforts. See Appendix A for a table detailing variables and sources (which are also described below).

Administrative Data

Information regarding health services utilization, select comorbid mental and physical health conditions, and demographics was obtained from VA administrative databases (and supplemented with CEPEP survey data (in the case of demographics)), where available, to minimize the amount of missing data. The VA Corporate Data Warehouse (CDW) is a national database comprised of data from VHA clinical and administrative systems, which are stored such that all data can be merged at the patient level. Data included in the CDW include information about all inpatient and outpatient care, as well as the content of patient's electronic health records. CDW data are refreshed nightly, allowing close monitoring of included data, such as utilization trends. Administrative data collected in the CDW was pulled and analyzed for all 234 Veterans in the final cohort of this study. For this study, the CDW was used to capture

demographic data, chronic conditions, mental health diagnoses, mental health and general health services utilization, and physical and mental health indicators.

Medical Chart Abstraction

Information regarding severity of comorbid mental health conditions, frequency and severity of PTSD symptoms, and provider recommendations for treatment was obtained via medical chart review abstraction. Medical chart reviews are a data collection method which involves scanning progress notes in patient's medical records for data relevant to health care and health care visits (Jaén et al., 2010), For the current study, medical chart reviews were conducted to gather additional information related to participant' PTSD symptoms, providers' treatment recommendations (and patient preferences for treatment), and severity of comorbid mental health conditions, information which is not available via administrative databases. The content of physicians' and nurses' notes, documented in patient's electronic health record, may offer additional detail about the frequency and severity that participants experienced PTSD symptoms, as well as provider referrals to various potential treatment options (e.g., pharmacology, psychotherapy, CAM), and details about the trajectory of any mental health comorbidities the patient may be experiencing.

Medical chart reviews were conducted with a random sample of 45 individuals from the integrative mental health group and 45 individuals from the usual mental health care group (90 chart review 'participants' total). Chart reviews started with an index date (the patient's first integrated mental health or usual mental health care visit); all mental health and primary care notes were reviewed from the index date through the subsequent

year. Data were systematically extracted using a form developed by the researcher (Etingen), which was revised based on several test cases (see Appendix B). For each patient participant, one 'cover sheet' was filled out overall, and one chart review form was completed for each visit that the patient has in the chart review time period.

In order to assess inter-rater reliability, a 10% sample of the chart reviews were conducted by an independent member of the research team; a reliability check was then done to make sure both individuals were conducting the chart reviews in the same way. An a-priori criterion of 85% inter-rater reliability was set for the overall chart review assessment tool. Inter-rater reliability was investigated by calculating the proportion of agreement (or the number of times the two reviewers agreed on the presence or absence of the criterion in each of the notes); agreement between the two reviewers was very high, with an overall proportion agreement of 98%.

Survey Data

Information on self-reported health status and patient perceptions of several patient-centered care constructs was obtained for a sub-set of the sample using data from the mailed national survey conducted as part of the CEPEP evaluation efforts. The CEPEP patient survey was sent to a national sample of Veteran patients in February/March of 2013. The survey packet was comprised of several measures of patient-centered care constructs, and was sent along with a cover letter explaining the study and a postage paid return envelope to facilitate ease of response. A follow-up mailing was conducted in May/June of 2013 with non-respondents, to facilitate response.

Surveys were sent to 16,425 general Veteran patients. The denominator was adjusted to 15,629, as 674 surveys were returned as undeliverable, 77 Veterans on the initial mailing list were deceased, 42 Veterans indicated the survey was not applicable to them, and 3 surveys were returned to us unopened. Surveys were returned by 5,512 Veteran patients (35.27% response rate). Of our cohort, completed surveys were available for 30 Veterans in the integrated mental health group and 31 Veterans in the usual mental health care group (n=61 Veterans total).

Measures/Variables

Demographics, Veteran Characteristics and Select Health Conditions

Demographic and characteristic variables collected were: gender (male, female); age; race (white, black, Asian, native Hawaiian/ other Pacific Islander, American Indian/Alaska Native, other); ethnicity (Hispanic/Latino, non-Hispanic/Latino); relationship/marital status (married, not married); service connected disability percentage (0%, 1-49%, 50-100%), number of select chronic conditions; multimorbidity (≥2 chronic conditions); and select mental health diagnoses. Chronic conditions assessed and included in the count used to identify multimorbidity were based on 5 chronic conditions indicated by the CDC as being among the top causes of mortality in the US, and included: heart disease, cancer, chronic lower respiratory disease, stroke and diabetes (CDC, 2013). ICD-9 codes (slightly modified from those used by Jemal and colleagues, 2005) used to identify presence of these disorders can be found in Appendix A (Jemal, Ward, Hao, & Thun, 2005).

Comorbid mental health diagnoses were obtained via administrative data. For these psychosocial disorders, ICD-9 codes, classified into groups using the general classifications documented in the Agency for Health Research and Quality's (AHRQ) Clinical Classifications Software (Elixhauser, Steiner, & Palmer, 2008), a method that has been previously used to examine mental health diagnoses in Veterans, with minor adjustments (e.g., examining PTSD on its own rather than with other anxiety disorders; combining alcohol and substance use disorders; examining bi-polar and depressive disorders separately rather than combined as the more general group of 'mood disorders') (Pavao et al., 2013). Mental health diagnoses examined included: adjustment disorders, anxiety disorders, PTSD, impulse control disorders (including pathological gambling), bipolar disorders, depressive disorders, personality disorders, schizophrenia and other psychotic disorders, substance use disorders, and suicide and intentional self-injury. Information on whether or not Veterans had a documented history of military sexual trauma was also be collected. (See Appendix A for a full description of ICD-9 codes included in each diagnosis category).

Health Services Utilization

Utilization variables assess whether integrative mental health fosters an increase in *adequate* mental health care utilization (defined as 9 or more mental health treatment visits within 12 months of the patient's index visit for patients with PTSD; Lu, Duckart, O'Malley, & Dobscha, 2011). Mental health utilization was examined through the following indicators: outpatient visits related to mental health services, prescription psychotropic medication fills, and visits specifically associated with a number of mental

health conditions (a visit was considered to be for a particular condition if the primary diagnosis code for that visit was an ICD-9 code for that condition).

Further, data on general health care utilization (including mental health care utilization, which was also pulled out and reported separately) was also be examined, and included: inpatient encounters (hospitalizations); average length of stay; outpatient visits (general) and specifically primary care visits [and number of no-shows to scheduled primary care visits]; emergency department visits; prescription medication fills (general). Additionally, patients' number of visits for several select physical were tracked (a visit was considered to be for a particular condition if the primary diagnosis code for that visit was an ICD-9 code for that condition).

Physical Health

Proxy measures (indicators) of physical health were obtained via administrative databases, and included: blood pressure (hypertension); Hemoglobin A1c (diabetes); LDL (Hyperlipidemia). The number of visits associated with indicators of poor health for these conditions were recorded. For blood pressure, systolic blood pressure ≥ 140 and diastolic blood pressure ≥ 90 indicates poor health (American Heart Association, 2014). For Hemoglobin A1C: HbA1c ≥9% indicates health (US Department of Health and Human Services). For Low Density Lipids (LDL): LDL ≥ 130 indicates poor health (National Heart, Lung and Blood Institute, 2005). Pain severity was measured using a 0-10 rating scale. Patients are asked to rate, on a scale of 0 to 10, how much pain they are currently in. Scoring is as follows: 0=no pain, 1-3=mild pain, 4-6=moderate pain, 7-10=severe pain (Jones, Vojir, Hutt, & Fink, 2007).

Mental Health Comorbidities

Information regarding the symptom severity of a mental health comorbid condition typically experienced along with PTSD (e.g., depression) was assessed through medical chart reviews. Specifically, provider's progress notes often include, as appropriate, scores on several clinical measures of mental health issues. The assessment scores most commonly utilized among VA providers for depression, where available, were recorded for each patient: Depression severity, most commonly assessed among VA providers using the PHQ-9, was recorded when available. The PHQ-9 is a 9-item measure used to assess depression severity. Patients are asked to think about the last 2 weeks, and report how much they were bothered by the problems inquired about in the questions. Response options are on a 4 point scale, and include 0 (not at all), 1 (several days), 2 (more than half the days), 3 (nearly every day). Scores are added together for a total depression severity score (University of Michigan Health System (UMHS), 2011).

PTSD Symptoms

Symptom endorsement was assessed using the revised DSM-V diagnostic criterion; patient's progress notes were scanned for mention of or diagnostic assessments of PTSD symptoms that the patient is experiencing. Symptom clusters and individual symptoms were recorded. *PTSD symptom severity* was assessed using the PTSD Checklist (PCL) (see Appendix C); PCL scores were also be extracted from patient's medical records, where available. The PCL is a 17-item measure which asks patients about their experiences with PTSD symptoms; response options are on a 5-point scale, and range from 1 (not at all) to 5 (extremely). PCL scores range from 17-85, with PTSD

severity levels classified as follows: <40 indicates non-significant symptoms, 40-50 indicates moderate symptoms, and >50 indicates severe symptoms. A change of at least 5 points on the PCL indicate response to treatment, and a change of at least 10 points indicates a clinically significant improvement (National Center for PTSD, 2012).

Self-Reported Health Status

A self-report measure of health status was included with the CEPEP survey; the Veterans RAND 12-Item Health Survey (VR-12) is a validated, reliable measure of health status. The VR-12 produces two summary scores: mental health and physiological health. The scale consists of 12 questions, and is scored based on guidelines provided by the scale's developers; higher scores indicate better health status (Kazis, Selim, Rogers, Ren, Lee, & Miller, 2006). Self-reported health status was compared in the sub-set of patients for whom CEPEP survey data were available.

Perceptions of Patient-Centered Care Constructs

The integrative mental health treatment model is geared toward ensuring the delivery of patient-centered care, and as such, this study assessed patient perceptions of several important patient-centered care constructs, as collected via the CEPEP survey (see Appendix D), in a sub-set of patients for whom CEPEP survey data were available. Patient-centered care constructs measured included:

Global Practice Experience (GPE). Designed for the evaluation of the Patient-Centered Medical Home National Demonstration Project, the GPE is a 2 question scale which provides an all-or-nothing rating of patient's satisfaction with their experience at their health care facility (Jaen et al., 2010; Nutting et al., 2010), and is based on Institute

of Medicine criteria (IOM, 2001). Questions are: 'I receive exactly the care I want and need when and how I want and need it' and 'I am delighted with this practice'. Response options range from 'strongly disagree' to 'strongly agree'; scores provided are the proportion of patients who provide a 'full successful' rating, which is given only when the patient provides a 'strongly agree' response to both questions.

Consultation and Relational Empathy (CARE). The CARE is a valid and reliable 10-item scale that assesses patient's perceptions of provider's empathy and patient-provider communication (Mercer, & Reynolds, 2002; Mercer, Maxwell, Heaney, & Watt, 2004). While the original CARE measure's questions referred to a specific consultation, we adapted the wording such that questions better fit the experience of care in the VA, altering 'consultation' to 'visit' or 'clinical encounter.' Questions include: How was the provider at. . . 'making you feel at ease?', '…letting you tell your "story?"', '…making a plan of action with you?' Response options are on a 5 point scale, and range from 1 (poor) to 5 (does not apply); each question also has a 'does not apply' option available. Scores are added, and range from 10 to 50; the scale may still be scores with up to 2 'does not apply' or missing values. Higher scores reflect higher perceptions of provider empathy and patent-provider communication.

Patient Activation Measure (PAM). The PAM (Hibbard, & Mahoney, 2005) is a 13-item valid and reliable instrument that measures patients' engagement in their health care. Using a 4-point scale (response options ranging from 'strongly disagree' to 'strongly agree'), patients are asked to rate their level of agreement with statements reflecting the stages of activation, which represent a 4-stage developmental process of

activation. Responses are added, and using a conversion table designed by the scale's developers, those raw scores are converted into an overall patient activation score, which ranges from 0-100 (if there are missing responses, take the mean of the answers provided and multiply by 13 prior to concerting the scores). Patient activation scores are also classified into stages of activation (1=believing that an active patient role is important; 2=having the confidence and knowledge to take action; 3=taking action; 4=staying the course under stress); higher scores and higher stages of activation represent greater patient activation/engagement in their care.

Press-Ganey Questions. The 5 Press-Ganey questions assess family involvement in care, respect for choices, and support. Response options are presented on a 5 point scale, and range from 1 (very poor) to 5 (very good). Scores are summed, and raw scores are converted to a 0-100 point scale (Tackett, Tad-y, Rios, Kisuule, & Wright, 2013); higher scores indicate better outcomes.

Patient Assessment of Chronic Illness Care (PACIC). The PACIC is a valid, reliable instruments used to assess patient perceptions of the extent to which their health care is aligned with the chronic care model (Glasgow, Wagner, Schaefer, Mahoney, Reid, & Greene, 2005). The PACIC is comprised of 20 questions, which provide scores concordant with 5 sub-scales: patient activation (how much patient engagement is sought), delivery system design (how much information is provided to patients to aid in decision-making); goal setting/tailoring (how much patients were able to set health care goals with their providers); problem-solving/contextual (how much patient's life circumstances are considered when forming treatment plans); follow-up/coordination

(care management and at-home follow-up). Questions ask that the patient to rate their care over the past 6 months, and are rated on a 5 point scale (1=no/never to 5=yes/always). An overall mean is provided, along with mean scores for each sub-scale; higher scores indicate greater patient perceptions of care alignment with the chronic care model.

Combined Outcome Measure for Risk Communication and Treatment Decision Making Effectiveness (COMRADE)

The COMRADE is a valid, reliable 20-item measure of patient's perceptions of how much they are involved in the decision-making process when it comes to their care (e.g., shared decision-making) (Edwards et al., 2003). The scale provides scores for two sub-scales, which reflect the key elements of shared decision-making: risk communication (how well the benefits and risks of treatment options are communicated to the patient) and decision making effectiveness (how much patients are able to participate in making decisions about their treatment). Response options are presented on a 5 point scale, and range from 1 (strongly disagree) to 6 (strongly agree). Scores for the 2 sub-scales are calculated based on an algorithm provided by the scale's developers, and range from 0-100; higher scores represent greater patient perceptions of shared decision-making.

Provider Recommendations for Treatment

Data on provider's treatment recommendations (e.g., psychotherapy, pharmacology, CAM) were extracted from patient's progress notes.

Patient Preferences for Treatment

Assessment of patient preferences for treatment were made based on a comprehensive assessment of the content of progress notes across the course of treatment; an example of a patient preferences is if a patient tells their provider that they do not wish to participate in pharmacological treatment because they medication they are on gives them side-effects; the provider may either accommodate the patient's preference (e.g., recommend an alternative, non-pharmacological treatment option) or recommend treatment that is not concordant with what the patient wants (e.g., insist the patient stays the course of the medication).

