Deconstructing the In-Patient Behavioral Health Facility: Finding the Balance Between Safety and Therapeutics

Robert J. Schultz
Clemson University

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DECONSTRUCTING
THE IN-PATIENT BEHAVIORAL HEALTH FACILITY:
FINDING THE BALANCE BETWEEN SAFETY AND THERAPEUTICS

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science, Architecture + Health

by
Robert J. Schultz
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Accepted by:
Dina Battisto, Primary Advisor
David Allison, Committee Member
Elizabeth Baldwin, Committee Member
ABSTRACT

Casualty statistics resulting from 10+ years of combat action/deployments in Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) have yielded multiple casualties. These casualty types include the visibly and invisibly wounded, where the visible (physical) wounds include but are not limited to gunshot/shrapnel, blunt trauma and blasts from Improvised Explosive Devices (IED). The invisibly wounded include but are not limited to Combat Stress, Anxiety, Post-Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI). Unfortunately and although operations in Iraq and Afghanistan have decreased, invisible wounds continue to persist yielding an increase in soldier behavioral health complications which at an all-time high with statistics reflecting minimal patient healing progress. To make matters worse, war-fighters affected by these “invisible wounds” experience difficulties in family relationships and societal reintegration where statistics show that 1 US Combat Veteran commits suicide every 65 minutes (Reuters, 2013). Additionally, historical studies have focused on curative solutions with little information existing on Behavioral Health Facilities that foster this care environment. With the continued suicide rate and the complexities of Behavioral Health still misunderstood, a collective effort of solutions (treatment, medicine, programs and facilities) are required to effectively address issues of Soldier Behavioral Health and improve patient outcomes for the future.

Optimally designed Behavioral Health Facilities are of significant importance to provide an adequate environment for Behavioral Health treatment. However, literature reviews reveal little if any data regarding Evidence Based Design solutions to enhance their care potential, in particular create a safe and therapeutic healing environment within the military. Acknowledging that suicides often occur as a result of low self-esteem and the presence of man-made hazards, creation of a safe and therapeutic environment will not only resolve the most significant concerns with Behavioral Health (staff/patient safety and eliminate patient suicide) but also present an atmosphere of pride and dignity. Both factors coupled together in an optimally designed environment will enable those soldiers who suffer from
Behavioral Health complications to receive care within the Military Health System (MHS) that can address these “wounds” and treat them respectably.

To adequately research and expand upon the issues of safety and therapeutics within Behavioral Health Facilities, a qualitative research approach (Creswell 2014) will be employed utilizing a case study research strategy (Stake 1995; 2005) that utilizes multiple methods inclusive of qualitative and quantitative data. The objective of the study is to investigate how environmental factors of Military In-Patient Behavioral Health Units promote or deter two significant outcomes, safety and therapeutics, within three areas: private patient spaces (bedrooms); communal spaces (such as activity rooms, day rooms, etc.) and therapy areas (such as group therapy rooms). Although there are additional spaces that exist within the In-Patient Behavioral Health Facility (e.g. – Soiled Linen storage, Supply, Staff Conference Room, etc.), private, communal and therapy spaces are the only collective areas that combine staff and patient operations on a daily basis.

This research study will explore the impacts the built environment has on safety and therapeutics within In-Patient Behavioral Health Military Healthcare units, comparing two high-volume patient facilities in different settings. Exploring facilities in different settings will provide an understanding of how the built environment factors (BEF - space layout, hardware & fixtures and finishes & furnishings) are linked to safety and therapeutic outcomes through four facility related dimensions: Visual Appeal, Physical Comfort, Mental Comfort and the Absence of Hazards. Multiple data collection methods will be used including: review of archived documents (floor plans, MHS Space Planning Criteria, etc.); interviews with clinical staff and technical end users; interviews with subject matter experts involved with treatment program management & implementation and onsite observations. Research findings will reveal how the aforementioned BEF will either positively or negatively influence the creation of a safe space for patients and staff as well as coexist with therapeutics to provide an optimal patient care environment. Data
analysis and conclusions from this study will be provided to the MHS to potentially enhance space planning criteria and templates to enhance In-Patient Behavioral Health facility design for the present as well as into the future.
DEDICATION

This thesis is dedicated to my family and in particular, my children Jaecob and Madison. The encouragement of my entire family, their belief in me as well as that content and nature of this work served as motivation to help me complete this project and accomplish my objectives. It is my hopes and intentions that the results of this research project provides a tool to enhance the military medical facility design process and improves patient outcomes, assisting service members who have become casualties through their selfless service (peacetime and/or wartime missions) to keep America safe, maintain our freedoms and sustain the way of life that we enjoy on a daily basis.
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DEFINITION OF TERMS AND ABBREVIATIONS

Absence of Hazards – An environment or space that is free of all sources of danger that could cause harm or death to oneself others. Examples include but are not limited to contact, ingestible, impalement, puncture/cut or hanging dangers (Carr, 2011).

Aesthetics – Appreciative of, responsive to or zealous about the beautiful; response to or appreciative of what is pleasurable to the senses (Carr, 2011).

American Psychiatric Association (APA) - The American Psychiatric Association, founded in 1844, is the world’s largest psychiatric organization. It is a medical specialty society representing growing membership of more than 35,000 psychiatrists. Its member physicians work together to ensure humane care and effective treatment for all persons with mental disorders, including intellectual disabilities and substance use disorders. APA is the voice and conscience of modern psychiatry (Source: www.psychiatry.org)

Americans with Disabilities Act (ADA) – The Americans with Disabilities Act is a law enacted by Congress and signed into law on 26 July 1990 by President George H. W. Bush. It is a wide ranging civil rights law that prohibits, under certain circumstances, discrimination based on disability with disability being defined as “a physical or mental impairment that substantially limits a major life activity. The determination of whether any particular condition is considered a disability is made on a case by case basis (O’Brien, 2004).

American National Standards Institute (ANSI) – The Institute oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector, such as acoustical devices, construction equipment, livestock production, energy distribution and many more. ANSI is also actively engaged in accrediting programs that assess conformance to standards – including globally-recognized cross-sector programs such as ISO-9000 (quality) and ISO-14000 (environmental) management systems. Founded 19 October 1918 as a private, not-for-profit organization, it is located in Washington, D. C. (Source: www.ansi.org)

Army Medical Department (AMEDD) – The Army Medical Department is comprised of the Army’s six medical Special Branches (or "Corps") of officers and its enlisted medical soldiers. The AMEDD is led by the Surgeon General of the U.S. Army, a lieutenant general (Source: www.armymedicine.mil).

Barbiturates – Drugs that act as central nervous system depressants and can therefore produce a wide spectrum of effects from mild sedation to anesthesia. They have addiction potential, both physical and psychological but are still used in general anesthesia, for epilepsy, for the treatment of acute migraines and cluster headaches (Shephard, 2000).

Battle Fatigue – The World War II name for what is known today as PTSD, this is a psychological disorder that develops in some individuals who have had major traumatic experiences (serious accident or through war). The person is typically numb at first but later has symptoms including depression, excessive irritability, guilt (for having survived while others died), recurrent nightmares, flashbacks and overreaction to sudden noises. (HQDA, 2012).
Behavioral Health / Healthcare – Behavioral healthcare is a term referring to a continuum of services for individuals at risk of, or suffering from, mental, behavioral, or addictive (e.g., substance abuse) disorders. Behavioral health, as a discipline, refers to mental health, psychiatric, marriage and family counseling, and addictions treatment, and includes services provided by social workers, counselors, psychiatrists, psychologists, neurologists, and physicians. “Behavioral health” and “mental health” are often used interchangeably (DOD Space Planning Criteria - BH Units, 2013).

Brain Health – Term coined by the 43rd Surgeon General of the Army that encompasses all aspects of Behavioral Health and Brain Issues, inclusive of trauma, behaviors, imbalances and lack of cognitive ability (OTSG, 2011).

Center for Disease Control and Prevention (CDC) – Federal Agency under the Department of Health and Human Services, headquartered in Atlanta, Georgia. The CDC focuses national attention on developing and applying disease control and prevention, especially on infectious disease, food borne pathogens, environmental health, occupational safety and health, health promotion, injury prevention and educational activities designed to improve the health of United States citizens (OTSG, 2011).

Cognitive – Of, relating to or involving conscious intellectual activity (e.g. – thinking, reasoning or remembering). Additionally, Cognitive Therapy is also associated with Brain Health (primarily depression) which emphasizes the substitution of desirable patterns of thinking with faulty ones (OTSG, 2011).

Concept of Operations – The purpose of this tool is to provide an overview of the department operational, space and staff requirements used as guidance by the design team. The document describes in detail the proposed services, estimated patient volumes, staffing requirements, key operating assumptions, required departmental adjacencies and the proposed layout and workflow (HQDA, 1994).

Continental United States (CONUS) - The Continental United States is the area of the United States of America comprising the 48 states that are south of Canada and north of Mexico, not including Alaska, the state of Hawaii (as they are Pacific Ocean islands), or any other territories under the control of the United States.

Department of Defense (DOD) – The Department of Defense is the Executive Department of the Government of the United States charged with coordinating and supervising all agencies and functions of the government. It is concerned directly with National Security and the United States Armed Forces and its mission is to provide the military forces needed to deter war and protect the security of the United States. The department is headquartered at the Pentagon in Washington, D.C. (Source: www.defense.gov).

Department of Veterans Affairs (VA) – The United States Department of Veterans Affairs is a government-run military veteran benefit system with Cabinet-level status. It is the United States government’s second largest department, after the United States Department of Defense that continues to fulfill President Lincoln’s promise “To care for him who shall have borne the battle, and for his widow, and his orphan” by serving and honoring the men and women who are America’s veterans (Source: www.va.gov).

Diagnostic and Statistical Manual of Mental Disorders (DSM) – Manual first published in 1952 by the American Psychiatric Association that offers a common language and standard criteria for the classification of mental disorders. Often referred to as psychiatry’s bible, it is used by a broad array of
Behavioral Health Professionals that include but are not limited to clinicians, researchers, insurance companies and policy makers (Shephard, 2000).

**Disease Non-Battle Injury (DNBI)** - A soldier who is not a battle casualty but who is lost to the organization by reason of disease or injury, including persons dying of disease or injury, by reason of being missing where the absence does not appear to be voluntary or due to enemy action (Shephard, 2000).

**Exercise Room** – Exercise encourages patients to engage in healthy behaviors. The exercise room is an enclosed room with an observation window that provides space for patient exercise and may accommodate exercise equipment such as treadmills, elliptical and bicycles (DOD Space Planning Criteria - BH Units, 2013).

**Evidence Based Design (EBD)** - The process of basing decisions about the built environment on credible research to achieve the best possible outcomes. A large and growing body of evidence attests to the fact that physical environment impacts patient stress, patient and staff safety, staff effectiveness and quality of care provided in hospitals and other healthcare settings. (Source: [http://www.healthdesign.org](http://www.healthdesign.org))

**Facility Guidelines Institute (FGI)** – FGI is a nonprofit organization that was established in 1998 to provide leadership and continuity to the development and publication of the Guidelines for Design and Construction of Health Care Facilities. FGI functions as a contractual, fundraising and coordinating entity, supporting the work of the independent Health Guidelines Revision Committee in its goal to update and improve the content of the Guidelines document to encourage its adoption and use. (Source: [http://www.ashe.org](http://www.ashe.org))

**Group Therapy Spaces** – Facility space that supports a form of psychosocial treatment where a small group of patients meets regularly to talk, interact, and discuss problems with each other and the group leader (therapist). Group psychotherapy is likely the most beneficial psychotherapy method for PTSD, especially for military personnel and veterans. Examples of other topics discussed are combat stress, anger control, and relationship and communication issues (DOD Space Planning Criteria – BH Units, 2013).

**Ground Fault Circuit Interrupter (GFCI)** – A device that shuts off an electric circuit when it detects that current is flowing along an unintended path, possibly through water or through a person. It is used to reduce electric shock (DVA, 2010).

**Improvised Explosive Device (IED)** – An improvised explosive device (IED) is a homemade bomb constructed and deployed in ways other than in conventional military action. It may be constructed of military explosives, such as an artillery round, and attached to a detonating mechanism. Roadside bombs are common IEDs (HQDA, 2012).

**Joint Task Force National Capital Region Medical (JTFCAPMED)** – Established on 14 September 2007 under the command of RADM John Mateczun, MC, USN, this joint task force ensures delivery of military healthcare within the National Capital Region (NCR) using all available military healthcare resources. Additionally, it oversees the consolidation and realignment of military healthcare within the joint operating area (JOA) in accordance with the 2005 Base Realignment and Closure (BRAC) Act (Source: [www.capmed.mil](http://www.capmed.mil))

**Medical Treatment Facility (MTF)** – A facility established for the purpose of furnishing medical and/or dental care to eligible individuals (HQDA, 1994).
Mild Traumatic Brain Injury (mTBI) – Characterized by a confused or disoriented state lasting less than 24 hours; loss of consciousness for up to thirty minutes; memory loss lasting less than 24 hours and structural brain imaging that yields normal results (Fischer, 2013).

Military Occupational Specialty (MOS) - A United States military occupation code, or a Military Occupational Specialty code (MOS code), is a nine character code used in the United States Army and United States Marines to identify a specific job (Source: www.globalsecurity.org)

Mental Comfort – In a facilities context regarding patients, a space or environment that allows or permits patient comfort that is free of stress or complications that can result in frustration, confusion or agitation. In other words, a space or environment that permits the mind to relax and be at ease (Carr, 2011).

Moderate Traumatic Brain Injury – Characterized by a confused or disoriented state that lasts more than 24 hours; loss of consciousness for more than 30 minutes, but less than 24 hours; memory loss lasting greater than 24 hours but less than seven days; and structural brain imaging yielding normal or abnormal results (Fischer, 2013).

National Association of Psychiatric Health Systems (NAPHS) – An organization established to advocate for behavioral health and represent provider systems that are committed to the delivery of responsive, accountable and clinically effective prevention, treatment and care for children, adolescents, adults and older adults with mental and substance use disorders (NAPHS, 2013).

National Fire Protection Agency (NFPA) – An International Non-profit organization established in 1896 whose mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training and education. As the world’s leading advocate of fire prevention and an authoritative source on public safety, NFPA develops, publishes and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. (Source: www.nfpa.org)

Negative Incidents – Unproductive acts or occurrences that cause harm, injury or damage to oneself, to others or to facilities or property that can either be intentional or accidental. Examples of unproductive acts or occurrences include but are not limited to electrocution hazards, accessible screws or fasteners for furniture, decorations or heating, ventilating, and air-conditioning (HVAC) systems, anchor points that would enable one to hang themselves or breakable furniture/materials that would allow a patient to utilize the broken remnants as a weapon to harm themselves or others (DVA, 2010).

Non-Commissioned Officer (NCO) – A non-commissioned officer (sometimes abbreviated to NCO or non-com) is a military officer who has not been awarded a commission. Non-commissioned officers, in the English-speaking world, usually obtain their position of authority by promotion through the enlisted ranks (Shephard, 2000).

Operation Enduring Freedom (OEF) – Combat Operations within the Country of Afghanistan that employed United States and North Atlantic Treaty Organization (NATO) troops in operations to mitigate if not eliminate terrorist operations and harm toward the people of Afghanistan, the United States and NATO elements around the world (Source: www.globalsecurity.com).

Operation Iraqi Freedom (OIF) – The Iraq War was an armed conflict in Iraq that consisted of two phases. The first was an invasion of Iraq by the United States starting on 20 March 2003 followed by a longer phase of fighting in which an insurgency emerged to oppose the occupying forces and the newly formed Iraqi government (Source: www.globalsecurity.com).
Office of the Surgeon General (OTSG) – Located in Falls Church, Virginia, it is the office where the Surgeon General (TSG) serves as Commanding General, U.S. Army Medical Command (MEDCOM) as well as head of the AMEDD (HQDA, 2012).

Patient Safe Space – A space or room, either public or private, that is secure from threat of danger, harm, or loss by accidental or intentional self-inflicted harm or harm to others by patients, clinical staff or civilians (Carr, 2011).

Physical Comfort – A feeling of well-being brought about by internal and environmental conditions that are experienced as agreeable and associated with contentment and satisfaction. Environmental conditions include but are not limited room space and/or layout, furniture type, available lighting (natural and man-made) and views of nature (Carr, 2011).

Poly-Trauma – Also known as multiple-trauma, is a medical term describing the condition of a person who has been subjected to multiple traumatic injuries, such as a serious head injury in addition to a serious burn. The term has become common among US military doctors in describing the seriously injured soldiers returning from Operation Iraqi Freedom and Operation Enduring Freedom. The term, however, has been in use for a long time for any case involving multiple traumata (HQDA, 2012).

Post-Concussive Syndrome (PCS) – PCS is a specific set of neuropsychological (thinking, behavioral and emotional) disorders caused by TBI (aka concussion). PCS results from actual physical damage or injury to the brain caused by an external force. A brain subjected to such violent forces can be torn or sheared, crushed, displaced or simply destroyed to the point that it may even shut down (Source: www.theadinjury.com).

Post-Occupancy Evaluation (POE) – A systematic evaluation of buildings in use from the perspective of the people who use them. POE assesses how well buildings match users’ needs, and identifies ways to improve building design, performance and fitness for purpose (Source: http://postoccupancyevaluation.com).

Post-Traumatic Stress Disorder (PTSD) – Coined by the American Psychiatric Association in 1980 that evolved from mental health disorders in soldiers returning from the Vietnam War. Today, the term is applied towards people (civilian or military) who experience catastrophic events that can result in mental, physical and cognitive ability disorders (HQDA, 2012).

Private Patient Space – Space that is designed or intended for one’s exclusive use or confined to the individual. Furthermore, the space is not intended to be used by the public for use, control, or participation as it belongs to a particular person or persons as opposed to the public (Carr, 2011).

Program for Design (PFD) - Program for Design (PFD): A listing of all of the spaces and rooms included within a service and the corresponding net square foot area of each space and room. This listing of spaces and rooms is based on criteria set forth in this chapter and specific information about mission, workload projections and staffing levels authorized (DOD Space Planning Criteria – BH Units, 2013).

Proximity, Immediacy and Expectancy (PIE) – A formula for the treatment of Psychiatric Casualties that was developed during the Korean War. Simply put, the formula was meant to treat casualties as close to the front line as possible (proximity) as soon as possible (immediacy) and in an atmosphere that encouraged return to their unit (expectancy) (Shephard, 2000).
**Shell Shock** – The reaction of soldiers in World War I to the trauma of battle based on the intensity of the bombardment and fighting that produced a sense of helplessness. Symptoms were panic and being scared, or flight, an inability to reason, sleep, walk or talk (Shephard, 2000).

**Space and Equipment Planning System (SEPS)** - A digital tool developed by the Department of Defense (DoD) and the Department of Veterans Affairs to generate a Program for Design (PFD) and a Project Room Contents list (PRC) for a DoD healthcare project based on specific information entered in response to Input Data Statements (DOD Space Planning Criteria – BH Units, 2013).

**Space Planning Criteria** – Provides guidance for space planning including staffing and programmatic requirements used for the planning and design of MHS healthcare facilities. It includes definitions of staffing categories, room areas, net to gross factors & workload calculations and provides the area requirements per room type area identified by room codes that relate to the templates and the UFC. This tool is used by the Services and the Architects as a preliminary planning tool to develop the Program for Design using the Space and Equipment Planning System (SEPS) (DOD Space Planning Criteria – BH Units, 2013).

**Sulphonamide** – Sulfonamides are the basis of several groups of drugs. The original antibacterial sulfonamides (sometimes called sulfa or sulpha drugs) are synthetic antimicrobial agents that contain the sulfonamide group and were utilized within the treatment of mental health patients (Shephard, 2000).

**Templates** – Templates provide a recommended plan to support the function of key room areas, inclusive of space layout, furniture and medical equipment as well as the mechanical and electrical infrastructure. The room codes are kept consistent across all tools within the Templates, Space Planning and the Unified Facilities Criteria (UFC) (Source: DOD Space Planning Criteria).

**Therapeutic Environment** – In a healthcare facility, defined as an environment where items (individual physical, mental, expressive or a combination of all) that contribute to patient healing that mitigate fear, stress, health uncertainty and human relation isolation are present (Carr, 2011).

**Unified Facilities Criteria (UFC)** - Unified Facilities Criteria (UFC) documents provide planning, design, construction, sustainment, restoration and modernization criteria for application to the Military Departments, the Defense Agencies and the DoD Field Activities in accordance with the Under Secretary of Defense for Acquisition, Technology and Logistics (USD-AT&L) Memorandum dated 29 May 2002 (Source: www.wbdg.org).

**United States Army Health Facilities Planning Agency (USAHFPA)** - Organization that serves as The Surgeon General’s Program Manager and User Representative for health facility planning, programming, design and construction of medical treatment facilities, medical research & development facilities (Source: http://www.armyhealthfacilities.amedd.army.mil)

**United States Army Medical Command (MEDCOM)** - The U.S. Army Medical Command (MEDCOM) is a direct reporting unit of the U.S. Army that provides command and control of the Army’s fixed-facility medical, dental and veterinary treatment facilities, providing preventive care, medical research & development and training institutions. MEDCOM is commanded by the Army Surgeon General, who is also head of the U.S. Army Medical Department (AMEDD) (HQDA, 1994)
United States Army Medical Research and Materiel Command (USAMRMC) – The U.S. Army Medical Research and Materiel Command is the Army’s medical materiel developer, with responsibility for medical research, development, and acquisition and medical logistics management. The USAMRMC’s expertise in these critical areas helps establish and maintain the capabilities the Army needs to fight and win on the battlefield (Source: [http://mrmc.amedd.army.mil](http://mrmc.amedd.army.mil)).

Vestibule - This is the primary access point to the locked behavioral health unit. It is a sally port, whereby the first opened door to the sally port is closed, locked and secured prior to unlocking and/or opening the second door (DOD Space Planning Criteria – BH Units, 2013).

Visibility – The ability to extract information from the field of view, which is affected by glare, uniformity, luminance, surface brightness and lighting components. The consideration of these factors improves task performance, mood and atmosphere, visual comfort, aesthetic judgment, health, safety and well-being and social communication (Source: [UFC 3-530-1, 2006](http://www.dtic.mil/)).

Visual Appeal – Attraction that causes an interest or desire in something produced by visual stimuli. Examples of visual appeal in a patient room or space includes but are not limited to color and/or pattern selection, amount of light (natural and man-made), furniture types/patterns and room/space layout (Carr, 2011).
INTRODUCTION

The complexities of Behavioral Health and the Military Service-member are by far more apparent today than they ever have been since the term Post-Traumatic Stress Disorder (PTSD) was coined by the American Psychiatric Association in the early 1980s. In an article published by Reuter’s in 2003, it stated that 1 combat veteran commits suicide every 65 minutes. Statements of this magnitude are powerful and lead one to question publication validity and method of data analysis until catastrophic events occur, such as the actions of Specialist Ivan Lopez at Fort Hood, Texas (Sanchez, 2014). The Specialist, who had been receiving treatment at a Behavioral Health clinic for anxiety and depression, opened fire with a .45 caliber pistol on members of his Army unit at Fort Hood, Texas on 2 April 2014. The aftermath of his actions left 3 soldiers dead and 16 injured before he turned the weapon on himself, all resulting from the lack of attention he received regarding his leave request. As a result, the Army as well as America is left pondering a series of questions such as why would the married father of a 3-year old commit such an atrocity, why a person with no history of Behavioral Health react in such a manner, what is the military doing to prevent future atrocities such as this and what programs and facilities are in place regarding the identification, treatment and follow-up for Behavioral Health patients? Little if any information exists regarding Evidence Based Design or Post Occupancy Evaluations for Behavioral Health Facilities, although multiple documents have been written and actions have taken place regarding clinical solutions. As of Fiscal Year 2011, the Army increased its Behavioral Healthcare access and delivery by more than 10%, witnessed through a surge in individual soldier participants (253,773 in Fiscal Year 2010 to 280,403 in Fiscal Year 2011) (HQDA, 2012). Even with the increase in contacts, why are soldiers who are supposedly disciplined through training, conditioned through experience and rehearsed to respond to emergencies behaving in such a manner?
General Robert E. Lee, Commanding General, Confederate States of America (1861-1865) was quoted saying “it is well that war is so terrible, else we would grow too fond of it” (Alexander, 1907). This statement was made during a period where Mass and Economy of Force were keys to victory and no matter how large the battle, casualties were suffered on both sides. As a result, Disease and Non-Battle Injuries (DNBI) was responsible for more than 2/3rd of the 620,000+ battle deaths (Schroeder-Lein, 1994), indicative that the medical focus (or lack thereof) for the period was purely on the physical: soldiers were either killed, died of wounds, sustained minor injuries or were not injured at all. With the complexities of modern warfare, would General Lee recant his statement or would he still find some degree of fondness in warfare?

Through lessons learned, Army Medicine has evolved and continues to evolve through the development of enhanced curative solutions: antibiotics, evacuation platforms and treatment protocols. These solutions and innovations continue to mitigate injuries and the loss of life that were previously viewed as the unavoidable catastrophic occurrences of battle. Improvements have been witnessed in casualty rate reductions over time that has dropped from 1 in 2 in the American Civil War to 1 in 16 in Operation Iraqi Freedom (OIF) (OTSG, 2011). Although these statistics are favorable, they do not reflect the fact that more patients today survive to deal with the psychological after-effects of traumatic injury (e.g. – severe burns, multiple fragment wounds, amputations and brain and spinal cord injuries). These injuries often represent the end of one’s life as they knew it and the beginning of a painful and uncertain recovery coupled with psychological stressors that include but are not limited to: frequent wound debridement, dressing changes, skin grafts and plastic surgery that can lead to irritability, exaggerated startle response, helplessness, detachment, absence of emotions and anxiety (OTSG, 2011). This potentially unique set of military stressors coupled with everyday civilian stressors that include but are not limited to financial security, spouse or relationship complications, death in family and spousal employment can all combine to put “inward” pressures on the soldier. This combination of stressors, whether minor or exponential in
nature, can all affect the soldier differently and cause “outward” actions (e.g. – Homicide, Spousal Abuse, Child Abuse, Sexual Misconduct, etc.) that can not only be detrimental to the individual (See Figure 1) but also to his family, friends or innocent bystanders as such the recent case with Specialist Lopez at Fort Hood, Texas.

Figure 1 – Inward Pressures (left) can cause Outward Actions (right) and potentially result in mental harm, physical injury or even death to the individual soldier, his family, his friends or the general public.

Historically, these signs and symptoms are not new to combat and proof of the Behavioral Health Casualty can be seen not only through multiple literary works of Psychiatric Health professionals but also through the works of Cartoonist Bill Mauldin and Artist Thomas Lea. With both men possessing front-line World War II experience, they effectively captured the real-world effects of Behavioral Health through their drawings and paintings: The cartoon “Last Dry Socks” by Bill Mauldin (Figure 2) depicting Combat Stress and Battle Fatigue and the infamous print “The 2000 Yard Stare” by Thomas Lea (Figure 3) depicting symptoms of “Shell Shock”. Both works successfully depict
not only the horrors of war but emotional issues that are hard to talk about and almost impossible to describe unless a person has “been there” and experienced the hardships or suffered the consequences. These consequences go beyond the risk of death, dismemberment, disfigurement and paralysis … as terrible as these realities appear. Military members also risk their peace of mind and their sense of right and wrong through psychological wounds that are no less of a sacrifice than that of the armless, legless or sightless veteran (Shay, 2002). Additionally, many veterans have felt that their “homecoming” was within their grasp and then they lost it, leading to despair, demoralization and thoughts or attempts of suicide (Shay, 2002) where this concept is sadly validated in a 2003 report produced by the American Psychiatric Society. In this report, it states that 1,500+ suicides occur annually in U.S. inpatient mental health units (Shepley, 2013). Also, the fact that Vietnam veterans today are still experiencing Behavioral Health issues some 40+ years after the war is a testament to the fact that mental illness involves many complexities (biological, chemical, psychological and social) that one cannot present universally approved recommendations (JCMIH, 1961) regarding treatment. Fortunately, even though the term PTSD was coined 7 years after troops were removed from Vietnam, it has finally gained the much needed publicity it deserves today in a way unheard of since “shell-shock” in 1914. The Behavioral Health or “Brain Health” patient (Brain Health is a term coined by the 43rd Army Surgeon General to encompass all issues of the Brain, both physical and mental) is one who has been and continues to be ill-understood by patients, service-members and the general public. This type of patient and their issues have typically been
categorized as a low priority but advancements have slowly but surely evolved due in part to the tireless efforts, persistence and treatment programs instituted by today’s team of Psychological Experts. This team of experts includes but is not limited to Psychiatrists, Psychologists, Psychiatric Nurses, Social Workers and Behavioral Health Specialists who endlessly and tirelessly focus their efforts on treatment program progress that consists of a myriad of therapy, one-on-one and creative activity sessions that have aided in individual as well as collective patient improvement. Recognizing that improvements regarding Behavioral Health patients have relied heavily on curative solutions, the question arises as to what else can be done to compliment these efforts and help resolve the problems that so horrifically plague service-members today. For this research study, In-Patient Behavioral Health Facilities will be studied to determine whether or not they are adequate to effectively support treatment programs. In-Patient Facility success is critical due to the fact that patients admitted are potentially suicidal and it is important to have the right programs, treatments and facilities to collectively support the prescribed clinical solutions, deter the patient from terminating their life and either refer them to an additional treatment program and/or outpatient facility. With the average Length of Stay in the unit ranging between 7 to 14 days, the time spent literally could mean the difference between life and death if the design, potential hazards and general atmosphere don’t instill a sense of safety and dignity within the patient population regarding the provision of the required care and treatment programs.

A review of the literature indicates extensive research and testing for patient treatment and rightly so; the right programs enabling the detection of problems prior to their occurrence may aid in the mitigation if not elimination of the Behavioral Health Patient altogether. Since that currently is not the case, a few organizations recognize the importance of appropriately designed facilities and the impact that they can have regarding positive patient outcomes. These organizations include but are not limited to the Department of Defense (DOD), the Department of Veteran Affairs (VA) and the National Association of Psychiatric Health Systems (NAPHS). John R. Seeley, mental health consultant for the Joint Commission in
1961, labeled mental health as a “continuous conversation” as the maintenance of one’s mental health is a continuous process – such as breathing. Likewise, the search for knowledge about mental health must continue as final answers are not yet at hand (JCMIH, 1961), which is inclusive of all aspects of patient treatment as well as the facility that creates the healing environment where treatment success is hopefully achieved. The VA recognizes the contributions and level of success that can be achieved through well planned and well-designed Behavioral Health Facilities as mentioned in their design manual, where they state that “creating a therapeutic environment helps reinforce the recovery of the individual patient program and reduces institutional stigma often associated with mental health treatment facilities. Facility interior design should embody safe components with improved aesthetics and noise control that promote social interaction and engagement (DVA, 2010). Unfortunately for the military, most In-Patient Behavioral Health Facilities today were not specifically designed to address the needs of the Behavioral Health Patient. These shortcomings are apparent through several aspects which include but are not limited to design aesthetics, therapeutics and access to nature. Upon speaking with a Behavioral Health Expert at the US Army Medical Command (USAMEDCOM) in San Antonio, Texas, he advised that Behavioral Health Units were not built for Psychiatric care as they are converted wards that were designed to adhere to Medical/Surgical patients. Additionally, he advised that one of the main problems with these converted wards is the lack of access to secure outdoor spaces, which is one of the most important aspects of treatment. The reason why access to nature is so important is that if you are going to basically incarcerate someone for a defined period of time and you are worried about them harming themselves or others, putting them in something without exposure to the outdoors can very quickly develop into cabin fever. So, the best facilities in the US are designed with access to the outdoors and sunshine. Additionally, appropriate design therapeutics and aesthetics are critical as well toward the recovery and success of the treatment programs designed for the individual patient as their dignity, respect and privacy should be maintained without compromising the operational realities of close observation, safety and security. In accordance with the principles highlighted in the VA Facility Design
Guide, it states that “Patient and resident vulnerability to stress from noise, lack of privacy, poor or inadequate lighting, ventilation as well as subsequent harmful effects on well-being are well-known and documented as common problems in In-Patient Behavioral Health Facilities. A key architectural objective should be to reduce emphasis on the institutional aspects of care and to surround the patient with furniture, furnishings and fixtures that are not only appropriate from a safety standpoint but are more residential in appearance, providing the desired therapeutics to mitigate if not eliminate the aforementioned documented issues.” (DVA, 2010). Therefore, In-Patient Facility designs should not only adhere to design therapeutics but there should also be equal emphasis regarding patient and staff safety – increasing the potential for improved patient outcomes and for the staff providing the care.