Statistical Analyses

Bivariate Comparisons

To assess differences among Veterans with PTSD receiving IMH care to those receiving usual care, bivariate analyses were conducted for all variables (student's t-tests were used in instances where the dependent variable was continuous, and chi-square tests in instances where the dependent variable was categorical) by group membership. Student's t-tests assess the magnitude of the mean difference of a given variable between members of two independent groups; chi-square tests assess whether the proportion of individuals who fall into various categories of a given outcome variable are statistically significant across levels of an independent variable. Additionally, in cases where continuous outcome variables could be sensibly grouped together (e.g., select patient-centered care, mental health care utilization, general health care utilization measures), Hotelling's T^2 tests were conducted in an effort to increase power.

For all bivariate comparisons, patients in the two groups were compared on all demographic variables to highlight similarities and potential differences among groups; variables that showed significant differences were included in the multivariate logistic regression analysis as covariates, to control for potential confounding effects of those potential differences among groups on outcomes of interest.

Competing regression models were built based on significant bivariate associations, as well as commonly modeled variables as seen in the literature (significance will be based off of $p < .05$). Variables which produced significant chi-square statistics were included in the model first. Consequently, individual variables that did not yield significant bivariate associations, but are typically included in such analyses for the population at hand, were also added to the model to create competing models. Multicolinearity among independent variables was assessed.

Multivariate Logistic Regression Analyses

To assess patient-centered care variables associated with receipt of integrative mental health care, a multivariate logistic regression was conducted. Logistic regression analysis is predominantly used to predict outcomes for a categorical dependent variable, from a set of multiple independent variables that can be continuous or categorical (Tabachnick & Fidell, 2007). Since the outcome variable in the current study is a dichotomous, categorical variable (type of mental health service received - integrative mental health care vs. usual care) and a group of predictor variables (both categorical and continuous variables), binary logistic regression was the best-suited analysis. Further, as the outcome variable is dichotomous and no a-priori hypotheses concerning the order of

importance of the predictor variables was established, a direct (as opposed to stepwise or sequential) logistic regression analysis was used (Tabachnick & Fidell, 2007).

Logistic regression analysis is based on the following assumptions: the relationship between continuous predictor variables and the transformed dependent variable is linear; independence of responses; adequate sample size to predictor variables ratio; adequate cell-frequencies for each independent variable included in the model (as well as the dependent variable); no outliers present in the data; that multicolinearity is not a problem pertaining to the group of independent variables (Tabachnick & Fidell, 2007).

Predictive utility of variables was assessed using the Wald chi-square statistic (Mendenhall & Sincich, 2011). In order to assess the fit of the regression model, the final model was compared to a null model (which does not include any predictor variables) (Tabachnick & Fidell, 2007). By subtracting the Log-likelihood (-2LL) value of the final model from that of the null model, a chi-square value assessing goodness of fit was obtained. The significance of this chi-square value is based on the number of predictor variables in the null model (1) minus the number of predictor variables in the model including the group of predictors (Tabachnick & Fidell, 2007). If the final model yields a significant log-likelihood chi-square difference, the model increases the ability to predict the likelihood of each independent variable based on integrative mental health treatment receipt (Tabachnick & Fidell, 2007).

The logistic regression model provides odds ratios and 95% confidence intervals for each individual predictor variable. Odds-ratio values which exceed 1.0 are associated with increased odds of that variable for Veterans who received integrative mental health

treatment, and those which were less than 1.0 will be associated with decreased odds of that variable for Veterans who received integrative mental health treatment (Peng, Lee & Ingersoll, 2002). The analysis also generated 95% confidence intervals around the odds ratios; for each predictor variable, we can say with 95% confidence that the true population increase/decrease in the likelihood of that variable for Veterans who received integrative mental health treatment falls between the interval values.

Mediation Analyses

According to Baron and Kenny (1986), four relationships are necessary in order for mediation to be established. First, an association between the predictor variable and the outcome variable must be established [Path C]. Next, a relationship between the predictor variable and the mediating variable must be established [Path A]. Third, a relationship between the mediating variable and the outcome variable must be established [Path B] (Baron & Kenny, 1986). Once the first three paths are established, mediation is tested for. In order for any level of mediation to exist, the relationship between the mediator and the outcome variable must remain significant when the predictor variable is being controlled for. The mediating relationship is considered 'full' if, when the mediator is entered into the model, the predictor variable is no longer significant; alternatively, the mediating relationship is considered 'partial' if both the predictor and mediator are significant in the multiple regression model (Baron & Kenny, 1986).

For the current study, the hypothesis that the relationship between type of mental health treatment received (integrative mental health vs. usual mental health care) and receipt of adequate mental health treatment (9 or more mental health visit in the year

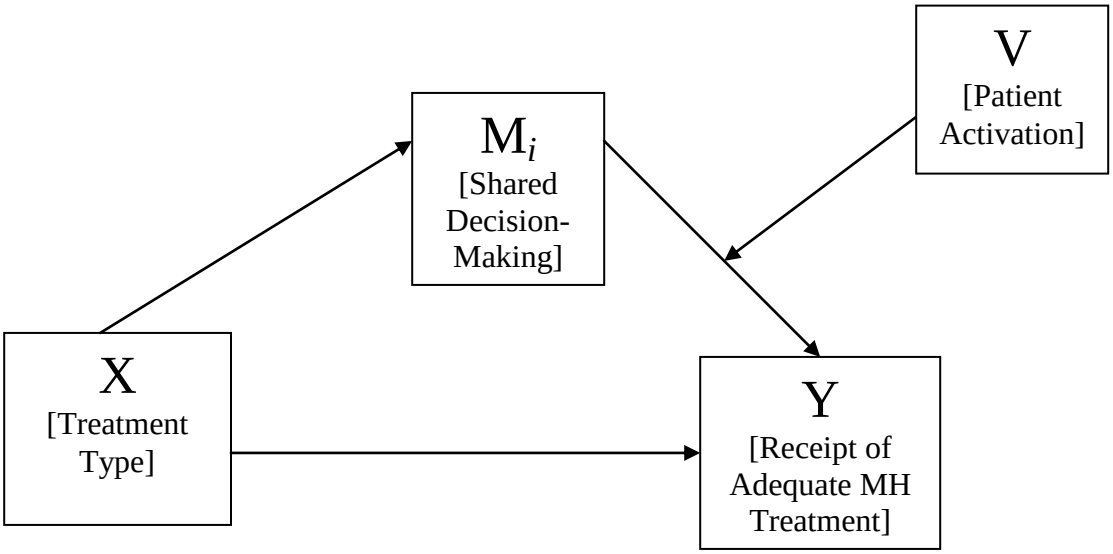
following treatment initiation) is mediated by patient perceptions of important patient-centered care constructs (shared decision-making; patient activation) known to be associated with health services utilization, including mental health care services, was testing was tested using Hayes' (2012) PROCESS Macro for SPSS (specifically, using the Model 4 template), which uses a bootstrapping approach to create confidence intervals for the indirect effects. Two meditational models were conducted; the established models consisted of the following variables: (1) group membership (integrative mental health vs. usual mental health care services received; predictor variable), patient perceptions of patient activation (mediator), and receipt of 'adequate' mental health services (outcome variable), and; (2) group membership (integrative mental health vs. usual mental health care services received; predictor variable), patient perceptions of shared decision-making (mediator), and receipt of 'adequate' mental health services (outcome variable).

Moderated Mediation Analyses

In some cases, a meditational effect can be present only for (or stronger in) one group/type of people vs. another; this type of relationship is referred to a moderated mediation. For the present study, moderated mediation was tested using Hayes' (2012) PROCESS Macro for SPSS, which uses a bootstrapping approach to create confidence intervals for the indirect effects. Specifically, using the Model 14 template (please see Figure 1), the possibility that patient perceptions of shared decision-making mediate the relationship between receipt of IMH services and receipt of adequate mental health care

for PTSD only for patients with high patient activation (whereas no mediating relationship exists for those with low patient activation) was tested.

Figure 1. Model 14 (Preacher, 2012)



CHAPTER SEVEN

RESULTS

As a disclaimer, prior to presenting the study results we would like to mention that while we realize the family-wise error issue present in this study, because the present research is somewhat exploratory we are using .05 as our type I error rate (e.g., to determine statistical significance). However, we will also be reporting results with p-values less than .1, so as to avoid missing detection of possible benefits of the IMH program. Such findings, however, should not be considered reliable without further replication(s), with data sets providing greater statistical power.

Power Analyses

Post-hoc power analyses were conducted to assess power associated with the administrative and survey data available for this project. Power analyses were conducted for variables with the lowest and highest effect sized (to establish the range of power for each data collection method) based on the procedure outlined by Cohen (1988): effect sizes were determined based on the results of the bivariate analyses, and in combination with the respective sample sizes, were used to determine power from look-up tables (Cohen, 1988).

Administrative Data

Of the variables compared between Veterans with PTSD who received IMH vs. UMH treatment using administrative data, power ranged from <26% - 94%. The variable

producing the lowest effect size (and thusly, the lowest power) was visits associated with suicide/self-injury (Cohen's D=0.00; power=<26%), while prescription fills of psychotropic medications resulted in the highest power (Cohen's D=0.28; power-94%). The high end of the range of power detected for the administrative data analyses was considered adequate (>80%), however, differences for some administrative data variables examined may be undetectable based on low power. Additionally, administrative data were collected for a sample of 234 Veterans; based on critical values, minimum necessary effect sizes to detect significant differences are: 0.13 for a chi-square test with 1 degree of freedom, 0.16 for a chi-square test with 2 degrees of freedom, and 0.22 for a t-test.

Survey Data

Of the variables compared between Veterans with PTSD who received IMH vs. UMH treatment using survey data, power ranged from <12%->99.5%. The variable producing the lowest effect size (and thusly, the lowest power) was patient's perceptions of their overall health care experience, as measured by the Global Practice Experience measure (effect size=0.01, power=<12%), while patient activation (Cohen's D=-2.57, power=>99.5%) and shared-decision making (Cohen's D=-0.49, power=81%) resulted in the highest power. The high end of the range of power detected for the survey data analyses surpassed the threshold for what is considered adequate power (>80%), however, differences for some survey variables examined may be undetectable based on low power. Additionally, survey data were collected for a sample of 61 Veterans; based

on critical values, minimum necessary effect sizes to detect significant differences are: 0.25 for a chi-square test with 1 degree of freedom, and 0.44 for a t-test.

Chart Review Data

The chart review sample for the present study was determined based on an a-priori power analysis. As a general rule, literature suggests that between 5 and 10 charts per variable of interest is the rule of thumb for deciding a chart review sample size (Gearing, Mian, Barber, & Ickowicz, 2006). Technically, 6 variables are being obtained from the chart review data collection piece of this project: pain severity, depression severity, PTSD symptom endorsement, PTSD symptom severity, provider's treatment recommendations & discussion of patient's preferences for treatment. However, since symptom endorsement was examined separately for all 4 PTSD symptom clusters, the 'symptom endorsement' variable is being considered as 4 separate variables. Accordingly, conducting chart reviews for 90 individuals provides sufficient power for the chart review data collection efforts of this project. Additionally, chart review data were collected for a sample of 90 Veterans; based on critical values, minimum necessary effect sizes to detect significant differences are: 0.21 for a chi-square test with 1 degree of freedom, 0.26 for a chi-square test with 2 degrees of freedom, and 0.35 for a t-test.

Reliability: Scales Used to Measure PCC

For measurement scales for which we had item-level data (e.g., scales used to measure patient perceptions of PCC), we calculated the reliability among our sample (e.g., the Cohen's α statistic) for each scale. All of the PCC scales were found to be highly reliable among our sample: (1) GPE, α =0.92; (2) CARE, α =0.99; (3) PAM, α

=0.91; (4) Press-Ganey questions, α =0.94; (5) PACIC, α =0.97; (6) VR-12, overall, α =0.87; VR-12, PCS, α =0.83; VR-12, MCS, α =0.74; (7) COMRADE, overall, α =0.98; COMRADE, RC, α =0.97; COMRADE, DME, α =0.90.

Bivariate Comparisons

Demographics, Chronic Health Conditions, and Comorbid Mental Health Diagnoses

At baseline, Veterans comprising the IMH and UMH groups were extremely similar, with no significant differences noted across any demographic, chronic condition, or comorbid mental health condition diagnoses (see Table 2 below). There were a marginally greater proportion of men and individuals with bipolar disorder in the UMH group compared to the IMH group, however no statistically significant differences in demographics, physical or mental health conditions existed between Veterans comprising the IMH vs. UMH groups.

Table 2. Demographics, chronic conditions and comorbid mental health diagnoses for Veterans with PTSD who received IMH vs. usual mental health care (n=234)

	Overall % (n=234)	Usual Care (n=117)	IMH (n=117)	p-value	t- or chi-sq value	df	Effect Size*
Demographics							
Male Gender (n=234)	89.74	93.16	86.32	*0.08*	2.97	1	0.11
Age (n=234) [Mean (range) SD]	49.56 (21.90-87.43) 15.55	49.35 (21.90-87.43) 16.09	49.78 (22.51-78.11) 15.05	0.83	-0.21	232	-0.03
Race (n=205)				0.13	4.02	2	0.14
White	62.93	67.65	58.25				
Black	28.78	22.55	34.95				
Other[3]	8.29	9.80	6.80				
Ethnicity[1] (n=219)	13.70	13.64	13.76	0.98	0.001	1	0.002
Married[2] (n=233)	57.51	52.59	62.39	0.13	2.29	1	0.10
Service-Connected Disability % (n=234)				0.44	1.64	2	0.08
0%	21.79	24.79	18.80				
1%-49%	23.08	20.51	25.64				
50%-100%	55.13	54.70	55.56				
Select Chronic Conditions (n=234)							
Heart Disease	28.21	28.21	28.21	1.00	0.00	1	0.00
Cancer	9.83	7.69	11.97	0.27	1.21	1	0.07
Chronic Lower Respiratory Disease	20.94	23.08	18.80	0.42	0.65	1	0.05
Stroke	5.98	5.98	5.98	1.00	0.00	1	0.00
Diabetes	24.79	24.79	24.79	1.00	0.00	1	0.00
Number of chronic conditions[3] (count) [Mean (range) SD]	0.90 (0.00-4.00) 0.99	0.90 (0.00-4.00) 0.98	0.90 (0.00-4.00) 1.01	1.00	0.00	232	0.00
Multimorbidity[4]	24.36	26.50	22.22	0.45	0.58	1	0.05
Select Mental Health Conditions (n=234)							
History of military sexual trauma	9.40	8.55	10.26	0.65	0.20	1	0.03

Adjustment disorders	8.97	9.40	8.55	0.82	0.05	1	0.01
Anxiety disorders	43.16	41.88	44.44	0.69	0.16	1	0.03
Impulse control disorders NEC (including pathological gambling)	1.71	1.71	1.71	1.00	0.001	1	0.002
Bipolar disorders	8.12	11.11	5.13	*0.09*	2.81	1	0.11
Depressive disorders	67.95	63.25	72.65	0.12	2.37	1	0.10
Personality disorders	3.42	4.27	2.56	0.47	0.52	1	0.05
Schizophrenia & other psychotic disorders	3.85	4.27	3.42	0.73	0.12	1	0.02
Substance use disorders (alcohol and substance-related disorders)	20.09	19.66	20.51	0.87	0.03	1	0.01
Suicide & intentional self-inflicted injury	3.42	4.27	2.56	0.47	0.52	1	0.05

[1]Hispanic ethnicity presented
[2]Reference group: Not Married
[3]Of the following chronic conditions: heart disease, cancer, chronic lower respiratory disease, stroke, diabetes
[4]Defined as having ≥2 of the following chronic conditions: heart disease, cancer, chronic lower respiratory disease, stroke, diabetes
*Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

Health Care Utilization

Health care utilization variables were examine in the year following treatment initiation, and compared across UMH and IMH groups (see Table 3). As hypothesized, in regard to mental health care utilization, Veterans in the UMH group averaged significantly more prescription psychotropic medication fills in the year following treatment initiation than those in the IMH group. Contrary to hypotheses, no other

differences in ‘appropriate’ mental health utilization were observed between the UMH and IMH groups. While no statistically significant differences were observed in the proportion of Veterans who received adequate mental health care services between those who received IMH vs. UMH services, descriptively 22% of those in the IMH group received adequate mental health services, compared to about 18% of those in the UMH group.