Based on this information, three key questions arise that will serve to guide this research inquiry: 1) Are the current Military Health System (MHS) universal guidance criteria (space planning criteria, templates and Unified Facilities Criteria (UFC)) for In-Patient Behavioral Health effective for keeping patients and staff safe? 2) Are the current MHS universal guidance criteria (space planning criteria, templates and UFC) for In-Patient Behavioral Health effective for providing a therapeutic environment for staff and patients? 3) What improvements to the MHS universal criteria can be suggested with regard to balancing safety and therapeutic needs for patients, staff and family members? To adequately address these questions, a qualitative research approach (Creswell 2014) will be employed utilizing a case study research strategy (Stake 1995; 2005) and the use of multiple methods inclusive of qualitative and quantitative data. The objective of the study is to investigate how environmental factors of Military In-Patient Behavioral Health Units promote or deter two significant outcomes, safety and therapeutics, within three areas: private patient spaces (bedrooms); communal spaces (such as activity rooms, day rooms, etc.) and therapy areas (such as group therapy rooms). Additionally and with issues of Brain Health being a complex patient population that is difficult to understand and define (e.g. – Traumatic Brain Injury (TBI) and Post-Traumatic Stress Disorder (PTSD) may be associated but they are by no means
the same as they are many times utilized as interchangeable terms), it is critical to understand the history of the evolution of the Behavioral Health patient, programs that have evolved and been implemented over time catering to the patient’s needs, the facilities that were constructed (or lack thereof) to support Behavioral Health needs and finally ... the long-overdue success and recognition of accomplishments that have come or will soon come to fruition. With an understanding of the history of the military behavioral health, two MHS In-Patient Behavioral Health units will be studied to understand how built environment factors (BEF - space layout, hardware & fixtures and finishes & furnishings) are linked to safety and therapeutic outcomes through four facility related dimensions: Visual Appeal, Physical Comfort, Mental Comfort and the Absence of Hazards. Furthermore, multiple data collection methods will be utilized which include but are not limited to: the review of archived documents (floor plans, MHS Space Planning Criteria and Project Specific Information); interviews with clinical staff and technicians involved with space planning and treatment program management as well as onsite observations. Research findings will reveal how the aforementioned BEF positively or negatively influence the creation of a safe place for patients and staff as well as a therapeutic patient care environment. Data analysis and conclusions from this study will be provided to the MHS to potentially enhance space planning criteria and templates to enhance In-Patient Behavioral Health facility design for the present as well as into the future.

With such a broad array of personalities, unique conditions, individual experiences and unconventional factors that define individuals with Brain Health issues, there isn’t a patient population who are more dependent upon the aspects of therapeutics and safety regarding their treatment success. Safety must be adhered to for the comfort and confidence not only of the individual patient but also the staff members who are charged with the treatment and oversight of the individual patient’s care. Therapeutics must also be adhered to regarding the patient’s dignity and confidence as well as a unit that provides the same principles for the staff charged with the management, oversight and facilitation of individual care on a daily basis. As previously stated, the invisibly wounded are just as relevant as the visibly wounded as their
experiences in combat or peacekeeping missions are “no less of a sacrifice than that of the armless, legless or sightless” (Shay, 2000). Although individual cases and scenarios differ from service-member to service-member, it is important to realize that these individuals have given their all and in some cases, made the ultimate sacrifice to ensure that our freedoms and way of life are protected and sustained today as well as into the future. Therefore, the American fighting man and woman are due the best care that can be afforded to them and state-of-the-art facility designs must be a continued progression to compliment the innovative treatment programs and curative solutions that heal this unique population and help them get their lives and personnel affairs back in order.
LITERATURE REVIEW

Casualties of war have always been comprised of both the visibly and invisibly wounded, regardless of conflict location or historic point in time. Ever since man first picked up a weapon or raised a clenched fist toward what he declared as an enemy combatant, the aftermath consisted of what many deemed as honor through victory and shame through defeat. However, both sides failed to realize that all involved are technically losers to a degree as collecting the dead and wounded after the conflict were inevitable tasks. Along with the fortunate unblemished soldiers, the wounded were viewed as viable combat assets and with rest, nourishment and complimentary medicinal treatments – their minor injuries wouldn’t prevent them from future combat if called upon. With the mentally wounded, identification and diagnosis was and continues to be much more difficult to not only detect, but also determine the point where the “mental scab” disappears and the patient is free of the complication altogether. Additionally, there are mechanisms that might link conditions to specific experiences in war (e.g. depression can be a reaction to loss; stress can be a reaction to trauma, etc.). Unlike the physical wounds of war, these wounds remain invisible to other service-members, to family members and to society in general. The effects of these wounds historically were and still are greatly misunderstood today, leaving a large gap in knowledge related to how extensive the problem is and how best to handle it (Jaycox, 2008). These gaps in knowledge reside not only with the individual patient but also with the programs and facilities that are in place to identify, diagnose and foster an environment to adequately address and treat the problem.

With Behavioral Health continuing to exist as a complicated, globally misunderstood condition, a brief look at its history will provide a better understanding of the evolution of solutions and treatment program progress that has been achieved. These issues include an understanding of the patient, a summary regarding the reasoning and evolution of treatment programs as well as the facilities built that comprises the healing environment. Understanding the historical barriers and past complexities will provide a
greater appreciation for the successful employment of the tactics that clinicians, nurses and other mental health professionals who have had much of their work appear as invisible to military leadership as the mental wounds they work so tirelessly and persistently to resolve. The popular philosophical phrase “if we do not learn from history, then it is sure to repeat itself” has proven itself true within the field of Wartime Psychology and Behavioral Health through the past 100+ years. With the innovations, dedication and progress achieved through the hard work of talented military and civilian mental health professionals today, the faults and shortcomings of history will remain where they should, in the archives of the past. Hopefully, progress will continue to advance toward current and future success within this critical healthcare field.

Behavioral Health Patients and the Military – A Historical Overview

The concept of the Invisibly Wounded Casualty has changed considerably from times past when the symptoms of stress breakdown and issues with one’s mental health were thought to be proof of cowardice and thus were punished rather than treated (OTSG, 1995). These punishments are evidenced throughout time, consisting of a broad range of verbal and physical acts, where mental health patients were labeled as “dullards, morons or religious sinners”. These acts consisted of physical mockery, verbal harassment and torture (JCMIH, 1961) that was conducted within the facilities that were charged with the care of the patients. To make matters worse, these actions provided cheap thrills and amusement to the “passers-by” who engaged in and encouraged this cruel, inhumane treatment. Fortunately for the mental health patient, inconsistency in treatment programs and societal ostracism slowly but surely declined over time. Besides, these were people that were being dealt with that had families: brothers, sisters, spouses, mothers, fathers and grandparents that deserved to reside in respectable facilities coupled with moral treatment. Although they were hidden from society in facilities located deep within austere locations – they were not to be forgotten, especially those who had recently or historically performed wartime
military service. Obviously, deplorable living conditions such as this were not appropriate environments to show appreciation for military servicemen.

As an understanding of the combat stress casualty and battlefield environment increased, it was discovered that the most important lesson learned from previous wars is the need for timely and appropriate handling of stress casualties (OTSG, 1995). This is easier said than done as being a patient often involves a sense of loss that many cannot verbalize; uncomfortable circumstances that many times the patient will not verbalize nor will they openly admit that they require help or assistance. The reason for this is simple. Throughout a soldier’s military career, he is taught through training that it is best to “bottle up” feelings which could result due to particular occurrences (e.g. – loss of a comrade) that eventually exhibits itself through a broad range of behavioral health issues (OTSG, 2011). Also, military culture and concerns of possible career jeopardy can deter one from seeking the appropriate help, particularly at an early stage when symptoms may be more likely to respond to treatment (Richardson, 2012). These factors are still recognized as concerns today, originally recognized and classified through one of the most historically significant periods regarding military psychiatric patients – World War I (also referenced as the Great War.)

Since World War I, a combat psychiatric casualty has been defined as any militarily ineffective soldier (or organization) in whom the predominant factors producing ineffectiveness were of psychological (as opposed to physical) or neuropsychiatric origin (OTSG, 1995). During the early years of the war, it was believed that many soldiers had suffered concussions caused by exploding shells or bombs based on the nature and intensity of “trench warfare”, where artillery was one of the more effective means of engaging the enemy. Due to repeated shelling and tactics employed, there was an increase in combat psychiatric casualties where the diagnosis of “shell shock” arose, assigned to all soldiers who claimed to have been physically shelled or hit by incoming rounds (OTSG, 1995). Although there was a high volume of artillery
fire that fell upon soldier positions, it was eventually determined that many of the soldiers who claimed to have been shelled were not. Thus, the term “shell shock” was used primarily by many as an excuse to shirk their duties and justify relocation away from the front lines of the battlefield. However, it was soon discovered that treatment close to the front lines not only provided help and treatment to those who really needed it but it also helped determine which cases were legitimate or not. Unfortunately, just as medical personnel were starting to understand the techniques regarding the improved management of shell shock casualties, a new weapon appeared. In the last year of the war, artillery delivered gas emerged as the new threat. By 1918, close to 1/3rd of the artillery shells were filled with gas, making the horrific experience of chemical warfare now an ever-present threat. During the onset and throughout most of the war, high-explosive artillery had been the threat mainly through the repeated noise and concussive vibrations soldiers experienced through the impacts of the incoming shells that ripped the ground or decimated the targets they hit. Delivery of gas through artillery was slightly different. Delivered in the same manner utilizing the artillery shell, loaded projectiles made a “popping” sound instead of a “bang”, indicating that the spread of gas was imminent and would soon dominate certain sectors of the battlefield. Furthermore, gas provided additional psychological stressors beyond what was experienced with the high-explosive shell. Now, not only did they fear what they repeatedly heard and felt but now their confidence in the use of their individual protective equipment (mask) came into question. Furthermore, psychological stress intensity was increased by the addition of what they saw; humans becoming slimy creatures with blood gurgling from froth-corrupted lungs. Gas was then ... and remains today ... as much a psychological weapon as a physical one (Shephard, 2000) producing the same fears and horrific thoughts in soldiers as it did almost 100 years ago. Based on the success of this new psychological weapon, the term “war neurosis” soon came into play with soldiers latching onto this label to escape combat (OTSG, 1995), placing medical personnel into similar if not identical predicaments (valid and invalid psychological health claims) as was seen with “shell shock”. As the war began to draw to a close, many doctors hoped that this would bring about the end of psychiatric casualties and fortunately,
they were correct. Out of 2,500 patients that were awaiting return to the United States, 2,100 had been
restored to normal as the certainty of being safe “from the bullet” did more good than any doctor could
have ever achieved (Shephard, 2000). For the remaining 400 patients, concern arose regarding the length
and conditions of required treatment, if there was any treatment at all. Fortunately, an example provided
from an American Ally proved beneficial regarding the treatment and recovery of true psychiatric
battlefield casualties. Dr. Billy Tyrell, a British Officer who served within the Royal Air Force, had
“cracked” from Shell-Shock but after 6 months removed from the front line, he was returned to duty and
able to successfully serve once again. His recovery proved that it was possible for anyone to crack under
pressure but also possible to get oneself back into fight – showing that the word “Shell-shock” was
meaningless. The British justified deeming the term meaningless based on their observation that 90-95%
of “shell shocked” soldiers were suffering not from the shock of an exploding shell but from a nervous
breakdown brought about by fear, fatigue and horrific experiences (Shephard, 2000). So, mitigating
psychiatric casualties on the battlefield (mental health casualties inclusive of shell shock, war neurosis,
etc.) was greatly enhanced by properly adhering to individual soldier needs: proper nourishment, rest
and reassurance through leaders and peers. Unfortunately, many of the recorded lessons learned from
psychological professionals were not reviewed by all levels of military leadership – from the lowest non-
commissioned officer (NCO) to the most senior flag officer – which led to problems for the next conflict
the US would participate in, World War II.

Regardless of the level of understanding by military leadership regarding psychiatric casualties, medical
and psychiatric teams wanted to be better prepared than their wartime predecessors by implementing
selection programs to eliminate high risk psychiatric casualty personnel. At the onset of World War II,
psychiatry was given the task of screening out young men who appeared psychologically unfit for military
service. These men were rejected on the reasonable assumption that those with obvious neurotic
symptoms or personality defects would break under the stress of adjusting to military life in combat or
become troublemakers. Also, it was believed that if these defective or troublemaker personnel were not removed, they would impose a drain on effective troop strength and morale. Consequently, this theory was disproved as some personnel who were accepted into military service later broke down and some who were initially rejected and yet later accepted under looser standards did well. So, it wasn’t simply the absence of neurosis or psychosis within all individuals but for many, the presence of motivation and instilling a sense of individual as well as collective pride appeared to be key factors for success (JCMIH, 1961).

Beyond the psychiatric innovations, discoveries and accomplishments that occurred during World War II, nothing did more to put the psychiatric casualty on the map than the actions of then 3rd Army Commander, Lieutenant General George S. Patton, Jr (See Figure 4). On 10 August 1943, 21 year old Army Private Paul G. Bennet was admitted to the 93rd Evacuation Hospital as he was experiencing trouble sleeping at night due to his buddy being wounded. Additionally, his condition was intensified by repetitive incoming artillery shells coming in around him. So, when LTG Patton entered the receiving tent to speak with his injured men as he had done so many times before, he saw Private Bennet sitting on a litter, huddled up and shivering. When the LTG asked what his trouble was, he sobbingly replied “It’s my nerves”. The General yelled at him, “Your nerves, hell; you are just a Goddamned coward, you yellow son of a bitch.” He then slapped Private Bennet and said, “Shut up that goddamned crying. I won’t have these brave men here who have been shot at seeing a yellow bastard sitting here crying.” LTG Patton then turned to the hospital staff and yelled, “Don’t admit this yellow bastard; there’s nothing the matter with him. I won’t have the hospitals cluttered up with these sons of bitches who don’t have the guts to fight.” He then turned to Private Bennet once again and said “You’re going back to the front lines and you may get shot and killed, but you’re going to fight. If you don’t, I’ll stand you up against a wall and have a firing squad kill you on purpose. In fact”, he said, reaching for his pistol, “I ought to shoot you myself, you Goddamned whimpering coward” (Province, 1983). When word of LTG Patton’s actions reached General
Omar Bradley, he held the complaints in his own personal files knowing the importance of Patton to the overall war effort. However and as it turned out, medical officers by-passed the normal channels and sent a second set of reports through medical channels to the High Command at Eisenhower’s headquarters (Province, 1983). LTG Patton’s actions toward the young private soon hit the media and newspapers, striking a heavy political blow toward Patton’s future service in the military. However, as harsh as his actions may have been, they were successful in sending at least two powerful messages: 1) Soldiers attempting to “shirk” their duties would receive tough punishment and 2) The American public now knew that casualties beyond the visibly wounded did exist.

Although criticized by many, LTG Patton’s treatment of Private Bennet was the common view of many officers and soldiers alike within the military. Additionally, LTG Patton was a combat veteran of World War I who as a young officer had seen soldiers shirk their duties and take advantage of the “shell shock” diagnosis which in turn had demoralized entire units. With that experience, Patton coined one of his maxims as “Cowardice is a disease and must be checked immediately, before it becomes epidemic.” In a special memo to the Seventh Army dated August 5, 1943, Patton said, “It has come to my attention that a very small number of soldiers are going to the hospital on the pretext that they are nervously incapable of combat. Such men are cowards and bring discredit on the Army and disgrace to their comrades, whom
they heartlessly leave to endure the dangers of battle while they, themselves, use the hospital as a means of escape. You will take measures to see that such cases are dealt with at the unit, not hospitals” (Province, 1983). The final sentence of his maxim may have proven beneficial (although inadvertently) toward field psychiatric treatment as it was later proven that treatment for casualties of this type was best handled as far forward as possible. Consequently and as the war progressed, the problem of the appropriate methods to handle and discharge psychiatric casualties once redeployment back to the United States occurred soon began to trouble psychiatric teams. It came to attention of the public that as these men began returning home, some were hospitalized while others were left idle to make their own adjustments back into civilian life. Compounding the problem was the fact that many of the returnees who had successfully survived combat often displayed symptoms of anxiety, which in turn was a new set of circumstances encountered during the return home period (JCMIH, 1961). Similar to World War I, many innovations and discoveries were derived from combat experience in World War II. However, upon surrender by the Axis Powers and redeployment of troops back to the United States, psychiatric issues were once again regarded as low priority and for the most part were consumed by a more dominant healthy force. These issues were not to be reviewed or studied until years later when involvement in a different kind of war evolved – one that was like no other that the United States had engaged in before.

US involvement in the ground war in Vietnam (1965-1972) began on March 8, 1965 in response to increased fighting between South Vietnam (an ally of the United States), indigenous communist forces (Viet Cong guerrillas) and those from South Vietnam’s neighbor to the north, the Democratic Republic of Vietnam (North Vietnam). In early May, the first US Army troops (the 173rd Airborne Brigade) arrived in South Vietnam as part of an enormous military effort by the United States and other allies to block the spread of communism in Southeast Asia. From the outset, the organization of psychiatric services was weighted in favor of the treatment and rehabilitation of combat stress casualties. This plan did not materialize regarding the type and number of casualties originally envisioned. However, an
unprecedented flood of psychosocial casualties emerged instead. Following the war, the Army Medical Department did not commit to developing a historical summary of psychiatry in Vietnam or study these problems for “lessons learned.” Furthermore, the Army evidently lost, abandoned or destroyed documentation at the conclusion of hostilities. Sadly, this material could have served to improve the quality of life for US soldiers who served in Vietnam as well as future wars (OTSG, 2011). Regardless of the circumstances with psychosocial patients, the overall incidence of psychiatric and behavioral difficulties among deployed Army troops in Vietnam in the initial years was held to levels no greater than if they were still stateside. The period referred to as the “transition” proved otherwise where in 1968, the Tet (Lunar New Year) Offensive launched the bloodiest year in Vietnam for US forces, where 16,592 were killed in action (KIA). Although these attacks by the communist guerilla forces were extremely costly and achieved little if anything militarily, the political yield was enormous. On March 31, 1968, President Johnson announced that he would halt the bombing over North Vietnam as a prelude to peace negotiations. America had begun to disengage, yet the fighting continued amid patrols, sweeps and ambushes which appeared to result only in more danger, discomfort and casualties (OTSG, 2011). Other factors that compounded on the mental struggles experienced by US Soldiers in Vietnam was that the US public learned that in 1968, several hundred Vietnamese civilians from My Lai were massacred by a US Army unit (OTSG, 2011). From this point forward, all seemed to worsen not only from the standpoint of legitimacy for the war effort but for the plethora of psychological problems and issues that evolved. One example was the “short-timer’s syndrome”, which is the belief that one’s chances of being killed are increased and therefore, that individual is prompted to attempt avoidance of all risks which was a frequent occurrence in many soldiers in Vietnam prior to their rotation home (OTSG, 1995). Other problems that occurred were far from the battlefield as the demoralization and alienation of combat soldiers from Vietnam often took the form of other psychiatric and behavioral health problems: drug abuse, racial incidents, misconduct and insubordination presented problems for the Army and Army psychiatrists on an unprecedented scale. These problems were even greater with support soldiers who
were far from combat operations and the front lines, but even combat unit troops challenged authority. Especially dramatic was the skyrocketing out-of-country psychiatric evacuation rate, which had remained below 5/1,000 troops per year throughout the war until 1971. By July 1971, it had risen to 42 and by July 1972, the rate had climbed to 130. In other words, one out of every eight soldiers was being medically evacuated from Vietnam for psychiatric reasons (primarily for heroin dependency) (OTSG, 2011).

Additional stressors on the returning veteran were the “other than warm reception” that many received upon their return home, being hailed as monsters instead of heroes from merely doing what they were ordered to do. One combat veteran vividly recalled his experience upon redeployment: "The day I returned home, a woman of my own age walked up to me with several of her friends at the airport and asked me if I had been to Vietnam. When I responded that this was my first day home, she spit in my face and the group let loose with a barrage of insults. I don’t think that she knew that it is not possible to wipe that spit clean and it is on my face today" (Shephard, 2000).

More than any other war in the 20th century, Vietnam redefined the social role of psychiatry and society’s perception of mental health. An example was the public attention gained on 30 April 1971, the day that Medal of Honor recipient Sergeant Dwight Johnson was shot. Awarded the United States’ highest decoration for valor, Sergeant Johnson had single-handedly knocked out 20 enemy soldiers during a raid on his position and went on to serve with distinction for another 2 years until he came home, finding it extremely difficult to re-adjust to civilian life. Sergeant Johnson soon became convinced that the Army had exploited all black soldiers and made no effort to help them afterwards – and Army Psychiatrists did not change his view. Frustrated, he decided to rob a liquor store within his rundown Chicago neighborhood where he was shot and killed. The fact that a heavily decorated soldier behaved in this manner shocked the public and turned their focus toward the need to better address and adhere to the growing list of Veteran Behavioral Health issues (OTSG, 2011). Another example occurred in January 1975 when New York Times columnist Tom Wicker told the story of a Vietnam Veteran who had slept with a
pistol under his pillow and consequently shot his wife as the result of horrific reoccurring nightmares. Wicker wrote that this was only one example of the serious and largely unnoticed problem of “Post Vietnam Syndrome” which was the label given to categorize hundreds of thousands of Vietnam Veterans psychological difficulties. Additionally, Wicker also presented statistics reflecting that 38% of married soldiers were divorced within 6 months upon return from Vietnam, more than 500,000 had attempted suicide and over 175,000 had used heroin since returning to civilian life. In the decade that followed the war, the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (DSM-III) contained the new category “Post-Traumatic Stress Disorder or PTSD”. Originally called “Post-Vietnam Syndrome”, the term PTSD was approved by the American Psychiatric Association in 1980 in the hopes of diagnosing, categorizing and providing treatment to not only those that had been identified and were receiving help at that time, but also for the estimated 500,000 – 700,000 veterans that were still in need of some form of Behavioral Health Treatment (OTSG, 2011).

Almost 100 years since the conclusion of World War I, the Army has taken steps to adjust policy and reduce the negative stigma associated with behavioral healthcare and the psychiatric casualty. Further change must continue to occur within the broader perspective of national culture, but it is off to a good start. For instance, GEN Chiarelli (previous Vice Chief of Staff of the Army) indicated in a November 2011 interview that “PTSD continues to carry a stigma, especially amongst young Soldiers”. He advised that “there is a stigma attached to any mental illness and to convince a 19-year-old soldier who thinks he’s invincible that he’s got an issue is a daunting task.” For this reason, GEN Chiarelli (among others) has voiced his desire to change the “D” (Disorder) to “I” (Injury) in PTSD, to dispel the perception that the word “disorder” reflects an individual weakness. Use of the word “injury” more accurately characterizes the trauma associated with this condition, but this change will require collaboration with national medical organizations (e.g., American Psychiatric Association) to assess the impact of diagnosis (HQDA, 2012).
Regardless if the change is accepted or not, this is proof beyond the medical community alone that people are starting to recognize and better understand the complexities of the “invisibly wounded” soldier.

**Behavioral Health Programs and the Military – A Historical Overview**

General Creighton Abrams Jr., 26th Chief of Staff of the Army was quoted saying “Soldiers are not IN the Army; Soldiers ARE the Army” (HQDA, 2012). With the Army being all about people and wanting to ensure that programs are in place of varying magnitudes to ensure that the needs of these human resources are met, quality programs supporting education, training, logistics and medical services are amongst the main concerns. Medical service programs, consisting of both physical and mental health (visibly and invisibly wounded) needs, have slowly evolved over time but program evolution has been comprised of multiple progressions as well as digressions. These digressions historically have and continue to exist in the form of understanding program benefits by senior leaders; the logistical and financial complexities that can occur if programs do not exist to address the injured or aid in the selection or rejection of potential military service personnel. So, as with all branches of medicine, psychiatry’s involvement with the military during the wars of the 20th century had a significant effect on the discipline. Before World War I, virtually all American psychiatrists worked within mental health asylums with institutionalized individuals that had severe forms of mental illness. At that time, there were no specific treatment programs or methods available to address asylum patient needs and the concept of field psychiatry for the military was unheard of let alone treatment programs for the soldier. Additionally, the professional status of psychiatry as a medical specialty was low (Pols, 2007). With that being said, a review of the history of mental health programs will provide an appreciation of just how far progress has come over the past centuries.
The idea of basing medical treatment for disease may trace back as far as the Old Testament, where the belief that disease of any kind (mental or physical) represented punishment for sin. Relief for these varying ailments was obtained through a myriad of procedures: purging, bleeding, inducing vomiting, shock treatment through “water cures” (dousing, ducking and near drowning), chair spinning, centrifugal swinging and electric shock – all of which were geared toward driving out evil spirits or toxic vapors (JCMIH, 1961). Other treatment methods consisted of steam therapy as well as wrapping the patient in a series of wet blankets (See Figures 5 –7).

Success with the aforementioned patient treatment methods is questionable as the main noted accomplishment was to keep the patient calm and docile for additional treatment. Perhaps one of the most ground-breaking program innovations regarding the practice of field psychiatry was developed in 1869 by New York neurologist Charles Beard. Dr. Beard coined the term Neurasthenia, referring to nervous exhaustion brought about by overwork or overindulgence, taking on what would now be called depression and/or mood disorders (Shephard, 2000). Treatment for this disorder was devised by Pennsylvanian Neurologist Silas Mitchell, which consisted of isolation, complete rest and “excessive feeding”. The rationale for this curative solution was that the body contained a finite amount of “nerve force” and like batteries; they eventually required recharging which led to the application of mild electric current to the body to recharge drained nerve batteries. Other treatment programs during this period that varied from hospital to hospital ranged from discipline and physical exercise to a treatment program
consisting of isolation, rest and electrical stimulation of the muscles (Shephard, 2000). These unique program treatment tactics were employed to provide an approach of total healing to a field that wasn’t really known or understood by the medical community, let alone the average military leader and soldier. Therefore, Psychiatrists were brought in because they seemed to have ways of alleviating the suffering of war and a means to reassure society that everything possible was being done and would be done for the soldier as required both in garrison and wartime settings (Shephard, 2000).

With the non-existence of Field Psychiatry as a professional military discipline prior to World War I, a leader was needed to emerge and initiate planning and program implementation specifics to address soldier mental health needs and that leader was a psychiatrist named Dr. Thomas W. Salmon (See Figure 8). Recognized as the main architect of the US program of military psychiatry during World War I (Pols, 2007), Dr. Salmon advised the US armed forces on what he considered two significant military psychiatric principles 1) Screen and exclude recruits that are “insane, feeble-minded, psychopathic and neuropathic” and 2) ensure soldier treatment is conducted by psychiatric trained medical officers as far forward as possible (Shephard, 2000). Individuals to be screened or excluded included those with schizophrenia and mental retardation; conditions that would clearly limit the ability of one to adequately provide military service. This program enabled the US military to reject 2% of its inductees, but no data was captured regarding the effectiveness of this screening program. However, the general opinion at the end of the war among psychiatrists and military leadership alike was that there were too many cases of mental breakdown on the battlefield because screening had not been stringent enough. In response to this concept, a psychoanalyst named Harry Stack Sullivan was appointed to the Selective Service System as a consultant to expand upon the development of an effective soldier screening program. Perhaps one of the most logical and philosophical principles that Sullivan brought to the screening program (See Figure 9) was his belief that the US armed forces should exclude not only individuals suffering from mental illness but also those with neurosis or maladjustment. His reasoning behind this principle was that he believed
that individuals who had been unable to adjust to the demands of civilian life would never adjust to the demands of Army life (Pols, 2007). The American Post-World War I experience was unfortunately riddled with several complications that continued to mount within the field of military psychiatry. An example was the long delay in treatment for ex-servicemen with psychiatric problems. When it became clear at the end of 1919 that mental and nervous cases constituted over 38% of all hospitalized veterans, a single body (The Veterans Bureau – later Administration) was created. This institution initially was not readily accepted by the general public or by those who held significant political positions of authority. However, through the creative verbiage and work from “the mothers of insane soldiers”, support and progress for psychiatric cases and Bureau establishment grew, enabling its formation in 1922 (Shephard, 2000). During the same time period, a young doctor named Abram Kardiner dedicated himself to studying only chronic wartime cases. Although he knew little of battle or the horrors of combat, he published a book entitled *The Traumatic Neurosis of War* in 1941. Although his work had little if any impact on American military preparations for World War II, Dr. Kardiner would ultimately prove to be one of the most influential writers on the topic as his book was used as “The Bible” for wartime mental health casualties from Vietnam (Shephard, 2000).
Simultaneously, Great Britain had a slightly different war-time experience than the lessons learned by the United States, mainly regarding the emergence of new distinctions for war neuroses. These new distinctions consisted of categorizing patients as true, false, acute and chronic. Chronic neurosis was the most extreme of the distinctions as it was applied to men with mentally disabling symptoms that would continue to plague them long after a war ended. Additionally, it was thought that the amount of stress endured before a breakdown was the measure of a man’s original stamina and directly related to how he would respond to treatment. On the other hand, those categorized as “false neurosis” were deemed incapable of adapting to Post-War life. Even if there had been no war, it was determined that these men would have broken down from one thing or another under the stress of standard occurrences in everyday life (Shephard, 2000). Additionally, if there was one lesson that the British doctors took away from their experiences in the Great War, it was the need for personnel selection. They concluded that there could not be “misfits” or “congenital defectives” on any future battlefield and this would be accomplished through effective screening and recruit examinations. However, this now created a new problem in regards to selection criteria: what criteria should be used to assess a man’s soldierly fitness? Regardless, screening did occur by Doctor’s but lasted around 6-7 minutes with the obviously unstable recruits eliminated from the personnel selection pool. However, if a man was a bit slow but well-muscled and fit, the British thought he was ideal and “just the right stuff for the Army”. With this erroneous criteria assumption, a considerable number of men (referred to as dullards) were admitted into the Army where many possessed IQs within the range of 70 – 90 (Shephard, 2000).

Treatment programs during the timeframe that surrounded World War I targeted treatment through the minimized use of medications. Many at John Hopkins’ University (Baltimore, Maryland) believed that drugs such as arsenic and laudanum did more harm than good and that the body often fought disease better in the absence of medications. However, the 1920s brought about new drugs (barbiturates) whose use were widespread, followed by sulphanamides in the 1930s and then later, penicillin. Successful use of
these medications inspired drug research (cocaine, hashish and countless others) that were evaluated against all types of mental disorders, establishing optimism toward modern medicinal techniques. Out of all the drugs tested during this time-period, Barbiturates were the most promising as they produced the greatest degree of success (Shephard, 2000). In 1933, the use of the barbiturate Sodium Amytal was attractive to psychiatrists trying to reach “difficult” patients as it was successful in accelerating psychotherapy. With the increasing popularity of this new “truth drug”, experiments continued with noted success as it was also utilized as an effective sedative that minimized confusion, drawing information from patients in one hour that normally required a month utilizing traditional methods (Shephard, 2000). Additionally, drugs were also effective with extreme cases (such as severe anxiety, hysteria, etc.) through deep sleep treatment. In some cases, patients were kept asleep for weeks upon which they would awake refreshed. These dramatic results suggested that it was possible through the effective and timely use of drugs that psychiatric disasters of the past could now be avoided: the long hysterical cases, the war pensions and the wasted lives (Shephard, 2000).

World War II (1939-1945) brought about new tactics and techniques regarding field medicine (treatments and curative solutions for both physical and mental patients). Doctors in the United States had heard stories of strange new diseases with origins in the stress and special horrors of modern warfare which had presented problems and a great deal of difficulty for the British Army. Therefore, the first published reports were eagerly read by American Neurologists and Psychiatrists who realized that they soon may be dealing with similar circumstances under similar if not identical conditions (Shephard, 2000). In 1940, the majority of the American psychiatrists were still based in mental hospitals with only 35 involved with the US Armed Forces. The concept of Field Psychiatry and the services it could provide to soldiers in a combat setting was still not understood or appreciated by all within the military leadership chains. By the end of the war, the number had risen to nearly 1,000 psychiatrists which was just short of one third of all American psychiatrists (Pols, 2007). A positive tied to this massive employment of psychiatrists was the
experience gained along with new perspectives regarding war neurosis and soldier mental capacity. In general, they came to understand that a man’s capacity to endure in war was determined by many factors inclusive of heredity, upbringing, societal pressures, feelings about the war, relations to fellow soldiers, the length of time he had been fighting and whether or not his wife or girlfriend had been faithful. With the recognition of these factors originally existing in soldiers or candidates being considered for military service, psychiatrists found that the impacts affecting a soldier’s performance was way beyond military circumstances alone (Shephard, 2000), thus highlighting the importance of candidate screening.

However, the benefits of this process were not viewed with positive consistency by all. An example was seen with the United States and Great Britain as their view on the screening of candidates was completely opposite. The only similarity between the two countries was an awareness of the cost of past mistakes which both hoped to avoid (between the wars, the United States government had spent almost a billion dollars on the psychiatric problems of veterans with nearly $42M during 1940 alone). Every psychiatric casualty, it was estimated, cost the American taxpayer some $30,000 and some argued that they could be identified in advance, provided that the interviewer was given adequate time (at least 15 minutes) to conduct the individual interview with the appropriate amount of background information. Others doubted whether you could or couldn’t predict a man’s behavior in battle (Shephard, 2000). For the most part, the screening process was effectively planned and implementation was widespread but the expected results did not materialize during as psychiatrists had hoped. The reported incidence rate of war neurosis amongst the United States Military alone was at least double that of what was seen during World War I. The unexpected, dramatic failure of selection combined with the pressing military need for manpower led military officials to severely criticize psychiatrists, resulting in an order in 1944 from General George C. Marshall abolishing military screening altogether. To further compound the issue, many men who had been previously recommended for rejection on psychiatric grounds were inducted into military service after all (Pols, 2007). With the British Army, operations at Dunkirk led to a unique partnership between a Clinical Researcher, Ronald Hargreaves and an Artillery Corps Commander who
had served at Dunkirk, General Sir Ronald Adam. To the British, the concept of candidate selection through intelligence testing was considered the potential instrument to solve the Army’s manpower problems, believing that it would eliminate “unsuitable and inadequate men” whom research showed to be more inclined to pose disciplinary problems through desertion, insubordination, etc. The process seemed logical and sound but legitimacy to prove the full spectrum of the test was still required. The test was therefore administered to available soldiers as well as to General Adam himself. When the General took the test, he got every question correct and in record time, proving the legitimacy of the test and providing the required testing profile to validate the process (Shephard, 2000). With the results providing favorable results as hoped for by Adam and Hargreaves, they now shared a vision of “personnel selection” to create a new kind of Army altogether: mechanized, technical and specialized. War now seemed to involve brains and special technical skills as much as brawn and physical fitness (Shephard, 2000). Other innovations and concepts to improve individual soldier health continued to evolve during World War II. In 1944, Dr. John Appel (a Psychiatrist serving on Chief, US Army Psychiatrist’s Staff in Washington) produced a report stating that there was no such thing as “getting used to combat”. The report showed that practically all men who were not otherwise disabled ultimately became psychiatric casualties. Additionally, it was believed that the average man could last between 200 and 240 combat days before becoming ineffective as a soldier (Shephard, 2000). Therefore, Dr. Appel proposed that the Army set a limit, a “tour of duty” so to speak, of 210 days which gave the soldier something to look forward to; attempting to bolster the morale of the infantryman and front line combat troops (Shephard, 2000). Additionally, research conducted after World War II demonstrated that only around 40% of all armed forces cases of nervous breakdown took place overseas (and only a fraction of these in personnel at the front lines), whereas around 60% occurred amongst personnel within the United States. These findings indicated that psychiatric disorder was not primarily related to extended frontline duty as many had expected, but to a variety of other factors which included a lack of morale (Pols, 2007). In 1946, the American psychiatrist G.W. Beebe was quoted saying that “Each moment of combat imposes a strain so
great that men will break down in direct relation to the intensity and duration of their exposure. Thus, psychiatric casualties are as inevitable as gunshot or shrapnel wounds in warfare (OTSG, 1995) and they are inevitably going to occur in garrison and during training as well.