Further, Hotelling’s T^2 test examining differences in mental health utilization variables (outpatient visits related to mental health services, prescription psychotropic medication fills) between IMH and UMH groups simultaneously revealed marginally significant mean differences, Hotelling’s T^2=5.34, F(2,231)=2.66, p=0.07, Mahalinobis Distance=0.30. (In order to reach significance, a Mahalinobis Distance of 0.36 is needed). These results corroborate that, overall, IMH services may catalyze change in mental health care utilization.

In terms of general health services use, as hypothesized, Veterans in the UMH group averaged a marginally lesser number of outpatient visits and specifically, primary care visits in the year following treatment initiation then those in the IMH group, indicating that IMH services may foster ‘appropriate’ health care utilization among Veterans with PTSD.

Hotelling’s T^2 tests examining differences in general health care utilization variables (outpatient visits, ER visits, prescription medication fills) between IMH and UMH groups simultaneously, however, did not reveal significant mean differences, Hotelling’s T^2=5.11, F(3,230)=1.69, p=0.17, Mahalinobis Distance=0.30. (In order to

reach significance, a Mahalinobis Distance of 0.36 is needed). These results indicate that, while receipt of IMH services may impact outpatient health care utilization, overall, receipt of these services may not impact general health care utilization trends when health care use is considered all together.

Table 3. Health services utilization among Veterans with PTSD who received IMH vs. usual mental health care (n=234)

	Overall % (n=234)	Usual Care (n=117)	IMH (n=117)	p-value	t- or chi-sq value	df	Effect Size*
Mental Health Services Utilization (n=234)							
Adequate mental health care utilization[1] (%)	20.09	17.95	22.22	0.41	0.67	1	0.05
Outpatient visits related to mental health services [Mean (range) SD]	5.64 (0.00-57.00) 8.51	4.89 (0.00-43.00) 7.52	6.38 (0.00-57.00) 9.37	0.18	-1.35	232	-0.18
Prescription psychotropic medication fills [Mean (range) SD]	4.12 (0.00-27.00) 5.49	4.86 (0.00-27.00) 6.22	3.37 (0.00-25.00) 4.56	**0.04**	2.10	232	0.27
Visits Associated With Select Mental Health Conditions (n=234) [Mean (range) SD]							
Adjustment disorders	0.11 (0.00-7.00) 0.62	0.14 (0.00-7.00) 0.74	0.08 (0.00-4.00) 0.48	0.46	0.73	232	0.10
Anxiety disorders	0.62 (0.00-13.00) 1.75	0.61 (0.00-13.00) 2.00	0.62 (0.00-9.00) 1.46	0.94	-0.07	232	-0.01
PTSD	8.39 (0.00-47.00) 8.82	7.96 (0.00-38.00) 8.13	8.83 (0.00-47.00) 9.48	0.45	-0.76	232	-0.10
Impulse control disorders NEC (including pathological	0.01 (0.00-1.00) 0.11	0.01 (0.00-1.00) 0.09	0.02 (0.00-1.00) 0.09	0.56	-0.58	232	-0.11

gambling)							
Bipolar disorders	0.11 (0.00-7.00) 0.67	0.18 (0.00-7.00) 0.88	0.04 (0.00-4.00) 0.38	0.12	1.56	232	0.21
Depressive disorders	1.53 (0.00-18.00) 3.08	1.69 (0.00-18.00) 3.63	1.38 (0.00-16.00) 2.41	0.43	0.79	232	0.10
Personality disorders	0.01 (0.00-3.00) 0.20	0.03 (0.00-3.00) 0.28	0.00 (0.00-0.00) 0.00	0.32	1.00	232	0.15
Schizophrenia & other psychotic disorders	0.03 (0.00-4.00) 0.30	0.05 (0.00-4.00) 0.41	0.01 (0.00-1.00) 0.09	0.27	1.09	232	0.13
Substance use disorders (alcohol and substance-related disorders)	0.26 (0.00-31.00) 2.35	0.16 (0.00-15.00) 1.43	0.35 (0.00-31.00) 3.00	0.54	-0.61	232	-0.08
Suicide & intentional self-inflicted injury	0.00 (0.00-0.00) 0.00	0.00 (0.00-0.00) 0.00	0.00 (0.00-0.00) 0.00	--	--	232	0.00
General Health Services Utilization (n=234)							
Inpatient discharges [Mean (range) SD]	0.07 (0.00-6.00) 0.47	0.04 (0.00-1.00) 0.20	0.10 (0.00-6.00) 0.64	0.33	-0.97	232	-0.13
Length of Stay [Mean (range) SD]	0.50 (0.00-42.00) 3.57	0.24 (0.00-16.00) 1.64	0.74 (0.00-42.00) 4.77	0.29	-1.06	232	-0.14
Outpatient visits [Mean (range) SD]	12.13 (0.00-68.00) 14.28	10.48 (0.00-68.00) 12.98	13.78 (0.00-61.00) 15.36	*0.08*	-1.77	232	-0.23
Primary care visits [Mean (range) SD]	1.50 (0.00-13.00) 1.94	1.26 (0.00-9.00) 1.66	1.74 (0.00-13.00) 2.16	*0.06*	-1.90	232	-0.25
ER visits	0.24	0.27	0.22	0.61	0.51	232	0.08

[Mean (range) SD]	(0.00-4.00 0.64	(0.00-4.00) 0.66	(0.00-3.00) 0.62				
Prescription medication fills (general) [Mean (range) SD]	16.19 (0.00-95.00) 20.00	17.03 (0.00-80.00) 19.62	15.36 (0.00-95.00) 20.43	0.53	0.64	232	0.08

[1]9 or more mental health treatment visits within 12 months of the patient's index
*Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

Physical Health

Contrary to hypotheses, IMH and UMH groups did not differ on any of the proxy measures of physical health (visits with poor health indicators, self-reported physical health (VR-12) scores) (see Table 4). However, descriptively, average self-reported physical health scores were higher among Veterans in the IMH group compared to the UMH group (as hypothesized), though not significantly so. Overall, 87 Veterans had 1 recorded pain score and 67 had multiple records of reported pain severity. When comparing Veterans who received IMH to those who received UMH, there were no differences in initially reported pain severity (3.80 vs. 3.33, p=0.4979); further, for those who had multiple recorded pain scores there were no differences in patient's last recorded pain score (3.38 vs. 3.18, p=0.8092) and, contrary to hypotheses, no differences in the amount of change in pain among the two Veteran groups.

Table 4. Physical health indicators among Veterans with PTSD who received IMH vs. usual mental health care (n=234)

	Overall % (n=234)	IMH (n=117)	Usual Care (n=117)	p-value	t- or chi-sq value	df	Effect Size ***
Hypertension[1] (n=234)	29.49	33.33	25.64	0.20	1.66	1	0.08
Diabetes[2] (n=234)	3.85	3.42	4.27	0.73	0.12	1	0.02
Hyperlipidemia[3] (n=234)	16.67	18.80	14.53	0.38	0.77	1	0.06
VR-12: PCS (n=60)* [mean (range) SD]	32.05 (7.01-59.90) 12.41	35.00 (7.01-59.90) 13.12	29.28 (11.68-55.06) 11.21	*0.07*	-1.82	58	0.47
Change in Pain Severity (n=67)** [mean (range) SD]	0.54 (-7.00-10.00) 3.77	0.93 (-7.00-8.00) 3.88	0.24 (-7.00-10.00) 3.70	0.46	-0.74	65	0.18

[1]Blood pressure: diastolic blood pressure ≥ 90 and systolic blood pressure ≥ 140 indicates poor disease control; the number of visits where an indication of poor condition management was recoded is presented for each time period

[2]Hemoglobin A1C: HbA1c ≥9 indicates poor disease management; the number of visits where an indication of poor condition management was recoded is presented for each time period

[3]Low Density Lipids (LDL): LDL ≥ 130 indicates poor disease control; the number of visits where an indication of poor condition management was recoded is presented for each time period

*Obtained via CEPEP survey

**Obtained via medical chart review abstraction

***Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

Depression Symptom Severity, and Self-Reported Mental Health Scores

Contrary to hypotheses, there were no significant differences in self-reported mental health scores between Veterans in the IMH group compared to the UMH group (see Table 5). Overall, 29 Veterans had 1 recorded PHQ-9 score, and 9 had multiple records of reported depression severity. When comparing Veterans who received IMH to those who received UMH, there were no differences in initially reported depression

severity (16.69 vs. 14.56, p=0.4145); further, for those who had multiple recorded depression scores there were no differences in patient's last recorded depression score (17.60 vs. 14.75, p=0.6149) and, contrary to hypotheses, no differences in the amount of change in depression among the two Veteran groups.

Table 5. Self-reported mental health status and depression severity among Veterans with PTSD who received IMH vs. usual mental health care (n=61)

	Overall % (n=61)	Usual Care (n=31)	IMH (n=30)	p-value	t- or chi-sq value	df	Effect Size***
VR-12: MCS (n=60)* [mean (range) SD]	37.53 (15.06-63.38) 12.91	35.86 (15.06-63.38) 13.04	39.31 (17.80-59.72) 12.76	0.30	-1.04	58	-0.27
Change in Depression Severity; PHQ-9 Score (n=9)** [Mean (range) SD]	0.56 (-7.00-7.00) 4.03	-0.20 (-7.00-7.00) 5.26	1.50 (-1.00-4.00) 2.08	0.57	0.60	7	-0.43

*Obtained via CEPEP survey
**Obtained via medical chart review abstraction
***Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

PTSD Symptom Endorsement and Symptom Severity

Overall, 39 Veterans had 1 recorded PCL score, and 16 had multiple records of reported PTSD symptom severity. When comparing Veterans who received IMH to those who received UMH (please see Table 6), there were no differences in initially reported PTSD symptom severity or last recorded PCL score (51.43 vs. 60.78, p=0.1957); contrary to hypotheses, there were no differences in the amount of change in PTSD symptom severity among the two Veteran groups. Contrary to what we expected, however, visit-level data indicates that a greater proportion of Veterans receiving IMH (vs. UMH)

reported experiencing intrusion symptoms, and symptoms related to alterations in arousal and reactivity, during primary care or mental health encounters with VA providers.

Table 6. PTSD symptom endorsement and severity among Veterans with PTSD who received IMH vs. usual mental health care (n=90)

	Overall % (n=90)	Usual Care (n=45)	IMH (n=45)	p-value	t- or chi-sq value	df	Effect Size*
Symptom Severity							
At least 1 PCL score documented % (n=90)	43.33	46.67	40.00	0.52	0.41	1	0.07
Initial PCL Score [Mean (range) SD] (n=39)	60.28 (24.00-83.00) 13.93	57.81 (24.00-74.00) 16.38	63.17 (43.00-83.00) 10.08	0.24	-1.20	37	-0.39
Multiple PCL scores documented % (n=90)	17.78	20.00	15.56	0.58	0.30	1	0.06
Change in PCL Score [Mean (range) SD] (n=16)	10.75 (-5.00-34.00) 11.58	7.67 (-3.00-19.00) 7.28	14.71 (-5.00-34.00) 15.24	0.24	-1.23	14	-0.59
Change in PCL Score % (n=39)				0.88	0.25	2	0.05
Only 1 Documented Score (%)	71.79	71.43	72.22				
Treatment Responsive Improvement in PCL Score (%)	7.69	9.52	5.56				
Clinically Significant Improvement in PCL Score (%)	20.51	19.05	22.22				
Symptom Endorsement (%) (n=2799)							
Intrusion Symptoms				**0.05**	5.82	2	0.05
Symptom(s) present	15.18	14.68	15.76				
Not Mentioned	84.03	84.17	83.86				
No symptoms	0.79	1.15	0.38				

Avoidance Symptoms				0.14	3.96	2	0.04
Symptom(s) present	7.72	8.25	7.12				
Not Mentioned	91.46	90.66	92.35				
No symptoms	0.82	1.08	0.53				
Negative Alterations in Cognitions and Mood Symptoms				0.14	3.92	2	0.04
Symptom(s) present	6.43	6.22	6.67				
Not Mentioned	93.18	93.17	93.18				
No symptoms	0.39	0.61	0.15				
Alterations in Arousal and Reactivity Symptoms				**0.001**	13.39	2	0.07
Symptom(s) present	21.22	19.42	23.26				
Not Mentioned	78.21	79.63	76.59				
No symptoms	0.57	0.95	0.15				

*Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

Patient Perceptions of Patient-Centered Care Constructs (Table 7)

In line with hypotheses, patient perceptions of patient activation and the decision-making effectiveness component of shared decision-making were marginally lower, on average, among Veterans receiving UMH compared to those receiving IMH (see Table 7). Additionally, a greater proportion of Veterans receiving UMH were in the lowest stage of activation, as compared to those receiving IMH. No other differences in patient perceptions of PCC constructs were noted across the two groups.