Military Psychiatric success in Korea was observed through the implementation of psychiatric management programs that consisted of rotating soldiers off the front line upon completion of nine months of service. This program reduced psychiatric casualties down to almost nothing. With the successes encountered during the Korean Conflict, military psychiatry was established as a separate branch of American Military Medicine based on the lessons learned from a simple formula – PIE: Proximity, Immediacy and Expectancy. In general, this formula was indicative of psychiatric casualties being treated as close to the front as possible (proximity) as soon as possible (immediacy) and in an atmosphere that encouraged return to their unit (expectancy) (Shephard, 2000). Establishment of Military Psychiatry as a separate branch in the Army was such a monumental success that in 1952, it was complimented by the American Psychiatric Association’s attempts to condense multiple psychiatric terms, the misunderstandings and mental disorder diagnosis into a sole format or language for Psychiatry. This was accomplished through the publication of a standard classification system, better known as The Diagnostic and Statistical Manual of Mental Disorders or DSM-I (Shephard, 2000) – a reference that was revealed as one of the most ingenious publications of the period as it still is today.

When the United States committed to provide support for the Vietnam War, the concept of routine screening of inductees was one again abandoned where only persons with extreme psychiatric disabilities were rejected. Adding to the problem was that the Pentagon, as part of the Great Society Program to provide opportunities for the disadvantaged, relaxed the standards regarding recruit intelligence in order to meet manpower needs. Conceptually, this program had good intentions and seemed like an ideal program to bolster not only the economic status of potential candidates but also provide opportunity for those who previously hadn’t had any. However, the relaxed standards allowed for the acceptance of
candidates with IQs as low as 62 who were cruelly labeled as McNamara’s Morons (after Secretary of Defense Robert McNamara) (Shephard, 2000). Additionally, the number of psychiatrists who served in Vietnam was considerably fewer than the more than 2,400 psychiatrists who eventually served in World War II. Other circumstances contributing to an incomplete Military Psychiatric History in Vietnam was forced heroin usage studies that occurred late in the war. These studies were not published for fear of the repercussions that could result from the data that evolved from the findings. Additionally, of the 27 psychiatrists who served with the Army and who published accounts, 82% (22) were assigned there during the first half of the war (1965–1968). Also, of the 46 publications from the entire group of 24 individuals, half appeared in the US Army Vietnam Medical Journal—a publication whose circulation was exclusive primarily to Vietnam where the publication ceased in 1970 (OTSG, 2011). Regardless, the medical support was outstanding in Vietnam, despite the hostile physical environment and Vietnam’s geographical remoteness. The build-up of Army medical units was completed in 1968 when 11 evacuation, 5 field and 7 surgical hospitals were in place. These facilities, plus the 6th Convalescent Center in Cam Ranh Bay, brought the total bed capacity in South Vietnam to 5,283. Most importantly, the new helicopter ambulance also permitted rapid evacuation of the wounded to the most appropriate level of medical care. Therefore, comparing the ratio of KIA to WIA across wars attests to the superiority of medical care provided in Vietnam (World War II, 1:3.1; Korea, 1:4.1; and Vietnam, 1:5.6). In planning medical support for Vietnam, the Army Medical Department assumed that the greatest psychological threat to the force would be the “breaking point” of soldiers exposed to sustained enemy fire (e.g., “combat exhaustion”—now labeled as “combat stress reaction”). The refined treatment philosophy from World War II and Korea had military planners confident that this system would promote the conservation of military strength and that it would reduce morbidity in affected soldiers. Division Psychiatrists were assigned to combat divisions (composed of 15,000–20,000 soldiers) or more specifically, their medical battalions with allied mental health personnel. Hospitals were also assigned psychiatrists along with allied mental health personnel where their first priority was to provide inpatient treatment for referrals from the combat
Efforts to understand soldier stress and resilience in Vietnam also have to take into account the influence of the draft (stress inducing) as well as the effect of the military’s replacement policy of individualized, 1-year tours. The 1-year tour was intended to be stress reducing because these soldiers would perceive their obligation and risk as limited. However, over time the depletion of experienced military personnel in theater (both commissioned and noncommissioned officers) had an immense negative effect on cohesion and morale (OTSG, 2011). The effect was exhibited through the coining of the diagnosis popularly termed as “Short-Timers Syndrome”, where the reluctance of soldiers to risk their lives increased as they approached the timeframe when their year was nearly up (Shephard, 2000). This syndrome produced problems on multiple scales: combat ineffectiveness, questionable abilities to complete missions and loyalty to members within the unit. Many years after the Vietnam War had concluded, the American Psychiatric Association successfully gained the acceptance and definition of a new term – Post-Traumatic Stress Disorder (PTSD) – that in 1980 was included in the DSM-III (Shephard, 2000). PTSD was originally seen as something that happened after extreme life-threatening events occurred to or was witnessed by an individual. However, detailed studies showed that while rates of PTSD are uniformly high after certain stressors such as rape, occurrence is more probable after combat and comparatively low in workers in the emergency services. At the same time, it was discovered that some people develop symptoms of PTSD after exposure to minor stressors (Shephard, 2000), indicating again that it was not so much the event but mental capacity and level of tolerance within the individual. Additionally, inclusion of the term PTSD within the DSM-III now provided a menu of its symptoms that were easy for both doctor and patient to read. The standardized packages now included in the reference provided diagnostic questionnaires and psychometric devices to aid with properly diagnosing disorders. No longer was the surgeon required to review and understand a patient’s life history and personality. The checklist of symptoms told the physician whether the patient’s condition was PTSD or not from an objective point of view (Shephard, 2000). Furthermore, Psychiatric Disability after Vietnam was believed to be related to pre-existing conditions, prompting a major shift in psychiatric
interest in war-related psychiatric disability. Fifteen years after the U.S. withdrew from Vietnam, an epidemiological survey concluded that 480,000 (15%) of the 3.15 million Americans who served were suffering from service-related PTSD. A range of explanations have been offered to explain the extraordinarily high rate of PTSD but the media emphasized that soldiers entered and left the war as individuals instead of in close-knit units. They also returned to a polarized United States where they were often reviled as villains instead of celebrated as heroes coupled with the pains of stigma and high unemployment (Pols, 2007).

Treatment programs initiated after the Vietnam War concluded that group therapy was the most effective and efficient use of the patient and psychiatrist’s time compared to individual interviews. Group therapy enhanced patient comfort and allowed the psychiatrist to observe him in a quasi-social environment instead of the artificial atmosphere created by the consulting room (Shephard, 2000). With success achieved as a result of group therapy sessions, the psychiatric profession wanted to keep things moving forward and provide assistance to Veterans who may have been erroneously screened upon redeployment or misdiagnosed with symptoms of PTSD. Therefore in 1981, the Vietnam Veterans Outreach Program was created in Out-Patient Clinics with the hopes that the program would be put in place, do its job providing enhanced diagnostic assistance and treatment for what was anticipated to be a small group of Veterans and then dismantle. However, when the Vets started coming to the centers, they kept coming to the point that Congress had to renew the program in 1981 and 1983. By the mid-1980s, Vet Centers were treating more than 150,000 vets per year and another 28,000 were in treatment for PTSD in one of the 172 Veteran Administration Hospitals (Shephard, 2000). Drastic improvements regarding Behavioral Health continued after the Vietnam War, have continued today and will continue on through the future. Attempts to research and provide optimal Field, Inpatient and Outpatient Psychiatric Services continue as Behavioral Health Treatment Program Developments cannot cease with the growing patient population that seems only to have evened out in the past few years with the reduction of activity
in Iraq and Afghanistan. In the Garrison or home-station (clinic or hospital) settings, Behavioral Health Management Operations have drastically improved as well. Historically, the Medical Treatment Facility (MTF) Commander had exclusive control over what happened inside the Behavioral Health Clinics that he was responsible for. Under this methodology, there were a few superiorly managed Behavioral Health clinics with outstanding leadership as well as clinics with other than outstanding management and leadership (HQDA, 2012). This resulted in the lack of standardization in the delivery of care with no centralized or standard policies from the Office of the Surgeon General (OTSG) or the US Army Medical Command (USAMEDCOM). Additionally, all funding was managed through local MTF Resource Managers (RMs) rather than funding management conducted in a more equitable manner to fund activities. Upon discussion with a Behavioral Health Expert at Fort Sam Houston, he advised that as of 2010, “the ability to manage the funding, resources, data analytics, feedback review and analysis was centralized, providing a more equitable and standard distribution of resources across the Army. To better support the management and oversight of these programs and resources, a Behavioral Health Division was established at USAMEDCOM to oversee program execution and a Division at OTSG to manage leadership inquiries and program issues in Washington, D.C.”

In general, programs regarding forward treatment were developed and refined during World War I, World War II and the Korean conflict. For the casualties of these conflicts, those principles worked reasonably well (Since World War I, forward treatment returned 40%-90% of stress casualties to combat within days). Treatment failures (when they occurred) happened when forward principles were not applied in such conditions that overwhelmed medical resources and forced evacuation in high-intensity conflicts (OTSG, 1995). During the Vietnam War, mental health teams became an integral part of the fighting force. On the basis of the experience of military psychiatrists of previous wars, the US military has implemented extensive strategies to target combat stress, believing that all service personnel are potential stress casualties. “Combat stress control teams” are responsible for prevention, triage and short-term
treatment with the purpose of retaining manpower and maintaining operational efficiency (Pols, 2007). Building upon the lessons learned from the aforementioned wars, improvements in Soldier Protective Equipment and Combat Casualty Care have drastically reduced mortality rates. On the other hand, casualty rates have increased for Soldiers as they now suffer with the sustained injuries and behavioral health issues they acquired in theatre. Operations Enduring Freedom and Iraqi Freedom, for example, had a fatality to wounded ratio of 1:5 and 1:7.2 (respectively) as of November 2009, compared to the ratio in Vietnam that was 1:2.6. Additionally, the Army increased its Outpatient Behavioral Health access and delivery by more than 10% in Fiscal Year (FY) 2011 to address the surge in behavioral healthcare that rose from 253,773 individual soldiers in FY2010 to 280,403 in FY2011. Based on this increase, Army leadership now understands that behavioral health contacts is essential in maintaining soldier health in high-risk occupations associated with sustained deployments and the effects of war (HQDA, 2012).

Furthermore and one of the most logical solutions to improving Behavioral Health was the establishment and “embedding” of an outpatient clinic at the Brigade Combat Team or BCT (The BCT is the lowest level of treatment at the Operational Unit Level). Comprised of 7 Psychological Health personnel, they offer the full spectrum of outpatient care to keep the soldier close to his unit, his peers and his leadership to speed his recovery for Return to Duty (RTD). Additionally and according to a Facility Planning Expert, the development of this asset has paid huge dividends as patients now have providers in the units to talk with and they don’t feel ostracized. No longer are they looked at and referred to as “the Head Case that needs to go to the building on the hill”. Now, Behavioral Health Issues can be addressed and/or treated at the unit level just as a bruise, common cut or any other type of problem which is huge for soldier dignity and unit cohesion. In other words, today’s leaders recognize the holistic approach of treating both the mind and body to create effective soldiers and cohesive combat teams (HQDA, 2012).
Behavioral Health Diagnosis – Traumatic Brain Injury & Post Traumatic Stress Disorder

Several conditions associated with a soldier’s Brain Health exist today that have plagued and continue to plague service members, regardless if they are conducting overseas deployments or performing home-station operations in the United States. If not addressed in a timely manner, these conditions can result in unfavorable actions that can take a toll on the health of the soldier as well as those he comes in contact with. These conditions include but are not limited to Battle Fatigue, Stress, Depression, Post-Traumatic Stress Disorder (PTSD), Traumatic Brain Injury (TBI) and Poly-Trauma. The primary conditions that are most commonly seen at Behavioral Health Facilities are PTSD and TBI. Both conditions CAN be associated with each other, but they are commonly misused as interchangeable terms by the general public, proving society’s clear misunderstanding of both conditions.

Unfortunately, the effects and symptoms of PTSD and TBI are often invisible to the eye. Unlike the physical wounds of war that maim or disfigure, these conditions remain invisible to other service-members, to family members and to society in general even though they affect mood, thoughts, and behavior. The effects of Traumatic Brain Injury (TBI) are still poorly understood, leaving a large gap in knowledge related to how extensive the problem is or how to handle it (Jaycox, 2008). Compounding on the issue is the fact that military personnel can experience the same stressors as civilians but also experience unique stressors from the military. Some potential traumatic military events include combat, imprisonment, torture, witnessing atrocities, comrades being wounded or killed or rescue missions following natural disasters. Additionally, deployed members can be exposed to long separations from their families and friends and ongoing financial strain might add to the distress experienced after they return home. Peacekeeping missions (such as those conducted in Bosnia, Somalia and Rwanda) have also contributed to the problem as complex Rules of Engagement many times have prevented active intervention and resulted in a feeling of vulnerability to attack. On the other hand, non-military stressors
and trauma that service members can also be exposed to include but are not limited to rape, motor vehicle accidents and assault. (Richardson, 2012). In 2010, a research report estimated that over 20% of service members returning from deployment to Iraq and Afghanistan (236,000+ soldiers) have PTSD with an estimated cost of care ranging between $4 and $6.2 billion (HQDA, 2012). Furthermore, the high rate of co-occurring TBI and PTSD in those returning from the two theatres pose clinical challenges that are still ill understood (OTSG, 2011). Therefore, it is important to understand both conditions (TBI and PTSD) regarding their definitions, diagnosis, and initiatives to continue advanced treatment solutions for affected personnel.

In general, TBI is a significant public health issue and the leading cause of death and disability in young people. The Centers for Disease Control and Prevention (CDC) estimates that 1.4 million individuals sustain a TBI in the United States annually, resulting in 50,000 deaths and about 80,000 to 90,000 suffering permanent disability (OTSG, 2011). The monetary cost to society is almost $50 billion annually when treatment expenses, lost wages, disability and death are considered. Even more significant, at its most severe, TBI robs individuals of important aspects of their relationships, well-being and happiness. Regarding the military, the focus of TBI is predominantly on the mild variant as that is the population group most likely to come in contact with the military behavioral health provider. Additionally, the overlap of typical post-concussive symptoms with mood, anxiety or other disorders may make referral to such providers improbable when an individual with such unclear symptoms is recognized. Because the most common injury in the current conflicts is blast, there are possibilities for TBI either through direct, secondary or tertiary blast effects. Therefore, it is essential for the healthcare provider to be aware of these possibilities where identification early after the injury is crucial as these “silent injuries” may have implications over time that may affect recovery and rehabilitation of other more visible injuries (OTSG, 2011).
TBI is defined as a disruption of Brain Function resulting from a blow or jolt to the head or a penetrating head injury (DOD, 2009). It is described as either penetrating or closed. A penetrating brain injury occurs when a foreign object or bone penetrates the region surrounding the brain (this region is called the “dura” and the object most common is a bullet or fragment.) In a closed TBI, penetration does not occur, but forces acting on the head cause damage to the brain. A mild Traumatic Brain Injury (mTBI - also known as a “concussion”) is an unclear topic compared to physical injuries from concussive events that can affect both the brain and the mind (physical and psychological injuries, respectively). Physical injuries to the brain can be identified easier due to obvious implications while injuries to the mind (or invisible wounds) can be harder to detect and diagnose (HQDA, 2012). An example of the complexities associated with the detection and diagnosis of TBI can be seen in Figure 10. Even with the use of sophisticated imaging equipment to provide Brain Scan images, it is difficult to identify a mild concussion versus the severe TBI. Upon looking at the three images, the image to the far right represents normal brain activity as reflected by the intense amount of red and orange color – indicative that brain activity is high. The other images are quite different. The darker blue color in the images at center and left reflect areas in two separate brains that are less active or at rest. While they depict similar brain activity levels, they represent two separate patients under very different conditions. The picture at center is an image taken from a traumatic brain-injured patient who sustained a severe head injury in a car.
accident. The image at left is that of a football player 24 hours after he received a concussion during a
game. He never lost consciousness, was cleared to continue to play by sideline medical staff, and at the
time of the scan was awake, fully able to talk, walk and only had mild symptoms from the concussion.
Both images depict similar brain activity and it seems that despite differences in the severity of injury,
both brains have equally reduced activity—likely indicative of the need for rest and recovery. Regardless,
this highlights the importance of surveillance and detection of potential brain injuries following combat-
related concussive events where the biggest concern is the prevention of a second concussion close to the
first one. The reason is that back-to-back injuries (including mild concussions) can lead to severe brain
damage and in rare cases, death (HQDA, 2012).

The total Army has had over 126,545 diagnosed cases of TBI between CY2000 and CY2010 (figure II-6).
Severity includes 95,251 mTBI, 20,149 moderate and 3,571 severe / penetrating injuries, though there are
a number of additional concussions that go untreated. Most Soldiers with TBI—especially those with
mTBI—fully recover. DOD developed mTBI protocols in 2010 to enhance early detection and intervention
following concussive events in combat, but they are also equally relevant to traumatic head injuries from
non-combat related accidents. These protocols are inclusive of Medical Algorithms or “Flow Charts”
designed to assist both medics and providers to properly diagnose and address potential concussion
patients (See Figures 11 and 12).
The DOD categorizes TBI cases as mild, moderate, severe, or penetrating. **Mild TBI** is characterized by a confused or disoriented state lasting less than 24 hours; loss of consciousness for up to thirty minutes; memory loss lasting less than 24 hours and structural brain imaging that yields normal results. **Moderate TBI** is characterized by a confused or disoriented state that lasts more than 24 hours; loss of consciousness for more than 30 minutes, but less than 24 hours; memory loss lasting greater than 24 hours but less than seven days; and structural brain imaging yielding normal or abnormal results. **Severe TBI** is characterized by a confused or disoriented state that lasts more than 24 hours; loss of consciousness for more than 24 hours; memory loss for more than seven days; and structural brain imaging yielding normal or abnormal results. A **penetrating TBI**, or open head injury, is a head injury in which the dura mater (the outer layer of the system of membranes that envelops the central nervous system) is penetrated. Penetrating injuries can be caused by high-velocity projectiles or objects of lower velocity, such as knives, or bone fragments from a skull fracture that are driven into the brain (Fischer, 2013).
The biggest concerns that arise from TBI are the physical forces exerted on the brain during injury causing event. Fortunately, these events are reasonably well understood. The brain can be physically displaced within the skull by linear forces. It can also be rotated or twisted by angular or rotational forces. These forces make the lower-density tissues, particularly the outer layer of the brain (the cerebral hemispheres), move more quickly than the higher-density tissues that make up the core of the brain. They can also twist the brain around its central axis. Both types of movement result in stretching and shearing forces within the brain (See Figure 13).

Figure 13 – Linear and Rotational forces that can exert damage on the brain (OTSG, 2011).

The short and long term effects of blast injury on the brain are still unknown. In an effort to further understand the patterns of this injury, the DOD is collaborating with numerous other agencies on translational biophysics, proteomics and other blast-related projects. Current and future studies include but are not limited to:

- **A Helmet Mounted Sensor Study** – Sensors are to be placed in the Light Weight Helmet (LWH) / Headborne System (HBS) to measure the energy load received by the helmet when in proximity or direct contact of an Improvised Explosive Device.

- **Complications of TBI** – Imaging findings related to blast – Diffusion Tensor Imaging Study, Pituitary Dysfunction and Auditory Dysfunction.

- **15-year longitudinal study** – Sponsored through DVBIC, this study will examine the long-term effects and outcomes of combat-related TBI.

- **Hyperbaric Oxygen** - DOD is working to sponsor a study to evaluate the safety and efficacy of hyperbaric oxygen in the treatment of chronic symptomatic mild to moderate TBI. This study will be a prospective, randomized, double-blind, sham comparator trial that will enroll approximately 300 subjects. Outcome measures to be evaluated include symptom improvement, functional improvement, neuroimaging and visual/vestibular and auditory measures. *(DOD, 2009)*
The final condition to look at or be aware of that is related to TBI is known as Poly-Trauma. This condition is defined as the physical loss of a limb or body system that brings with it the added anxiety of potential social and interpersonal difficulty. Trauma patients have been described as experiencing a loss of identity, self-confidence, self-esteem, self-reliance and ideal self. Patient reactions to traumatic injury can be similar to bereavement. In addition to concern regarding physical appearance, patients sustaining an amputation may be concerned with the reactions from peers, the ability to earn a living, socialization, dating and sexual behavior (OTSG, 2011).

Post-Traumatic Stress Disorder (PTSD) is the most common and conspicuous psychiatric problem associated with the stress experienced by soldiers in combat. By definition, diagnosis of PTSD requires exposure to a traumatic event that involves experiencing, witnessing or being confronted by death or serious injury to self or others; a response of intense fear, helplessness, or horror; development of a set of symptoms that persist for at least a month and cause significant impairment of functioning. Studies have demonstrated four basic dimensions of PTSD symptoms—(1) re-experiencing (nightmares, flashbacks), (2) avoidance (efforts to avoid thinking about the trauma), (3) numbing of general responsiveness (restricted range of affect) and (4) hyperarousal (exaggerated startle response). Individuals diagnosed with PTSD almost always experience additional concurrent mental health disorders, such as substance abuse, anxiety and major depressive disorder. PTSD is also associated with significant levels of functional impairment and disability in civilian and veteran populations. The extent and number of symptoms can often predict physical and mental health problems. The persistence of PTSD as much as 30 years after trauma exposure is associated with continuing family problems, mitigated happiness and reduced life satisfaction (OTSG, 2011). Although most theories of PTSD emphasize the relationship of fear to the development of PTSD, combat and other deployment-related traumas often activate other intense emotions—including sadness, anger, and guilt—that can be connected to the development of PTSD and other post trauma problems. In Operation Iraqi Freedom (OIF), for example, substantial percentages of US Army and US Marine Corps
personnel reported potentially traumatic experiences that included not only events likely to be associated with fear (“being attacked or ambushed”), but also those related to loss (“knowing someone that was seriously injured or killed”), moral conflict (“being responsible for the death of a noncombatant”), horror (“handling or uncovering human remains”) or helplessness (“seeing ill or injured women or children whom you were unable to help”). These types of experiences are associated with a range of intense emotions that can continue to trouble trauma survivors (OTSG, 2011).

To adequately assess military-related PTSD, a multi-method approach is required. First, it is important for the provider to gather information about the individual’s experiences during deployment. Second, findings of high rates of lifetime physical and sexual victimization among veterans in treatment for chronic PTSD support the need for routine assessment of history of trauma exposure. Adverse childhood experiences are strongly associated with mental health symptoms and predict the presence of PTSD and depression among active duty soldiers seeking mental health services. Third, it is important that clinicians engage in ongoing assessment and monitoring of treatment impact. Although this is not currently routine practice in many treatment settings, it is important to help providers and survivors evaluate the effectiveness of their work together and make changes when necessary (OTSG, 2011). Catastrophically, the presence of PTSD is also associated with anger, irritability and the increased risk of suicide. Intense anger is a common part of the presentation of those with PTSD and is more significant among those whose traumas were experienced during military service. Vietnam veterans with PTSD have higher levels of anger than veterans without PTSD and high levels of anger have been reported among Iraq and Afghanistan War veterans. Suicidal ideation and suicide attempts are linked where no other anxiety disorders showed such an association. Therefore, Army veterans are generally associated with mortality from external causes, including homicide, suicide, drug overdoses and unintended injury. PTSD, itself classified as an anxiety disorder, is highly comorbid with other anxiety disorders, including panic, generalized anxiety disorder, social anxiety disorder, obsessive-compulsive disorder and phobias. Little
research has examined the impact of PTSD treatment on co-occurring anxiety problems, but a treatment for individuals with PTSD who also experience panic attacks has been developed (OTSG, 2011).

An interesting finding that demonstrates promise for early intervention revealed that active social engagement can reduce the onset and severity of PTSD symptoms. Multiple studies have demonstrated the importance of strong social support (e.g., family, friends, co-workers) in the recovery from this condition. The relationship between a lack of ongoing cohesion after return and PTSD may explain why Army health assessments found that 20% of returning RC Soldiers, as compared to 11% of Active Component (AC) Soldiers, reported two or more PTSD symptoms 3-6 months after re-deployment. This may not be surprising given the loss of team cohesion and geographical dispersion of RC Soldiers following redeployment and demobilization (HQDA, 2012). As of 2000, 1,610 new cases of PTSD were recorded that are not deployment related and they have continued to increase on an annual basis with 2,806 new cases reported for 2011. Deployment related PTSD was first seen in 2002 with 133 cases and deployment related cases have continued to increase annually as well with 15,702 as last figures reported for 2011 (Fischer, 2013).

In general, TBI and PTSD exist as two of the most common terms associated with Brain Health today, validating the importance of understanding that although they can be associated with each other they are by no means interchangeable. The symptoms of PTSD can and most likely will follow a patient suffering from TBI but a PTSD patient cannot present the symptoms of TBI unless they sustained a physical blow to the head. Regardless, research continues to enhance patient outcomes in these fields and periodic screening, early identification and treatment environments are crucial to effectively compliment the positive outcomes that can be achieved through the application of improvement programs.
Behavioral Health Facilities – “Gaps” within In-Patient Facility Designs

As referenced earlier, the Mental Health Patient, Treatment Programs (or lack thereof) and facilities that provided the treatment environment that housed these unique patients were cruel and horrific. Although there was no standardization and some facilities were evidenced in providing suitable living conditions compared to some of the more deplorable settings, treatment was questionable as patients were more/less “stored” away from society instead of being properly treated to address their condition or ailment. An example of one of these horrid facilities and their methods of patient treatment and disposition are detailed within the history of the Bethlem Royal Hospital. Built in London, England 1330, the facility started admitting mental patients in 1403 under conditions that were nothing more than basic restraint through the utilization of manacles, chaining patients to the floors and walls and establishing itself as a chaotic, harsh facility for treatment of the mentally ill. During the 18th century, Bethlem was moved to new buildings within London where visitors were freely admitted to view patient cells and poke them with sticks, seeking amusement at their responses, sexual antics and violent fights (Currie, 2007). Fortunately, the 18th century brought about the “moral treatment” of mentally ill patients with governments recognizing their duty to provide appropriate accommodations and care for the mentally ill. During this transition period, some mental health facilities were built like country houses of the wealthy, while others copied hospital designs already in use (Currie, 2007). Regardless, the process of improvement (although slowly but surely) regarding patient treatment and facility design providing enhanced healing environments had begun. Examples of some of the more notable facilities (See Figures 14 – 17 below) were:

1) The Vienna General Hospital in Vienna, Austria was established in 1784 for Mental patients with a circular design called the Narrenturm (meaning “Fool’s Tower”) as it was called with rooms for up to 250 patients. Each room or cell had strong lattice doors and rings for chaining patients.
years after its construction, the design was outdated due to changes in therapy for treating mental patients (Currie, 2007).

2) The **York Retreat** in York, England was opened in 1796 and presented new design schemes to compliment enhancements in patient treatment inclusive of occupational therapy through walks and farming, pleasant and quiet surroundings, a social environment where patients were treated as a large family unit and perhaps most importantly – kindness and trust replaced mechanical restraints. Success here was also attributed to excellent nursing care and the therapeutic environment (Currie, 2007).

3) The **Hospital Charenton** was built in 1797 in Charenton-Saint-Maurice, France. After the French Revolution it was reopened as a civil facility to care for the mentally ill and soon became known for its humane treatment of the mentally ill.

Prior to the 19th Century, the facilities for treating the mentally ill in the United States were influenced by the design and protocol of the York Retreat. In the United States, the first American hospital to admit the mentally ill was the Pennsylvania Hospital. Founded in 1751, this facility was established to care for the
sick poor and the “reception and cure of lunatics”, indicating for the first time that the mentally ill could and often did recover their senses (Currie, 2007). However, insane patients were assigned to the facility cellar where they were placed in bolted prison cells with shaved scalps and chained to the walls by the waists and ankles. Although this method of treatment was harsh, it was believed during this period that “terror acts powerfully on the body and should be employed in the cure for madness (JCMIH, 1961). So patient treatment environments during this period and time went way beyond the facility alone as beliefs, rumored methods of treatment and generalized mindset of those charged with the care of patients all were significant parts contributing to the process.

Mental Health care in the Victorian period focused on the concept of “moral treatment”. In 1854, Physician Thomas Kirkbride dramatically changed healthcare in the United States by writing what would soon be the standard for mental healthcare. His work was entitled On the Construction, Organization and General Arrangements of Hospitals for the Insane and expanded on concepts that included but were not limited to the positive effects of natural sunlight, fresh air ventilation in country settings, limits on patient populations in hospitals as well as patient limits within individual wards. Examples of Kirkbride Hospital Plans are seen in the Pennsylvania Hospital for the Insane in Philadelphia, the Alabama Insane Hospital in Tuscaloosa, the Government Hospital for the Insane in Washington, D.C. and the Hudson River State Hospital in New York (Currie, 2007).

At the close of World War I, the leader for military psychiatry Dr. Thomas W. Salmon worked closely with the American Legion, recommending the establishment of specialized treatment facilities for neuropsychiatric war casualties. Historically, patients had been received and treated at non-military facilities but the things that they saw, encountered and experienced in wartime was nothing like what the average civilian patient saw or experienced. Additionally, the American Legion believed that these soldiers deserved the best possible treatment and were entitled to a pension (Pols, 2007). Simultaneously
in Great Britain, enhanced patient identification and treatment methods raised public expectations, increasing the focus on mental health patients. In 1920, asylums were investigated by the media with findings reported in multiple periodicals that indicated the deplorable and yet obscene methods of torture, general atmosphere of brutality, overcrowding and poor military mental health facilities in general (Shephard, 2000). This led many within Great Britain and in particular, those that had completed military service to believe that their military needed specialized treatment centers or facilities as well. So, out of the experience of shell-shock and the lessons of World War I evolved facilities that provided unparalleled promise for British Society – two in particular were the Tavistock Square Clinic and the Maudsley Hospital, both of which were located in the vicinity of London. The Tavistock Square Clinic opened its doors in a depressing, gloomy house in Bloomsbury in 1920. Created by Hugh Chrichton-Miller who was a former shell-shock doctor, this facility provided assistance regarding everyday psychological problems that had been so hard to address and seek help with prior to the war. As successful as this facility was, it had a rival. In 1923, the Maudsley Hospital (named after its Psychiatrist Henry Maudsley) opened its doors to not only further seek answers through research but also provide services to the general public, seeing voluntary instead of certified cases. The hospital also conducted other types of research, provided a psychological provider teaching facility and provided outpatient clinic services. Furthermore, the Maudsley looked for inspiration and concepts in a new direction – John Hopkins’ University in Baltimore, MD which had become the mainstream finishing school for English Speaking mainstream Psychiatrists (Shephard, 2000).

After the conclusion of World War II, mental hospitals always seemed to be the first of the public health institutions to suffer in bad times and the last to benefit in good times. State Hospitals deteriorated significantly during the Great Depression during the 1930s and had not recovered when they were hit by another severe blow – World War II – that consumed their limited resources of professional and support personnel, finances and institutional morale. Bringing these institutions to their lowest state (earning
them nicknames of “house of horrors”) with the participation and aftermath of World War I and World War II, the Wars demanded the sacrifice of non-essentials and the incarcerated mentally ill were those non-essential personnel that were sacrificed (JCMIH, 1961). Further compounding on the issue, Mr. Albert Deutsch (recognized mental health writer) noted during his 1946-1947 investigations that several mental health facilities located in prominent areas (New York, Michigan, Ohio, California and Pennsylvania) provided patient scenes that would rival that of Nazi concentration camps. In these facilities, one could find hundreds of naked mental patients that had been herded into huge, filth-infested wards in all degrees of deterioration that had stripped of every vestige of human decency from the semi-starved patients. In fact, one doctor admitted that animals in nearby pig farms were better fed, housed and treated than many patients in their wards as hundreds of patients were shackled, strapped, straight-jacketed and bound to their beds in facilities filled three times their capacity (JCMIH, 1961).

In World War II, most patients with serious psychological problems were evacuated either back to Great Britain or the United States for more extensive treatment. In April 1942, the British Army turned Northfield Hospital in Birmingham, England into the largest military hospital in the country, collecting all the psychoneurotic cases there that were thought capable of further military service. However, anyone who thought Northfield was an escape from the rigors of Army life (malingers, misfits, etc.) was in for a surprise. As originally established, the hospital was divided into Medical and Military zones where one started off in the Hospital Wing, wearing comfortable blue uniforms, attended to by an assigned psychiatrist who allowed you to do as you please. As you recovered, you moved to the training wing, traded in your blue uniform for khakis and were subject to Army discipline under regular Army Officers. Many who were sent to the training wing were resentful and did what they could to prove unworthy for future military service in lieu of a discharge (Shephard, 2000). In the United States, the development of psychiatric problems after wars was believed to be successfully counteracted by the presence of an understanding and supportive community. In 1945, Gen Omar N. Bradley, who was respected among
soldiers and veterans alike, was appointed as the head of the Veterans Administration. Bradley hired Paul Hawley, the chief surgeon of the European Theater of Operations, to direct the Division of Medicine. Hawley hired more than 4000 physicians and initiated an extensive hospital-building program. Under the policies of Hawley and Bradley, the new Veterans Administration hospitals were established in affiliation with medical schools, guaranteeing that the best medical services would be provided to veterans (Pols, 2007). Additionally and with the construction of Veterans Hospitals and facilities charged with the oversight and implementation of their care, the Joint Commission released a report on Mental Illness and Health in 1961. This report discussed the details regarding Mental Hospital construction, recommending that State hospitals of no more than 1,000 beds be built and not one patient should be added to a facility that houses 1,000 or more patients. It further recommended that all existing State hospitals of more than 1,000 beds be gradually and progressively converted into centers for the long-term and combined care of chronic diseases, including mental illness (JCMH, 1961). Further enhancements toward the improvement of facility spaces came about in 1971 when a U.S. court (Wyatt v. Stickney, 1971) ruled that psychiatric patients have a right to quality physical environments that support treatment goals (Sommer & Kroll, 1979). Additionally in 1985 at the Joint Hearings before the Subcommittee on the Handicapped, the staff presented findings from 31 facilities and 600 interviews indicating that patients and staff were subject to injury and living conditions were unacceptable (Shepley, 2013). So as time progresses, one can see that facility solutions and treatments for the mentally ill have continued to fluctuate back and forth, which is an unfortunate set of circumstances for a patient population that has been ill understood, received other than adequate if not deplorable treatment throughout the years, have been housed in facilities that either weren’t designed to address their needs or weren’t renovated to provide the basic dignities and self-worth that all humans seek. Only through the persistence of clinicians, ideas of certain designers and awareness & involvement of the general public have patient care solutions been made possible to increase positive patient outcomes. These outcomes that are intended to improve the overall patient experience are dependent upon more than the treatment methods or what the doctor prescribes alone.
These solutions include but are not limited to properly trained and screened staff personnel, facility managers, food service and amenity provision teams as well as the proper materials included within the facility. These proper materials are complimented by designs with proper finishes, furnishings, hardware and spatial layouts that are all important contributors toward the overall healing environment and indicative of success. Collectively, all of the aforementioned factors work in unison toward achieving the common goal of patient treatment. Unfortunately, there is limited literature that expands upon In-Patient Behavioral Health facility design Lessons Learned, Evidence Based Design or other examples that not only foster constructive treatment programs but also keep the staff safe from the potential harmful actions of patients as well as keeping patients safe from themselves. Regardless, the limited information that did surface through the literature review reflected several reoccurring issues. These issues that were derived from journal articles, research studies and textbooks were related to the aspects of Safety and Therapeutics. Accordingly, these reoccurring issues enabled the completion of a “top ten list” that is reflected below in Table 1 which depicts the potential risk and associated article or information that pertains to that risk.

On the issue of limited literature regarding facilities, there are a few that are most frequently used by the MHS when planning for facilities: Department of Defense (DOD) Space Planning Criteria, the Department of Veterans Affairs (VA) Criteria (inclusive of VA Space Planning Criteria and the VA Design Guide for Mental Health Facilities), the Facility Guidelines Institute (FGI) and the National Association for Psychiatric Health Systems (NAPHS). All documents have their strengths and limitations but unfortunately there isn’t one complete reference that lists all required aspects to properly address design issues. Instead, each document focuses on certain aspects of the design process regarding the Built Environment Factors (BEF) of space planning, finishes & furnishings and hardware & fixtures. The following table (Table 2) reflects how each of the aforementioned references regarding guidance criteria relates to the Top Ten List for Safety and Therapeutics, the degree each pertains to those risks and the strengths and limitations of each.
<table>
<thead>
<tr>
<th>Item</th>
<th>Potential Risk</th>
<th>Supporting Literature or Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hardware and fixtures with ligatures pose risk of harm to self or others</td>
<td>(Watts, Young-Xu, Mills, DeRosier, et al., 2012), (Jeffers, 1991), (Geddes, 1999), (Carr, 2011),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Li et al., 2008), (Stewart, Ross, Watson, James and Bowers, 2011), (FGI, 2013), (Karlin, Zeiss, 2006),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(DVA, 2010), (Hunt, Sine, 2013)</td>
</tr>
<tr>
<td>2</td>
<td>Compartmentalized Plan provides hidden corners and blind spots, posing risks</td>
<td>(Whitehead, et al., 1984), (Turlington, 2004), (Shepley, et al., 1999), (Christenfeld, et al., 1989),</td>
</tr>
<tr>
<td></td>
<td>due to limited visibility. Therefore, an open plan is preferred.</td>
<td>(Chou, et al., 2002), (Carr, 2011), (Ulrich, et al., 2012), (FGI, 2013), (Karlin, Zeiss, 2006),</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(DVA, 2010)</td>
</tr>
<tr>
<td>3</td>
<td>Breakable items that pose a weapon risk regarding harm to self or others</td>
<td>(Davis, Glick, &amp; Rosow, 1979), (Shepley, et al., 1999), (Watts, Young-Xu, Mills, DeRosier, et al.,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2012), (Jeffers, 1991), (Geddes, 1999), (Carr, 2011), (Li et al., 2008), (Stewart, Ross, Watson,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>James and Bowers, 2011), (Karlin, Zeiss, 2006), (DVA, 2010)</td>
</tr>
<tr>
<td>4</td>
<td>Single occupancy rooms may result in increased harm to self or others due to</td>
<td>(McGuire et al., 1977), (DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>isolation</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>No interlocking vestibules allow patient elopement and safety/security risk</td>
<td>(DVA, 2010)</td>
</tr>
<tr>
<td>6</td>
<td>Non-secure or poorly mounted items negatively impact patient outcomes</td>
<td>(DVA, 2010), (Karlin, Zeiss, 2006), (Hunt, Sine, 2013)</td>
</tr>
<tr>
<td>7</td>
<td>Doors that swing in versus out create the risk of patients baricading</td>
<td>(FGI, 2013), (DVA, 2010), (Hunt, Sine, 2013)</td>
</tr>
<tr>
<td></td>
<td>themselves in room where they can potentially cause harm to self or others</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Tamperable controls and outlets create risk of scalding, electrocution or</td>
<td>(Shepley, 2013), (Hunt, Sine, 2013), (FGI, 2013), (Karlin, Zeiss, 2006), (DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>other injury to self or others</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Insufficient lighting may create dark spots posing the risk of poor</td>
<td>(Turlington, 2004), (Ulrich, et al., 2012), (Gutkowski &amp; Guttmann, 1992), (DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>observation and limited visibility, enabling a patient to cause harm to self</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or others due to isolation</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Ceilings that allow patient access can enable them to harm themselves or</td>
<td>(Odobhozoff, Llewellyn-Jones, 2011), (FGI, 2013), (DVA, 2010), (Hunt, Sine, 2013)</td>
</tr>
<tr>
<td></td>
<td>others</td>
<td></td>
</tr>
</tbody>
</table>

**Therapeutic Risks Identified from Literature Review**

<table>
<thead>
<tr>
<th>Item</th>
<th>Potential Risk</th>
<th>Supporting Literature or Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No access to nature or views of nature negatively impact patient outcomes</td>
<td>(Shepley, 2013), (Shepley, 1995), (Potthoff, 1995), (Shepley, et al., 1999), (Ulrich, et al., 2012),</td>
</tr>
<tr>
<td>2</td>
<td>No Access to Natural Daylight negatively impact patient outcomes</td>
<td>(Shepley, 2013), (FGI, 2013), (Karlin, Zeiss, 2006), (DVA, 2010)</td>
</tr>
<tr>
<td>3</td>
<td>Institutional or “Prison-Like” feel versus Residential (Home) Feel negatively</td>
<td>(Shepley, 2013), (Carr, 2011), (Devlin, 1992), (Grosenick &amp; Hatmaker, 2000), (Priebe &amp; Broker, 1999),</td>
</tr>
<tr>
<td></td>
<td>impact patient outcomes</td>
<td>(Potthoff, 1995)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Shepley, Frohman, &amp; Wilson, 1999), (Ulrich, et al., 2012), (Wilson, Soth, &amp; Robak, 1992), (Whitehead,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Polsky, Crookshand, &amp; Fik, 1984), (Hunt, Sine, 2013), (Karlin, Zeiss, 2006), (DVA, 2010)</td>
</tr>
<tr>
<td>4</td>
<td>Color accents that provide an institutional look can negatively impact patient</td>
<td>(Whitehead, Polsky, Crookshand, &amp; Fik, 1984), (Karlin, Zeiss, 2006), (DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>outcomes</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Undesirable Noise and Lack of Acoustic Privacy negatively impact patient</td>
<td>(Carr, 2011), (DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>outcomes</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Artwork that doesn’t provide soothing images can negatively impact patient</td>
<td>(Karlin, Zeiss, 2006), (DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>outcomes</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Finishes that do not resemble natural wood can hinder the residential feel</td>
<td>(Karlin, Zeiss, 2006), (DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>can negatively impact patient outcomes</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Inadequate temperature controls enhance stress stress and agitation, negatively</td>
<td>(Devlin, 1992)</td>
</tr>
<tr>
<td></td>
<td>impacting patient outcomes</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Artificial Light (Underlit or Overlit spaces) may cause dark spots or</td>
<td>(DVA, 2010)</td>
</tr>
<tr>
<td></td>
<td>excessive heat load that negatively impacts patient outcomes</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Uncomfortable Furnishings that do not present a residential feel negatively</td>
<td>(Potthoff, 1995), (Holahan &amp; Saegert, 1973), (Grosenick &amp; Hatmaker, 2000), (Christenfeld, Wagner,</td>
</tr>
<tr>
<td></td>
<td>impact patient outcomes</td>
<td>Pastva, &amp; Acrish, 1989)</td>
</tr>
</tbody>
</table>

Table 1 – Top Ten Lists regarding Safety and Therapeutics that evolved from the Literature Review
| Strengths, Limitations and Emphasis on 10 Therapeutic and Safety Potential Risk Concerns |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| **Safety**                      | **Therapeutics**                | **Comments**                    |
| **DOD**                         | Addresses 0 areas in Table 1 for safety. DOD Space Planning Criteria recommends space square footage, definitions and use. | Addresses 0 areas in Table 1 for therapeutics. DOD Space Planning Criteria recommends space square footage, definitions and number of spaces per unit based on patient or staff size. | Strengths of the Department of Defense (DOD) guidelines is that they focus heavily on Square footage recommendations, defining spaces, space linkages & flow and coding of particular space types. Limitations are that there is limited if any information regarding safety and therapeutics. |
| **VA**                          | Addresses 9 out of 10 areas in Table 1 for safety: 1) Non-ligature fixtures/hardware 2) Open Plan to negate obstructed views 3) Breakable furnishings that can be used as weapons 4) No interlocking vestibules to negate elopement 5) Non-secure or poorly mounted artwork/items 6) Doors that swing in versus out 7) Insufficient lighting that creates dark spots 8) Single versus Double Occupancy rooms and 9) Ceilings that allow patient access | Addresses 8 out of 10 areas in Table 1 for therapeutics: 1) No access to nature or views of nature negatively impact patient outcomes 2) No access to natural daylight negatively impacts patient outcomes 3) Institutional Feel versus Residential Feel negatively impacts patient outcomes 4) Color accents that provide an institutional look can negatively impact patient outcomes 5) Undesirable noise and lack of acoustic privacy negatively impacts patient outcomes 6) Artwork that doesn’t provide soothing images can negatively impact patient outcomes 7) Finishes that do not resemble natural wood can hinder the residential feel can negatively impact patient outcomes and 8) Artificial Light (underlight or overlight spaces) may cause dark spots or excessive heat load that negatively impact patient outcomes | Strengths of the Veterans Affairs (VA) guidelines are that they provide data similar to the DOD regarding Space Planning Criteria but also provide a design guide that addresses many of the concerns regarding facility safety and therapeutics. |
| **FGI**                         | Addresses 5 out of 10 areas in Table 1 for safety: 1) Non-ligature fixtures/hardware 2) Open Plan to negate obstructed views 3) Breakable furnishings that can be used as weapons 4) No interlocking vestibules to negate elopement 5) Non-secure or poorly mounted artwork/items 6) Doors that swing in versus out 4) Tamper-proof controls to negate scalding, electrocution or other injury to self or others and 5) Ceilings that allow patient access | Addresses 2 out of 10 areas in Table 1 for therapeutics: 1) No access to natural daylight negatively impacts patient outcomes and 2) Institutional Feel versus Residential Feel negatively impacts patient outcomes | Strengths of the Facility Guideline Index (FGI) is that it provide a broad sense of facility recommendations providing flexibility to the designer. The limitation is that this guidance in many ways is too broad and not directive enough in nature. |
| **NAPHS**                       | Addresses 6 out of 10 areas in Table 1 for safety: 1) Non-ligature fixtures/hardware 2) Breakable furnishings that can be used as weapons 3) Non-secure or poorly mounted artwork/items 4) Doors that swing in versus out 5) Tamper-proof controls to negate scalding, electrocution or other injury to self or others and 6) Ceilings that allow patient access | Addresses 1 out of 10 areas in Table 1 for therapeutics: 1) Institutional Feel versus Residential Feel negatively impacts patient outcomes | Strengths of the National Association of Psychiatric HealthCare Systems (NAPHS) is that it focuses heavily on all components within the multiple spaces contained within the Behavioral Health Unit. The limitation is no data regarding space planning or evidence to support item use. |

Table 2 – MHS facility planning documents and how they relate to safety and therapeutics

**Space Layout** is an important BEF not only because it involves money and resources (facility construction is usually expressed in dollars/square foot - and mitigating costs is top concern for all parties involved) but too little space could cause patient claustrophobia, negating a therapeutic appearance and creating a safety risk for frustrated patients and staff alike due to the confined space (horizontal as well as vertical dimensions). Adversely, excessive and compartmentalized space could provide hiding spots for patients, blind spots for staff and create scenarios that complicate patient treatment program management.

Regarding this BEF, DOD and VA Criteria provide the most comprehensive listing of space types while the FGI and NAPHS discuss broad factors and give “recommended” spatial dimensions that “should be”, “at least” or “no more than” a particular space size in square feet as indicated per document. Furthermore,
the DOD and VA provide the most extensive, detailed examples regarding a variety of coded space types (e.g. – Restraint Room – BRNP7) with dimensions and use descriptions, unlike any of the other documents. When comparing document pros and cons that support facility design regarding the BEF of Space Layout, the following results were obtained as seen in Table 3 below:

<table>
<thead>
<tr>
<th>Nomenclature / Description</th>
<th>DOD Criteria</th>
<th>FGI Criteria</th>
<th>VA Criteria</th>
<th>NAPHS Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psych, Bedroom - 1 Bed</td>
<td>BRNP1 185</td>
<td>None</td>
<td>BRNP1 125</td>
<td>None</td>
</tr>
<tr>
<td>Psych, Bedroom - 2 Bed</td>
<td>BRNP2 280</td>
<td>None</td>
<td>BRNP2 230</td>
<td>None</td>
</tr>
<tr>
<td>Psych Seclusion, Bedroom</td>
<td>BRNP5 140</td>
<td>None</td>
<td>BRNP5 80</td>
<td>None</td>
</tr>
<tr>
<td>Psych Seclusion, Anteroom</td>
<td>BRNP6 60</td>
<td>None</td>
<td>BRNP6 100</td>
<td>None</td>
</tr>
<tr>
<td>Toilet - Seclusion</td>
<td>TLTP2 60</td>
<td>None</td>
<td>TLTP3 65</td>
<td>None</td>
</tr>
<tr>
<td>Toilet - Patient</td>
<td>TLTP1 60</td>
<td>None</td>
<td>TLTP3 65</td>
<td>None</td>
</tr>
<tr>
<td>Toilet/Shower - Psychiatric</td>
<td>TLTP3 60</td>
<td>None</td>
<td>SHWR2 100</td>
<td>None</td>
</tr>
<tr>
<td>Treatment Room</td>
<td>None 0</td>
<td>None 0</td>
<td>TRGM1 160</td>
<td>None 0</td>
</tr>
<tr>
<td>Exam Room</td>
<td>EXRG1 120</td>
<td>None 0</td>
<td>EXRG3 120</td>
<td>None 0</td>
</tr>
<tr>
<td>Restraint Room</td>
<td>BRNP7 120</td>
<td>None 80</td>
<td>BRNP5 80</td>
<td>None 0</td>
</tr>
<tr>
<td>Group Therapy Room</td>
<td>OPMH1 240</td>
<td>None 225</td>
<td>OPMH1 300</td>
<td>None 0</td>
</tr>
<tr>
<td>Screening Room</td>
<td>EXRG4 120</td>
<td>None 0</td>
<td>None 0</td>
<td>None 0</td>
</tr>
<tr>
<td>Bio-Feedback/Sensory Room</td>
<td>OPMH3 120</td>
<td>None 0</td>
<td>OPMH3 140</td>
<td>None 0</td>
</tr>
<tr>
<td>Toilet - Patient</td>
<td>TLTP1 60</td>
<td>None 0</td>
<td>TLTP1 50</td>
<td>None 0</td>
</tr>
<tr>
<td>Multi-Purpose Activity Room</td>
<td>DAYR1 360</td>
<td>None 0</td>
<td>DAYR1 675</td>
<td>None 0</td>
</tr>
<tr>
<td>Toilet - Patient</td>
<td>TLTP1 60</td>
<td>None 0</td>
<td>TLTP1 50</td>
<td>None 0</td>
</tr>
<tr>
<td>Exercise/Noisy Activity Room</td>
<td>PTES1 120</td>
<td>None 120</td>
<td>OPMH1 225</td>
<td>None 0</td>
</tr>
<tr>
<td>Quiet Activity Room</td>
<td>OPMH3 120</td>
<td>None 120</td>
<td>OPMH3 120</td>
<td>None 0</td>
</tr>
<tr>
<td>Interview / Consult Room</td>
<td>OIFDC2 120</td>
<td>None 100</td>
<td>None 0</td>
<td>None 0</td>
</tr>
</tbody>
</table>

Table 3 – Space Planning Criteria Comparison – DOD, VA, FGI and NAPHS

From this table, one can construe that guidance recommendations indicate the space for a Single Occupant Patient Room to be between 100-185 square feet. This obviously enables design flexibility for the Architect, but is there proof or evidence that a room closer to 100 square feet or closer to 185 square feet is preferred or better for the patient and staff member? If there are incidents that have occurred regarding too much or too little space, did the Architect follow the guidelines and recommendations regarding space planning? Questions such as this are applicable to all of the varying space types listed within Table 3 above and will be addressed within this study.
**Finishes & Furnishings** are also critical regarding BEF as appropriate finishes (rounded ends, no sharp or pointed corners, smooth and not abrasive surfaces that are both safe but also therapeutic – residential in appearance) as well as appropriate furnishings (furniture and materials) for use within the space that are safe but also provide the therapeutic residential look. Amongst the four guidance documents pertaining to Behavioral Health facility design (DOD, VA, FGI and NAPHS), the following information was derived when comparing recommendations for finishes and furnishings:

1. **Furniture, general** (Communal, Therapy and Private Patient Space) - The FGI and NAPHS detail generalized furniture composition recommendations. Guidance is that selected furniture be able to withstand physical abuse, be designed to look “non-institutional”, have the ability to be easily cleaned and reupholstered (as required) and be heavy if not anchored to mitigate if not eliminate throwing or barricading.

2. **Beds** (Private Patient Space) – The VA and NAPHS detail guidance regarding standard beds, restraint beds, manual medical needs beds, electrically operable medical beds and mattress recommendations. Mattresses should be contamination and abuse resistant as well as comply with NFPA 101 Life Safety Code specifications. Standard beds should be of heavy construction with rounded edges, securely anchored in place without wire springs or storage drawers. Manual medical needs beds should have inoperable wheels with tamper resistant headboards, footboards and rails (these components can be hazardous). Electrically Operable beds should provide the same tamper resistant features as manual medical beds and include cords (as applicable) of 12” or less with control “lockout” features.

3. **Wardrobe** (Private Patient Space) – The VA and NAPHS detail guidance regarding wardrobe shelving unit recommendations. Wardrobe units are preferred to be made of plastic, built into the wall, contain no drawers and have fixed non-adjustable shelves. Stand-alone furniture variants are also acceptable as long as they have sloped tops, no drawers, fixed non-adjustable shelves and are anchored in place.
4. **Flooring, general** (Communal, Therapy and Private Patient Space) – The VA and NAPHS detail general guidance regarding flooring as well as baseboards. General flooring recommendations are to utilize sheet, tile or seamless vinyl that is available in wood grain patterns for a therapeutic, residential feel. Carpet is acceptable and if used should be broadloom or sheet with anti-microbial yarn and moisture absorbing backing. Baseboards should complement wood grain pattern tile for the residential look and be affixed with a pick-resistant sealant.

5. **Walls, general** (Communal, Therapy and Private Patient Space) – The VA and NAPHS detail general guidance regarding wall requirements. Walls should be high-impact and/or abrasion resistant gypsum board on metal studs with a painted finish with warm color (avoid an institutional look) or wood grain texture accents.

6. **Ceilings, general** (Communal, Therapy and Private Patient Space) – The VA, NAPHS and FGI detail guidance regarding general ceiling requirements that include the height minimum of 9’ to avoid patient tampering, contain key lockable access panels (if ceiling access is required) and be of gypsum board composition with a painted surface. If acoustic privacy is desired, the VA recommends that these ceilings be taller than 9’ and if acoustic plaster is used on the gypsum board, it should be applied 1”-2” thick.

7. **Artwork** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding the use of artwork and recommends that all art be glazed, framed with heavy beveled frames and top-sealed with tamper resistant screws. However, murals are the preferred artwork.

8. **Lavatory Walls** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding Lavatory Walls. Lavatory Wall recommendations differ from standard room walls due to moisture content and the possibility of mold growth. Therefore, walls will be made of avonite, ceramic tile or impact-mold-moisture resistant epoxy painted gypsum board or ceramic tile.

9. **Lavatory Ceiling** (Communal, Therapy and Private Patient Space) – The NAPHS and FGI detail guidance regarding Lavatory Ceilings. Similar to walls, ceilings are also of concern due to moisture and
mold growth. Recommended minimal ceiling height is 9’ and will be constructed of mold-moisture resistant faced gypsum board with epoxy painted surface.

10. **Lavatory Floors** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding Lavatory Floors recommending that they be seamless epoxy, sheet vinyl or ceramic tile. However, one-piece flooring (European Style) that drains to a central location is preferred.

11. **Lavatory Shower Floor** (Private Patient Space) – The NAPHS details guidance regarding Lavatory Shower Floors where the recommendation is to utilize a pre-cast, artificial stone or solid surface type with a trench drain across the entire front opening.

12. **Lavatory Shower Seat** (Private Patient Space) – The NAPHS details guidance regarding Lavatory Shower Seats where the recommendation is that, although folding seats are not preferred but if they are utilized, they should be free of tubes or brackets which are potentially hazardous to patients.

13. **Lavatory Vanity** (Communal, Therapy and Private Patient Space) – The VA, NAPHS and FGI detail guidance regarding design of the Lavatory Vanity where they recommend that they should be included within all toilet rooms and provide a residential appearance as a wall-hung unit with no ligatures. Additionally, they should be constructed of solid surface material with all piping concealed behind tamper-resistant panels and preset temperature (110° F) faucets.

14. **Lavatory Soap Dish** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding Lavatory Soap Dish design recommending that they should be recessed and not have handles.

15. **Lavatory Toilet** (Communal, Therapy and Private Patient Space) – The VA, NAPHS and FGI detail guidance regarding Lavatory Toilet design recommending that floor mounted fixed seats with back outlet and back water supply. Additionally, there should be no exposed piping, actuators should be push-button and prevent excessive flooding and flushing. Wall mounted units are not to be used as they can be broken off.
16. **Lavatory Toilet Paper Holder** (Communal, Therapy and Private Patient Space) – The VA and NAPHS detail guidance regarding Lavatory Toilet Paper Holders recommend that dispensers with soft spindles be used as an option in patient bathrooms. Recessed holders without a spindle should not be used due to infection control issues. However, ligature resistant-paper tear off outside cabinet holders are preferred.

17. **Lavatory Mirrors** (Communal, Therapy and Private Patient Space) – The VA and NAPHS detail guidance regarding Lavatory Mirrors recommending that they be composed of a reflective polycarbonate with a stainless or chrome plated steel frame. The glass should be tempered and the mirror should be firmly anchored to the wall with no shelf or ligatures.

18. **Lavatory Paper Towel Dispenser** (Communal, Therapy and Private Patient Space) – The VA and NAPHS detail guidance regarding Lavatory Paper Towel Dispensers recommending that they be recessed with no ligature points, free of sharp edges and of sturdy construction. Commercial Tri-Fold dispensers are also acceptable.

19. **Lavatory Soap Dispenser** (Communal, Therapy and Private Patient Space) – The VA, NAHPS and FGI detail guidance regarding Lavatory Soap Dispensers recommending that they be wall mounted with sloped tops, ligature free, stainless steel or solid material construction that is tamper-resistant.

20. **Telephones** (Communal Space) – The NAPHS details guidance regarding Telephones, recommending that they be comprised of a stainless steel case, wall mounted and have a non-removable shielded cord of a length that does not exceed 14”.

21. **Kitchen Appliances** (Communal Space) – The NAPHS details guidance regarding Kitchen Appliances and recommends that regardless of the device (ranges, coffee pots, ovens, disposals, etc.) be equipped with key operated lock-out switches and the coffee pot should be located where the staff can observe at all times with plastic dispensers.

22. **Television Set** (Communal Space) – The VA and NAPHS detail guidance regarding Television Sets recommending that they be located in Day Rooms (Communal Spaces) with an isolation switch controlled
by the staff. The sets should be flush-wall mounted, not bracket mounted and any required cables will be 12” or less and housed so they are tamper-proof and away from patient access.

23. **Desks** (Communal and Therapy Space) – The VA and NAPHS detail guidance regarding the use of Desks where the recommendation is that they be comprised of a simple writing surface, solid surface tops with no exposed sides and open shelving on one side. Additionally, they should be constructed of a solid composite or wood material that can be bolted to the floor, abuse resistant and cannot be disassembled for weapon use.

24. **Desk Chairs** (Communal and Therapy Space) – The VA and NAPHS detail guidance regarding Desk Chairs recommending that they be durable with rounded edges, enclosed with no ligatures and present a residential look. Plastic chairs are discouraged, but polypropylene chairs that are break resistant and can be filled with sand to complicate throwing or barricading are preferred.

25. **Hallway Handrails / Wall Protection** (Communal Space) – The VA details guidance regarding Handrails / Wall Protection recommending that they be present in corridors for safety but also be equipped with corner guards to protect the walls.

Finishes are important within the design process, in particular to healthcare as infection control is a concern as well as safety as improper finishes could enable patients to harm themselves (ingest removable wall mounted materials or décor, impale themselves on sharp corners, non-impact resistant walls destroyed for weapon use or edges to further cause self-harm, etc.). Likewise, furnishings provide a level of pride and dignity as they provide a residential feel but these items must not be equipped with ligatures which could be used for hanging, cannot provide an institutional look and cannot allow for breakage or disassembly for weapon use. Solutions exist that can adequately accommodate both safety and therapeutic concerns and therefore care must be taken to ensure the appropriate items are selected to successfully satisfy requirements.
**Hardware & Fixtures** is the third and final BEF Category for review. As important if not more important than the aspects of Space Layout and Finishes & Furnishings, Hardware & Fixtures consist of items that can cause serious harm such as electrocution, severe burns from scalding (water controls), ligatures for hanging or items that could allow the patient to smash, crush or destroy limbs, appendages or worst case scenario – death. As with Finishes & Furnishings, the four guidance documents pertaining to Behavioral Health facility design (DOD, VA, FGI and NAPHS) provided the following information when upon conducting a comparison:

1. **Patient Observation Mirrors** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding the use of Patient Observation Mirrors and recommends that they be made of ¼” polycarbonate, filled with a high density foam and encased in a heavy-duty metal frame. The perimeter is to be sealed with pick-resistant caulk.

2. **Doors** (Communal, Therapy and Private Patient Space) – The VA, NAPHS and FGI detail guidance regarding the use of doors within In-Patient Behavioral Health Facilities. The guidance states that doors should be 1 ¾” thick, open minimally to 2’10” and have a solid core within a metal frame (wood veneer faces are preferred as painted steel doors are institutional and are discouraged from use). Door hinges should be of continuous hinge type as they are free of ligatures. Door closers are discouraged but if must be used shall be mounted on public side and in constant view from Nurse Station. Lockset preferences are crescent, lever and pull/push handles. Smoke seals may be used for safety and the preferred seal that breaks into 8” pieces is optimal. Finally, pressure sensor alarms preventing pinch points and material being thrown over the top to enable hanging is a good patient safety device.

3. **Light Fixtures, general** (Communal, Therapy and Private Patient Space) – The NAPHS and FGI detail guidance regarding light fixtures recommending fixtures be secured at a height to prevent patient access, be made with a ¼” polycarbonate prismatic lens, securely fixed in a frame with tamper resistant screws (no glass).
4. **Lavatory Ceiling, Curtain Tracks** (Private Patient Space) – The NAPHS details guidance for use of Lavatory Ceiling Curtain Tracks where the recommendation is not to use them at all. However, if they must be flush mounted to the ceiling with no chains or cords to prevent ligature use.

5. **Signage, Ceiling** (Communal Space) – The NAPHS details guidance for the use of Ceiling Signage, recommending they be photo-luminescent, vandal resistant with full length mounting brackets with no ligatures.

6. **Fire Sprinklers** (Communal, Therapy and Private Patient Space) – The NAPHS and FGI detail guidance regarding sprinklers recommending they be of institutional head type due to no ligatures and recessed in design.

7. **HVAC Grilles / Vent Covers** (Communal, Therapy and Private Patient Space) – The NAPHS and FGI detail guidance for HVAC Grilles / Vent Covers recommending they have small perforated grilles with tamper-resistant fasteners, minimized tie off points (if any) and located away from patient access. If they are existing old-style units, they should be protected with a vandal resistant cover.

8. **Windows** (Communal, Therapy and Private Patient Space) – The VA, NAPHS and FGI detail guidance for windows recommending heavy gauge construction with insulated double glazing, locked with custodial lock and wrench and openings (if applicable) not to exceed 4”. Windows should be included in each patient room, impact resistant with no ligature points. Mini-blinds between layers or roller shades are preferred for lighting control.

9. **Cabinet Pulls** (Communal and Therapy Space) – The NAPHS and FGI detail guidance regarding cabinet pulls recommending they either be recessed with no tie off points or be of the closed type variant.

10. **Electrical Switches / Outlets** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding Electrical Switches / Outlets recommending they have cover plates with tamper resistant screws, made of polycarbonate materials and have Ground Fault Interrupted Circuit (GFCI) water source protection.
11. **Fire Extinguishers and Alarm Pull Stations** (Communal and Therapy Space) – The NAPHS details guidance regarding Fire Extinguishers and Alarm Pull Stations recommending all cabinets housing these devices be locked with the staff equipped with keys for access at all times. Furthermore, keys should have a red plastic ring attached for quick identification as required.

12. **Lavatory Doors** (Communal, Therapy and Private Patient Space) – The NAPHS and FGI detail guidance regarding Lavatory Doors recommending that soft suicide doors (is used) be attached by magnets for easy removal, cannot be locked, have thresholds that do not allow wheelchair tipping and be ADA or ANSI compliant. If Sentinel Door is utilized, it shall swing outward and be ASA or ANSI compliant.

13. **Lavatory Grab Bars** (Communal, Therapy and Private Patient Space) – The VA, NAPHS and FGI detail guidance regarding Lavatory Grab Bars recommending that they (horizontal or vertical) be fixed to the wall with horizontal plates, no anchor points, self-draining, removable, easy to clean, able to support 250 pounds and ASA or ANSI compliant.

14. **Lavatory Faucets and Valves** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding Lavatory faucets and valves recommending that they be ligature resistant, allow temperature control and be push-button or motion sensor activated.

15. **Lavatory Waste and Supply Piping** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding Lavatory waste and supply piping recommending that they be enclosed and not accessible by patients. Additionally, they should not enable patients to hide contraband.

16. **Lavatory, Toilet Flush Valve** (Communal, Therapy and Private Patient Space) – The NAPHS details guidance regarding Lavatory Toilet Flush Valves recommending that they be recessed and activated by push button. Else, pipes and flush valve should be enclosed in a sloped top housing.