Hotelling's T^2 tests examining differences in patient-centered care variables (patient activation, shared decision-making, consultation and relational empathy, perceptions of patient activation in terms of chronic illness care delivery, perceptions of family involvement in care, respect for choices, and support) between IMH and UMH

groups simultaneously, however, did not reveal significant mean differences, Hotelling's T^2=8.63, F(6,39)=1.27, p=0.29, Mahalinobis Distance=0.87. (In order to reach significance, a Mahalinobis Distance of 1.08 is needed). These results indicate that, while receipt of IMH services may impact patient's perceptions of shared decision-making and patient reported engagement in their health care (i.e., patient activation), overall, receipt of these services may not impact general trends in patient's perceptions of the patient-centeredness of their health care, when patient-centered care variables are considered all together.

Table 7. Perceptions of patient-centered care among Veterans with PTSD who received IMH vs. usual mental health care (n=61)

	Overall % (n=61)	Usual Care (n=31)	IMH (n=30)	p-value	t- or chi-sq value	df	Effect Size*
Patient Perceptions of Patient-Centered Care Constructs							
PAM (n=57) [mean (range) SD]	56.37 (0.00-100.00) 22.44	51.18 (0.00-100.00) 4.20	61.74 (0.00-100.00) 4.03	*0.08*	-1.81	55	-2.57
PAM Stages (n=57)							
Stage 1 (%)	31.58	44.83	17.86	**0.03**	4.80	1	0.29
Stage 2 (%)	12.28	13.79	10.71	0.72	0.13	1	0.05
Stage 3 (%)	24.56	17.24	32.14	0.19	1.71	1	0.17
Stage 4 (%)	31.58	24.14	39.29	0.22	1.51	1	0.16
COMRADE							
Risk Communication (n=51) [mean (range) SD]	56.46 (13.48-86.97) 19.56	53.78 (13.48-86.97) 21.06	59.03 (21.82-80.76) 18.04	0.34	-0.96	49	-0.27
Decision-Making Effectiveness (n=51) [mean (range) SD]	59.63 (19.56-86.14) 20.17	54.69 (19.56-81.14) 23.75	64.39 (20.73-80.31) 14.98	*0.09*	-1.75	49	-0.49
CARE (n=59) [mean (range) SD]	37.58 (10.00-	36.15 (10.00-	39.07 (10.00-	0.40	-0.85	57	-0.22

	50.00) 13.22	50.00) 14.01	50.00) 12.41				
PACIC (n=58) [mean (range) SD]	3.02 (1.00- 5.00) 1.31	2.91 (1.05-5.00) 1.38	3.14 (1.00- 5.00) 1.24	0.51	-0.67	56	-0.18
Patient Activation (n=58)	3.07 (1.00- 5.00) 1.48	3.02 (1.00-5.00) 1.62	3.12 (1.00- 5.00) 1.34	0.81	-0.25	56	-0.07
Delivery Systems Design (n=58)	3.32 (1.00- 5.00) 1.40	3.16 (1.00-5.00) 1.47	3.50 (1.00- 5.00) 1.33	0.36	-0.92	56	-0.24
Goal Setting/Tailoring (n=58)	3.05 (1.00- 5.00) 1.40	2.85 (1.00-5.00) 1.47	3.27 (1.00- 5.00) 1.30	0.26	-1.14	56	-0.30
Problem Solving/Contextual Counseling (n=58)	3.16 (1.00- 5.00) 1.51	3.03 (1.00-5.00) 1.53	3.29 (1.00- 5.00) 1.50	0.53	-0.63	56	-0.17
Follow-Up/Care Coordination (n=58)	2.65 (1.00- 5.00) 1.36	2.62 (1.00-5.00) 1.43	2.68 (1.00- 5.00) 1.31	0.86	-0.18	56	-0.04
Press-Ganey (n=54) [mean (range) SD]	2.65 (0.00- 100.00) 26.93	62.93 (0.00- 100.00) 28.02	69.80 (20.00- 100.00) 25.68	0.35	-0.93	52	-0.26
GPE (n=51)				0.94	0.01	1	0.01
Successful	25.49	25.93	25.00				
Not Successful	74.51	74.07	75.00				

*Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

Provider Recommendations for Treatment (see Table 8)

Overall, visit-level data indicates that recommendations for mental health treatment were made during a greater proportion of IMH visits (vs. UMH visits). Additionally, while pharmacology was recommended during a lesser proportion of IMH

visits, CAM treatment modalities were recommended during a greater proportion of IMH visits.

Table 8. Provider recommendations for treatment for Veterans with PTSD who received IMH vs. usual mental health care (n=2109)

	Overall % (n=90)	IMH (n=45)	Usual Care (n=45)	p-value	t- or chi-sq value	df	Effect Size*
Provider Recommendations for Treatment							
Note Included Recommendations for Treatment (n=2799)				**<0.0001**	33.81	1	0.11
Yes	39.16	44.85	34.10				
No	60.84	57.91	62.53				
If yes, the recommendation was for: (n=1096)							
Psychotherapy	80.75	80.07	81.55	0.54	0.38	1	0.02
Pharmacology	51.55	47.30	56.55	**0.002**	9.33	1	0.09
CAM (i.e., yoga, MBSR, etc.)	7.21	9.97	3.97	**0.0001**	14.64	1	0.12

*Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

Patient Preferences for Treatment (see Table 9)

Visit-level data indicates that patient preferences for mental health treatment were discussed during a greater proportion of IMH visits than UMH visits.

Table 9. Patient preferences for treatment among Veterans with PTSD who received IMH vs. usual mental health care (n=2109)

	Overall % (n=90)	Usual Care (n=45)	IMH (n=45)	p-value	t- or chi-sq value	df	Effect Size*
Note Included Communication about the Patient's Preference for Mental Health Treatment (n=2799) [visit-level data]				**0.001**	10.17	1	0.06
Yes	19.22	16.98	21.74				
No	80.78	83.02	78.26				
Patient's Preferences for Treatment Were Met, Overall (n=90) [individual level data]				0.84	0.34	2	0.06
Yes	84.44	82.22	86.67				
No	7.78	8.89	6.67				
Treatment Preferences Not Mentioned	7.78	8.89	6.67				

*Effect size measures reflect Cohen's D for continuous variables and Phi for categorical variables

Multivariate Logistic Regression: Factors Associated with Receipt of Integrative Mental Health Treatment – Dependent Variable: IMH receipt [reference: UMH receipt]

We compared a regression model consisting of patient perceptions of patient-centered care constructs which produced significant/marginally significant differences in the bivariate comparisons in tandem with other patient-centered care constructs (as we hypothesized that higher patient perceptions of each patient-centered construct would be

independently associated with receiving IMH services) to a model using only predictor variables which produced significant/marginally significant differences in the bivariate comparisons [patient activation; shared decision-making]. Predictive utility of variables was assessed using the Wald chi-square statistic (Mendenhall & Sincich, 2011); the variables with significant Wald results were associated with receipt of IMH services.

In order to assess the fit of our regression model, we compared the final model to a null model, which did not include any predictor variables (Tabachnick & Fidell, 2007). By subtracting the Log-likelihood (-2LL) value of the final model from that of the null model, we obtained a chi-square value assessing goodness of fit. The significance of this chi-square value was based on the number of predictor variables in the null model (1) minus the number of predictor variables in the model including our group of predictors (Tabachnick & Fidell, 2007).

The first model created contained all patient-centered care constructs assessed with the CEPEP survey. Multicolinearity was assessed using the variance inflation factor (VIF) index; the rule of thumb for assessing multicolinerity using the VIF is as low as values >4 - to values >10 - indicate high multicolinearity (O'Brien, 2007); none of the patient-centered care constructs had to be removed due to mutlicolinearity. The model containing all patient-centered care constructs produced a -2LL value of -24.46, with 7 degrees of freedom (compared to the null model produced a -2LL value of -162.20, with 1 degree of freedom), and an R-squared of 0.12. The log-likelihood difference between this initial model and the null model was 137.7, with 6 degrees of freedom, which is a significant chi-square value, $p<.05$.

A competing model was then created, which contained only patient activation and shared decision-making (the patient centered care constructs which were marginally different between IMH and UMH groups in the bivariate comparisons). This model produced a -2LL value of -31.10, with 2 degrees of freedom (compared to the null model produced a -2LL value of -162.20, with 1 degree of freedom), and an R-squared of 0.08. The log-likelihood difference between this initial model and the null model was 131.10, with 1 degree of freedom, which is a significant chi-square value, $p<.05$.

Since both models displayed a significant increase in fit over the null model, to pit them against one another we subtracted the -2LL values for the model containing only patient activation and shared decision-making to the model containing all of the patient-centered care constructs; based on $(7 – 2 = 5)$ degrees of freedom, our log-likelihood difference of: $31.10 – 24.46 = 6.64$, which is not significant at $p<0.05$. While this non-significant -2LL test indicates that both models are of relatively similar fit, the model containing only the variables which produced significant bivariate associations was selected this as the final model as it was the more parsimonious model.

The logistic regression model provided us with odds ratios and 95% confidence intervals for each individual predictor variable. Odds-ratio values which exceeded 1.0 were associated with increased odds of having received an adequate amount of information, and those which were less than 1.0 were associated with decreased odds (Peng, Lee & Ingersoll, 2002). The analysis also generated 95% confidence intervals around the odds ratios; for each predictor variable, we are 95% confident that the true

population increase/decrease in the likelihood for having received IMH services falls between the interval values.

While accounting for approximately 8% of the variance between receipt of IMH compared to UMH treatment, the final model did not identify either of the included patient-centered care constructs as being independently associated with receipt of IMH services (see Table 10).

Table 10. Logistic regression analysis: patient-centered care constructs independently associated with receipt of IMH treatment (n=49)

	Odds Ratio	**95% Wald Confidence Limits**		**p-value**
Patient Activation [PAM]	2.86	0.76	10.78	0.12
Shared Decision-Making [COMRADE]				
Decision-Making Effectiveness	1.02	0.98	1.05	0.34

*R-squared: 0.08

Mediation Analyses

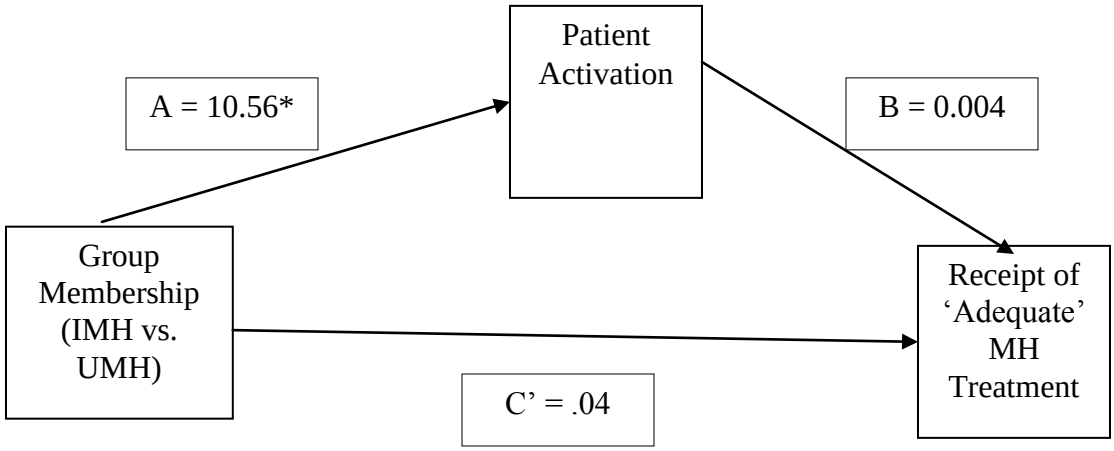
Patient Activation As A Mediator Between IMH vs. UMH Treatment and Receipt of Adequate Mental Health Care

The first mediation model conducted examined whether patient activation mediated the relationship between receipt of IMH treatment and receipt of adequate mental health care (please see Figure 2). In this model, we examined whether group membership (integrative mental health vs. usual mental health care services received) predicted patient activation, whether patient activation predicted receipt of ‘adequate’ mental health services, and whether the relationship between group membership and receipt of ‘adequate’ mental health services was significantly reduced when we controlled for patient activation (Baron & Kenny, 1986).

Figure 2 contains a depiction of the results from this mediational analysis. As predicted, Veterans who received IMH treatment reported (marginally) higher levels of patient activation (path **a** was marginally significant: unstandardized β=10.56, SE=5.83, p=0.08; standardized β=0.24, SE=0.13, p=0.08). However, being a Veteran with higher patient activation was not significantly related to receiving adequate mental health treatment (path **b** was not significant, unstandardized β=0.004, SE=0.01, p=0.79; standardized β=0.08, SE=0.31, p=0.79). Further, group membership (receipt of IMH vs. UMH treatment) was not predictive of receiving adequate mental health care (unstandardized β=0.19, SE=0.62, p=0.76; standardized β=0.10, SE=0.31, p=0.76). Finally, after taking the relationship between group membership and patient activation into account, the direct path between group membership and receipt of adequate mental health care (path **c**) was (still) not significant (unstandardized β=0.19, SE=0.62, p=0.76; standardized β=0.10, SE=0.31, p=0.76).

Despite one of the assumptions underlying mediation was not met (e.g., insignificant path **b**), we tested the significance of the indirect path (and thus tested for mediation). The combined indirect paths (e.g. group membership to patient activation and patient activation to receipt of adequate mental health treatment) were not significant, unstandardized β=0.04, SE=0.20, CI95%=-0.34-0.59; standardized β=0.02, SE=0.10, CI95%=-0.15-0.27. Therefore, results indicate that the relationship between group membership and receipt of adequate mental health care is not mediated by patient activation.

Figure 2. Mediational Model: Patient Activation



[=marginally significant at p<.10; unstandardized Betas are shown]*

Shared Decision-Making As A Mediator Between IMH vs. UMH Treatment and Receipt of Adequate Mental Health Care

The second mediation model conducted examined whether shared decision-making mediated the relationship between receipt of IMH treatment and receipt of adequate mental health care (please see Figure 3). In this model, we examined whether group membership (integrative mental health vs. usual mental health care services received) predicted shared decision-making, whether shared decision-making predicted receipt of 'adequate' mental health services, and whether the relationship between group membership and receipt of 'adequate' mental health services was significantly reduced when we controlled for shared decision-making (Baron & Kenny, 1986).