17. **Lavatory, Shower Controls** (Private Patient Space) – The VA and NAPHS detail guidance regarding Lavatory Shower Controls recommending that the mixing valve be single knob, minimal ligatures and allow patient to control flow and temperature (not scalding). The shower head (mounted or hand held)
should be of institutional type and ligature resistant. The “Wall Pak” single piece, recessed stainless steel unit is preferred with recessed soap dish and push-button valves.

18. **Lavatory, Shower Floor Drains** (Private Patient Space) – The VA details guidance regarding Lavatory Shower Floor Drains recommending that they be attached with security screws and if a depression of 4” or more exists, then sloping the entire floor to the drain is preferred.

19. **Night Light** (Private Patient Space) – The VA, NAPHS and FGI detail guidance regarding Night Lights and recommend that they be located in all patient rooms and bathrooms to prevent patient falls and enable staff to verify nightly patient well-being. The lights must be tamper-resistant, have a minimum ¼” thick polycarbonate prismatic lens, secured in a frame with no glass bulbs, tamper-resistant and controlled at the room entrance.

20. **Nurse Call / Emergency Call Systems** (Communal, Therapy and Private Patient Space) – The NAPHS and FGI detail guidance regarding Nurse Call / Emergency Call Systems recommending that pull cords be no longer than 6” and Patient Toilet Pull cords be no longer than 4”. Additionally, shall be low voltage, have a signal outside the patient door and at the Nurse Station

21. **Clothing Rods / Clothing Hooks** (Private Patient Space) – The FGI is the only reference that makes a recommendation stating that if used, they must be designed to mitigate if not eliminate patient injury. Else, they should not be used due to hanging hazards.

As previously indicated, the appropriate selection and positioning of Hardware & Fixtures is important as utilization of the wrong device can result in injury or death. While it is therapeutically important to provide residential looking features that enable patient control (amount of water flow, degree of water temperature, etc.), it is equally important from a safety standpoint to mitigate if not eliminate excessive access or control that could result in hanging, burns or electrocution. Solution devices exist to accomplish safety and therapeutic goals but for this BEF in particular, safety is weighted heavier than therapeutics due to the implications to patient as well as staff health and welfare. To summarize the findings regarding
the comparison of the BEFs (Space Layout, Finishes & Furnishings and Hardware & Fixtures) and the guidance available through four of the most prominent references (DOD, VA, NAPHS and FGI guidance documents), review the table at Appendix A regarding the recommendations, information gaps and image examples for many of the BEF details.

Of all the areas to focus on regarding patient care, one of the more critical if not the most critical is patient safety – and this critical area can also be viewed from the position of staff safety as well (NAPHS, 2013). In regards to In-Patient Behavioral Health Facilities, most patients are brought in because of attempted suicide, flashbacks or images that potentially have them categorized as a flight risk to do harm to themselves as well as others. As indicated above with this fragile patient type, dignity and respect are important to helping the patient achieve mental stability and get beyond the point of wanting to end his or her own life but at the same time, they must be housed in an environment that doesn’t give them the option to expedite personal life termination. So in general, facilities completed in the past were weighted heavily toward therapeutics (artistically intriguing and visually appealing designs) that appeared functional but were not feasible due to ligatures, sharp or pointed corners, ingestible hazards, hiding places or materials that could be broken and used as weapons to harm oneself or others. On the other hand, facility designs were weighted excessively on the aspect of safety, providing the appearance of incarceration in a prison cell: stainless steel toilets, bland wall tiles, absence of color, limited windows and limited access to the outdoors. Additionally, the overall feeling makes the space feel like it was nothing more than a low maintenance, easy to clean space that “stored” a patient rather than provided an effective and dignified treatment environment. Today, research and experience are starting to test and validate theories regarding successful Behavioral Health Facility design. An example can be seen regarding the evaluation of safety with the 2-bed Private Patient Room. This room type forces a social intimacy that may be intimidating and detrimental to interaction with some patients. While some researchers provide support theorizing that private rooms are appropriate for some patients, other
researchers/practitioners contend that shared rooms support patient safety as the presence of a roommate potentially prevents suicide. Additionally, private rooms have the negative impacts of encouraging withdrawal from therapeutic group interaction (Shepley, 2013). For the MHS, patient rooms of two or more are the ideal solution as training, meals, recreation – almost all activities are completed focusing on the “buddy system” concept. So, the dynamics that can be achieved through well designed, multiple-occupancy personal spaces pay huge dividends not only regarding patient and staff safety but also with the confidence and healing success with individual as well as collective patient groups in particular treatment programs.

Another aspect for consideration is the therapeutics of the facility or particular space. Again, safety is the primary aspect to consider as injury to staff, to patients or worst case scenario – death to anyone is unacceptable. So, one must really look at the fine “minutia” when it comes to planning a safe and yet therapeutic facility to support In-Patient Behavioral Health. An example of this concept evolved from a conversation with a facility planning expert from OTSG in Washington D.C., related to the size of tiles used in bathroom and shower spaces. The VA has recommended the use of 2”x2” tiles instead of 4”x4” tiles because if the patient breaks 2”x2”tiles, then the pieces are too small to be used as weapons versus the shards that can result from the breaking of 4”x4” tiles. So, in line with the VA’s statement that “Mental health facilities should be environments of healing that allow the building itself to be part of the therapeutic setting and process (DVA, 2010) coupled with the concerns of safety for not only the staff but the patient himself, what is the balance between safety and therapeutics? Answer to this question as well as others will be explored within the analysis of this study.

In summary, the history of Behavioral Health and trying to understand those with “invisible wounds” has been a complicated series of progressions and digressions, a process of dramatic yet innovative discoveries that were adhered to under optimal conditions but were often times neglected to satisfy
manpower requirements. Later on, the choices made regarding the poor selection of personnel proved to be extremely costly as well as ineffective burdens that in many senses continue to burden the lives of the American Military Veteran as well as the American Public in general today. However, it is interesting to note that each successive war from World War I thru today, not only in the United States Military but within members of the North Atlantic Treaty Organization as well, has produced significant discoveries and accomplishments that have greatly contributed to the advancement of cures for the Mental Health patient. World War I provided the most significant, ground-breaking information on patient definition and categorization than any other conflict. LTG Patton’s slapping incident with Private Bennet during World War II aided with the global recognition that invisible wounds with soldiers was a reality and a disorder that needed addressing. The Vietnam War taught psychiatrists and clinicians more about patient treatment and effective program solutions than any other conflict and OEF/OIF has enabled the effective identification and treatment of PTSD and TBI than any other conflict. Although these accomplishments are monumental, there is still much to learn through research and in particular – much room for improvement within Behavioral Health Facility design. Some current guidance documents (DOD, VA, NAPHS and FGI) provide recommendations and criteria, however, more definitive solutions and direct guidance is required to truly impact Behavioral Health Facility Design in a positive way. Further details regarding Research Design, the selected Theoretical Framework and criteria surrounding the selection of Case Studies will be expanded upon in the next chapter.
RESEARCH DESIGN AND METHODS

The purpose of this research study is to gain an understanding of the balance between safety and therapeutics regarding In-Patient Behavioral Health Facilities within the Military Health System (MHS). Beyond the fact that Traumatic Brain Injury (TBI) and Post-Traumatic Stress Disorder (PTSD) are currently the dominant issues regarding Brain Health, there is also a direct relation regarding both conditions as TBI patients can potentially develop PTSD due to flashbacks, the recollection of horrific memories or depression caused by the change in lifestyle resulting from the brain and/or other injury. Inadvertently, a PTSD patient cannot develop TBI unless they physically receive a blow to the head. With that being said, PTSD patients represent the largest at-risk patient group for suicide dominating the In-Patient Behavioral Health facility today and that in itself is the major justification for this study – eliminate patient suicide and other forms harm attempt on themselves. Although it has taken almost 100+ years, military leaders today understand the importance of Brain Health and that optimal soldier performance is comprised of a “holistic” approach, combining both physical as well as mental fitness (HQDA, 2012) both on and off the battlefield. Off the battlefield, an In-Patient Behavioral Health unit that provides an environment that keeps soldiers safe, is hazard free and eliminates suicide is critical regarding the maintenance of soldier health.

The majority of the research that exists regarding Behavioral Health has primarily focused on clinical solutions. Little has been documented regarding Evidence Based Design (EBD) or Post Occupancy Evaluations (POE) for In-Patient Behavioral Health Facilities. EBD or POE to compliment the progress and success of the aforementioned clinical and treatment solutions could potentially increase positive patient as well as staff outcomes and experiences. Furthermore and to reiterate, the three key questions that will serve to guide this inquiry are:
1. Are the current MHS guidance criteria (space planning criteria, templates and unified facilities criteria (UFC)) for In-Patient Behavioral Health Facilities effective for keeping patients and staff safe?

2. Are the current MHS guidance criteria (space planning criteria, templates and UFC) for In-Patient Behavioral Health Facilities effective for providing a therapeutic environment for staff and patients?

3. What improvements to the MHS guidance criteria can be suggested with regard to balancing safety and therapeutic needs for patients, staff and family members?

With little information existing on safety and therapeutics for In-Patient Behavioral Health facilities within the MHS or regarding facilities of this type in general, a review of available research theory and methods is required to determine what is applicable regarding this type of research as well as what some of the preferred methods available are (both quantitative and qualitative) to address the problem.

Theoretical Framework

Multiple theoretical influences exist regarding research for the Built Environment, but the most practical and applicable theory for this particular study is the concept of Environmental Press. Coined by the Psychologist M. Powell Lawton, he stated “people and the environment they are in are related via the people’s competence and the environment’s press, where competence is the person’s cognitive, mental and emotional aptitude and press is the demands the environment has on the user (Lawton, 1980). Clearly for the clinical or treatment facility environment, designs that keep the patient calm and at ease throughout the duration of their stay is an example of a successful design outcome and one that definitely reflects a positive relationship between the environment and human behavior. Furthermore, Lawson argues that there is an “infinite variety of behaviors that are a function not of the person alone, nor of the environment alone, but of the unique interactions between what is inside and outside the person” (Lawton, 1980). Employing this theory will help address the Positives and Negatives within the Built Environment Factors (BEF) of Space Layout, Finishes & Furnishings and Hardware & Fixtures as well.
as their impact on Human Behavior – Patient Outcomes within the In-Patient Behavioral Health Facility. The results will assist serving as screening and evaluation criteria to be used as feedback to enhance design, improve patient facility use and increase positive patient outcomes.

Figure 18 – Psychologist M. Powell Lawton’s Diagram of Environmental Press

Research Methodologies and Data Collection

Understanding the Theoretical Framework that will be utilized for this study enables a more clear understanding of the selection criteria, decisions and related inputs required to determine the appropriate Research Methodology. Although there are many options when it comes to research, the most logical options regarding Architectural Research are to utilize either quantitative (e.g. – experiments, historical documents), qualitative (e.g. – site surveys, interviews) or a mixed methods approach which utilizes a combination of both methods. Again, with little information existing regarding safety and therapeutics within MHS In-Patient Behavioral Health facilities, a Case Study approach will be utilized a this type of study will target the exploration of the phenomenon in its natural context using multiple data
sources (Baxter, 2008). A more detailed look at the approach that targets phenomenon will be evaluated between the Case Study Research Theories of two well-known researchers, Robert Stake and Robert Yin. Robert Yin’s views the individual data element (or case) as the most important issue for Case Study Research and he defines the case as phenomenon that possesses unclear boundaries as examined within the context by the researcher (Yin, 2014). Furthermore, his theory reflects that one must define the case and establish boundaries: the case is related to the way the initial research question is defined and the boundaries are the parameters used in the selection of the case or cases such as specific building types, timeframes, geographical locations or people that comprise the organization’s social makeup (Yin, 2014). Adversely, Robert Stake believes the case to be an integral part of a system with defined boundaries and multiple parts (Stake, 1995). With that being said, Stake’s views have been selected as the method of choice for this study. Additionally, selection of this method stems from an issue that occurs in a real-world setting, utilizing multiple data sources and focusing on a qualitative inquiry to construct an in-depth understanding of the cases (Stake, 1995). By selection of similar cases, the researcher aims to attain a better understanding about the collection of cases across a standardized set of criteria. In general, this study focuses on the issues that stem from the findings and their relationship within the context of the problem and series of research questions (Stake, 1995).

The Research Design consists of three integral components that will serve as the foundation for the study. The first of the integral components is outcomes, which are identified as safety and therapeutics. Safety is defined as the condition of being protected against physical, social, occupational, psychological or other types or consequences of failure, damage, error, accidents, harm or event which could be considered non-desirable, including protection from people or possessions. Therapeutics (within a healthcare facility) is defined as items (individual physical, mental, expressive or a combination of all) that contribute to patient healing and mitigate fear, stress, health uncertainty and human relation isolation. Absence of these factors may cause a person's immune system to be suppressed and can dampen a person's emotional and
spiritual being, impeding recovery and healing. Additionally, these integral components comprise the basis of this study, determining what the balance is between safety and therapeutics to instill patient and staff dignity while at the same time keeping both safe from harm and hazards that could relate to injury or even worse – death. The second component is the selection of Facility Related Dimensions. In regards to safety and therapeutics, the dimensions to be investigated are Physical Comfort, Mental Comfort, Absence of Hazards and Visual Appeal. A closer look at these dimensions provide a better understanding of the context for which each will be utilized within this study. Physical Comfort is defined as a feeling of well-being brought about by internal and environmental conditions that are experienced as agreeable and associated with contentment and satisfaction, where these conditions include but are not limited room space and/or layout, furniture type, available lighting (natural and man-made) and views of nature. Mental Comfort is defined (in a facilities context regarding patients) as a space or environment that allows patient comfort that is free of stress or complications that can result in frustration, confusion or agitation. In other words, a space or environment that permits the mind to relax and be at ease. The term Absence of Hazards is defined as a space that is free of all sources of danger that could cause harm or death to oneself or others. Examples include but are not limited to contact, ingestible, impalement, puncture/cut or hanging dangers. The final element of the four Facility Related Dimensions is Visual Appeal, which is defined as the attraction that causes an interest or desire in something produced by visual stimuli. Examples of visual appeal in a patient room or space includes but is not limited to color and/or pattern selection, amount of light (natural and/or man-made), furniture types/patterns and room/space layout. The final integral component is the Built Environment Factors (BEF) that includes three specific areas for investigation: Space Layout, Hardware & Fixtures and Finishes & Furnishings. Within the context of this study, Space Layout is defined as a BEF that includes but is not limited to room sizes, same-handed rooms, ceiling heights and how items are arranged within the space. Hardware & Fixtures is defined as a BEF that includes but is not limited to door hinges, light fixtures, locksets, vents, electrical outlets and mounted sprinkler heads. Studying the combination of the aforementioned components and how they
complement or potentially hinder each other is critical as patient dignity and self-worth is important but so is keeping them safe. So what are the solutions that provide a happy medium – dignity through style but yet safety through the absence of ligatures for hanging, electrical devices that could shock, furnishings that could be broken into weapons and blind-spots within spaces that interfere with effective patient observation? Again, all are critical and require close scrutiny, observation and analysis to appropriately determine what the appropriate “balance” is.

To effectively compare and contrast the Built Environment Factors (BEF) and Dimensions to determine the degree in which they either support or hinder the outcomes of safety and therapeutics, multiple data collection methods will be utilized. Data Collection methods consist of the following:

1. **Review of archived documents.** Coordination was made with the facility staff, the clinical staff and the Architect/Engineering Firm responsible for project new construction, renovation or alteration. Documents acquired for review included Floor Plans depicting current space utilization, room types and numbers, room or space dimensions and overall facility layout to provide a basic understanding of potential patient and staff workflows, location of nursing stations and any hazard areas (blind spots). Additionally, a questionnaire was compiled and sent to each facility to obtain historical data that depicts a basic description of the facility use with metrics that include but are not limited to facility hours of operation, services offered, staff model by number and specialties of personnel assigned, average length of stay, number of patients seen annually from 2010 to present and bed capacity of the facility. Additionally, archived document analysis was used to explore how the planning and design of multiple In-Patient Behavioral Health units for the Military Health System (MHS) support or hinder a balance between safety and therapeutics for patients and staff. To enable this analysis, a post occupancy evaluation method was employed that focused on targeting three main areas within the In-Patient Behavioral Health unit:
A. **Private Patient Spaces (Inpatient bedrooms)** – Areas include multiple-occupancy bedrooms, single-occupancy bedrooms, toilet room and toilet/shower room spaces. Within the floor plans, those spaces are highlighted in yellow.

B. **Communal Space (Activity rooms)** – Areas include multi-purpose, exercise and enclosed balcony room spaces (as applicable). Within the floor plans, those spaces are highlighted in brown.

C. **Therapy Space (Counseling / Group Therapy rooms)** – Areas include consultation, treatment, group therapy and team collaboration room spaces. Within the floor plans, those spaces are highlighted in red.

D. **Remaining Spaces** – Additional spaces within the floor plan include but are not limited to break rooms, supply, storage, records, nourishment and other rooms or spaces that support the facility. Although these spaces are important, they do not represent space where patients and staff would collectively exist and therefore are not a focus of this study. An example of space identification is seen below in Figure 19.

![Figure 19](image19.png)

Figure 19 – Examples of space color coding that will be utilized on floor plans.

2. **Interviews with General Staff and Leadership.** Upon review of the structure that comprises the elements of the Army Medical Department (AMEDD) that focus on Brain Health, participants were selected for interviews based on their current assignment within the Office of the Surgeon General (OTSG) or the US Army Medical Command (MEDCOM). Participants were selected based on their experience, current assignment, role in policy development and level of responsibility. Interviews were conducted telephonically with Behavioral Health leaders from OTSG and MEDCOM, Traumatic Brain Injury (TBI)
expert from the US Army Medical Research and Materiel Command (MRMC) as well as a Senior Clinical Planner from the US Army Health Facility Planning Agency (USAHFPA). The interview questions target the participant’s area of expertise, experience within the area of Brain Health, how their organization works and the products/services they provide supporting MEDCOM initiatives as well as pros and cons with current programs and facilities. Interviews at this level and magnitude provide an overarching framework that appropriately leads into the treatment programs and curative solutions located at the individual clinics or hospital facilities for which members of these staffs are charged with the oversight of program implementation and to a degree, program management.

3. **Interviews with staff and clinicians:** Upon review of the Table of Distribution and Allowances (TDA) and Joint Manning Document (JMD) for Behavioral Health Facilities, interview participants were selected based on their experience and expectation that they will provide a “front-line” perspective of clinic and patient operations. Each member of the clinical staff are physically present daily at the selected facility to implement as well as manage the daily programs and operations that provide the care for the patients whose care they have been charged with, so their views and experiences are critical determine the outcomes of this study. Based on schedules and availability, the goal is to acquire 5-10 personnel of varying Military Occupational Specialties (MOS), both uniformed and civilian personnel that include but are not limited to Social Workers, Psychiatric Nurses, Psychiatrists and Mental Health Specialists. Each member of the clinical staff will provide his or her unique experiences (civilian, officer or enlisted member) as well as provide a perspective that may quite possibly differ from that of the General Staff. In accordance with Carl Von Clausewitz’s theory of “Fog and Friction” as depicted in his classic work *On War*, Senior Leadership or “decision makers” sometimes are so far removed from the actual actions taking place that they can’t see through the fog and their decision can create friction that could increase into a horrific problem at the lowest level. Therefore, gaining perspectives from both groups within the various levels of the leadership chain will provide a complete and thorough picture of the issues, observances and true status of the programs and facilities support the patient and clinical operations.
4. **On-site observations**: Review of archived documents and interviews with Senior Planning and Clinical Staff provide the foundation of knowledge for this study. However, on-site observations enabling the researcher to “walk the terrain” to visually observe, graphically record (photographs) and physically obtain space measurements is invaluable to the research process as well as this research study. These observations include but are not limited to recording staff workflow, staff & patient movement within the spaces, photographs of fixtures, hardware and furnishings and utilization of space (both independent and collective use by patients and staff). A checklist will be employed summarizing the aforementioned concepts (See Appendix A – BEF Checklist).

**Selection of Case Studies**

With little information existing regarding MHS In-Patient Behavioral Health Facilities, Case Studies were selected as the primary vehicle to provide the foundation for the basis of this research study. With multiple facilities located both within the Continental United States (CONUS) as well as Outside the Continental United States (OCONUS), metrics regarding the ideal facility criteria for Case Study selection included:

A. Must be an MHS facility

B. Must have an In-Patient Behavioral Health unit

C. Must be a high-volume facility.

Although Medical Operations within the DOD has been directed to and is staring to merge toward Joint Operations and Facilities, the majority of current facilities were designed and managed with a heavy influence either from the Army, the Navy or the Air Force. Many medical professionals believe that each service conducts business differently based on influences and tendencies of the service, but nothing was discovered in the literature review to indicate this claim. However, selection of facilities that may have a strong Army and Navy influence would only serve to provide a more accurate and detailed analysis of the
safety and therapeutic aspects to better provide the base of knowledge for this study. Regardless, the two cases selected for this study were the Carl R. Darnall Army Medical Center located in Killeen, Texas (Fort Hood) and the Walter Reed National Military Medical Center located in Bethesda, Maryland.

The Walter Reed National Military Medical Center (WRNMMC – See Appendix B) historically has been known as the Bethesda Naval Hospital located in Bethesda, Maryland (Hoffman, 2001). The hospital (as implied by its historical name) was a Naval Facility, manned by a Naval Staff whose sole focus were members of the United States Navy or United States Marine Corps. However, with the closure of the Walter Reed Medical Center in Washington, D. C. the Bethesda Facility as well as the new hospital built on Fort Belvoir in Lorton, Virginia, both hospitals were aligned under Joint Task Force National Capital Region/Medical (JTF CAPMED) in accordance with the directed mandate for joint operations but also (amongst other goals and objectives) to ensure an adequate division of the coverage area that support the DOD personnel who reside within the Capital Region. Regardless, the WRNMMC In-Patient Behavioral Health Unit renovation was completed in 2012 to enhance the services and care provided by this 24-hour operation facility. Upon completion of the renovation, the 32,220 square foot unit has a total of 14 available patient rooms with a total bed capacity available to accommodate 28 patients comfortably. Unless extenuating circumstances dictate otherwise, patients are housed jointly taking advantage of the “buddy system” that not only assures the patient that he/she are not only through this period that they requirement treatment assistance but also from a safety standpoint where talk and encouragement from a peer may save one’s life and ensure that further harm to the individual patient or staff member does not occur. With this being the case, all rooms are double occupancy except for 1 Seclusion Room, postured and ready in the event it is needed. With WRNMMC located in the Capital Region and potentially catering to a more senior DOD population, the services offered at the facility are Acute Psychiatric Hospitalization, stabilization and disposition to a lower level of care to address the top three diagnosed admissions that include but are not limited to Depression, Post-Traumatic Stress Disorder
(PTSD) and Psychosis. Another aspect to consider (beyond the senior population) is that all military personnel evacuated from the current Theater of Operations that are throughput from the Landstuhl Army Medical Center in Germany are sent to either WRNMMC or Fort Belvoir, which could also continue the constant flow of Brain Health patients. Regardless, WRNMMC is staffed with a broad spectrum of medical and clinical staff professionals that consists of: 3 Psychiatrists, 1 Psychologist, 4 Social Workers, 2 Case Managers, 8 Registered Nurses, 1 Nurse Practitioner, 8 Licensed Practical Nurses, 10 Behavioral Health Specialists and 1 Administrative Specialist. Through an increase in program performance and experience, the Length of Stay (LOS) for the facility has been reduced from 24 days which was the average from 2010 – 2013 to the current LOS of 13 days for 2014. Finally, the number of patients seen annually within the unit from 2010 – 2013 averaged 628, qualifying this facility as a high volume unit and therefore an optimal Case for use within this study.

The Carl R. Darnall Army Medical Center (CRDAMC – See Appendix C) is located at Fort Hood, Texas (City of Killeen, Texas). With the current hospital built in 1964, it was renovated in 1984 to adhere to modernization standards and upgrades to the climate controls. In 2006, the facility was repurposed to support the 24-Hour In-Patient Behavioral Health unit that remains today catering to a variety of Behavioral Health conditions. Constructed to support what was considered at one time the “largest military installation in the free world” (hospital supported 1st Cavalry Division, 4th Infantry Division, III Corps as well as a myriad of support and specialty units), the facility still supports 1 Division (+) and serves as a Power Project Platform for the United States Army Reserve and other forces as required. The total square footage for this facility is 6,989, providing a total of 6 patient rooms. The CRDAMC facility adheres to the theory of joint occupancy as does WRNMMC but provides two rooms that accommodate 4 patients which is beyond the “battle buddy” concept and into a “battle team” concept. Regardless, the 6 rooms accommodate a total of 16 patients in double or quadruple occupancy configurations. The services provided at this facility are identical to WRNMMC as Acute Psychiatric Hospitalization, Stabilization and
disposition to a lower level of care are what is offered to cater to a slightly different top three diagnosed admissions consisting of 1) Post-Traumatic Stress Disorder 2) Adjustment Disorder with Depressed Mood and 3) Adjustment Disorder with Anxiety and Depressed Mood. Top three diagnosis variations in regards to what was listed for WRNMMC could be a variety of things but the inference here could be the type of units at each installation (Combat Arms Unit Personnel versus Planning Staff Personnel), mission requirements (Deploying Maneuver Units versus Garrison Staff Units) and average age of predominant personnel that comprise the units (Seasoned Commissioned Senior Officer and DOD Civilian Staff Personnel versus Junior Non-Commissioned and Enlisted Personnel). The staffing model and specialty types authorized at this facility are 3 Psychiatrists, 3 Case Managers, 16 Registered Nurses, 3 Licensed Practical Nurses, 12 Behavioral Health Specialists and 1 Administrative Specialist. The average Length of Stay (LOS) for this unit has been consistent at 7 days from 2010 until present day, 2014. Finally, the number of patients seen annually within the unit from 2010 – 2013 averaged 476, qualifying this facility as a high volume and therefore an optimal case for use within this study. See Table 4 below depicting the annual patient admissions for WRMMC and CRDAMC from 2010 until present.

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
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<td>460</td>
<td>488</td>
<td>492</td>
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<tr>
<td>WRNMMC</td>
<td>625</td>
<td>620</td>
<td>635</td>
<td>630</td>
<td>TBD</td>
</tr>
</tbody>
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Table 4 – Annual Patient Admissions for CRDAMC and WRNMMC In-Patient Behavioral Health Units.

Even with the Department of Defense (DOD) mandating a Joint and/or a consolidated approach to Military Medicine, there are some facilities that still exist regarding the influences and unique tendencies of each of the individual services. However and for the purpose of this study, facilities designed with a heavy influence from the Army as well as heavy influence from the Navy, utilized in a Joint capacity will suffice for this study.
Effective Data Analysis from what is obtained through the aforementioned Case Studies is critical to understanding and providing effective feedback that adequately addresses the research questions. With Case Study Research, a multi-methodology approach is provided to study a phenomenon within its real-life context and utilizing multiple data sources allows for the understanding of all facets of the phenomenon using data triangulation to confirm findings and strengthen case validity (Yin, 2014). Therefore, the data analysis that supports this study will follow the categoric aggregations and interpretations following Robert Stake’s principals which includes but is not limited to triangulating key observations and interpretations, seeking patterns within the data to develop issues and the selection of alternative interpretations (Stake, 2005). Another means to view or expand on the Data Analysis process is represented in Figure 20, where the potential relationships between the Outcomes, Dimensions and Built Environment Factors (BEF) are reflected. When comparing the elements, Visual Appeal is a Dimension that was screened as physical comfort, mental comfort and absence of hazards all had a more dominant effect regarding safety and therapeutics.

![Behavioral Health Framework: Dimension Comparison and Potential Relationships](image)

With the correlations established between the Outcomes, Dimensions and Built Environment Factors, the remaining elements were applied to shape the focus for the interviews, on-site tours and recording of visual data. With data obtained from both Case Studies (WRNMMC and CRDAMC respectively), the
process will begin to evaluate the findings from each Case Study amongst themselves as well as against the Guidance Criteria that currently exists. Once comparisons are made or data triangulation is conducted, findings will then be compared to Safety and Therapeutics to determine if the issue is valid or not. If the issue is not valid, then it will be screened out of consideration and discarded. If the issue is valid, then it will remain with the Case for further comparison and interpretation regarding the level of safety and therapeutic qualities of the facility (See Figure 21).

![Figure 21](image-url)

Figure 21—Data Analysis: Filtering and Interpreting Valid Issues amongst selected Case Studies
RESULTS / FINDINGS

The military service-member that qualifies for admittance as a patient into an In-Patient Behavioral Health Facility (self-admittance or military unit referral based on acts that include but are not limited to harm to self or others, speaking of harm to self or others or talk of suicide, etc.) can be subjected to additional strains, pressures or circumstances that are not encountered within the average civilian. However, military service-members are human beings and like all people, they have their own unique character flaws, faults, varied upbringing experiences and unique genetic makeup that enables them to endure (or not) the diverse set of variables or stressors that are encountered in everyday life, regardless if civilian or military. Consequently, issues of defining and correcting individual Brain Health cases are the responsibility of the psychiatrist or mental health professional, not the architect. The architect’s job is to design quality facilities with spaces / environments that “house” curative solutions and treatment programs to compliment the efforts of the mental health professional as well as facilitate the progress made by the individual patient. Although the architect and mental health professional are charged with differing responsibilities, their collective patient goals are the same: eliminate harm to self and others to prevent the occurrence of suicide and positively convey that there are always options and help to resolve issues. With the average patient Length of Stay (LOS) between both facilities averaging 5 -13 days, the initial hour is much like that in standard military patient triage (the golden hour) which is the most critical. Therefore, a safe facility that provides a level of dignity throughout (safety and therapeutics) can only aid to enhance positive patient experiences and outcomes within the facility.

Review of Components

Recognizing the importance of the concepts of Safety and Therapeutics, the most effective means to determine the “balance” between the two is to conduct Case Study Research. The two selected cases
that were deemed as High Volume, Military Health System (MHS) facilities were Carl R. Darnall Army Medical Center (CRDAMC) at Fort Hood, Texas and Walter Reed National Military Medical Center (WRNMMC) at Bethesda, Maryland, respectively. With little information available, a mixed-method research approach was deemed as the most appropriate means to provide a broad array of information through archived document review, clinician and staff interviews, and onsite observations. The information obtained would be applied toward the desired outcomes (staff safety, patient safety and potential therapeutics) that support the balance between safety and therapeutics as they are correlated with the Built Environment Factors (BEF) of Space Layout, Finishes and Furnishings, and Hardware and Fixtures. Accordingly, the aforementioned three BEFs were selected as the most critical based on the following criteria: 1) Space Layout pertains to the therapeutic arrangement of furnishings and materials, dimensions and amenities within a given space to provide a “home-style” level of comfort. From a safety perspective, the space should be free of hiding/blind spots or spaces that enable barricading or other harmful actions 2) Finishes and Furnishings pertains to the provision of therapeutic materials (furniture, artistic finishes, natural daylight, etc.) as well as safety considerations through the provision of durable, secured furniture, non-ingestible artwork that is tamper-proof and finishes that result in rounded or smooth edges versus pointed or rough ones and 3) Hardware and fixtures that therapeutically don’t present the “institutionalized” look (e.g. – stainless steel toilet, exposed sink pipes) and from a safety standpoint don’t present ligatures that enable hanging or controls that can be tampered with causing electrocution.

Facility Built Environment Factor Analysis

Utilizing the mixed-method research approach, review of archived documents began with analysis of facility floor plans for the two selected Case Studies. Even though WRNMMC is twice the size of CRDAMC (20,658 and 10,586 Square Feet, respectively) utilization of facility spaces are practically identical and
therefore were able to be defined as Communal, Therapy, Private Patient, Clinical Support and Other Space. Communal Space (highlighted in brown) represents spaces where patients can relax in an entertainment centered venue, engage in quiet activities (reading, music, etc.) or engage in other activities (exercise, peer conversation, etc.). Communal Space can also be comprised of outdoor space where patients can engage in smoking (as applicable), exercise or take in the sunshine and fresh air amongst the landscaped environment. Private Patient Space (highlighted in yellow) includes single or multiple occupancy patient rooms. Therapy Space (highlighted in red) is inclusive of Group Therapy Rooms, Counseling Rooms, Art Therapy Rooms and Seclusion Rooms (seldom occupied but are always ready in the event of a contingency or emergency). Clinical Space (highlighted in green) is defined as all spaces that exist to support the facility, which includes but is not limited to Staff Lounge, Storage Spaces, Laundry, Medication Room, Nourishment (Food Preparation) Room, Charting Rooms and Nurse Stations. The final space to be defined is Other Space (highlighted in blue) which is inclusive of physician offices, student resident workrooms, staff locker space, family waiting rooms and patient examination rooms. Although both facilities are virtually identical in use, the space utilization differs slightly with WRNMMC’s division existing as 34.6% Private Patient, 20.1% Clinical, 12.6% Communal, 12.9% Therapy and 19.7% Other space and CRDAMC Space division existing as 20.9% Private Patient, 13.3% Clinical, 19.1% Communal, 8.2% Therapy and 38.5% Other space (See Figure 22 and 23 respectively).
The variations in space utilization are logical regarding Private Patient Space since WRNMMC has a larger bed capacity for patients than does CRDAMC. However, the difference in the ratio of Other Space raises one’s attention as to why a smaller facility would have a greater percentage than a larger facility. More beds mean more patients which, accordingly, should result in more providers. The answer to that question could be satisfied based on two possibilities. The first is the fact that CRDAMC has a pair of 4-patient rooms (Room 5117 and Room 5122) where WRNMMC only supports 2-patient bedrooms. If CRDAMC has two more rooms to have all patients supported in 2-patient rooms then the percentage would change increasing Private Patient Space and reducing Other Space. The other is the fact that WRNMMC was a renovated project completed as of 2012 with a specific emphasis toward providing a quality unit to address In-Patient Behavioral Health needs. CRDAMC currently is a facility that was built in 1964 with the current In-Patient Behavioral Health unit existing as a repurposed space as of 2006. So beyond basic safety amenities that were considered when this facility was repurposed, the staff more/less is working with what they have until the new facility is completed around June of 2015.