Figure 3 contains a depiction of the results from this mediational analysis. In this model, we examined whether group membership (integrative mental health vs. usual mental health care services received) predicted patient's perceptions of shared medical

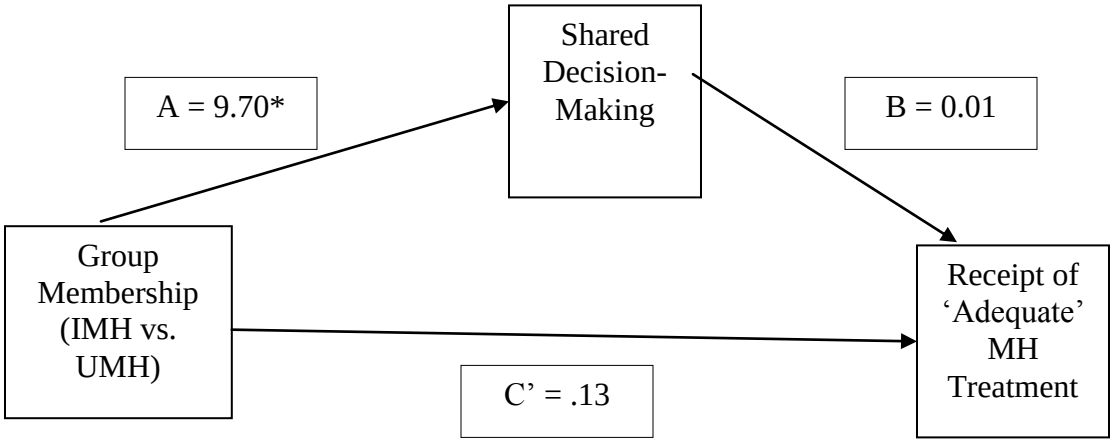
decision-making, whether patient's perceptions of shared medical decision-making predicted receipt of 'adequate' mental health services, and whether the relationship between group membership and receipt of 'adequate' mental health services was significantly reduced when we controlled for patient's perceptions of shared medical decision-making (Baron & Kenny, 1986).

As predicted, Veterans who received IMH treatment reported (marginally) higher perceptions of shared medical decision-making (path **a** was marginally significant: unstandardized β=9.70, SE=5.54, p=0.09; standardized β=0.24, SE=0.14, p0.09) (Figure 4). However, being a Veteran with a higher perception of shared medical decision-making was not significantly related to receiving adequate mental health treatment (path **b** was not significant; unstandardized β=0.01, SE=0.02 p=0.46; standardized β=0.27, SE=0.36, p=0.46). Further, group membership (receipt of IMH vs. UMH treatment) was not predictive of receiving adequate mental health care (unstandardized β=-0.17, SE=0.68, p=0.81; standardized β=-0.08, SE=0.34, p=0.81). Finally, after taking the relationship between group membership and patient's perceptions of shared medical decision-making into account, the direct path between group membership and receipt of adequate mental health care (path **c**) was (still) not significant (unstandardized β=-0.17, SE=0.68, p=0.81; standardized β=-0.08, SE=0.34, p=0.81).

Despite one of the assumptions underlying mediation was not met (e.g., insignificant path **b**), we tested the significance of the indirect path (and thus tested for mediation). The combined indirect paths (e.g. group membership to perceptions of shared medical decision-making and perceptions of shared medical decision-making to receipt of

adequate mental health treatment) were not significant, unstandardized β=0.13, SE=0.40, CI95%=-0.21-1.15; standardized β=0.07, SE=0.18, CI95%=-0.12-0.59. Therefore, results indicate that the relationship between group membership and receipt of adequate mental health care is not mediated by patient's perceptions of shared medical decision-making.

Figure 3. Mediational Model: Shared Decision-Making



[=marginally significant at p<.10; unstandardized Betas are shown]*

Moderated Mediation Analyses

The impact of shared medical decision-making on the relationship between treatment group and receipt of adequate mental health treatment was much larger for Veterans with high patient activation (unstandardized β=0.4527; CI: -0.2768 - 5.8966; standardized β=0.23, CI: -0.17 – 2.64) than those with low patient activation (unstandardized β=0.0510; CI: -2.0974 - 1.7274; standardized β=0.03, CI: -1.20 – 0.75), however, as neither of these effects were significant, a true difference of zero cannot be ruled out. Additionally, the index of moderated mediation indicates that the effects of

shared medical decision-making on the relationship between treatment group and receipt of adequate mental health treatment do not significantly differ between Veterans with high vs. low patient activation, however, descriptively the effects are going in the hypothesized direction.

CHAPTER EIGHT

DISCUSSION

Collectively, the results of this project indicate that, among Veterans with PTSD receiving VA health care, IMH treatment receipt is associated with: increased outpatient and primary care visits; decreased psychotropic medication use; increased recommendations for CAM treatment modalities and decreased recommendations for pharmacological treatment; discussion of patient preferences for mental health treatment during a greater number of VA primary care and mental health encounters; better patient perceptions of physical health status; greater patient-reported patient activation (e.g., engagement in health care), and; better patient perceptions of shared medical decision-making. Specifically:

Health Care Utilization and Provider Recommendations for Treatment

Previous research has found that, among Veterans with mental health concerns, mental health treatment receipt in an IMH setting may foster more appropriate health care utilization; specifically, increased primary care and specialty medical care visits (Engel, Malta, Davies, & Baker, 2011) and decreased preventable hospitalizations (Pirraglia, Kilbourne, Lai, Friedmann, & O'Toole, 2011). In line with these findings, of the Veterans with PTSD in our cohort, those who were in the IMH group had a marginally greater number of outpatient visits in general, as well as primary care visits specifically, in the year following treatment initiation.

We did not, however, find differences in hospitalizations, ER visits, or overall number of prescription medications filled between Veterans receiving IMH services as compared to those receiving UMH treatment. Though one previous study has also failed to observe decreases in ER use among Veterans receiving IMH treatment (Engel, Malta, Davies, & Baker, 2011), these null findings were not entirely aligned with the literature or hypotheses.

Further, contrary to hypotheses, we also did not find differences in the proportion of Veterans who received adequate mental health treatment in the year following treatment initiation, nor did we detect differences in the average number of mental health specialty care visits or the average number of visits for any specific mental health diagnoses (including PTSD), between our IMH and UMH groups. Similarly, one recent study found that Veterans with PTSD who received a psychotherapy referral from a primary care provider were less likely to initiate treatment as compared to those who were referred from a specialty mental health provider (Keller & Tuerk, 2015). These differences in appropriate mental health care use were expected, however, as several other previous studies have reported improved mental health care utilization among Veterans with mental health concerns, specifically, improved mental health care continuation (Bohnert, Pfeiffer, Szymanski, & McCarthy, 2013), treatment retention in mental health care (Tsan, Zeber, Stock, Sun, & Copeland, 2012), and increased utilization of specialty mental health services (Wray, Szymanski, Kearney, & McCarthy, 2012).

It may be the case that inadequate power is behind the lack of differences detected in this project as compared to previous research, as post-hoc power analyses indicated a

particularly low likelihood of being able to detect differences in some utilization variables (e.g., adequate mental health treatment; visits associated with specific mental health diagnoses) even if differences were to be present. However, the implications of the results of our moderated mediation analyses (as described below) may also be at play, in which patient's level of activation (i.e., engagement in health care) may be the driving force between IMH treatment receipt and mental health care utilization.

We did find that Veterans in the IMH group filled less psychotropic prescription medications, on average, then those in the UMH group in the year following treatment initiation. These findings are inconsistent with some literature, which ascertains that IMH treatment increases adherence to pharmacological treatment in other cohorts of Veterans with mental health concerns (e.g., depression) (Fortney et al., 2011). However, various complementary and alternative medicine (CAM) (e.g., meditation, mindfulness and relaxation practices, yoga) treatment options are available for Veterans with PTSD throughout the VA health care system (Libby, Pilver & Desai, 2012), and Veterans with PTSD may benefit greatly from CAM modalities (Smeeding et al., 2010).

However, the results of the chart reviews conducted for the present study indicate that, while treatment recommendations via psychotherapy may be similar between IMH and UMH groups, CAM treatment modalities may be recommended as treatment options more often in visits among Veterans receiving IMH treatment, while pharmacology may be recommended for treatment more often in visits among Veterans receiving UMH care. This is in line with literature finding that Veterans with PTSD receiving their care in specialty mental health clinics (vs. Veterans receiving integrated mental health care)

filled a greater number of psychotropic prescriptions (Vojvoda, Stefanovics, & Rosenheck, 2014), and may be driving the presently observed differences in psychotropic medication use between our IMH and UMH groups.

Since both IMH treatment delivery and offering CAM treatment modalities are aspects of mental health care that are highlighted in efforts to create a patient-centered care environment, it is not surprising that our results indicate that the two are related. Further, literature indicates that Veterans who reported using CAM treatment modalities were more likely to have PTSD than those who are not CAM users (Baldwin, Long, Kroesen, Brooks & Belle, 2002), and that CAM use among persons with PTSD is high, both along-side and instead of traditional treatment options (Libby, Pilver & Desai, 2013). This evidence indicates that some Veterans with PTSD may prefer to utilize CAM treatment modalities over traditional PTSD treatment options. Accordingly, it may be the case that providers delivering IMH treatment may be offering treatment modalities alternative to medication for Veterans with PTSD in an effort to provide more patient-centered options for mental health care, and as such, driving down the rates of pharmacology use among these patients.

Patient Preferences for Treatment

In line with the notion that CAM treatment modalities may be preferential treatment options among persons with PTSD, and that CAM treatment modalities may be recommended as treatment options more often in visits among Veterans receiving IMH treatment, our visit-level data indicates that patient preferences for treatment were discussed during a greater proportion of IMH visits than UMH visits as well. This is not

surprising, as the consideration of patient preferences for treatment in treatment planning and recommendations is an integral part of patient-centered care provision (IOM, 2001; Barry & Edgman-Levitan, 2012) and a goal of the VA (VHA, 2014).

However, our visit-level chart review data also indicated that less than a quarter of notes from primary care and mental health visits overall documented patient's preferences for mental health treatment; while a conversation about patient's preferences may not have been appropriate or natural during all visits reviewed as part of the data collection process for this piece of the current study, this finding suggests that there may be some room for improvement in discussing and considering patient's preferences for treatment among Veterans with PTSD during primary care and mental health visits.

There is some evidence that, when documenting details of mental health visits for Veterans with PTSD, VA mental health care providers record information that they believe is vital for them to remember in order to provide appropriate care for the patient, while omitting details that they do not believe are vital for are improvement or may actually hinder care provision (Tuepker et al., 2015). As such, improvement efforts geared toward educating providers about the importance of discussing and considering patient's preference for treatment, and using that information to drive future treatment and care planning efforts, may be warranted.

Furthermore, alignment of treatment with patient preferences for treatment has been linked to increased engagement in care (Kwan, Dimidjian, & Rizvi, 2010) and treatment adherence (Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008; Thompson, & McCabe, 2012). It is therefore not surprising that in the present study, results indicate

that there is a link between IMH treatment and both increased patient engagement (as expanded upon below) and discussion of patient preferences for mental health care. Alternatively, it may be the case that increased patient engagement empowers patients to open up during visits with their VA providers and make their preferences for treatment know, and that the differences observed in discussion of patient preferences for care were patient driven rather than provider driven. In any case, overall, our patient-level data suggest that the VA is doing very well at meeting patient preferences for treatment overall, with no person-level differences observed between Veterans receiving IMH compared to UMH in terms of the proportion of Veterans who had their mental health preferences met over the course of their care in the year following treatment initiation.

Physical Health and Pain

The receipt of IMH treatment has been reported to be associated with improvements in important health outcomes such as glycated hemoglobin A1c, cholesterol, and blood-pressure levels in patients with chronic conditions (e.g., diabetes, coronary heart disease (CHD) or both) and comorbid depression (Katon et al., 2010). However, in the current project no differences were observed in proxy indicators of physical health (e.g., the number of visits with poor health indicators for chronic condition management of diabetes, hypertension, or hyperlipidemia) between Veterans receiving IMH vs. UMH care. Additionally, IMH treatment receipt has been associated with decreased pain among Veteran cohorts (Dobscha et al., 2009), but our findings did not suggest differences in pain (baseline, last recorded, or pain difference scores) among Veterans with PTSD who receive IMH compared to those who receive UMH care.

Interestingly, though, Veterans in the IMH group reported marginally higher physical health scores (as measured by the VR-12), on average, than those in the UMH group; taken together, these findings suggest that aspects of physical health which may not be captured via proxy measures of physical health may be improved in patients who received IMH treatment over those who received UMH treatment. Additional research may be warranted to examine the impact of IMH treatment receipt on a more comprehensive gamut of factors related to physical health that may impact patient's perceptions of their physical health status, namely factors which may be most important to patients regarding their physical health and functioning.

Mental Health Symptoms: Depression Symptom Severity, Self-Reported Mental Health Scores, PTSD Symptom Endorsement and PTSD Symptom Severity

Prior literature has indicated that IMH treatment receipt may be effective in reducing depression severity among Veteran cohorts (Dobscha et al., 2009), and PTSD symptom severity in active duty military personnel (Engel et al., 2008; Cigrang et al., 2011). Accordingly, we were expecting to observe higher self-reported mental health scores, and lower depression and PTSD symptom severity among Veterans who received IMH (vs. UMH care). Contrary to our expectations, however, no differences were observed in patient's perceptions of mental health status, depression (baseline, last recorded, or PHQ-9 difference scores) or PTSD symptom severity (baseline, PCL difference scores) among patients comprising our two Veteran groups.

Particularly for depression and PTSD symptom severity, however, multiple scores were available for only a small number of participants. As such, results should be

interpreted with caution, since they may not be representative of the actual severity of depression and PTSD severity among all Veterans in the sample and further, may not be generalizable to Veterans receiving VA mental health care in general. The limited number of patients for whom multiple standardized assessments of symptom severity were available may be a result of in-depth assessments of symptom severity not being conducted, however, these 'missing' data may alternatively be a result of the provider having conducted but failed to document such assessments, or results of the assessments, in the note for that visits. However, these findings may corroborate recommendations that system-wide, standardized screening and in-depth assessment procedures for mental health diagnoses should be developed and implemented (Kearny, Wray, Dollar, & King, 2015).

We did find that Veterans in our two groups differed on endorsement of some PTSD symptom clusters. Specifically, visit-level chart review data indicated that a greater proportion of Veterans receiving IMH (vs. UMH) reported experiencing symptoms consistent with intrusion, as well as alterations in arousal and reactivity, during primary care or mental health encounters with VA providers. This is relatively surprising, as IMH treatment is typically less intensive than specialty mental health care (Dundon, Dollar, Schohn, & Lantinga, 2011; Possemato, 2011), and persons with more severe symptoms who need more intensive treatment are usually referred out to specialty mental health clinics (i.e., UMH). However, it is likely the case that, since IMH treatment is associated with increased patient activation/engagement in care, Veterans receiving IMH treatment may be more open/expressive about their symptom endorsement during health

care encounters, thusly making it appear that they are more likely to endorse symptoms when in actuality they are merely talking about their symptoms more openly.