With an understanding of how the floor space by type is broken down within the facility, determining how staff members as well as patients utilize the space was next. A thorough analysis of the spaces reflected
where the patient spends most of his or her time, where the staff spends the majority of his or her time and then most importantly, where the staff and patients collectively spend their time. Although it is important to have a completely well-designed facility, some spaces should receive more attention than others based on the degree and frequency of use. An example would be the space utilized to house the clean linen and supplies to support and sustain operations. The focus for this space would be to incorporate optimal shelving units or equipment that maximizes storage, access and retrieval of materials as they are needed to support the facility and the patient. Since access to this space is only authorized for members of the staff, safety concerns are predominantly centered on entry access that may be accomplished by installing patient tamper-resistant door locksets. Therapeutics for this space should be of no concern as the use of color; design patterns, décor and natural daylight will not affect the use of this space. Additionally, time spent within this space should only be periodic and require less design focus compared to spaces where both patients and staff collectively spend the majority of their time these areas require greater detail and focus. Therefore, a review of space utilization by Clinical Staff (Psychiatrists and Psychiatric Nurses), by Clinical Support Staff (Behavioral Health Specialists – Enlisted personnel) and the Patient reflect how the unit is utilized on a daily basis to support treatment operations (See Figure 24 and 25). Although the goal is to improve operations for the entire facility, analyzing and cross-referencing how each of the aforementioned personnel utilize the space will determine where the priority of effort should occur to truly make a positive impact and enhance patient outcomes within the In-Patient Behavioral Health Unit.
As indicated in the floor plans above, the patient space utilized within both units is defined as Private Patient Space (their bedrooms, both single and multiple occupancy spaces), Communal Space (where they partake in activities, may watch television, make calls, etc.), Therapy Space (Therapy or Counseling Sessions) and Other Space (Exam Rooms in the event of injury, Sessions with Physicians, etc.). Regarding
Private Patient Space, both facilities enabled the patient to spend 9 hours in that space (1 hour dedicated for pre and post bedtime activities) with 8 hours dedicated for sleep during the mandated “lights out” period. Although graphics depict 38% of the patient’s time spent within this space, almost all of their time is spent in the dark for sleeping. So, therapeutic qualities in this space are important as over a 1/3rd of the patients time is spent here, but with the majority of that time in the dark – flooring, wall décor and a comfortable bed are the prominent amenities needing consideration. Communal Space Rooms are spaces that reflected equal use in both facilities. Here the patient can relax under supervised circumstances to watch television, make telephone calls and engage in other activities to allow the progress and actions from therapy sessions to sink in, enabling the patient to realize what he / she just experienced and accomplished. Equally important to the Communal Space (if not the most important) is the Therapy Space where group sessions, activities and treatment programs are conducted. Lastly, Other Space indicates time spent with the Physicians (as required periodically) but mainly access to Outdoor Spaces. The variance in time allocation is mainly due to the fact that WRNMMC has a rooftop outdoor space that is accessible on the same floor as their unit within the facility. Adversely, CRDAMC has to take their patients down to the first floor via elevator to gain access to the outdoor space, requiring more time based on patient movement to enjoy the same therapeutic effect that the patients at WRNMMC are afforded. In summary and regardless of facility, patient’s predominantly utilize 3 of the 5 defined spaces (Private, Communal and Therapy) where Communal and Therapy are the spaces requiring the majority of the focus as this is where critical cognitive activities are conducted to instill patient dignity, self-worth and the confidence to rejoin life outside of the unit to partake in a lower level of care (as applicable) at an outpatient facility.

With an understanding of how patients use the space at both facilities, analyzing how the clinical staff utilizes the space is equally important. For this study, space use will be analyzed from the standpoint of how the clinical staff (Officers – Nurses, Psychiatrists) and clinical support staff (Enlisted – Behavioral
Health Specialists) utilize space. A depiction of how the space is utilized along with time allocations is depicted in Figure 26 and 27 respectively.

![Figure 26 – Clinical Staff Space utilization by type – WRNMMC In-Patient Behavioral Health Unit](image1)

![Figure 27 – Clinical Staff Space utilization by type – CRDAMC In-Patient Behavioral Health Unit](image2)

Based on the data acquired from clinical staff interviews at both facilities, time spent in Private Patient Space was limited as mainly pre and post sleep activity checks as well as time spent at Other Spaces, such
as providing the needed supervision for outdoor activities or physician exams. The largest space and time variance was witnessed in the area of clinical support space where activities here include but are not limited to: food preparation, charting, fielding telephone calls and additional administrative functions. The variance could be based on many things but in particular, WRNMMC has almost twice the bed capacity as CRDAMC but the staff sizes are the same which could enable more time to be spent overseeing therapy sessions and treatment programs with a smaller patient population. Regardless, the two most important areas to note are the Communal Space and the Therapy Space. Although the total time spent by the Clinical Staff in Communal and Therapy spaces is almost identical at the two facilities, the allocation in each individual space is almost the exact opposite. Again, many things could explain this variance, such as type of staff interviewed, patient population and number of therapy sessions but could also be reflective of break time scheduled between sessions or other activities. Regardless from the standpoint of the Clinical Staff, the Clinical Support Space, Communal Space and Therapy Space is where they predominantly spend their time.

The Clinical Support Staff is comprised of Behavioral Health Specialists who are enlisted personnel (both Army and Navy) that are trained technicians and important members of the MHS Healthcare Team. These specialists, under the supervision of Psychiatrists, Social Workers, Psychiatric Nurses or Psychologists, provide mental health treatment to patients that include but is not limited to collecting and recording psychosocial and physical data, assisting with the care and treatment of patients and counseling patients regarding their personal, behavioral or psychological problems. Currently, WRNMMC has 10 Specialists and CRDAMC has 12 that perform a variety of functions to support the unit as indicated above. A depiction of how the space is utilized by Behavioral Health Specialists along with time allocations is depicted in Figure 28 and 29 below.
When analyzing the space use of the Behavioral Health Specialist, the spaces where most of their time is spent is located within the Communal Space, Therapy Space and Clinical Support Space. The time spent in the Private Patient Space is identical for both facilities as the Behavioral Health Specialist spends his/her
time here in the morning conducting room inspections in search of evidence of unfavorable acts (destruction or damage to self or equipment) and to ensure there is no contraband that the patient has attempt to conceal. All Private Patient Rooms (regardless of occupancy or bed count) are searched each morning and indicates (unless extenuating circumstances) the only time Behavioral Health Specialists would occupy this space. Other space is reflected as equal at each facility and reflects time within physician offices assisting patients or other personal time with locker rooms, break rooms, etc.

Communal Space use is similar within each facility, reflecting 13% and 18% for WRNMMC and CRDAMC, respectively. This variance in space use between the two facilities is due to scheduled meal times, breaks and activity time where the Behavioral Health Specialist physically oversees these activities to ensure a smooth flow in operations but also to ensure that the patient does cause any harm to himself or others. The largest variance in space use is witnessed within the Therapy and Clinical Support Space. Therapy Space use is 4% and 13% while Clinical Support Space use is 25% and 12% at WRNMMC and CRDAMC, respectively. This relationship and variance in the space use is proportion to the size of the facility and location. WRNMMC, located in Bethesda, Maryland has a larger bed capacity, admits a larger patient base and requires more administrative actions to sustain operations at the facility. With CRDAMC existing as a smaller and yet simpler facility with a smaller patient population to monitor, more time can be spent to assist or monitor actions within Therapy Spaces instead of Clinical Support Spaces. Overall, the Behavioral Health Specialist spends a fairly even amount of time in all spaces with Communal, Therapy and Clinical Support occupying the majority of their time.

Space allocation and utilization within a facility is important, not only to define the space and specify how they are utilized but also to determine the frequency of use. Although good design should consider and encompass all spaces within the facility, there are spaces that require more attention than others based on several issues that include but are not limited to frequency of use, actions performed within the space and the intention of the space design. When looking at safety and therapeutics, our requirement was to
understand how the facility was utilized broken down into Private Patient, Communal, Therapy, Clinical Support and Other Space. Furthermore, we were able to review how the spaces were used along with the frequency of use. Determining how the spaces were utilized enabled the screening of spaces where patients, clinical staff and clinical support staff did not jointly occupy with the results reflecting clinical support space and other space falling into this category. Other Space is a broad category that encompasses the spaces identified as Physician Offices and Exam Rooms. Since patients enter the Physicians’ Offices only on a periodic basis for counseling and Exam Rooms only if treatment is required, safety is a concern and it is the physician’s responsibility as they must be cognizant of the items they have in their offices and exam rooms to ensure patients don’t retrieve them for harm against themselves or others. With spaces analyzed and screened, evaluation determined the frequency of use of the remaining spaces (Private Patient, Communal and Therapy). Understanding the frequency of use also can be utilized to establish a priority based on time spent within each space on a daily basis. Regarding Private Patient Space, the patients spend the majority of their time there but it is for sleeping with the lights out. So, it is important to have the space completely safe as the patient is secured in this space at night and this is perhaps the greatest period of independent time (staff checks on patients frequently but they still have a great degree of solitude with the exception of their roommate). With safety of the greatest concern, therapeutics should be considered regarding flooring, wall color and patterns as well as items that present a residential look (night stand, bed, mattress, etc.) but again, since almost all the time is spent within this space with the lights out and there isn’t a large degree of joint patient and staff time within this space, it should not be a priority. The two remaining spaces, Communal and Therapy are where the patients and staff spend the majority of their time together and therefore is where the focus was placed. Communal Spaces are important as they enable the patient to relax and decompress after therapy sessions, engage in recreational activities (reading, watch television, etc.) or freely converse with their peers. Safety and therapeutics are a concern here as patients aren’t received focused therapy targeting the reason why they are there and their mind may tend to wonder. Therefore, safety is critical within this space to ensure
safety for patients and staff but also therapeutics for a sense of pride and self-worth for the patient but also pride and dignity within the staff members. The final space is Therapy Space and is the most critical regarding focus of the three. Therapy Space is where the majority of the patient and staff time is spent jointly on a daily basis and is the space where treatment programs and healing intersect for the patient. Additionally, this is also where a level of progress may be achieved that postures the patient for a lower level care or Out-Patient services away from the In-Patient unit. Therefore, regarding priority of use and focus for this study, the spaces to focus on for this study in priority order are Therapy, Communal and Private Patient Space.

With the top three spaces priorities justified based on the aforementioned data, analysis was conducted between the two Case Study Facility Spaces regarding how the Built Environment Factors (BEF) of each facility and Built Environment Details (BED) compared to the documented standards and criteria. Once the comparison was completed, it was annotated whether or not the Spaces and BEDs for each facility adhered to the standards or not and if each was safe, not safe, therapeutic or not therapeutic and this “rating” will assist with determining the balance of safety and therapeutics upon conclusion. Additionally, some items may be annotated with “no data” as either no data to make a determination was given or safety and therapeutics (independent or joint) did not play a factor regarding space or BED. Safety and therapeutic rating definitions for Spaces and BEDs are as follows:

1. **Safe** is defined as a Space or BED that negates hazards and contributes to an environment where a patient is free of harm to himself or others.

2. **Not Safe** is defined as a Space or BED that potentially could contribute to an environment where a patient could harm himself or others.

3. **Therapeutic** is defined as a Space or BED that instills a sense of mental and/or physical comfort, creating a residential or comfortable appearance instead of an institutionalized or incarcerated appearance.
4. **Not Therapeutic** is defined as a Space or BED that provides an institutionalized feel or appearance. These items meet building construction standards but reflect no sense of patient dignity within the facility space.

5. **No Data** is defined as a Space or BED where there was either insufficient evidence or no data to determine whether the detail could be rated as safe or therapeutic.

Analyzing the documented recommendations with the Built Environment Factors (BEF) and Built Environment Details (BED) for the selected Case Studies began with Space Layout, where the BEF includes but is not limited to room sizes (square footage), same handed rooms, ceiling heights, potentially obstructed views and the orientation & organization of items (e.g. – furniture) within the space. Within each facility, **Communal Space** was dedicated for use as a Dayroom where patients are authorized watch television during the specified time-period, consume their meals, have morning and evening meetings as well as freely talk with their peers or other patients. The standard size recommended for the Dayroom (or Multi-Purpose Activity Room) is 360 Square Feet (SF) by the DOD Space Planning Criteria and 675 SF in accordance with VA Space Planning Criteria. The FGI provides no data guidance for room square feet (horizontal dimensions) but does indicate that ceiling height should be at least 9’ to prevent patient access. No guidance exists within the NAPHS regarding recommended SF for use of a Dayroom or Multi-Purpose Activity space. When actual measurements were taken of the Dayroom spaces at both facilities, WRNMMC reflected 767 Net SF with a ceiling height of 8’5” while CRDAMC reflected 803 Net SF with a ceiling height of 9’. Only CRDAMC’s Dayroom adheres to the height standard as specified within the guidance documents. Although both dayrooms for WRNMMC and CRDAMC exceed the recommended guidance for size in square feet, there were no issues to report regarding safety or therapeutics. With respect to the ceiling height (vertical dimension) as indicated above, both facilities can be rated as therapeutic but neither can be rated as safe as a Behavioral Health Specialist who stood at 5’6” proved that he could jump and access the ceiling. So a safe ceiling height within an In-Patient Behavioral Health
Facility would need to be at least 10’ to ensure both grounded and jumping access to the ceiling cannot be accomplished. Regarding the orientation and organization of items within the space, both WRNMMC and CRDAMC contained wall-mounted flat screen televisions mounted at a position that provided standard viewing by all patients. Additionally, both facilities contained similar arrangements of tables and chairs that enabled discussions but also supported mealtime activities. Finally, both facility Dayrooms were of simple design with no blind corners or obstructed views. Plan view diagrams of the Dayrooms for WRNMMC and CRDAMC are reflected at Figure 30 and 31 respectively. Summary data for Space Layout for the analyzed Multi-Purpose Activity Room (or Dayroom) is as follows:

**SAFETY:**
- CRDAMC – SAFE, compliant with DOD, VA and FGI criteria
- WRNMMC – NOT SAFE, not compliant with DOD, VA and FGI criteria

**THERAPEUTICS:**
- CRDAMC and WRNMMC – NO DATA regarding therapeutics for space layout

**Comments:**
- No evidence to support Space sizes in SF regarding safety or therapeutics.

_Therapy Space_ for each facility consisted of several room types referred to as Art Therapy, Group Therapy and Patient Seclusion Rooms. Group Therapy Room was analyzed for both facilities with recommended dimensions from the DOD Space Planning Criteria, VA Space Planning Criteria and the FGI. The FGI recommended that the minimal size for a Group Therapy Room be at least 225 SF and likewise, a recommended ceiling height of 9’ for patient safety. Additionally, the DOD and VA recommend the dimensions for Group Therapy Rooms to be 240 SF and 225 SF, respectively. When measurements were taken to calculate the actual SF of each room, the results achieved were as follows: WRNMMC ceiling height was 8.5’ with a Net SF of 273 and CRDAMC ceiling height was 9’ with a Net SF of 285. The Ceiling
heights for both Group Therapy Room spaces at WRNMMC and CRDAMC were 8.5’ and 9’ respectively. Regarding the BED of ceiling height (vertical dimension), CRDAMC is compliant with guidelines (Safe) but WRNMMC is not (not safe). However, neither can be rated as safe due to the jumping access acquired by the aforementioned Behavioral Health Specialist. Additionally, no therapeutic issues were reported or observed regarding Group Therapy Room space layout. Regarding the orientation and organization of items within the space, both WRNMMC and CRDAMC contained similar arrangements of tables and chairs that facilitate discussions, enable note-taking from therapy sessions and provide space for art as well as other therapeutic program activities. However, both facility spaces contained obstructed views and blind spots that could enable patient hiding. To resolve this problem, patient observation mirrors should be included within each space and therefore cannot be rated as safe. Plan view diagrams of the Dayrooms for WRNMMC and CRDAMC are reflected at Figure 32 and 33 respectively. Summary data for Space Layout for the analyzed Therapy Space is as follows:

**SAFETY:**
- CRDAMC – SAFE, compliant with DOD, VA and FGI criteria
- WRNMMC – NOT SAFE, not compliant with DOD, VA and FGI criteria

**THERAPEUTICS:**
- CRDAMC and WRNMMC – NO DATA regarding therapeutics for space layout

**Comments:**
No evidence to support Space sizes in SF regarding safety or therapeutics.

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**Private Patient Space** is the final BES reviewed within both facilities. This space type consists of both Single and Multiple Bed Patient Rooms that were inclusive of either toilet rooms or toilet and shower rooms. Recommendations regarding this space type are reflected within the DOD Space Planning Criteria, VA Space Planning Criteria, National Association of Psychiatric Health Systems (NAPHS) and the Facility Guideline Index (FGI). The DOD recommends 280 SF for a double occupancy room with 60 SF for a toilet
& shower room. The VA recommends 230 SF for a double occupancy room and 60 SF for a toilet & shower room. The NAPHS recommends 160 SF for a double occupancy patient room but no data was available regarding a toilet & shower room. The FGI recommends a minimum of 160 SF for a double occupancy patient room and while there is no recommendation regarding SF for a toilet & shower room, but the guidance provided does state that bathing facilities will be designed for patient convenience and privacy. Furthermore, the FGI states that the ceiling height will be at least 9’ to prevent patient access. Vertical measurements regarding Private Patient spaces resulted in 8’5” and 9’ for WRNMMC and CRDAMC respectively. As indicated before, ceiling access that can be gained through jumping, even though CRDAMC is in compliance with the recommendation in the FGI, rates both facilities as not safe.

Regarding room types, double occupancy Private Patient Spaces at WRNMMC and CRDAMC measured at 232 Net SF and 257 Net SF, respectively, placing them between the recommended DOD and VA guidance (SF exceeds VA recommendation but is smaller than DOD recommendation). Additionally, CRDAMC has two quadruple occupancy patient rooms where each consisted of 446 Net SF, placing that unique room type close to what the VA recommends regarding room types. Regardless, all room types at WRNMMC and CRDAMC (double and quadruple occupancy types) had no significant issues to report based on provision of space in SF. Therefore, patient room horizontal dimensions were rated as safe but no data was available for therapeutics. Ceiling heights (vertical dimensions) were rated identical to Therapy and Communal space, not safe due to the ceiling access issues with no data regarding therapeutics for space layout. Additionally, toilet & shower room measurements for WRNMMC and CRDAMC were 34 Net SF and 55 Net SF respectively, reflecting both spaces below the recommended guidelines of 60 SF for each space and thus rated not safe due to shortcomings complying with recommended horizontal dimensions. Additionally, vertical dimensions are rated as not safe due to ceiling access that can be acquired through jumping. Space Layout (both horizontal and vertical) for Private Patient spaces (inclusive of toilet and toilet/shower rooms) had no data within the guidance criteria to rate as therapeutic or not therapeutic. Regarding the orientation and organization of items within the space, beds were aligned and spaced
identically at WRNMMC and CRDAMC but shelving units differed slightly. Some rooms at WRNMMC had recessed, wall mounted shelving units while other rooms had no units at all. Each room at CRDAMC, regardless of double or quadruple occupancy space, possessed a stand-alone shelving unit per patient bed. Toilet & Shower rooms for each facility were basically outfitted identically. Plan view diagrams of the Private Patient Spaces for WRNMMC and CRDAMC are reflected at Figure 34, 35 and 36 below. Details regarding Patient Private Spaces (double & quadruple rooms and toilet/shower rooms are reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, not compliant with DOD, VA and FGI criteria
- WRNMMC – NOT SAFE, not compliant with DOD, VA and FGI criteria

**THERAPEUTICS:**
- CRDAMC and WRNMMC – NO DATA regarding therapeutics for space layout

**Comments:**
No evidence to support Space sizes in SF regarding safety or therapeutics.

In summary, the BEF of Space Layout reflected a mix of compliance and neglect regarding recommended guidance documents. Ceiling height at CRDAMC is aligned with guidance (at least 9’) but WRNMMC is not as it measured at 8.5’. Communal Space (Dayrooms) at both facilities regarding square footage was rated as safe (horizontal dimension) as well as Therapy Space (Group Therapy Rooms) at both facilities. No Data exists regarding square footage for Private Patient, Communal or Therapy spaces so therapeutic rating for these spaces is as indicated – No data. Toilet & Shower rooms at both facilities measured smaller than the recommended SF guidance and therefore were rated as not safe and with no data regarding therapeutics, they were rated accordingly.
The BEF of Finishes and Furnishings includes but is not limited to wall and ceiling tiles, ceiling textures, furniture composition, non-breakable pictures/art and acoustic privacy finishes. Although finishes and furnishings contain both safe and therapeutic qualities, they are more heavily weighted toward the aspect of therapeutics. Regardless, the BEF, how it relates to the selected Case Studies and the characteristics of each of the Built Environment Details (BED) were analyzed and rated. The results of that analysis in relation to the BES in order of Private Patient, Therapy and Communal Spaces are reflected below:

1. **Beds** - Within the Private Patient Spaces reviewed at WRNMMC and CRDAMC (double and quadruple occupancy), no medical or electronically operated medical needs beds were observed. All beds were of the manual type and adhered to guidance recommendations within the VA Space Planning and NAPHS guidance for therapeutics. Beds for both facilities were anchored to the floor and of solid construction however, WRNMMC beds contained drawers at the foot end, which is against NAPHS guidance. Therefore, beds at CRDAMC rate as safe and therapeutic but beds at WRNMMC rate as therapeutic but not safe. Images regarding recommended beds from NAPHS as well as actual images from WRNMMC and CRDAMC are at Figure 37, 38 and 39. Details regarding the BEF Detail - Patient Beds are reflected below:

   **SAFETY:**
   
   CRDAMC – SAFE and compliant with VA and NAPHS criteria
   WRNMMC – NOT SAFE, not compliant with VA and NAPHS criteria

   **THERAPEUTICS:**
   
   CRDAMC – NO DATA regarding published therapeutic guidance for Patient Beds
   WRNMMC – NO DATA regarding published therapeutic guidance for Patient Beds

   **Comments:**
   
   No additional comments regarding safety or therapeutics for Patient Beds

2. **Mattresses** – Mattresses within the Private Patient Spaces adhered to guidance recommendations within the NAPHS, which stated that they are to be contamination & abuse resistant and comply with the
National Fire Protection Agency (NFPA) 101 Life Safety Code. Mattresses at both facilities were of the same type and therefore met guidance standards for safety. However, patient complaints (discovered through staff interviews) indicate that the thin mattresses are not comfortable. Therefore, mattresses at both facilities were rated safe but not therapeutic and are reflected below at Figures 40, 41 and 42.

Details regarding Patient Beds are:

| SAFETY: | CRDAMC – SAFE and compliant with NAPHS criteria  
WRNMMC – SAFE and compliant with NAPHS criteria |
| THERAPEUTICS: | CRDAMC – NOT THERAPEUTIC based on data received through Staff Interviews  
WRNMMC – NOT THERAPEUTIC based on data received through Staff Interviews |
| Comments: | Staff Interviews revealed patients complain about the uncomfortable mattresses |

![Figure 40 – Mattress, NAPHS](image1) ![Figure 41 – Mattress, CRDAMC](image2) ![Figure 42 – Mattress, WRNMMC](image3)

3. **Wardrobe Shelving Units** – Within the Private Patient Spaces of CRDAMC and WRNMMC (double and quadruple occupancy bedrooms), not all rooms had shelving units. WRNMMC either didn’t have shelving units for its patient rooms or the rooms that did have units were built into the wall and in compliance with VA guidance. Therefore, WRNMMC shelving units are rated as safe but no data exists regarding what is therapeutic or not. CRDAMC had standalone shelving units that were compliant with guidance regarding sloped tops, solid shelving and no hooks but they could be moved. Therefore, CRDAMC units were not compliant with NAPHS guidance and rated as not safe. Additionally, no data exists regarding what is therapeutic or not for Wardrobe Shelving Units at both facilities, reflected below at Figures 43, 44 and 45. Details regarding the Wardrobe Shelving Units are:

| SAFETY: | CRDAMC – NOT SAFE based on non-compliance with NAPHS criteria  
WRNMMC – SAFE based on compliance with VA and NAPHS criteria |
| THERAPEUTICS: | CRDAMC – NO DATA regarding published therapeutic guidance for Wardrobe Shelving  
WRNMMC – NO DATA regarding published therapeutic guidance for Wardrobe Shelving |
| Comments: | Some rooms at WRNMMC did not have shelving units, stand alone or built in wall units |
4. **Flooring – General** – Flooring within Patient Private Spaces at CRDAMC and WRNMMC both consisted of vinyl floor tiles which gives off the undesirable institutionalized feel. Although wood grain sheet vinyl flooring is preferred, vinyl tile at CRDAMC and WRNMMC both meet guideline compliance for safety. However, both facilities rate as not therapeutic as neither meets guidance for color or wood grain patterns within the design. Therefore, flooring at both facilities were rated safe but not therapeutic and are reflected below at Figures 46, 47 and 48. Details regarding Flooring are:

**SAFETY:**
- CRDAMC – SAFE and compliant with VA and NAPHS criteria
- WRNMMC – SAFE and compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC based on VA guidance criteria
- WRNMMC – NOT THERAPEUTIC based on VA guidance criteria

**Comments:** Bland colored flooring gives institutional look and feel. Also, could have glare potential which may agitate patients and increase stress levels.

5. **Flooring – Baseboards** – Flooring baseboards differed within Private Patient Spaces at both facilities as CRDAMC was ceramic tile, securely emplaced between the floor and wall and WRNMMC was vinyl based but emplaced as specified with the pick-resistant sealant. VA and NAHPS guidance criteria are to provide a rubber-based baseboard that resembles a wood finish and therefore contributes toward the residential look. Therefore, CRDAMC baseboards rated not safe and not therapeutic. WRNMMC baseboard rated safe but not therapeutic as the institutional look was observed with the use of baseboard
selection for this facility. Summary data regarding flooring baseboards at both facilities as well as images (Figures 49, 50 and 51) are reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria
- WRNMMC – SAFE and compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
- WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria

**Comments:** Ceramic Tile baseboards at CRDAMC and Grey vinyl baseboards at WRNMMC both provide an institutionalized feel and do not contribute toward the improvement of patient dignity.

![Figure 49 – Baseboards, NAPHS](image1)
![Figure 50 – Baseboards, CRDAMC](image2)
![Figure 51 – Baseboards, WRNMMC](image3)

6. **Walls – General** – Walls at both facilities within the Private Patient Spaces were as specified with the guidance criteria from the VA and NAPHS as both were high impact gypsum board on metal studs with painted finishes. Similarly, both spaces at CRDAMC and WRNMMC were not therapeutic as neither were painted with a warm color or presented a wood-grain appearance directed at the concept of providing a residential feel to the facility. Therefore, both facilities rated not-therapeutic due to the use of grey, white and beige for the walls. Summary data regarding walls at both facilities as well as images (Figures 52, 53 and 54) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with VA and NAPHS criteria
- WRNMMC – SAFE, compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
- WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria

**Comments:** Both CRDAMC and WRNMMC walls provide an institutionalized feel.

![Figure 52 – Walls, NAPHS](image4)
![Figure 53 – Walls, CRDAMC](image5)
![Figure 54 – Walls, WRNMMC](image6)
7. **Ceiling – General** – Ceiling height within Private Patient Spaces is recommended to be 9’ in height and 10’ within patient activity areas with basic finishes on painted gypsum board. CRDAMC and WRNMMC measured in at 9’ and 8.5’ respectively with painted gypsum board, rating CRDAMC as safe and WRNMMC as not safe as indicted within guidance criteria. Furthermore, colors for ceilings at both facilities were the same as the walls, rating both facilities as non-therapeutic. Summary data regarding ceilings (Figures 55 and 56) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with VA, FGI and NAPHS criteria
- WRNMMC – NOT SAFE, non-compliant with VA, FGI and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC based on VA, FGI and NAPHS guidance criteria
- WRNMMC – NOT THERAPEUTIC based on VA, FGI and NAPHS guidance criteria

**Comments:** Both CRDAMC and WRNMMC ceilings provide an institutionalized feel.

8. **Lavatory Walls** – In accordance with NAPHS guidance, lavatory walls will be made of either avonite, impact-mold-moisture resistant epoxy painted gypsum board or ceramic tile. Both facility walls at CRDAMC and WRNMMC were ceramic tile as specified by guidance criteria and therefore can both be rated as safe. However, CRDAMC utilized a shade of earthtone red for its walls and WRNMMC utilized standard grey providing the institutional feel, rating WRNMMC as not therapeutic and CRDAMC as therapeutic. Summary data regarding lavatory walls at both facilities as well as images (Figures 57 and 58) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – THERAPEUTIC based on NAPHS guidance criteria
- WRNMMC – NOT THERAPEUTIC based on NAPHS guidance criteria

**Comments:** CRDAMC and WRNMMC utilized 4” tiles. 2” tiles are ideal and preferred because if broken, 4” tile shards can be used as weapons as 2” are too small for weapon capability.
9. **Lavatory Ceiling** – NAPHS and FGI provided guidance regarding Lavatory Ceilings in Private Patient Spaces stating that they should be at least 9’ to avoid patient access and be epoxy painted gypsum board with a mold and moisture-resistant facing. Both lavatory ceilings at CRDAMC and WRNMMC met the material guidance but height measurements were 8’ and 7.5’ respectively. Both ceilings were painted white, so no data was given to determine therapeutic or not. Summary data regarding lavatory ceilings (Figures 59 and 60) are reflected below:

**SAFETY:**  
CRDAMC – NOT SAFE, non-compliant with FGI criteria  
WRNMMC – NOT SAFE, non-compliant with FGI criteria

**THERAPEUTICS:**  
CRDAMC – NO DATA regarding published therapeutic guidance for Lavatory Ceilings  
WRNMMC – NO DATA regarding published therapeutic guidance for Lavatory Ceilings

**Comments:**  
No additional comments regarding lavatory ceilings

10. **Lavatory Floors** – The VA and NAPHS recommend that if ceramic floor tiles for Private Patient Space Lavatory floors are to be utilized, they should be the 2” variant as they are safe and slip resistant. Although the preferred flooring is one-piece that drains to a central location (European Style), seamless epoxy sheet vinyl is also acceptable. For CRDAMC and WRNMMC, both utilize 2” tiles and are rated as safe but CRDAMC utilizes earthtone tiles and WRNMMC utilizes varying shades of gray for its tiles. Therefore, CRDAMC is rated as therapeutic but WRNMMC is not. Summary data regarding lavatory floors at both facilities as well as images (Figures 61, 62 and 63) are reflected below:
SAFETY:  
CRDAMC – SAFE, compliant with VA and NAPHS criteria  
WRNMMC – SAFE, compliant with VA and NAPHS criteria

THERAPEUTICS:  
CRDAMC – THERAPEUTIC based on VA and NAPHS guidance criteria  
WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria

Comments:  
Earhtone colors present the preferred residential look at CRDAMC

11. Shower Floors – The preferred Lavatory Shower Floor for Private Patient Spaces, in accordance with NAPHS guidance, is a pre-cast artificial stone or solid surface with a trench drain across the entire front opening. Both CRDAMC and WRNMMC were constructed of solid surface materiel with a trench drain, rating both as safe. No Data was available regarding therapeutics of Lavatory Shower Floors for either facility. Summary data regarding Lavatory Shower Floors at both facilities as well as images (Figures 64, 65 and 66) are reflected below:

SAFETY:  
CRDAMC – SAFE, compliant with NAPHS criteria  
WRNMMC – SAFE, compliant with NAPHS criteria

THERAPEUTICS:  
CRDAMC – NO DATA regarding published therapeutic guidance for Lavatory Shower Floors  
WRNMMC – NO DATA regarding published therapeutic guidance for Lavatory Shower Floors

Comments:  
Earhtone colors present the preferred residential look at CRDAMC

12. Lavatory Soap Dishes – NAPHS guidance criteria regarding Lavatory Soap Dishes in Private Patient Spaces recommends that they not have handles and that they be recessed. Both CRDAMC and WRNMMC
adhere to this guidance and are therefore both rated as safe. No Data exists regarding therapeutics for Lavatory Soap Dishes. Summary data regarding Lavatory Soap Dishes at both facilities as well as images (Figures 67, 68 and 69) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Lavatory Soap Dishes
- WRNMMC – NO DATA regarding published therapeutic guidance for Lavatory Soap Dishes

**Comments:** Earhtone colors present the preferred residential look at CRDAMC

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13. **Toilet** – Toilet criteria for Private Patient Space Lavatories are detailed in VA, NAPHS and FGI guidance documents where they should have no exposed piping, fixed seats, push button flush actuators with excessive flooding and flushing prevention. Additionally, they should be floor-mounted with back outlets and back water supply compared to wall mounted versions that can be broken off. Both CRDAMC and WRNMMC had floor-mounted variants but CRDAMC was lidless and WRNMMC had a lid, rating them safe and not safe respectively. Therapeutically, CRDAMC rated as not therapeutic due to the stainless variant it provided but WRNMMC rated therapeutic as it had a powder-coated white variant that provided a residential look. Summary data regarding Toilets at both facilities as well as images (Figures 70, 71 and 72) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Lav Soap Dishes
- WRNMMC – NO DATA regarding published therapeutic guidance for Lav Soap Dishes

**Comments:** Earhtone colors present the preferred residential look at CRDAMC
14. Toilet Paper Holder – Guidance criteria for Toilet Paper Holders are detailed in VA and NAPHS documents where they state that dispensers with a soft spindle or ligature resistant, paper tear-off outside the cabinet units are preferred. Fully recessed, pivot bar or solid surface holders are acceptable but use is discouraged due to infection control concerns. CRDAMC did not have toilet paper holders and therefore rated no data for safety or therapeutics. WRNMMC rated safe as the recessed solid surface holder met guidance criteria. No data was available regarding therapeutic look of solid surface holder. Summary data regarding Toilet Paper Holders at both facilities as well as images (Figures 73 and 74) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Lav Soap Dishes
- WRNMMC – NO DATA regarding published therapeutic guidance for Lav Soap Dishes

**Comments:** Earhtone colors present the preferred residential look at CRDAMC

15. Lavatory Mirrors – CRDAMC and WRNMMC both had lavatory mirrors within their Private Patient Space Lavatories with WRNMMC rated as safe due to the non-ligature, firmly anchored framed variant that it provided for its patients. CRDAMC had a standard mirror with no frame, rating it not safe due to breakage or removal potential. Both facilities rate no data for therapeutics as no data is available to detail

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Figure 70 – Toilet, NAPHS

Figure 71 – Toilet, CRDAMC

Figure 72 – Toilet, WRNMMC

Figure 73 – Paper Hldr, NAPHS

No Reference Image

Figure 74 – Paper Hldr, WRNMMC
what a therapeutic mirror should be. Summary data regarding Lavatory Mirrors at both facilities as well as images (Figures 75, 76 and 77) are reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria
- WRNMMC – SAFE, compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Lavatory Mirrors
- WRNMMC – NO DATA regarding published therapeutic guidance for Lavatory Mirrors

**Comments:**
- CRDAMC mirrors allowed for potential prying and had exposed corners (ligature)

![Figure 75 – Lav Mirror, NAPHS](image1)
![Figure 76 – Lav Mirror, CRDAMC](image2)
![Figure 77 – Lav Mirror, WRNMMC](image3)

**16. Paper Towel Dispenser** — Both CRDAMC and WRNMMC provided Paper Towel Dispensers within the Lavatories of the Private Patient Spaces. However, neither met safety criteria as neither was recessed and there were ligature points as well as contraband hiding spots with each. No data was available regarding Therapeutics for Paper Towel Dispensers. Summary data regarding Paper Towel Dispensers at both facilities as well as images (Figures 78, 79 and 80) are reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria
- WRNMMC – NOT SAFE, non-compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Paper Towel Disp
- WRNMMC – NO DATA regarding published therapeutic guidance for Paper Towel Disp

**Comments:**
- Although Tri-Fold dispensers are acceptable, both are institutional in appearance

![Figure 78 – Towel Disp, VA](image4)
![Figure 79 – Towel Disp, CRDAMC](image5)
![Figure 80 – Towel Disp, WRNMMC](image6)

**17. Soap Dispenser** — CRDAMC and WRNMMC had soap dispensers within their Private Patient Lavatories that met safety criteria guidance as dictated by the VA, NAPHS and FGI. However, no data
regarding therapeutics was available. Summary data regarding Soap Dispensers at both facilities as well as images (Figures 81, 82 and 83) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with VA, NAPHS and FGI criteria
- WRNMMC – SAFE, compliant with VA, NAPHS and FGI criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Soap Dispensers
- WRNMMC – NO DATA regarding published therapeutic guidance for Soap Dispensers

**Comments:** A recessed version is in development that will be safer

![Figure 81 – Soap Disp, VA](image1)
![Figure 82 – Soap Disp, CRDAMC](image2)
![Figure 83 – Soap Disp, WRNMMC](image3)

Therapy Space includes but is not limited to Group Therapy Rooms, Seclusion Rooms and Quiet Activity Rooms. In general, these spaces are where curative solutions and treatment programs combine to enhance the overall disposition of the patient. Finishes and Furnishings within this space are as follows:

1. **Furniture – General** – Within Therapy Spaces, a variety of therapy sessions occur throughout the day requiring furniture, and chairs are the basic item that must be provided (at a minimum). Guidance criteria from the VA, NAPHS and FGI state that furniture shall be constructed to withstand physical abuse (easily cleaned, heavy if not anchored to eliminate throwing and non-institutional in appearance) and comfortable. CRDAMC utilizes light-weight office furniture that is not safe based on criteria while WRNMMC furniture is safe as it is heavy and not easily moved. Additionally, CRDAMC furniture is not therapeutic as it displayed an institutional look. WRNMMC furniture was rated as therapeutic as it was comfortable and provided a residential feel. Summary data regarding Furniture at both facilities as well as images (Figures 84, 85 and 86) are reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA, NAPHS and FGI criteria
- WRNMMC – SAFE, compliant with VA, NAPHS and FGI criteria

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC, non-compliant with VA, NAPHS and FGI criteria
- WRNMMC – THERAPEUTIC, compliant with VA, NAPHS and FGI criteria

**Comments:** No additional comments regarding furniture in Therapy Spaces
2. **Desks** – The VA and NAPHS provide guidance criteria regarding patient area desks. CRDAMC was the only facility to have a desk located within a Therapy Space and that desk was an older style, rated not safe and not therapeutic. Summary data regarding Desks and an image (Figure 87) is reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA, NAPHS and FGI criteria
- WRNMMC – NO DATA, no desks present

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC, non-compliant with VA, NAPHS and FGI criteria
- WRNMMC – NO DATA, no desks present

**Comments:** CRDAMC Desk is an older design with drawers, ligatures and other unsafe features.

3. **Flooring – General** – Flooring details in Therapy Space are the same as Private Patient Space #4.

**SAFETY:**
- CRDAMC – SAFE and compliant with VA and NAPHS criteria
- WRNMMC – SAFE and compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC based on VA guidance criteria
- WRNMMC – NOT THERAPEUTIC based on VA guidance criteria

**Comments:** Bland colored flooring gives institutional look and feel. Also, could have glare potential which may agitate patients and increase stress levels.

4. **Flooring – Baseboards** – Baseboard details in Therapy Space are the same as Private Patient Space #5.

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria
- WRNMMC – SAFE and compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
- WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria

**Comments:** Ceramic Tile baseboards at CRDAMC and Grey vinyl baseboards at WRNMMC both provide an institutionalized feel and do not contribute toward the improvement of patient dignity.
5. Walls – General – Wall details in Therapy Space are the same as Private Patient Space #6.

SAFETY: CRDAMC – SAFE, compliant with VA and NAPHS criteria
WRNMMC – SAFE, compliant with VA and NAPHS criteria
THERAPEUTICS: CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
Comments: Both CRDAMC and WRNMMC walls provide an institutionalized feel

6. Ceiling – General – Ceiling details in Therapy Space are the same as Private Patient Space #7.

SAFETY: CRDAMC – SAFE, compliant with VA and NAPHS criteria
WRNMMC – SAFE, compliant with VA and NAPHS criteria
THERAPEUTICS: CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
Comments: Both CRDAMC and WRNMMC ceilings provide an institutionalized feel

Communal Space includes but is not limited to Day Rooms, Multi-Purpose Activity Rooms and Noisy Activity Rooms. In general, these spaces are where patients relax and are able to allow the progress from therapy sessions to “sink in”. These spaces also allow patient exercise, television viewing and discussions with peers. The space analyzed was the Day Room at both facilities, however, no images were taken as these spaces consistently had patients within them and their privacy is priority. Finishes and Furnishings within these spaces are as follows:

1. Furniture – General – Furniture details in Communal Space are the same as Therapy Space #1.

SAFETY: CRDAMC – NOT SAFE, non-compliant with VA, NAPHS and FGI criteria
WRNMMC – SAFE, compliant with VA, NAPHS and FGI criteria
THERAPEUTICS: CRDAMC – NOT THERAPEUTIC, non-compliant with VA, NAPHS and FGI criteria
WRNMMC – THERAPEUTIC, compliant with VA, NAPHS and FGI criteria
Comments: No additional comments regarding furniture in Communal Spaces

2. Desks – Desk details in Communal Space are the same as Therapy Space #2.

SAFETY: CRDAMC – NOT SAFE, non-compliant with VA, NAPHS and FGI criteria
WRNMMC – NO DATA, no desks present
THERAPEUTICS: CRDAMC – NOT THERAPEUTIC, non-compliant with VA, NAPHS and FGI criteria
WRNMMC – NO DATA, no desks present
Comments: CRDAMC Desk is an older design with drawers, ligatures and other unsafe features
3. Flooring – General – Flooring details in Communal Space are the same as Therapy Space #3.

SAFETY: CRDAMC – SAFE and compliant with VA and NAPHS criteria
WRNMMC – SAFE and compliant with VA and NAPHS criteria

THERAPEUTICS: CRDAMC – NOT THERAPEUTIC based on VA guidance criteria
WRNMMC – NOT THERAPEUTIC based on VA guidance criteria

Comments: Bland colored flooring gives institutional look and feel. Also, could have glare potential which may agitate patients and increase stress levels.

4. Flooring – Baseboards – Baseboard details in Communal Space are the same as Therapy Space #4.

SAFETY: CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria
WRNMMC – SAFE and compliant with VA and NAPHS criteria

THERAPEUTICS: CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria

Comments: Ceramic Tile baseboards at CRDAMC and Grey vinyl baseboards at WRNMMC both provide an institutionalized feel and do not contribute toward the improvement of patient dignity.

5. Walls – General – Wall details in Communal Space are the same as Therapy Space #5.

SAFETY: CRDAMC – SAFE, compliant with VA and NAPHS criteria
WRNMMC – SAFE, compliant with VA and NAPHS criteria

THERAPEUTICS: CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
WRNMMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria

Comments: Both CRDAMC and WRNMMC walls provide an institutionalized look.

6. Ceiling – General – Ceiling details in Communal Space are the same as Therapy Space #6.

SAFETY: CRDAMC – SAFE, compliant with VA, FGI and NAPHS criteria
WRNMMC – NOT SAFE, non-compliant with VA, FGI and NAPHS criteria

THERAPEUTICS: CRDAMC – NOT THERAPEUTIC based on VA, FGI and NAPHS guidance criteria
WRNMMC – NOT THERAPEUTIC based on VA, FGI and NAPHS guidance criteria

Comments: Both CRDAMC and WRNMMC ceilings provide an institutionalized look.

7. Television – Located within the dayrooms of both CRDAMC and WRNMMC, both sets are rated as not safe as they are bracket mounted with wires exposed. No Data was available for therapeutics to determine television sets of configurations that would be deemed therapeutic. Summary data regarding a television is reflected below:
SAFETY:  CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria  
WRNMMC – NOT SAFE, non-compliant with VA and NAPHS criteria  
THERAPEUTICS:  CRDAMC – NO DATA regarding published therapeutic guidance for Televisions  
WRNMMC – NO DATA regarding published therapeutic guidance for Televisions  
Comments:  No comments regarding televisions

The Hardware and Fixtures BEF includes but is not limited to door hinges, light fixtures, locksets, controls, electrical outlets and sprinklers. Although hardware and fixtures could possibly contain both safe and therapeutic qualities, they are more heavily weighted toward the aspect of safety due to potential ligatures for hanging, scalding and electrocution hazards. Regardless, the BEF, how it relates to the selected Case Studies and the characteristics of each of the Built Environment Details (BED) were analyzed and rated. The results of that analysis in relation to the BES in order of Private Patient, Therapy and Communal Spaces are reflected below:

1. Door – General – The doors providing access to Private Patient Spaces were constructed per guidance criteria listed in the VA, NAPHS and FGI criteria as they were of the appropriate thickness, constructed of solid material, opened at the minimal required width of 2’10”. Additionally, doors were also outfitted with kick-plates and fitted with windows that enabled staff observation without entering the private space, regardless of the number of room occupants (single, double or quadruple – as applicable). Furthermore, WRNMMC doors were of the desired wood-grain appearance as preferred per guidance and the swung out as required, rating them both safe as well as therapeutic. CRDAMC doors swung inward and were of the painted, institutionalized variant, rating them not safe and not therapeutic per recommended guidance. Summary data regarding Doors at both facilities as well as images (Figures 88, 89 and 90) are reflected below:

SAFETY:  CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria  
WRNMMC – SAFE and compliant with VA and NAPHS criteria  
THERAPEUTICS:  CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria  
WRNMMC – THERAPEUTIC based on VA and NAPHS guidance criteria  
Comments:  WRNMMC doors provide the desired residential look while CRDAMC did not.
2. **Door Hinges** – Guidance criteria from the VA, NAPHS and FGI all specify continuous hinges to be used to mitigate if not eliminate potential points for hanging (non-ligature). CRDAMC utilizes standard hinges and although the doors swing in preventing patient hinge access, they still are not within the criteria guideline specifications and are therefore rated not safe. WRNMMC utilizes continuous hinges and therefore is rated as safe. No data was available regarding therapeutic qualities of door hinges and each facility was rated accordingly. Summary data regarding Doors at both facilities as well as images (Figures 91, 92 and 93) are reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA, NAPHS and FGI criteria
- WRNMMC – SAFE and compliant with VA, NAPHS and FGI criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Door Hinges
- WRNMMC – NO DATA regarding published therapeutic guidance for Door Hinges

**Comments:**
- No additional comments regarding utilized door hinge hardware.

3. **Door Locksets** – NAPHS is the primary source that provides guidance regarding door locksets indicating that although there is no ideal solution, crescent/lever locks with pull/push handles is preferred. CRDAMC and WRNMMC both utilized recommended handles and locksets, rating both as safe. No data existed regarding the therapeutics of door locksets and each facility was rated accordingly.

Summary data regarding Door Locksets as well as images (Figures 94, 95 and 96) are reflected below:
SAFETY: CRDAMC – SAFE and compliant with NAPHS criteria
WRNMMC – SAFE and compliant with NAPHS criteria

THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Door Locksets
WRNMMC – NO DATA regarding published therapeutic guidance for Door Locksets

Comments: No additional comments regarding Door Lockset hardware.

Figure 94 – Door Lockset, NAPHS
Figure 95 – Door Lockset, CRDAMC
Figure 96 – Door Lockset, WRNMMC

4. Light Fixtures – General – Both CRDAMC and WRNMMC utilized a variety of light fixtures to illuminate the Patient Private Spaces and both were rated as safe based on guidance criteria listed within VA, NAPHS and FGI documents. All fixtures viewed were hollow metal frames, glazed and secured with tamper-resistant screws. No data existed regarding the therapeutics of light fixtures and each facility was rated accordingly. Summary data regarding Light Fixtures as well as images (Figures 97, 98 and 99) are reflected below:

SAFETY: CRDAMC – SAFE and compliant with VA, NAPHS and FGI criteria
WRNMMC – SAFE and compliant with VA, NAPHS and FGI criteria

THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Light Fixtures
WRNMMC – NO DATA regarding published therapeutic guidance for Light Fixtures

Comments: Rounded light fixtures provided a more residential feel than the fluorescent variant.

Figure 97 – Light Fixture, NAPHS
Figure 98 – Light Fixture, CRDAMC
Figure 99 – Light Fixture, WRNMMC

5. Ceiling Curtain Tracks – NAPHS guidance is not to use this fixture due to chains, cords and other ligature points that can be detrimental to the patient. If they are to be used, they must be flush mounted close to the ceiling with no cords or chains visible. Curtain tracks utilized for both CRDAMC and WRNMMC are rated as not safe due to potential non-compliance guidance issues. No data was available.
regarding therapeutic qualities of curtain tracks and each facility was rated accordingly. Summary data regarding Curtain tracks as well as images (Figures 100, 101 and 102) are reflected below:

SAFETY: CRDAMC – NOT SAFE, non-compliant with NAPHS criteria
         WRNMMC – NOT SAFE, non-compliant with NAPHS criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Curtain Tracks
                WRNMMC – NO DATA regarding published therapeutic guidance for Curtain Tracks
Comments: No additional comments regarding the use or lack thereof regarding Curtain Tracks

6. Fire Sprinklers - Fire Sprinkler compliance was witnessed at both CRDAMC and WRNMMC, adhering to guidance within the NAPHS and FGI standards regarding institutional type that is recessed with mitigated opportunities for patient access or attachment. No data was available regarding therapeutic qualities of fire sprinklers. Summary data regarding Fire Sprinklers and images (Figures 103, 104 and 105) are reflected below:

SAFETY: CRDAMC – SAFE, compliant with NAPHS and FGI criteria
         WRNMMC – SAFE, compliant with NAPHS and FGI criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Fire Sprinklers
                WRNMMC – NO DATA regarding published therapeutic guidance for Fire Sprinklers
Comments: No additional comments regarding the use of or incorporation Fire Sprinklers in facilities

7. HVAC Grilles - Grilles utilized at CRDAMC and WRNMMC met basic guidance criteria as specified by the NAPHS and FGI as both were secured with tamper-resistant fasteners and included small perforations
that eliminate tie-off points. No data was available regarding therapeutic qualities of HVAC Grilles.

Summary data regarding HVAC Grilles and images (Figures 106, 107 and 108) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS and FGI criteria
- WRNMMC – SAFE, compliant with NAPHS and FGI criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for HVAC Grilles
- WRNMMC – NO DATA regarding published therapeutic guidance for HVAC Grilles

**Comments:**
No additional comments regarding the use of or incorporation HVAC Grilles in facilities

![Figure 106 – HVAC Grill, NAPHS](image)
![Figure 107 – HVAC Grill, CRDAMC](image)
![Figure 108 – HVAC Grill, WRNMMC](image)

8. **Windows – General** – Windows are a critical component of Private Personal Space because as indicated by Behavioral Health Experts at Fort Sam Houston, Texas “the lack of access to natural daylight and views of nature can instill a sense of cabin fever within patients and negatively affect outcomes”.

Additionally, FGI criteria state that all patient rooms will have a window. Furthermore, windows will be locked with a custodial style lock, have the ability to open at least 4” (as required) and designed not to cause harm to patients or others (breakable to create shards for weapons, anchor points for hanging or allow a patient to jump out). Windows at CRDAMC and WRNMMC both met compliance with guidelines and are rated safe. No data was available regarding window therapeutics and each facility was rated accordingly. Summary data regarding Windows and images (Figures 109 and 110) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with VA, NAPHS and FGI criteria
- WRNMMC – SAFE, compliant with VA, NAPHS and FGI criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Windows
- WRNMMC – NO DATA regarding published therapeutic guidance for Windows

**Comments:**
Natural daylight access creates the residential feel of a standard day and normal routine

![No Image Source Data Available](image)
![Figure 109 – Pat Window, CRDAMC](image)
![Figure 110 – Pat Window, WRNMMC](image)
9. **Window Shades** – Window shades or blinds are preferred between layers of glass with tilt control or access by the patient that doesn’t contain ligatures for hanging. Both CRDAMC and WRNMMC possessed blinds of the aforementioned variant, complying with recommended guidance and enabling both facilities to be rated as safe regarding window shades. No data was available regarding therapeutics for window shades or blinds and therefore, each facility was rated accordingly. Summary data regarding Windows and images (Figures 111, 112 and 113) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Window Shades
- WRNMMC – NO DATA regarding published therapeutic guidance for Window Shades

**Comments:**
- Window Shades / Blinds can help reduce heat and excessive glare

![Figure 111 – Shades, NAPHS](image1)
![Figure 112 – Shades, CRDAMC](image2)
![Figure 113 – Shades, WRNMMC](image3)

10. **Electrical Outlets** – Electrical outlet access by patients are a concern due to the potential electrocution hazard. NAPHS guidance states that all electrical outlet cover plats will have tamper-resistant screws, polycarbonate materials and Ground Force Circuit Interrupter (GFCI) water source protection. Outlets at both facilities are safe based on NAPHS guidance but no data was available regarding their therapeutic qualities. Summary data regarding Electrical Outlets and associated images (Figures 114, 115 and 116) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Electrical Outlets
- WRNMMC – NO DATA regarding published therapeutic guidance for Electrical Outlets

**Comments:**
- Several outlets had cover plates that completely prevented access
11. **Lavatory Door – Sentinel** – Design and Construction criteria for Lavatory Sentinel Event Reduction

Doors are detailed within the VA, NAPHS and FGI guidelines. Generally speaking, the doors shall be ADA or ANSI compliant, cut at a 30 degree angle with no anchor points and swing outward. Sentinel type doors were located at both CRDAMC and WRNMMC adhered to the aforementioned guidance and criteria standards. No data was available regarding therapeutics of Sentinel Doors and therefore, each facility was rated accordingly. Summary data regarding Lavatory Sentinel Doors and associated images (Figures 117, 118 and 119) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Lav Sentinel Doors
- WRNMMC – NO DATA regarding published therapeutic guidance for Lav Sentinel Doors

**Comments:** Acrovyn Patient Safety Doors are acceptable for use

12. **Lavatory Faucets** – NAPHS criteria regarding the selection and implementation of Lavatory Faucets and valves specifies that they should be ligatures resistant, allow control of temperature and water flow and are available in acceptable configurations ranging from push-button to motion sensor activated variants. Both CRDAMC and WRNMMC employed push button variants, enabled both to be rated as safe based on criteria guidelines. No data was available for therapeutics regarding Lavatory Faucets and
Valves, therefore rating each accordingly. Summary data regarding Lavatory Faucets and Valves as well as associated images (Figures 120, 121 and 122) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with NAPHS criteria
- WRNMMC – SAFE, compliant with NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Lav Faucets & Valves
- WRNMMC – NO DATA regarding published therapeutic guidance for Lav Faucets & Valves

**Comments:**
No additional comments regarding Lavatory Faucets & Valves

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**Figure 120 – Lav Valve, NAPHS**
**Figure 121 – Lav Valve, CRDAMC**
**Figure 122 – Lav Valve, WRNMMC**

13. **Lavatory Waste Piping** – Both CRDAMC and WRNMMC adhered to guidance criteria detailed in the VA and NAPHS documents: enclosed providing no access to patients for hiding of contraband or causing injury to themselves. No data was available regarding therapeutics and both facilities were rated accordingly. Summary data regarding Lavatory Waste Piping as well as associated images (Figures 123, 124 and 125) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with VA and NAPHS criteria
- WRNMMC – SAFE, compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Lav Waste Piping
- WRNMMC – NO DATA regarding published therapeutic guidance for Lav Waste Piping

**Comments:**
No additional comments regarding Lavatory Waste and Supply Piping

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**Figure 123 – Lav Wste Piping, NAPHS**
**Figure 124 – Lav Wste Piping, CRDAMC**
**Figure 125 – Lav Wste Piping, WRNMMC**

14. **Lavatory – Toilet Flush Valve** – Both CRDAMC and WRNMMC complied with guidance depicted in VA and NAPHS guidance documents, recessed buttons in wall that are push-button activated, and therefore are rated as safe. No data was available regarding therapeutics for Toilet Flush Valves and both facilities
were rated accordingly. Summary data regarding Toilet Flush Valves as well as associated images (Figures 126, 127 and 128) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with VA and NAPHS criteria
- WRNMMC – SAFE, compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Toilet Flush Valves
- WRNMMC – NO DATA regarding published therapeutic guidance for Toilet Flush Valves

**Comments:** Sloped type housings that enclose pipes and flush valves are acceptable options

![Figure 126 – Tilt Flush Val, NAPHS](image1)
![Figure 127 – Tilt Flush Val, CRDAMC](image2)
![Figure 128 – Tilt Flush Val, WRNMMC](image3)

**15. Shower Control Valves** – CRDAMC and WRNMMC complied with Shower Control Valve guidance criteria, rating both facilities as safe regarding this aspect. Both employed single knob valves providing non-scalding water and flow control up to the patient. No data was available regarding Therapeutic Shower Control Valves, rating both facilities accordingly. Summary data regarding Shower Control Valves as well as associated images (Figures 129, 130 and 131) are reflected below:

**SAFETY:**
- CRDAMC – SAFE, compliant with VA and NAPHS criteria
- WRNMMC – SAFE, compliant with VA and NAPHS criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Shower Cntrl Valves
- WRNMMC – NO DATA regarding published therapeutic guidance for Shower Cntrl Valves

**Comments:** Single knob valves should be selected with no ligature points for hanging

![Figure 129 – Show Cntl Val, NAPHS](image4)
![Figure 130 – Show Cntl Val, CRDAMC](image5)
![Figure 131 – Show Cntl Val, WRNMMC](image6)

**16. Shower Heads** – The VA and NAPHS provide criteria regarding the selection and use of shower heads, where guidance is to select a fixed position head that is institutional in type and ligature resistant. Both CRDAMC and WRNMMC adhered to guidance criteria and therefore can be rated safe per guidance. No
data exists on the Therapeutic qualities of a shower head and each facility was rated as such. Summary data regarding Shower Heads as well as associated images (Figures 132, 133 and 134) are reflected below:

SAFETY:       CRDAMC – SAFE, compliant with VA and NAPHS criteria
               WRNMMC – SAFE, compliant with VA and NAPHS criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Shower Heads
               WRNMMC – NO DATA regarding published therapeutic guidance for Shower Heads
Comments:     Hand-held variant are not preferred but acceptable and must have ligature resistant diverters

Figure 132 – Shower Head, NAPHS  Figure 133 – Shower Head, CRDAMC  Figure 134 – Shower Head, WRNMMC

17. Shower Control Panel – VA and NAPHS guidance indicate that Shower Control Panels (also referred to as “Wall Packs”) are the therapeutic, durable and safe option as the panel is a one piece unit with recessed soap dish, a shower head and a push button valve. CRDAMC does not employ a wall pack within its current facility and therefore no data is the rating for safety as well as therapeutics. WRNMMC does employ the wall pack with specified guidance as indicated, rating it as safe and as therapeutic. Summary data regarding Shower Control Panels as well as associated images (Figures 135 and 136) are reflected below:

SAFETY:       CRDAMC – NO DATA, Wall Pack not employed at the facility
               WRNMMC – SAFE, compliant with VA and NAPHS criteria
THERAPEUTICS: CRDAMC – NO DATA, Wall Pack not employed at the facility
               WRNMMC – THERAPEUTIC, compliant with VA and NAPHS criteria
Comments:     No additional comments regarding use of Wall Pack Shower Control Panel

Figure 135 – NAPHS, Shwr Cntl Pnl  No CRDAMC Reference Image  Figure 136 – Shwr Cntl Pnl, WRNMMC
18. **Shower Drains** - The guidance criteria provided by the VA states that drains should be attached with tamper resistant screws. CRDAMC does not meet the criteria and is therefore rated as not safe while WRNMMC employs the preferred tamper-resistant design and is rated safe. No data was available regarding the therapeutic qualities of shower drains and are therefore rated accordingly. Summary data regarding Shower Drains as well as associated images (Figures 137 and 138) are reflected below:

**SAFETY:**
- CRDAMC – NOT SAFE, non-compliant with VA criteria
- WRNMMC – SAFE, compliant with VA criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA regarding published therapeutic guidance for Shower Drains
- WRNMMC – NO DATA regarding published therapeutic guidance for Shower Drains

**Comments:** No additional comments regarding the use of Shower Floor Drains

![No Image Source Data Available](No Reference Image, Figure 137 – Shower Drain, CRDAMC, Figure 138 – Shower Drain, WRNMMC)

19. **Nurse Call System** – Nurse Call or Emergency Systems were not available at CRDAMC but were present at WRNMMC. Systems at WRNMMC were of the push-button variant with no exposed cords, no ligature points and were low voltage. CRDAMC rates no data for safety and therapeutics as systems were not employed at the facility. WRNMMC rates as safe, following the NAPHS and FGI guidance but no data was available regarding therapeutic qualities of Emergency Call System and it was rated accordingly. Summary data regarding Nurse or Emergency Call Systems as well as associated image (Figure 139) is reflected below:

**SAFETY:**
- CRDAMC – NO DATA, Nurse Call Systems not employed at the facility
- WRNMMC – SAFE, compliant with NAPHS and FGI criteria

**THERAPEUTICS:**
- CRDAMC – NO DATA, Nurse Call Systems not employed at the facility
- WRNMMC – NO DATA regarding published therapeutic guidance for Nurse Call Systems

**Comments:** No additional comments regarding the use of Nurse Call Systems
Therapy Spaces within the In-Patient Behavioral Health Units at CRDAMC and WRNMMC contain much of the same hardware & fixtures as included within the Private Patient Spaces. Although patients are constantly being supervised, monitored through their therapy sessions and amongst their peers at all times within these spaces, care and attention still must be provided toward the appropriate selection of items within this BEF. Hardware & Fixtures within this space are as follows:

1. **Door – General** – Door details in Therapy Space are the same as Private Patient Space #1.

   **SAFETY:**
   - CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria
   - WRNMMC – SAFE and compliant with VA and NAPHS criteria

   **THERAPEUTICS:**
   - CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
   - WRNMMC – THERAPEUTIC based on VA and NAPHS guidance criteria

   **Comments:** WRNMMC doors provide the desired residential look while CRDAMC did not.

2. **Door Hinges** – Door Hinge details in Therapy Space are the same as Private Patient Space #2

   **SAFETY:**
   - CRDAMC – NOT SAFE, non-compliant with VA, NAPHS and FGI criteria
   - WRNMMC – SAFE and compliant with VA, NAPHS and FGI criteria

   **THERAPEUTICS:**
   - CRDAMC – NO DATA regarding published therapeutic guidance for Door Hinge Hardware
   - WRNMMC – NO DATA regarding published therapeutic guidance for Door Hinge Hardware

   **Comments:** No additional comments regarding utilized door hinge hardware.

3. **Door Locksets** – Door Lockset details in Therapy Space are the same as Private Patient Space #3.

   **SAFETY:**
   - CRDAMC – SAFE and compliant with NAPHS criteria
   - WRNMMC – SAFE and compliant with NAPHS criteria

   **THERAPEUTICS:**
   - CRDAMC – NO DATA regarding published therapeutic guidance for Door Locksets
   - WRNMMC – NO DATA regarding published therapeutic guidance for Door Locksets

   **Comments:** No additional comments regarding Door Locket hardware.

4. **Light Fixtures – General** – Light Fixture details in Therapy Space are the same as Private Patient Space #4.
SAFETY: CRDAMC – SAFE and compliant with VA, NAPHS and FGI criteria
            WRNMMC – SAFE and compliant with VA, NAPHS and FGI criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Light Fixtures
               WRNMMC – NO DATA regarding published therapeutic guidance for Light Fixtures
Comments: Rounded light fixtures provided more of a residential feel than fluorescent variant.

5. Fire Sprinklers – Fire Sprinkler details in Therapy Space are the same as Private Patient Space #6.

SAFETY: CRDAMC – SAFE, compliant with NAPHS and FGI criteria
            WRNMMC – SAFE, compliant with NAPHS and FGI criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Fire Sprinklers
               WRNMMC – NO DATA regarding published therapeutic guidance for Fire Sprinklers
Comments: No additional comments regarding the use of or incorporation Fire Sprinklers in facilities

6. HVAC Grilles – HVAC Grille details in Therapy Space are the same as Private Patient Space #7.

SAFETY: CRDAMC – SAFE, compliant with NAPHS and FGI criteria
            WRNMMC – SAFE, compliant with NAPHS and FGI criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for HVAC Grilles
               WRNMMC – NO DATA regarding published therapeutic guidance for HVAC Grilles
Comments: No additional comments regarding the use of or incorporation HVAC Grilles in facilities

7. Windows – General – Window details in Therapy Space are the same as Private Patient Space #8.

SAFETY: CRDAMC – SAFE, compliant with VA, NAPHS and FGI criteria
            WRNMMC – SAFE, compliant with VA, NAPHS and FGI criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Windows
               WRNMMC – NO DATA regarding published therapeutic guidance for Windows
Comments: Natural daylight access accomplishes the residential feel of a standard day and normal routine

8. Electrical Outlets – Electrical Outlet details in Therapy Space are the same as Private Patient Space #10.

SAFETY: CRDAMC – SAFE, compliant with NAPHS criteria
            WRNMMC – SAFE, compliant with NAPHS criteria
THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Electrical Outlets
               WRNMMC – NO DATA regarding published therapeutic guidance for Electrical Outlets
Comments: Several outlets had cover plates that completely prevented access
9. Nurse Call Systems – Nurse Call System in Therapy Spaces are the same as Private Patient Space #19.

SAFETY: CRDAMC – NO DATA, Nurse Call Systems not employed at the facility
WRNMMC – SAFE, compliant with NAPHS and FGI criteria

THERAPEUTICS: CRDAMC – NO DATA, Nurse Call Systems not employed at the facility
WRNMMC – NO DATA regarding published therapeutic guidance for Nurse Call Systems

Comments: No additional comments regarding the use of Nurse Call Systems

10. Cabinet Pulls – The NAPHS and FGI guidance criteria is basic regarding cabinet pulls: they should be recessed, have no protruding openings and no tie-off points. CRDAMC utilizes traditional style file cabinets within its multi-purpose room that does not comply with guidance criteria and therefore is deemed as not safe. WRNMMC does not have cabinet pull equipped items within its therapy spaces and therefore is rated accordingly based on no data. No data was available regarding the therapeutic qualities of cabinet pulls and both facilities are rated accordingly. Summary data regarding Cabinet Pulls as well as associated images (Figures 140 and 141) are reflected below:

SAFETY: CRDAMC – NOT SAFE, non-compliant with NAPHS and FGI criteria
WRNMMC – NO DATA as cabinet pull furniture not utilized within Therapy Space

THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Cabinet Pulls
WRNMMC – NO DATA regarding published therapeutic guidance for Cabinet Pulls

Comments: No additional comments regarding the use of Cabinet Pulls

As indicated previously, Communal Space includes but is not limited to Day Rooms, Multi-Purpose Activity Rooms and Noisy Activity Rooms. In general, these spaces are where patients relax and are able to allow the progress from therapy sessions to “sink in”. The space analyzed was the Day Room at both facilities, however, no images were taken as these spaces consistently had patients within them and their privacy is priority. Hardware and Fixtures within these spaces are as indicated below:
1. **Door – General** – Door details in Therapy Space are the same as Private Patient Space item #1.