Patient Perceptions of Patient-Centered Care Constructs Associated with the Receipt of Integrative Mental Health Treatment

IMH treatment delivery within the VA health care system is a patient-centered method of managing mental health concerns among Veterans, an integral facet to ensuring that health care is being delivered in a truly patient-centered way (Croghan, & Brown, 2010). Despite this, however, literature examining the relationship between patient-centered care outcomes and IMH treatment receipt is lacking. Since IMH is a patient-centered care related effort, we were expecting that patient's perceptions of patient-centered care constructs would be higher among Veterans who received IMH, as compared to those who received UMH care.

Our data identified that following IMH treatment, Veterans with PTSD reported higher levels of patient activation (i.e., engagement in their health care) than those who received UMH care. These findings are concordant with the postulation that IMH treatment increases engagement in mental health care among Veterans with mental health concerns (Pomerantz, Kearney, Wray, Post, & McCarthy, 2014). Additionally, we found that Veterans in the IMH group reported marginally higher perceptions of the decision-making effectiveness component of SDM, on average, than did Veterans in the UMH group. One of the central tenets of the effectiveness of IMH treatment delivery is that it reduces the stigma associated with seeking mental health care (Collins, Hewson, Munger, & Wade, 2010; WHO, 2008). As such, it is likely the case that stigma reduction

facilitates engagement in mental health care. In turn, decreased stigma and increased engagement in care may catalyze Veterans with PTSD to actively participate in conversations with their providers, thereby facilitating shared medical decision-making and increasing patient's satisfaction with the medical decision-making process.

The Relationship Between IMH Treatment and Receipt of Adequate Mental Health Treatment in the Context of Patient Perceptions of Patient-Centered Care Constructs

The mediation analyses conducted indicate that the pathway through which IMH treatment may impact patient's likelihood of receiving adequate mental health treatment in the year following treatment initiation is not increased patient activation or shared medication decision-making on their own. However, moderated mediation analyses descriptively indicated that for patients receiving IMH treatment, perceptions of shared medical decision-making (particularly the extent to which patients believe they were presented with all possible treatment options, were involved in making a decision about which treatment option/regiment was most suitable for them and were satisfied with the treatment plan they came up with alongside their provider) may lead to adequate treatment receipt for individuals who are highly engaged in their health care (e.g., reported high levels of patient activation), but not for patients with low levels of health care engagement. In fact, the impact of shared medical decision-making on the relationship between type of treatment received and subsequent receipt of 'adequate' mental health care was about 4 times larger in Veterans with high patient activation then for those with low activation. Although our results were not reliably consistent with our

predictions for moderated mediation, the absolute size of relationship differences might merit further investigation.

A possible mechanism for this relationship begins with the association between IMH and increased engagement in health care, which has been found among adults with mental health concerns in the general population (Bartels, Coakley, Zubritsky, et al. 2004) as well as Veterans with mental health concerns (Pomerantz, Kearney, Wray, Post, & McCarthy, 2014). Further, the results of the current study indicate that receiving IMH care also leads to patients feeling more like their providers communicated effectively with them and allowed them have a say in treatment decisions, a finding that is corroborated with our chart review data, which suggests that patient preferences may have been discussed more in IMH visits compared to usual care visits. Collectively, increased engagement in mental health care may lead to an increased likelihood of patients following up with mental health care needs, as well as empowering patients to actively engage in conversations about treatment decision-making with their mental health care providers. Simultaneously, the consideration of patient preferences in mental health care treatment recommendations and providers engaging in shared medical decision-making with patients may also lead to increased patient engagement in care, and in turn, greater adherence to treatment regiments.

The lack of statistically significant findings in the moderated mediation analyses, despite the fact that descriptively the findings appear indicative of a relationship being present, may have more to do with lack of power then lack of an actual effect. In fact, the relatively small sample size available for these analyses would only be adequately

powered if a very large effect was present; given the effect sizes found in the mediation analyses for the present study, a sample size of over 400 individuals would be needed to detect a significant mediation effect (Fritz & MacKinnon, 2007). Given that the mediation and moderated mediation analyses in the present study were dependent on a sample less than 50 Veterans, a larger study may be warranted to give due diligence to testing these relationships.

The results of the mediation and moderated mediation analyses conducted for the present study may also shine some light on the potential reason behind some of the non-significant findings regarding general and mental health care utilization. For instance, the proportion of our sample that reported high and low patient activation was relatively equivalent (though overall patient activation was higher in those who received IMH care). As activation seems to matter greatly in terms of which patients participate actively in mental health care treatment for PTSD, it may be the case that patient activation leveled out potential differences in various aspects of health care utilization between the IMH and UMH groups, washing out potential (hypothesized) differences. Consequently, the lack of differences in some facets of appropriate health care utilization (e.g., number of filled prescriptions for medication) may be related to the lack of observed differences in proxy indicators of physical health (e.g., chronic condition management indicators for diabetes, hypertension and hyperlipidemia). As such, future research examining the interplay between patient activation and health care utilization may be warranted with a larger cohort of individuals, to allow for adequately powered multi-way crosstab analyses

to examine differences among utilization variables in Veterans who have PTSD with high vs. low activation who receive IMH vs. UMH care.

Limitations

Several limitations to the current study should be noted. Specifically, in regard to the data obtained via the patient-centered care survey, as with any self-reported survey data this information may have been influenced by response bias and/or social desirability bias. Further, as the instructions for the scales included in the patient-centered care survey did not specify that questions related to mental health care, there is no way to ascertain that participants were thinking about mental health care or interactions with mental health care providers specifically when responding to the survey questions. Additionally, the small sample size of the survey data coupled with a modest amount of survey data, as well as the large amount of missing chart review data regarding depression and PTSD symptom severity, limited both power and generalizability of the results.

In regard to the chart review data, the lack of notation about patient preferences in the notes documenting the primary care and mental health visits reviews does not necessarily indicate that patient preferences were not actually discussed during the visit, merely that they were not documented (e.g. full discussions/all details of visits may not be reflected in the charts). Additionally, discussion of patient preferences for treatment were not necessarily appropriate during all notes reviewed and included in analyses (e.g., primary care and/or mental health nursing encounters).

Further, while the facilities designated ‘controls’ in this project may not have been designated PCC COIs, it is possible that elements of PCC innovations were being implemented at those facilities too. If control facilities knew of ongoing successful innovations at the COIs and were practicing programs or elements of programs as well, ‘contamination’ of the control group may have occurred, and this may possible account for some of the null findings in this study as well. Finally, the retrospective and evaluative nature of this study, while affording the results great ecological validity, limit the internal validity; therefore, we cannot ascertain that any of the differences observed were a result of receiving IMH treatment.

Future Directions

While a number of potential focus areas have been identified by this project in regard to future research which could be warranted and useful in the area of outcomes of IMH treatment delivery, one overall recommendation is that a prospective study following new Veteran patients with PTSD receiving IMH and UMH care, from treatment initiation for at least one year may be warranted. This would allow for systematic and controlled collection of baseline data, along with data at multiple points of follow-up data, to identify differences in outcomes of interest. Additionally, a greater amount of primary data collection would be useful to truly understand the impact of IMH treatment delivery on patient’s perceived experiences with their VA mental health care. Specifically, in-depth interviews with Veteran patients and providers, as well as a survey focused entirely on perceptions of patient-centered care as it related to mental health care, would provide rich detail about how the IMH mechanism affects the patient experience.

Conclusions/Implications

Conclusions based on the present results are at best tentative and showed few reliable advantages of IMH over UMH. However, combining behavioral health care with traditional primary care through an integrative mental health treatment model may be most effective in increasing health care engagement, shared decision-making, and discussion of patient preferences for mental health care among Veterans with PTSD. As such, these treatment efforts may be effective in increasing the number of Veterans who receive appropriate, needed health care, as well as improving mental health care-related satisfaction. However, data indicate that some targeted improvement efforts geared toward educating providers about the importance of discussing and considering patient's preference for treatment, as well as implementing systematic collection of standardized measures of symptom severity for common mental health concerns among Veterans receiving VA health care, may be warranted. Collectively, integrating mental health care providers into the primary care setting may be a good strategy for encouraging Veterans with PTSD to seek out and stay the course of the treatment they need.

APPENDIX A

VARIABLES TABLE

Variable	Source	Specifications
Demographics and Veteran Characteristics		
Gender	VA Administrative Data	Male; Female
Age	VA Administrative Data	Veteran's age (continuous)
Race	VA Administrative Data	White; Black; Other
Ethnicity	VA Administrative Data	Hispanic/Latino; Non-Hispanic/Latino
Marital Status	VA Administrative Data	Married; Not Married
Service Connection	VA Administrative Data	Service Connected Disability Percentage: 0%, 1-49%, 50-100% (highest recorded)
Chronic Conditions		
Heart disease	VA Administrative Data	ICD-9 codes: 402, 404, 410-429
Cancer	VA Administrative Data	ICD-9 codes: 140-208, 238.6
Chronic lower respiratory disease	VA Administrative Data	ICD-9 codes: 490-496 *includes bronchitis, emphysema, asthma, bronchiectasis, extrinsic allergic alveolitis, chronic airway obstruction NOS
Stroke	VA Administrative Data	ICD-9 codes: 430-438
Diabetes	VA Administrative Data	ICD-9 codes: 250
Multimorbidity	VA Administrative Data	2 or more of the 2 chronic conditions examined
Number of chronic conditions	VA Administrative Data	Total number of chronic conditions (continuous)
Comorbid Mental Health Diagnoses		
Adjustment disorders	VA Administrative Data	ICD-9 codes: 309.0, 309.1, 309.2, 309.21, 309.22, 309.23, 309.24, 309.29, 309.29, 309.3, 309.4, 309.82, 309.83, 309.89, 309.9
Anxiety disorders	VA Administrative Data	ICD-9 codes: 293.84, 300.00, 300.01, 300.02, 300.09, 300.10, 300.20, 300.21. 300.22, 300.29, 300.3, 300.5, 300.89, 300.9, 308.0, 308.1, 308.2, 308.3, 308.4, 308.9, 313.0, 313.1, 313.2, 313.21, 313.22, 313.3, 313.82, 313.83
PTSD	VA Administrative Data	ICD-9 codes: 309.81

Impulse control disorders (including pathological gambling)	VA Administrative Data	ICD-9 codes: 312.30, 312.31, 312.32, 312.33, 312.34, 412.35, 312.39
Bipolar disorders	VA Administrative Data	ICD-9 codes: 296.00, 296.01, 296.02, 296.03, 296.04, 296.05, 296.06, 296.10, 296.11, 296.12, 296.13, 296.14, 296.15, 296.16, 296.40, 296.41 296.42, 296.43, 296.44, 296.45, 296.46, 296.50, 296.51, 296.52, 296.53, 296.54, 296.55, 296.56, 296.60, 296.61, 296.62, 296.63, 296.64, 296.65, 296.66, 296.67, 296.80, 296.81, 296.82, 296.89, 296.90, 296.99
Depressive disorders	VA Administrative Data	ICD-9 codes: 293.83, 296.20, 296.21, 296.22, 296.23, 296.24, 296.25, 296.26, 296.30, 296.31, 296.31, 296.22, 296.34, 296.35, 296.36, 300.4, 311
Personality disorders	VA Administrative Data	ICD-9 codes: 301.0, 301.01, 301.11, 301.12, 301.13, 301.20, 301.21, 301.22, 301.3, 301.4, 301.50, 301.51, 301.59, 301.6, 301.7, 301.81, 301.82, 301.83, 301.84, 301.89, 301.9
Schizophrenia and other psychotic disorders	VA Administrative Data	ICD-9 codes: 293.81, 293.82, 295.00, 295.01, 295.02, 295.03, 295.04, 295.05, 295.10, 295.11, 295.12, 295.13, 295.14, 295.15, 295.20, 295.21, 295.22, 295.23, 295.24, 295.25, 295.30, 295.31, 295.32, 295.33, 295.34, 295.35, 295.40, 295.41, 295.42, 295.43, 295.44, 295.45, 295.50, 295.51, 295.52, 295.53, 295.54, 295.55, 295.60, 295.61, 295.62, 295.63, 295.64, 295.65,

		295.70, 295.71, 295.72, 295.73, 295.74, 295.75, 295.80, 295.81, 295.82, 295.83, 295.84, 295.85, 295.90, 295.91, 295.92, 295.93, 295.94, 295.95, 297.0, 297.1, 297.2, 297.3, 297.8, 297.9, 298.0, 298.1, 298.2, 298.3, 298.4, 298.8, 298.9
Substance use disorders	VA Administrative Data	ICD-9 codes: Alcohol: 291.0, 291.2, 291.2, 291.3, 291.4, 291.5, 291.8, 291.81. 291.82, 291.89, 291.9, 303.00, 303.01, 303.02, 303.03, 303.90, 303.91, 303.92, 303.93, 305.00, 305.01, 305.02, 305.03, 980.0 Substance: 292.0, 292.11, 292.12, 292.2, 292.81, 292.82, 292.83, 292.84, 292.85, 292.89, 292.9, 304.00, 304.01, 304.02, 304.03, 304.10, 304.11, 304.12, 304.13, 304.20, 304.21, 304.22, 304.23, 304.30, 304.31, 304.32, 304.33, 304.40, 304.41, 304.42, 304.43, 304.50, 304.51, 304.52, 304.52, 304.60, 304.61, 304.62, 304.63, 304.70, 304.71, 304.72, 304.73, 304.80, 304.81, 304.82, 304.83, 304.90, 304.91, 304.92, 304.93, 305.20, 305.21, 305.22, 305.23, 305.30, 305.31, 305.32, 305.33, 305.40, 305.41, 305.42, 305.43, 305.50, 305.51, 305.52, 305.53, 305.60, 305.61, 305.62, 305.63, 305.70, 305.71, 305.72, 305.73, 305.80, 305.81, 305.82, 305.83, 305.90, 305.91, 305.92,

		305.93, 648.30, 648.31, 648.32, 648.33, 648.34, 655.50, 655.51, 655.53, 965.00, 965.01, 965.02, 965.09
Suicide and intentional self-injury	VA Administrative Data	ICD-9 codes: E9500, E9501, E9502, E9503, E9504, E9505, E9506, E9507, E9508, E9509, E9510, E9511, E9518, E9520, E9521, E9528, E9529, E9530, E9531, E9538, E9539, E954, E955, E9551, E9552, E9553, E9554, E9555, E9556, E9557, E9559, E956, E9570, E9571, E9572, E9579, E958, E9581, E9582, E9583, E9584, E9585, E9586, E9587, E9588, E9589, E959, V6284
Military sexual trauma	VA Administrative Data	Positive answer provided to VA Military Sexual Trauma screener
Mental Health Services Utilization		
Adequate mental health care utilization	VA Administrative Data	9 or more mental health treatment visits within 12 months of the patient's index
Outpatient visits related to mental health services	VA Administrative Data	Outpatient visits with primary or secondary mental health clinic stop
Prescription psychotropic medication fills	VA Administrative Data	Antidepressants (CN600, CN601, CN602, CN609); Antipsychotics (CN700, CN701, CN709); Anxiolytics (CN300, CN301, CN302, CN309); Stimulants (CN800, CN801, CN802, CN809); Lithium (CN750)
Visits specifically associated with mental health conditions	VA Administrative Data	A visit will be considered to be for a particular condition if the primary diagnosis code for that visit was an ICD-9 code for that condition
General Health Services Utilization		
Inpatient visits	VA Administrative Data	Hospitalizations
Average length of stay	VA Administrative Data	Length of hospitalizations, if

		any
Outpatient visits (general)	VA Administrative Data	
Primary care visits	VA Administrative Data	
Emergency department visits	VA Administrative Data	
Prescription medication fills (general)	VA Administrative Data	
Physical Health (Clinical Indicators)		
blood pressure (hypertension)	VA Administrative Data	Number of visits associated with poor condition management: diastolic blood pressure ≥ 90 and systolic blood pressure ≥ 140
Hemoglobin A1c (diabetes)	VA Administrative Data	Number of visits associated with poor condition management: HbA1c ≥9%
LDL (Hyperlipidemia)	VA Administrative Data	Number of visits associated with poor condition management: LDL ≥ 130
Mental Health Comorbidities		
Pain Severity	Chart Review Data	0-10 rating scale of current pain level
Depression Severity	Chart Review Data	PHQ-9 score(s)
PTSD Symptoms		
Symptom Endorsement	Chart Review Data	PTSD symptoms that the patient is experiencing; symptom clusters and individual symptoms will be recorded
Symptom Severity	Chart Review Data	PCL Score(s)
Provider Recommendations for Treatment and Patient Preferences		
Provider's treatment recommendations	Chart Review Data	Psychotherapy; Pharmacology; CAM
Patient preferences for treatment	Chart Review Data	Based on a comprehensive assessment of the content of progress notes across the course of treatment
Sub-Set Analysis of Patients for Whom CEPEP Survey Data Are Available		
Self-Reported Health Status		
Physical Health Summary	CEPEP Survey[1]	VR-12 PCS Score
Mental Health Summary	CEPEP Survey[1]	VR-12 MCS Score
Patient Perceptions of Patient-Centered Care Constructs		
Satisfaction with health care	CEPEP Survey[1]	Global Practice Experience

facility		measure (GPE) score
Perceptions of provider's empathy and patient-provider communication	CEPEP Survey[1]	Consultation and Relational Empathy (CARE) score
Engagement in Health Care	CEPEP Survey[1]	Patient Activation Measure (PAM) score
Family involvement in care, respect for choices, and support	CEPEP Survey[1]	Press-Ganey Question score
Perceptions of chronic illness care	CEPEP Survey[1]	Patient Assessment of Chronic Illness Care (PACIC) score
Shared decision-making	CEPEP Survey[1]	Combined Outcome Measure for Risk Communication and Treatment Decision Making Effectiveness (COMRADE) score

APPENDIX B

CHART REVIEW FORM

1. Patient problem list (Verbatim):

2. Index visit coded in the administrative data as:

☐ Integrative Mental Health (1)

☐ Control (Mental Health 'Usual Care') (0)

2a. If Control, what mental health clinic was the visit associated with?

PSYCHOLOGICAL COMORBIDITIES

3. Is there documentation of a validated PTSD assessment for this patient?

☐ Yes (1) ☐ No (0)

3a. If yes, which assessment was it:

☐ PTSD Checklist (PCL)

☐ Clinician Administered PTSD Scale (CAPS)

☐ PTSD Symptom Scale – Interview (PSSI)

☐ Other [*Specify:_____]

3b. Score and provider notes regarding assessment (if any) and date the assessment was administered (verbatim):

4. Is there documentation of an assessment of **pain**?

☐ Yes (1) ☐ No (0)

4a. If yes, copy pain score/content and date (verbatim):

5. Is there documentation of an assessment/diagnostic interview for **depression**?

☐ Yes (1) ☐ No (0)

5a. If yes, indicate name of assessment and score, and date (verbatim):

6. Is there documentation of an assessment/diagnostic interview for **anxiety**?

☐ Yes (1) ☐ No (0)

6a. If yes, indicate name of assessment and score, and date (verbatim):

7. Is there any documentation related to **substance abuse**?

☐ Yes (1) ☐ No (0)

7a. If yes, indicate details (verbatim):

Appendix C. Chart Review Form

Integrative Mental Health in PTSD Chart Review Tool:
PTSD Symptoms – Frequency, Severity, Treatment Recommendations

2. Date of Visit: __ ____ ____ __ 2. Date of note: __ ____ ____ __

3. Visit and provider type: _____ 4. Standard title: _____ 5.Local title: _____

6. Does the note appear to include standard text (i.e. copy and pasted or repeated in other notes?) ☐ Yes (1) ☐ No (0)

SYMPTOMS AT VISIT (check all that apply)

7. Did the note mention **overall PTSD symptoms,** in general:

☐ Yes
☐ No

7a. Did the note mention a **change in overall PTSD symptoms**, in general?

☐ Yes (From: _____) [Timeframe of change in symptoms, if mentioned]
☐ No

7d. Provider notes regarding **overall PTSD symptoms**, if any (verbatim):

8. Criterion B: **Intrusion Symptoms** – traumatic event is persistently re-experienced in the following way(s)

☐ Symptom(s) present *[go to question 8a]*
☐ Not Mentioned *[go to question 9]*
☐ No symptoms *[chart specified that no symptoms were present at this visit – go to question 9]*

8a. Check all **Intrusion Symptoms** that are present (if any):

☐ Recurrent, involuntary, and intrusive memories
☐ Traumatic nightmares
☐ Dissociative reactions (e.g., flashbacks) which may occur on a continuum from brief episodes to complete loss of consciousness
☐ Intense or prolonged distress after exposure to traumatic reminders
☐ Marked physiologic reactivity after exposure to trauma-related stimuli
☐ Other: _____

8b. Was a change in Intrusion Symptoms mentioned?

☐ Yes (From: _____) [Timeframe of change in symptoms, if mentioned]
☐ No

8c. Provider notes regarding **intrusion symptoms**, if any (verbatim):

9. Criterion C: **Avoidance** - Persistent effortful avoidance of distressing trauma-related stimuli after the event

- ☐ Symptom(s) present *[go to question 9a]*
- ☐ Not Mentioned *[go to question 10]*
- ☐ No symptoms *[chart specified that no symptoms were present at this visit – go to question 10]*

9a. Check all **Avoidance Symptoms** that are present (if any):

- ☐ Trauma-related thoughts or feelings
- ☐ Trauma-related external reminders (e.g., people, places, conversations, activities, objects, or situations)
- ☐ Other: _____

9b. Was a change in Avoidance Symptoms mentioned?

- ☐ Yes (From: _____) [Timeframe of change in symptoms, if mentioned]
- ☐ No

9c. Provider notes regarding **avoidance symptoms**, if any (verbatim):

10. Criterion D: **Negative Alterations in Cognitions and Mood** - Negative alterations in cognitions and mood that began or worsened after the traumatic event

- ☐ Symptom(s) present *[go to question 10a]*
- ☐ Not Mentioned *[go to question 11]*
- ☐ No symptoms *[chart specified that no symptoms were present at this visit – go to question 11]*

10a. Check all **Symptoms of Negative Alterations in Cognitions and Mood** that are present (if any):

- ☐ Inability to recall key features of the traumatic event (usually dissociative amnesia; not due to head injury, alcohol or drugs)
- ☐ Persistent (and often distorted) negative beliefs and expectations about oneself or the world (e.g., "I am bad," "The world is completely dangerous.")
- ☐ Persistent distorted blame of self or others for causing the traumatic event or for resulting consequences
- ☐ Persistent negative trauma-related emotions (e.g., fear, horror, anger, guilt or shame)
- ☐ Markedly diminished interest in (pre-traumatic) significant activities
- ☐ Feeling alienated from others (e.g., detachment or estrangement)
- ☐ Constricted affect: persistent inability to experience positive emotions
- ☐ Other:

_____

10b. Was a change in Symptoms of **Negative Alterations in Cognitions and Mood** mentioned?

- ☐ Yes (From: _____) [Timeframe of change in symptoms, if mentioned]
- ☐ No

10c. Provider notes regarding symptoms of **Negative Alterations in Cognitions and Mood**, if any (verbatim):

11. Criterion E: **Alterations in Arousal and Reactivity** - Trauma-related alterations in arousal and reactivity that began or worsened after the traumatic event

- ☐ Symptom(s) present *[go to question 11a]*
- ☐ Not Mentioned *[go to question 12]*
- ☐ No symptoms *[chart specified that no symptoms were present at this visit – go to question 12]*

11a. Check all **Alterations in Arousal and Reactivity Symptoms** that are present (if any):

- ☐ Irritable or aggressive behavior
- ☐ Self-destructive or reckless behavior
- ☐ Hypervigilance
- ☐ Exaggerated startle response
- ☐ Problems in concentration
- ☐ Sleep disturbance
- ☐ Other:

_____

11b. Was a change in Symptoms of **Alterations in Arousal and Reactivity** mentioned?

- ☐ Yes (From: _____) [Timeframe of change in symptoms, if mentioned]
- ☐ No

11c. Provider notes regarding symptoms of **Alterations in Arousal and Reactivity**, if any (verbatim):

12. **Functional significance** (i.e., significant symptom-related distress or functional impairment (e.g., social, occupational)) mentioned (verbatim):

- ☐ Not Mentioned
- ☐ No symptoms

13. **Depersonalization** (i.e., experience of being an outside observer of or detached from oneself (e.g., feeling as if "this is not happening to me" or one were in a dream) mentioned (verbatim):

- ☐ Not Mentioned
- ☐ No symptoms

14. **Derealization** (i.e., experience of unreality, distance, or distortion (e.g., "things are not real")) mentioned (verbatim):

- ☐ Not Mentioned
- ☐ No symptoms

15. Did the patient display **suicidal ideation**?

☐ Yes (1) ☐ No (0) ☐ Not Mentioned

TREATMENT RECOMMENDATIONS

16. Did the note include any documentation related to **recommendation(s)** for treatment?

☐ Yes (1) ☐ No (0)

16a. If yes, was the recommendation for: *check all that apply*

☐ Psychotherapy
☐ Pharmacology
☐ CAM (i.e., acupuncture, yoga, MBSR, etc.) [*Specify modality:_____]

16b. Provider recommendation(s) (verbatim):

17. Did the visit result in any **consult(s) or referrals** for future treatment?

☐ Yes (1) ☐ No (0)

17a. If yes, was the consult for: *check all that apply*

☐ Psychotherapy
☐ Pharmacology
☐ CAM (i.e., acupuncture, yoga, MBSR, etc.) [*Specify modality:_____]

17b. Provider consult(s) (verbatim):

18. Did the note include any documentation of **current treatment**?

☐ Yes (1) ☐ No (0)

18a. Provider's details about current treatment (verbatim):

19. Communication about the **patient's preferences for treatment** occurred.

☐ Yes (1) ☐ No (0)

19a. Details about *provider's probe* and *patient's treatment preferences* (verbatim):

APPENDIX C

PTSD CHECKLIST (PCL) - MILITARY VERSION

Below is a list of problems and complaints that veterans sometimes have in response to a stressful military experience. Please read each one carefully, put an "X" in the box.

		Not at all	A little bit	Moderately	Quite a bit	Extremely
1.	Repeated, disturbing *memories, thoughts, or images* of a stressful military experience?					
2.	Repeated, disturbing *dreams* of a stressful military experience?					
3.	Suddenly *acting* or *feeling* as if a stressful military experience *were happening again* (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful military experience?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful military experience?					
6.	Avoid *thinking about* or *talking about* a stressful military experience or avoid *having feelings* related to it?					
7.	Avoid *activities* or *talking about* a stressful military experience or avoid *having feelings* related to it?					
8.	Trouble *remembering important parts* of a stressful military experience?					
9.	Loss of *interest* in things that you used to enjoy?					
10.	Feeling *distant* or *cut off* from other people?					
11.	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
12.	Feeling as if your *future* will somehow be *cut short?*					
13.	Trouble *falling* or *staying* asleep?					
14.	Feeling *irritable* or having *angry outbursts?*					
15.	Having *difficulty* concentrating?					
16.	Being "*super alert*" or watchful on guard?					
17.	Feeling *jumpy* or easily startled?					

Has anyone indicated that you've changed since the stressful military experience?

Yes __ No__

APPENDIX D

CEPEP SURVEY WITH SCALES LABELED

PATIENT-CENTERED CARE SURVEY

VETERAN PATIENT DEMOGRAPHICS AND CHARACTERISTICS ASSESSMENT (PDCA)

Please answer all questions. Your answers will be kept confidential.

(1) Have you seen a doctor or been in the hospital during the past 6 months (from about August 2012 until now – early 2013)*?*
(Please check all that apply)
☐ Yes, a VA doctor or VA hospital
☐ Yes, a non-VA doctor or non-VA hospital
☐ No, I have not seen a doctor or been in the hospital

(2) What is your gender? ☐ Male ☐ Female

(3) What is your age? _____ years

(4) Are you Hispanic or Latino? ☐ No ☐ Yes ☐ Don't Know/Not Sure

(5) Which one of the following would you say best represents your race? *(Please check one)*
☐ White
☐ Black or African American
☐ Asian
☐ Don't Know/Not Sure
☐ Native Hawaiian/Other Pacific Islander
☐ American Indian or Alaska Native
☐ Other (specify) _____

(6) How much school have you completed? *(Please check one)*
☐ Did not complete elementary school
☐ Elementary (grades 1 through 8)
☐ Some high school (grades 9 through 11)
☐ High school graduate (grade 12 or GED)
☐ Some college or technical school
☐ College graduate (4 years or more)

(7) How would you describe your current relationship status? *(Please check one)*
☐ Married
☐ Separated/ Divorced
☐ Never married
☐ Member of an unmarried couple
☐ Widowed

(8) Which of the following most closely describes your usual living arrangements? *(Please check one)*
☐ Live alone
☐ Live with family, friend, spouse/other
☐ Live with formal (hired/paid) caregiver
☐ Other _____ (please specify)

(9) On average, what is the distance between your home and the VA facility from which you most often receive your care? *Please enter an answer and circle blocks or miles.*
_____ blocks / miles

(10) On average, about how long does it take you to get from your home to the VA facility from which you most often receive your care ?
_____ minutes

(11) About how often do you typically access the Internet?
☐ Daily
☐ Weekly
☐ Monthly
☐ Less than once per month
} *Please proceed to #12 and #13*
☐ I do not use/access the Internet *(if selected this option, please skip to #14)*

(12) Where do you most often access/use the Internet? (Please check one)
☐ Home ☐ Family/Friend's home ☐ Work ☐ VA
☐ Public place (e.g., library, community center) ☐ Other, specify: _____

(13) What do you use the Internet for? (Please check all that apply)
☐ Email ☐ News ☐ Entertainment
☐ Health information ☐ Social networking (e.g., Facebook) ☐ Other: _____

THE GLOBAL PRACTICE EXPERIENCE MEASURE

(14) Please indicate the extent to which you agree or disagree with the following statements:

At my VA health care practice …	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I receive *exactly* the care I want and need when and how I want and need it.	☐	☐	☐	☐	☐
I am delighted with this practice.	☐	☐	☐	☐	☐

(15) Have you ever been asked by your VA facility to serve on a VA quality improvement committee, advisory group, or decision-making team to represent the views of Veteran patients to improve care delivery?

☐ No
☐ Yes (please specify) _____

_____

_____

_____

(16) Have you ever been asked (survey, interview) by your VA about your preferences for the design structure, architecture, layout, etc. to enhance patient/family comfort, privacy, and/or convenience?

☐ No
☐ Yes (please specify) _____

_____

_____

_____

(17) We are interested in knowing more about your general experience as a VA patient, in your own words.

_____

_____

_____

_____

_____

_____

THE CONSULTATION AND RELATIONAL EMPATHY MEASURE (CARE)

Now, we would like you to please rate the following statements about your recent visit/clinical encounter to the VA.
Please check one box for each statement and answer every statement.

How was your VA health care provider at . . .	Poor	Fair	Good	Very Good	Excellent	Does Not Apply
1. Making you feel at ease . . . . . . *(being friendly and warm towards you, treating you with respect; not cold or abrupt)*	☐	☐	☐	☐	☐	☐
2. Letting you tell your "story" . . . . . . *(giving you time to fully describe your illness in your own words; not interrupting or diverting you)*	☐	☐	☐	☐	☐	☐
3. Really listening . . . . . . *(paying close attention to what you were saying; not looking at the notes or computer as you were talking)*	☐	☐	☐	☐	☐	☐
4. Being interested in you as a whole person . . . *(asking/knowing relevant details about your life, your situation; not treating you as "just a number")*	☐	☐	☐	☐	☐	☐
5. Fully understanding your concerns . . . . . . *(communicating that he/she had accurately understood your concerns; not overlooking or dismissing anything)*	☐	☐	☐	☐	☐	☐
6. Showing care and compassion . . . . . *(seeming genuinely concerned, connecting with you on a human level; not being indifferent or "detached")*	☐	☐	☐	☐	☐	☐
7. Being positive . . . . . . *(having a positive approach and a positive attitude; being honest but not negative about your problems)*	☐	☐	☐	☐	☐	☐
8. Explaining things clearly. . . . . . *(fully answering your questions, explaining clearly, giving you adequate information; not being vague)*	☐	☐	☐	☐	☐	☐
9. Helping you take control . . . . . . *(exploring with you what you can do to improve your health yourself; encouraging rather than "lecturing" you)*	☐	☐	☐	☐	☐	☐
10. Making a plan of action with you . . . *(discussing the options, involving you in decisions as much as you want to be involved; not ignoring your views)*	☐	☐	☐	☐	☐	☐

PATIENT ACTIVATION MEASURE (PAM)

Below are some statements that people sometimes make when they talk about their health. Please indicate how much you agree or disagree with each statement as it applies to you personally by circling your answer. Your answers should be what is true for you and not just what you think the doctor wants you to say.

1.	When all is said and done, I am the person who is responsible for taking care of my health.	Disagree Strongly	Disagree	Agree	Agree Strongly
2.	Taking an active role in my own health care is the most important thing that affects my health.	Disagree Strongly	Disagree	Agree	Agree Strongly
3.	I am confident I can help prevent or reduce problems associated with my health.	Disagree Strongly	Disagree	Agree	Agree Strongly
4.	I know what each of my prescribed medications do.	Disagree Strongly	Disagree	Agree	Agree Strongly
5.	I am confident that I can tell whether I need to go to the doctor or whether I can take care of a health problem myself.	Disagree Strongly	Disagree	Agree	Agree Strongly
6.	I am confident that I can tell a doctor concerns I have even when he or she does not ask.	Disagree Strongly	Disagree	Agree	Agree Strongly
7.	I am confident that I can follow through on medical treatments I may need to do at home.	Disagree Strongly	Disagree	Agree	Agree Strongly
8.	I understand my health problems and what causes them.	Disagree Strongly	Disagree	Agree	Agree Strongly
9.	I know what treatments are available for my health problems.	Disagree Strongly	Disagree	Agree	Agree Strongly
10.	I have been able to maintain (keep up with) lifestyle changes, like eating right or exercising.	Disagree Strongly	Disagree	Agree	Agree Strongly
11.	I know how to prevent problems with my health.	Disagree Strongly	Disagree	Agree	Agree Strongly
12.	I am confident I can figure out solutions when new problems arise with my health.	Disagree Strongly	Disagree	Agree	Agree Strongly
13.	I am confident that I can maintain lifestyle changes, like eating right and exercising, even during times of stress.	Disagree Strongly	Disagree	Agree	Agree Strongly

PRESS-GANEY PATIENT SATISFACTION SURVEY

Please select one answer for each (items a-f).		very poor	poor	fair	good	very good
a.	Degree to which you and your family were able to participate in decisions about your care	○	○	○	○	○
b.	How well staff explained their roles in your care	○	○	○	○	○
c.	Degree to which the staff supported your family throughout your healthcare experience	○	○	○	○	○
d.	Degree to which your choices were respected to have family members/friends with you during your care	○	○	○	○	○
e.	Degree to which staff respected your family's cultural and spiritual needs	○	○	○	○	○

PATIENT ASSESSMENT OF CHRONIC ILLNESS CARE (PACIC)

Staying healthy can be difficult when you have a chronic condition. **Now, we would like to learn about the type of help with your condition you get from your health care team.** This might include your regular doctor, nurse, or physician's assistant who treats your illness.

Over the past 6 months, when I received care for my chronic conditions, I was:

	None of the Time	A Little of the Time	Some of the Time	Most of the Time	Always
1. Asked for my ideas when we made a treatment plan.	☐1	☐2	☐3	☐4	☐5
2. Given choices about treatment to think about.	☐1	☐2	☐3	☐4	☐5
3. Asked to talk about any problems with my medicines or their effects.	☐1	☐2	☐3	☐4	☐5
4. Given a written list of things I should do to improve my health.	☐1	☐2	☐3	☐4	☐5
5. Satisfied that my care was well organized.	☐1	☐2	☐3	☐4	☐5
6. Shown how what I did to take care of myself influenced my condition.	☐1	☐2	☐3	☐4	☐5
7. Asked to talk about my goals in caring for my condition.	☐1	☐2	☐3	☐4	☐5
8. Helped to set specific goals to improve my eating or exercise.	☐1	☐2	☐3	☐4	☐5
9. Given a copy of my treatment plan.	☐1	☐2	☐3	☐4	☐5
10. Encouraged to go to a specific group or class to help me cope with my chronic condition.	☐1	☐2	☐3	☐4	☐5
11. Asked questions, either directly or on a survey, about my health habits.	☐1	☐2	☐3	☐4	☐5
12. Sure that my doctor or nurse thought about my values, beliefs, and traditions when they recommended treatments to me.	☐1	☐2	☐3	☐4	☐5
13. Helped to make a treatment plan that I could carry out in my daily life.	☐1	☐2	☐3	☐4	☐5
14. Helped to plan ahead so I could take care of my condition even in hard times.	☐1	☐2	☐3	☐4	☐5
15. Asked how my chronic condition affects my life.	☐1	☐2	☐3	☐4	☐5
16. Contacted after a visit to see how things were going.	☐1	☐2	☐3	☐4	☐5
17. Encouraged to attend programs in the community that could help me.	☐1	☐2	☐3	☐4	☐5
18. Referred to a dietician, health educator, or counselor.	☐1	☐2	☐3	☐4	☐5
19. Told how my visits with other types of doctors, like an eye doctor or other specialist, helped my treatment.	☐1	☐2	☐3	☐4	☐5
20. Asked how my visits with other doctors were going.	☐1	☐2	☐3	☐4	☐5

VR-12

This questionnaire asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Answer every question by marking the answer as indicated. If you are unsure how to answer a question, please give the best answer you can. Please select only one answer for each question.

	Excellent	**Very Good**	**Good**	**Fair**	**Poor**
1. In general, would you say your health is:	☐	☐	☐	☐	☐

2. The following questions are about activities you might do during a typical day. Does **your health now limit you** in these activities? If so, how much? **ACTIVITIES**	**Yes, limited a lot**	**Yes, limited a little**	**No, not limited at all**
a. **Moderate activities**, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf. .	☐	☐	☐
b. Climbing **several** flights of stairs.	☐	☐	☐

3. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities **as a result of your physical health?**	**No, none of the time**	**Yes, a little of the time**	**Yes, some of the time**	**Yes, most of the time**	**Yes, all of the time**
a. **Accomplished less** than you would like.	☐	☐	☐	☐	☐
b. Were limited in the **kind** of work or other activities. .	☐	☐	☐	☐	☐

4. During the **past 4 weeks**, have you had any of the following problems with your work or other regular daily activities **as a result of any emotional problems** (such as feeling depressed or anxious)?	**No, none of the time**	**Yes, a little of the time**	**Yes, some of the time**	**Yes, most of the time**	**Yes, all of the time**
a. **Accomplished less** than you would like.	☐	☐	☐	☐	☐
b. Didn't do work or other activities as **carefully** as usual	☐	☐	☐	☐	☐

5. During the **past 4 weeks**, how much did **pain** interfere with your normal work (including both work outside the home and housework)?	**Not at all**	**A little bit**	**Moderately**	**Quite a bit**	**Extremely**
	☐	☐	☐	☐	☐

These questions are about how you feel and how things have been with you during the **past 4 weeks**. For each question, please give the one answer that comes closest to the way you have been feeling. 6. How much of the time during the **past 4 weeks:**	**All of the time**	**Most of the time**	**A good bit of the time**	**Some of the time**	**A little of the time**	**None of the time**
a. Have you felt **calm and peaceful**?	☐	☐	☐	☐	☐	☐
b. Did you have **a lot of energy**?	☐	☐	☐	☐	☐	☐
c. Have you felt **downhearted and blue**?	☐	☐	☐	☐	☐	☐

7. During the **past 4 weeks**, how much of the time has your **physical health or emotional problems** interfered with your social activities (like visiting with friends, relatives, etc.)?	**All of the time**	**Most of the time**	**Some of the time**	**A little of the time**	**None of the time**
	☐	☐	☐	☐	☐

Now, we'd like to ask you some questions about how your health may have changed.	**Much better**	**Slightly better**	**About the same**	**Slightly worse**	**Much worse**
8. **Compared to one year ago**, how would you rate your **physical health** in general **now**?	☐	☐	☐	☐	☐
9. **Compared to one year ago**, how would you rate your **emotional problems** (such as feeling anxious, depressed or irritable) **now**?	☐	☐	☐	☐	☐

THE COMBINED OUTCOME MEASURE FOR RISK COMMUNICATION AND TREATMENT DECISION MAKING EFFECTIVENESS (COMRADE)

Please respond to the following statements by circling the number on the scale (1 to 5) that best agrees with your view. If you are not completely sure about an answer please circle the number which represents your best guess. An example of how to answer a question is shown here:

I have been to the doctor often in the last year	Strongly disagree				Strongly agree
	1	(2)	3	4	5

Here we refer often to "treatments" and "choices about treatment". One of these choices may be not to take treatment, or it may be that the decision was left until another time. Whichever plan was made, please still answer all questions.

1. The doctor made me aware of the different treatments available	Strongly disagree				Strongly agree
	1	2	3	4	5
2. The doctor gave me the chance to express my opinions about the different treatments available	Strongly disagree				Strongly agree
	1	2	3	4	5
3. The doctor gave me the chance to ask for as much information as I needed about the different treatment choices available	Strongly disagree				Strongly agree
	1	2	3	4	5
4.The doctor gave me enough information about the treatment choices available	Strongly disagree				Strongly agree
	1	2	3	4	5
5. The doctor gave enough *explanation* of the information about the treatment choices	Strongly disagree				Strongly agree
	1	2	3	4	5
6. The information given to me was easy to understand	Strongly disagree				Strongly agree
	1	2	3	4	5
7. I know the advantages of treatment or not having treatment	Strongly disagree				Strongly agree
	1	2	3	4	5
8. I know the disadvantages of treatment or not having treatment	Strongly disagree				Strongly agree
	1	2	3	4	5
9. The doctor gave me a chance to decide which treatment I thought was best for me	Strongly disagree				Strongly agree
	1	2	3	4	5
10. The doctor gave me a chance to be involved in the decisions during the consultation	Strongly disagree				Strongly agree
	1	2	3	4	5

11. Overall I am satisfied with the information I was given	Strongly disagree 1	2	3	4	Strongly agree 5
12. My doctor and I agreed about which treatment (or no treatment) was best for me	Strongly disagree 1	2	3	4	Strongly agree 5
13. I can easily discuss my condition again with my doctor	Strongly disagree 1	2	3	4	Strongly agree 5
14. I am satisfied with the way in which the decision was made in the consultation	Strongly disagree 1	2	3	4	Strongly agree 5
15. I am sure that the decision made was the right one for me personally	Strongly disagree 1	2	3	4	Strongly agree 5
16. I am satisfied that I am adequately informed about the issues important to the decision	Strongly disagree 1	2	3	4	Strongly agree 5
17. It's clear which choice is best for me	Strongly disagree 1	2	3	4	Strongly agree 5
18. I'm aware of the treatment choices I have	Strongly disagree 1	2	3	4	Strongly agree 5
19. I feel an informed choice has been made	Strongly disagree 1	2	3	4	Strongly agree 5
20. The decision shows what is most important for me	Strongly disagree 1	2	3	4	Strongly agree 5

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