   **SAFETY:**
   - CRDAMC – NOT SAFE, non-compliant with VA and NAPHS criteria
   - WRNMMC – SAFE and compliant with VA and NAPHS criteria

   **THERAPEUTICS:**
   - CRDAMC – NOT THERAPEUTIC based on VA and NAPHS guidance criteria
   - WRNMMC – THERAPEUTIC based on VA and NAPHS guidance criteria

   **Comments:**
   - WRNMMC doors provide the desired residential look while CRDAMC did not.

2. **Door Hinges** – Door Hinge details in Therapy Space are the same as Private Patient Space item #2

   **SAFETY:**
   - CRDAMC – NOT SAFE, non-compliant with VA, NAPHS and FGI criteria
   - WRNMMC – SAFE and compliant with VA, NAPHS and FGI criteria

   **THERAPEUTICS:**
   - CRDAMC – NO DATA regarding published therapeutic guidance for Door Hinges
   - WRNMMC – NO DATA regarding published therapeutic guidance for Door Hinges

   **Comments:**
   - No additional comments regarding utilized door hinge hardware.

3. **Door Locksets** – Door Lockset details in Therapy Space are the same as Private Patient Space item #3.

   **SAFETY:**
   - CRDAMC – SAFE and compliant with NAPHS criteria
   - WRNMMC – SAFE and compliant with NAPHS criteria

   **THERAPEUTICS:**
   - CRDAMC – NO DATA regarding published therapeutic guidance for Door Locksets
   - WRNMMC – NO DATA regarding published therapeutic guidance for Door Locksets

   **Comments:**
   - No additional comments regarding Door Locket hardware.

4. **Light Fixtures – General** – Light Fixture details in Therapy Space are the same as Private Patient Space #4.

   **SAFETY:**
   - CRDAMC – SAFE and compliant with VA, NAPHS and FGI criteria
   - WRNMMC – SAFE and compliant with VA, NAPHS and FGI criteria

   **THERAPEUTICS:**
   - CRDAMC – NO DATA regarding published therapeutic guidance for Light Fixtures
   - WRNMMC – NO DATA regarding published therapeutic guidance for Light Fixtures

   **Comments:**
   - Rounded light fixtures provided more of a residential feel than fluorescent variant.

5. **Fire Sprinklers** – Fire Sprinkler details in Therapy Space are the same as Private Patient Space #6.

   **SAFETY:**
   - CRDAMC – SAFE, compliant with NAPHS and FGI criteria
   - WRNMMC – SAFE, compliant with NAPHS and FGI criteria

   **THERAPEUTICS:**
   - CRDAMC – NO DATA regarding published therapeutic guidance for Fire Sprinklers
   - WRNMMC – NO DATA regarding published therapeutic guidance for Fire Sprinklers

   **Comments:**
   - No additional comments regarding the use or incorporation Fire Sprinklers in facilities
6. HVAC Grilles – HVAC Grille details in Therapy Space are the same as Private Patient Space #7.

SAFETY: CRDAMC – SAFE, compliant with NAPHS and FGI criteria
        WRNMMC – SAFE, compliant with NAPHS and FGI criteria

THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for HVAC Grilles
               WRNMMC – NO DATA regarding published therapeutic guidance for HVAC Grilles

Comments: No additional comments regarding the use of or incorporation HVAC Grilles in facilities

7. Windows – General – Window details in Therapy Space are the same as Private Patient Space #8.

SAFETY: CRDAMC – SAFE, compliant with VA, NAPHS and FGI criteria
        WRNMMC – SAFE, compliant with VA, NAPHS and FGI criteria

THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Windows
               WRNMMC – NO DATA regarding published therapeutic guidance for Windows

Comments: Natural daylight access creates the residential feel of a standard day and normal routine

8. Electrical Outlets – Electrical Outlet details in Therapy Space are the same as Private Patient Space #10.

SAFETY: CRDAMC – SAFE, compliant with NAPHS criteria
        WRNMMC – SAFE, compliant with NAPHS criteria

THERAPEUTICS: CRDAMC – NO DATA regarding published therapeutic guidance for Electrical Outlets
               WRNMMC – NO DATA regarding published therapeutic guidance for Electrical Outlets

Comments: Several outlets had cover plates that completely prevented access

With both selected Case Study facilities (CRDAMC and WRNMMC) belonging to the Department of Defense (DOD), the staffing, programs, services and staff experiences at both are similar but at the same time, each has its differences. These differences are due to issues that include but are not limited to geographic location, service-member population characteristics, mission of the installation (e.g. - Medical Training Units at Fort Sam Houston, Texas versus Mechanized Deployable Units at Fort Hood, Texas) and facility layout (a concern since most DOD facilities have been re-purposed units). With that being said, the common items previously mentioned within the Built Environment factors of Space Layout, Finishes & Furnishings and Hardware & Fixtures have been compared and contrasted to highlight adherence of not to documented guidance criteria regarding common factors related to safety and therapeutics (See Table XXX regarding comparison of guidance criteria and findings at CRDAMC and WRNMMC). However and as previously stated, there is little data available regarding Post-Occupancy Evaluations or Evidence Based
Design related to what works and doesn’t work within DOD facilities. Therefore, on-site observations and interviews with Subject Matter Experts and Healthcare Professionals that are directly engaged with patient care on a daily basis provide an excellent source if not the best source for which to obtain information and expand on issues, both positive and negative. During the interview process, a total of 15 questions were asked of each Medical Professional that include but were not limited to job specialty, role, average daily routine, current view regarding facility safety and therapeutics and what projects or modifications could be done to enhance both. Question response details from participating staff members are collectively reflected below and categorized by each Case Study.

**CASE 1 – Carl R. Darnall Army Medical Center IPBH Findings**

A total of 6 Behavioral Healthcare Professionals were interviewed at CRDAMC. Based on the current workload and therapy sessions, the specialties that were available for discussion participation consisted of 4 Psychiatric Nurses, 1 Psychiatrist and 1 Behavioral Health Specialist.

1. **Open versus Compartamentalized Plan** - As a re-purposed facility, the staff acknowledged that the current CRDAMC IPBH Facility was not designed with the Behavioral Health Patient in mind. Therefore, the layout is by no means preferred or deemed ideal by the professionals charged with providing care. The current blind spots and spaces of limited visibility could be enhanced with an open plan as observation and monitoring of patient activities from multiple perspectives and by multiple care professionals could be increased. The benefit of having and Open Plan compared to a Compartamentalized Plan is increased visibility and observation, which translates to the prevention of patient harm to themselves and others or forms of negative behavior that could be mitigated if not eliminated, enhancing the overall environment and positive outcomes for all.

2. **Artwork and Color Schemes needed in all spaces** – During the staff discussion period, 4 out of the 6 staff members mentioned that one of the biggest flaws with the unit was the lack of artwork and color
schemes. The current unit does not provide a comfortable or “residential feel” that is an objective mentioned in multiple guidance criteria documents (DVA, 2010). Staff members suggested that perhaps room design themes (e.g. - mountains, beach, forest, etc.) incorporated with soothing color schemes, geometric patterns and inspirational murals would contribute toward attaining the desired comforting effect and instill pride and dignity not only within the patients but also within the staff. The benefit of utilizing color schemes, patterns and mural artwork is the calming effect that it has with patients and staff, instilling positive character to the unit while eliminating the feeling of “incarceration” for the patients due to the residential feel instead of a prisonlike experience. Furthermore, a calm patient is a comfortable patient which potentially translates to increased safety for all.

3. **Enhanced Security through Vestibule** – During the staff discussion period, 3 out of 6 personnel mentioned that security was a concern on the floor due to no vestibule at the entrance. With a vestibule existing as a double-door space with a primary and secondary set of doors to create the “vestibule” space between, this would allow the staff to easily respond with securing a patient trying to flee in the event that occurred. The unit currently has a single magnetic door network that if breached, the patient has easy access to the staircase and elevator system. The benefit of incorporating a vestibule is extra security from the outside but also extra containment from the inside. This is not to say that all patients are obsessed with the concept of escape, but vestibules emplaced within the unit negate that possibility if it was to exist.

4. **More Therapy Space to accommodate smaller groups** – As previously mentioned, Therapy space is the location where curative solutions and treatment programs culminate regarding patient healing and the betterment their disposition. Therapy space within this unit can consist of counseling, group discussions, artwork and other activities that calm and/or help to re-instill dignity within the patient. Currently, dedicated Therapy Space at CRDAMC is limited and the staff stated that more spaces would allow for smaller, more effective therapy groups / activities. The benefit of more Therapy Space
translates to the potential for more focused and manageable programs as well as the potential to enhance patient outcomes.

5. **More Comfortable Furnishings** – The staff unanimously stated that the main patient complaint on the unit was the lack of comfortable furnishings, in particular the mattresses within Private Patient Spaces. Although the mattresses are compliant with National Fire Protection Agency (NFPA) 101 Life Safety Code Standards, they are thin, uncomfortable and provide little to no spinal support. Additionally, the staff stated that patients also complained about the chairs within the unit as they are not very comfortable either. Benefits to comfortable furnishings are patient physical and mental comfort, which contributes to keeping them calm and as previously mentioned, a calm patient increases safety not only for himself but for the staff as well.

6. **Better access to outdoor space** – During the staff discussion period, 3 out of 6 members indicated that increasing the access to nature or outdoor space is critical with Behavioral Health Treatment. Without access to nature, fresh air and the view of sunlight providing normalcy and routine of daily life, patient agitation can potentially increase. Within the current unit, outdoor access must be obtain by taking the patients down an elevator and then outside to an enclosed area. With a regimented daily routine and time of the essence, this process is unsafe but also time consuming. Therefore, the benefit of having better access to outdoor space is the potential of mitigating if not eliminating patient agitation and restlessness. Furthermore, a space that provides direct access from the unit can increase outdoor patient space exposure time as well as enhance the overall concept of safety for the patient and the staff.

7. **Current Unit not effective for Behavioral Health Patients** – To close the discussions with each of the staff members, the question was posed regarding whether or not they thought the unit was effective for keeping patients safe. The unanimous answer was “No” based on the fact that CRDAMC is a re-purposed facility and wasn’t designed to support the unique Behavioral Health population or programs required to provide the appropriate level of treatment. Secondly, the unit is compartmentalized instead of open as recommended per guidance and therefore can foster opportunities for patients to harm themselves,
harm others or engage in mischievous activities that could present unsafe predicaments for both patients and staff.

CASE 2 – Walter Reed National Military Medical Center IPBH FINDINGS

A total of 6 Behavioral Healthcare Professionals were interviewed at WRNMMC. Based on the current workload and therapy sessions, the specialties that were available for discussion participation consisted of 2 Military Psychiatric Nurses, 1 Civilian Psychiatric Nurse, 1 Social Worker and 2 Behavioral Health Specialists.

1. **Open versus Compartmentalized Plan** – During Staff discussions, five out of six members expressed displeasure with the current WRNMMC IPBH Facility. Although the facility underwent a renovation that was completed in 2012, the layout is by no means preferred or deemed ideal by the professionals charged with providing care due to the long tunnel-like corridors within the unit that provide blind spots and spaces of limited visibility. Staff stated that observation and monitoring of patient activities was many times difficult due to the layout and an arrangement that would provide observation from multiple perspectives (Open Plan) would greatly enhance operations. The benefit of having an Open Plan compared to a Compartmentalized Plan provides enhanced observation and visibility that mitigates the opportunity for patient seclusion, hiding opportunities, mischief or other forms of negative behavior that if not eliminated could be detrimental to patients and staff alike.

2. **Lack of Artwork and Color Schemes in all spaces** – Five out of Six Staff members indicated that the lack of artwork and color schemes contributed to an other than favorable feeling within the unit. Furthermore, the staff indicated that an area with a recessed display case to showcase patient artwork would contribute to re-instilling pride and dignity within the patient population. Other enhancements or additions pertaining to the concept of artwork for improved patient outcomes were theme-based therapy rooms (e.g. – beach, mountains, forest, prairie, etc.), color patterns and schemes for Private Patient
Spaces and a Chalk-Board Wall within an Art Therapy Room as a Mental Health Specialist stated that “I have a patient that loves to draw and a Chalk-Board wall would be a safe and therapeutic tool to keep her occupied and content all day long”. The benefit of having Artwork, Color Schemes and Artistically Creative Features can greatly contribute to positive patient outcomes by providing the desired effect of creating a “residential feel” to the unit (DVA, 2010), providing inspirational and/or motivational artwork that can contribute to enhancing patient disposition as well as re-instill pride and dignity back within the individual.

3. **Security: Add a Vestibule and Enclose Outdoor Space** – The WRNMMC Staff unanimously concurred that Outdoor Patient Space is critical to keeping one “grounded” with the therapeutic effects of fresh air, sunlight and refreshing break from Therapy. Furthermore, the staff likes the fact that outdoor space is easily accessible on the same floor as the unit but the negative aspect is the fact that the outdoor space is not covered and therefore requires no less than 3 people to stand guard to ensure no patient climbs the wall and jumps off the 7th floor to what will definitely be severe injury if not guaranteed death. All is copasetic with the outdoor space regarding design, arrangement of plants and provided amenities but a screen or containment device is needed to ensure jumping opportunities are completely eliminated.

Additionally along the lines of security, three out of six staff members stated that a vestibule was needed to better enhance patient and staff safety. Incorporation of a vestibule can only serve as an added layer of protection to ensure unruly patients remain within the unit and restrict them potential harm to themselves or others. The benefit of providing additional security measures not only increases the level of safety for the staff but mitigates if not eliminates the chances of patient fatality, which within at least the first 48-hours is of significant concern for any IPBH unit.

4. **More Comfortable, Safe and Logical Finishes & Furnishings** – WRNMMC Staff unanimously indicated that better finishes & furnishings are required that are more comfortable, safer and more logical than what they are currently working with. An item that was referenced by several staff members were the beds. Not only are the chairs and beds uncomfortable (pillows and mattresses – little to no support), but
many of the beds are outfitted with drawers that could provide ligature points, places for patients to hide contraband or worse – hide themselves. Furthermore, the lack of comfortable items can also greatly contribute to enhanced patient agitation, especially within patients who are struggling to cope with issues of Chronic Pain. So when looking for therapeutic and safe furniture, logic should also be incorporated into the equation to ensure a truly appropriate solution is provided. Finally, the staff recommended that it would be great (both from a safety and therapeutic standpoint) to incorporate impact resistant flooring that possesses a wood-grain finish. One member indicated that flooring of this magnitude exists in durable configurations that are durable to withstand excessive cleaning, equipment movement and furniture placement. The benefit of providing comfortable, safe and logical finishes & furnishings is that they can help keep patients calm and provide a safe venue for patients as well as staff. An example is the impact resistant floor, displaying the wood-grain finish that not only therapeutically provides the goal of the “residential feel” within the unit but also from a safety perspective could be the difference between a “bruise” or a “break” for a patient or a staff member, which either way could have a massive impact within the IPBH unit.

5. **Is the unit effective for Behavioral Health Patients** – Four out of six members of the staff felt that the unit was not effective regarding the provision of care. The lack of confidence within the unit stemmed from the long corridors that provide blind spots or spaces with poor observation, the lack of a security vestibule to adequately contain unruly patients in the event the scenario presented itself, the lack of safe and screened rooftop outside space that could facilitate patient suicide through jumping and the Open Nurse Station. For the most part, the open main Nurse Station is preferred for visibility, observation and central patient access as required. However, the station is located adjacent to the Dayroom (Communal Space) and there is no means to filter or block the noise if patient discussions or group television viewing is being conducted. Therefore, the recommendation is to install a plexi-glass barrier between the Dayroom and Nurse Station to filter out the noise created by side-bar discussions, ringing telephones and computer operations that can only serve to distract patients and degrade their level of attention. Finally,
the unit is ineffective as space layout is poor due to the lack of like space collocation. An example can be seen with the Private Patient Spaces as they are sporadically located within the unit, placing most too far away from adequate attention and observation from the Nurse Station.

Analyzing the two Case Studies (CRDAMC and WRNMMC) provided an immense amount of information that goes way beyond a standard literature review and could only be acquired through the physical conduct of on-site observations and personal discussions with Behavioral Health Professionals. Comparing and contrasting how issues of Space Utilization, Space Layout, Hardware & Fixtures and Finishes & Furnishings provided a thorough and meticulously detailed look at the issues regarding the balance between Safety and Therapeutics in MHS In-Patient Behavioral Health facilities. Although there were a lot of positive aspects observed at both facilities, there was also a great deal of negative aspects as well. Meticulous review of Design and Construction standards is paramount with the In-Patient facility beyond any other medical facility type, mainly due to one safety oversight could result in a fatality and therefore indicate failure for the organization. The overall conclusion regarding the findings of this study, future recommendations and the next steps will be covered in Chapter 5 – Conclusions.
CONCLUSIONS

The Brain Health Patient has been categorized utilizing multiple differing terms throughout the course of time (e.g. – Shell Shock, War Neurosis, Psychiatric Casualty, Post-Vietnam Syndrome, etc.). Regardless of the referenced diagnosis or name associated with the identified disorder, these mental or “invisible wounds” surprisingly to most have existed since the recognition of the physical wounds of war, but they have merely failed to garner the same level of attention that their physical counterparts have. World War I started the most significant period of program development, diagnosis and field treatment to help those affected with these wounds and achieved marked success. World War II, perhaps inadvertently, assisted with public recognition of invisible wounds (the LTG Patton soldier slapping incident) as well as assisted with soldier screening programs that were emplaced not so much as to define the right man for service but to screen the mentally unsound who surely would cause problems in the field later on. Finally, the Vietnam War aided with the identification, diagnosis and coining of Post-Traumatic Stress Disorder (PTSD), a condition that continues to plague multiple Vietnam Veterans (OTSG, 2011) as well as many returning OIF and OEF combat veterans to this day.

As previously indicated, the military has made significant progress over time regarding the diagnosis, treatment and implementation of preventive programs to address the complicated issues associated with Brain Health and has had marked success. With the significant withdrawal of troops from Iraq and Afghanistan as well as military operations in the Middle East failing to be the primary discussion topic on public television or make the front page headlines of popular print media, one can confidently assume that all is well with the US military. In an article published by Reuter’s in 2003, it stated that 1 combat veteran commits suicide every 65 minutes. Statements of this magnitude lead one to question source validity as invisibly wounded “victims” resulting from war seem to have successfully re-integrated and intertwined themselves back into the fabric of society. Again, all appears to have returned to a sense of
normalcy until horrific events in garrison (home station) occur that provide a good dose of reality, such as the recent actions of Specialist Ivan Lopez at Fort Hood, Texas (Sanchez, 2014). Unfortunately, his actions send out a catastrophic reminder to the world that mental issues exist and will continue to exist, even though combat operations have long sense ceased as it is hard to tell when the stressors experienced in combat (if applicable) will surface and combine (or not) with the stressors of everyday life. The ugly product of the culmination of these stressors often culminates into a horrific event that not only translates into harm for the individual service-member but also for many innocent bystanders who happen to merely be in the wrong place at the wrong time. So, programs are in place to improve mental disorder treatment and improvement has been noted in the identification of service-members that potentially are at the mental breaking-point, but little documentation exists regarding success within Behavioral Health Facilities. Therefore, to mitigate if not eliminate self-harm, suicide and harm to others that has been well documented in several publications throughout the past 40+ years (Shepley, 2013), the basis of this research study focused on the aspects to determine the proper balance between Safety and Therapeutics within the In-Patient Behavioral Health Facility. Whether one is involved in designing a new building, renovating space or maintaining an existing behavioral healthcare program, the environment can provide significant impacts on patient safety. Additionally, no built environment – no matter how well designed and constructed – can be relied upon as an absolute preventative measure as staff awareness, the risks of the environment and the needs of the patient (NAPHS, 2013) must all be considered and work collectively to address and resolve patient behavioral health issues. Furthermore, the disposition of these patients can be addressed similarly to standard military triage “golden hour” evacuation concept. The difference is that the “golden” period for In-Patient Behavioral Health Patients is the first 48 hours: the significant period to prevent patient harm to self (suicide) or others. With that being said, it is critical to ensure that the In-Patient spaces are durable without harmful aspects such as ligatures for hanging, furnishings that can be broken and used as weapons, etc. (safety) while simultaneously providing an open, “residential feel” (therapeutics) instead of an institutionalized, prison like atmosphere.
This research study utilized a mixed-methods approach that targeted two Case Study facilities with a simple list of qualifying criteria: 1) Must be a Military Health System Facility 2) Must have an In-Patient Behavioral Health Unit and 3) Must be a high-volume facility or located in a region to support a significantly large military population. For this study, the Carl R. Darnall Army Medical Center (CRDAMC) at Fort Hood, Texas and the Walter Reed National Military Medical Center (WRNMMC) at Bethesda, Maryland were selected for the research and analysis process (See Appendix B and C regarding a summary of facts and data for the selected facilities). Data collection for each Case Study focused on the areas that patients and staff co-exist in on a daily basis (Private Patient, Communal and Therapy Space) and 3 Built Environment Factors (BEF) that consisted of Space Layout, Finishes & Furnishings and Hardware & Fixtures. Further detail on the variety of collection methods utilized throughout the process consisted of archived document review, on-site observations & photographs as well as interviews with general and facility staff personnel. Data collected from the Case Studies were then referenced and compared to guidance criteria documents (the Department of Defense (DOD - Space Planning Criteria), the Department of Veterans Affairs (VA – Space Planning Criteria and Design Guide for Mental Health Facilities), the National Association of Psychiatric Health Systems (NAPHS – Design Guide for the Built Environment of Behavioral Health Facilities) and the Facility Guidelines Institute (FGI)).

Analysis of Findings

The BEF of Space Layout reflected nothing significant to report at WRNMMC and CRDAMC regarding space dimensions (length and width) for Private, Therapy and Communal spaces. The rooms either complied with guidance or were slightly above or below recommended space guidance. Regardless, no issues were reported through interviews where room size created problems. However, blind spots within some of the rooms did exist that could facilitate potential problems as well as many of the ceiling heights
were below recommended guidance criteria. In summary, there wasn’t sufficient data available to
determine whether or not the given room size dimensions were safe or not safe nor data available to
confirm what was therapeutic and what wasn’t. Concerns exist over the ceiling height as less than 9’
allows access through jumping (as proven by a Behavioral Health Specialist). Furthermore and
acknowledging that both facilities are repurposed, staff interviews stated that open plans were preferred
to compartmentalized plans for safety increased patient observation / visibility. Again, there were no
significant issues from interviews reported for Safety or Therapeutics regarding Space Layout, but success
is achieved through proactive design instead of reactive construction as patient actions are unpredictable.

The BEF of Finishes & Furnishings reflected similar results from onsite observations, interviews with staff
and staff input regarding patient comments for WRNMMC and CRDAMC: both facilities provide an
institutionalized feel versus the desired “residential” fell, needing color schemes, design patterns (walls,
floors and furniture) and artwork to enhance the overall therapeutic qualities of the unit. Furthermore,
staff interviews advised that the furniture is uncomfortable (e.g. – mattresses are too thin and provide no
support, chairs are uncomfortable to sit in, etc. which causes problems for the standard patient and
intensifies for those who also suffer from chronic pain). In regards to safety, many items reviewed
regarding this BEF were in compliance or acceptable under the recommended guidance criteria.
However, significant issues to note were ligatures that could be used for hanging on many items within
the lavatory, selection of furnishings that mitigate good infection control practices, exposed corners on
bathroom mirrors and furnishings that foster contraband concealment. Again, finishes and furnishings,
similar to Space Layout require proactive design to mitigate reactive construction but also require
constant, meticulous review of finishes and furnishings within space to ensure therapeutic qualities but
most importantly, ensure safety of the individual patient and those charged with the provision of care.
The BEF of Hardware and Fixtures posed safety issues at CRDAMC regarding operation of the Private Patient Space Door. On all patient rooms regardless if Single Occupancy Seclusion, Double Occupancy or Quadruple Occupancy, the door swung in instead of out as preferred, enabling patients the opportunity to pinch themselves, hide to cause potential harm to others or barricade themselves inside their rooms.

Other safety concerns related to the doors at CRDAMC are the use of standard hinges instead of the preferred continuous hinges, creating the potential for hanging due to ligatures. Furthermore regarding doors, WRNMMC utilizes the preferred push lever door handle on patient rooms but uses the swivel handle type on therapy and communal space doors. This creates a potential problem, regardless if the plan is open or compartmentalized as patients have access to these doors and could use the handle as a ligature to hang themselves. Regarding therapeutics, CRDAMC does not adhere to the guidance of utilizing doors with wood-grain finishes and instead utilizes painted white variants. Additionally, lavatory valves and waste piping adhere to guidance of not being exposed but therapeutically, CRDAMC does not pass the residential look as the sink and vanity are stainless steel, much like one observed within a prison cell. So, similar to Finishes & Furnishings, consistent meticulous review of available hardware & fixtures will help to proactively keep patients safe from harming themselves or inflicting harm on others.

Excessive harm to others or suicide that results in the loss of one life within the unit constitutes as failure for the entire organization.

Safety and Therapeutics Summary

Through the completion of data collection, comparison and analysis, the question still remains: What is the Balance between Safety and Therapeutics? To answer this question, first envision a counterbalance scale with a weight that says “therapeutics” and a weight that says “safety”. When the safety weight is placed on the right balance and the therapeutic weight is placed on the left balance, the scale is going to balance but safety will weigh heavier than therapeutics. Again, the scale balances – but safety is the
element that is a more heavily weighted as witnessed through literature review, guidance criteria review and interviews with staff as keeping patients safe and denying them the opportunity to harm themselves, harm others or worst case scenario – commit suicide is of the utmost importance. In other words, the patient admitted to an In-Patient Behavioral Health Facility benefits more from a Safely Therapeutic Facility than a Therapeutically Safe Facility because again, keeping a patient safe from committing suicide is top priority and as they relax and realize that there are other options to resolve their problems, therapeutics help to re-instill confidence, physical comfort as well as mental comfort that progresses toward treatment success and admission to a lower level of care within an Out-patient or other type of treatment facility. Furthermore, the In-Patient Behavioral Health Patient is the primary patient type admitted to a medical facility whose status may intentionally worsen by their own malicious hand or personal catastrophic series of events. So as mentioned previously on several occasions, meticulous design coupled with meticulous follow up within the construction process is the best way to ensure the safest facility is produced to address the needs and environment supporting this unique, at-risk patient population. Regardless, the following table summarizes the aforementioned issues regarding safety and therapeutics, providing a key and indicating the Top 3 Issues within each category at the CRDAMC and WRNMMC In-Patient Behavioral Health Facilities (See Table 5):
Table 5 – Top 3 Safety and Therapeutic Concerns Summary

<table>
<thead>
<tr>
<th>Safety Concerns</th>
<th>Supporting Data</th>
<th>Top 3</th>
<th>KEY - Supporting Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Ligatures</td>
<td>2a, 2b, 3, 4</td>
<td></td>
<td>1a - Staff Interviews - CRDAMC</td>
</tr>
<tr>
<td>2 Hidden Corners and Blind Spots</td>
<td>1a, 1b, 2a, 2b, 3, 4</td>
<td></td>
<td>1b - Staff Interviews - WRNMMC</td>
</tr>
<tr>
<td>3 Non-durable or breakable items</td>
<td>2a, 3, 4</td>
<td></td>
<td>2a - On-Site Observations - CRDAMC</td>
</tr>
<tr>
<td>4 Single Patient Rooms - Harm due to Isolation</td>
<td>3, 4</td>
<td></td>
<td>2b - On-Site Observations - WRNMMC</td>
</tr>
<tr>
<td>5 No Interlocking Vestibules</td>
<td>1a, 1b, 2a, 2b, 3</td>
<td></td>
<td>3 - Guidance Criteria</td>
</tr>
<tr>
<td>6 Non-secure furniture</td>
<td>2a, 3, 4</td>
<td></td>
<td>4 - Literature Review</td>
</tr>
<tr>
<td>7 Doors that swing in enabling barricade</td>
<td>2a, 3, 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Tamperable controls (water, electricity, etc.)</td>
<td>3, 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Insufficient Lighting</td>
<td>3, 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Patient Accessible Ceilings</td>
<td>2a, 2b, 3, 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Therapeutic Concerns</th>
<th>Supporting Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Limited access to nature</td>
<td>1a, 1b, 2a, 3, 4</td>
</tr>
<tr>
<td>2 No access to natural daylight</td>
<td>3, 4</td>
</tr>
<tr>
<td>3 Institutional versus Residential Feel</td>
<td>1a, 1b, 2a, 2b, 3, 4</td>
</tr>
<tr>
<td>4 Absence of Color accents impacts patient outcomes</td>
<td>1a,1b, 2a, 2b, 3, 4</td>
</tr>
<tr>
<td>5 Lack of Acoustic Privacy impacts patient outcomes</td>
<td>2a, 2b, 3, 4</td>
</tr>
<tr>
<td>6 Lack of Artwork impacts patient outcomes</td>
<td>1a, 1b, 2a, 2b, 3, 4</td>
</tr>
<tr>
<td>7 Institutional finishes impact patient outcomes</td>
<td>2a, 2b, 3, 4</td>
</tr>
<tr>
<td>8 Inadequate temperature impacts patient outcomes</td>
<td>4</td>
</tr>
<tr>
<td>9 Improper use of artificial light impacts patient outcomes</td>
<td>3</td>
</tr>
<tr>
<td>10 Uncomfortable furnishings impact patient outcomes</td>
<td>2a, 1b, 2a, 2b, 4</td>
</tr>
</tbody>
</table>

Although there are many deficiencies and issues of non-adherence to facility guideline criteria at both CRDAMC and WRNMMC, Table 5 reflects the Top 3 in each category:

1. **Safety** - Hidden Corners and Blind Spots – The lack of an open plan at either facility, corridors and the lack of patient observation mirrors beyond seclusion rooms hamper effective patient visibility.

2. **Safety** - No Interlocking Vestibules – The lack of vestibules provides a security concern for patients because if they are strong enough to break through the doors, there is nothing to stop them at either facility. Successful breach of the magnetic doors provides unimpeded access to the elevators or staircase.

3. **Safety** – Patient Accessible Ceilings – Some of the ceiling heights in CRDAMC met the standard in the guidance criteria of 9’ while others were below that threshold. Within WRNMMC, none of the ceiling heights exceeded 8’5”. There have been no reports of ceiling access issues at either facility but they should be raised to at least 10 feet to adequately deny patient access.

4. **Therapeutics** – The lack of color, color schemes or patterns within each facility does not adhere to the guidance criteria of establishing a residential look or feel to the facility. The off-white, gray or tan
colors utilized at both facilities are easy to clean, repair and sustain but provide little therapeutic support (if any) as they deliver an incarcerated, prison like feeling. Data obtained through interviews suggest that appropriate color selections add a more residential feel and can increase positive patient outcomes.

5. **Therapeutics** – Lack of Artwork – Artwork (preferably murals for safety) that instills pride and hope are recommended in guidance criteria to increase positive patient outcomes. Currently, neither facility has any artwork to adhere to this recommended criteria.

6. **Therapeutics** – Uncomfortable Furnishings – Guidance criteria and interview data suggest that uncomfortable furnishings lead to agitation and stress which mitigates positive patient outcomes. CRDAMC and WRNMMC patients both complain about poor bedding materials as well as furniture.

Based on the previous data analysis, answers to the posed Research Questions are as follows:

1. **Are the current MHS Guidance Criteria effective for keeping patients and staff safe?** The current MHS guidance criteria are not effective for keeping patients and staff safe. Understanding that guidance criteria is heavily weighted on that all important term “guidance”, more stringent requirements need to be placed on the design and construction process along with a series of check and balances. At this time, there are no such checks and balances that exist beyond punch list inspections. No data exists regarding a tool or methodology to ensure In-Patient facilities address all the safety concerns as indicated in the guidance criteria documents. As previously stated, the In-Patient Behavioral Health population is unique beyond any other and safety is the most important aspect (NAPHS, 2013) to mitigate the possibilities of self-harm or harm to others.

2. **Are the current MHS Guidance Criteria effective for providing a therapeutic environment for patients & staff?** The current MHS guidance criteria are not effective for providing a therapeutic environment for patients and staff. Understanding that most of the MHS In-Patient Behavioral Health Facilities in the inventory are repurposed facilities (CRDAMC and WRNMMC both fit this criteria) and were not specifically designed to address In-Patient needs, Therapeutics were touched on lightly at WRNMMC
but the facility still possesses and institutional feel due to the lack of color, patterns and artwork. Again, with this unique patient population that is unlike any admitted to the MHS treatment environment, focus should be placed on durable items that have therapeutic qualities as enhanced therapeutics may speed the recovery and treatment of the patient. Currently, there are no checks and balances documented to ensure therapeutic aspects are considered regarding facility design.

3. **What improvements to the MHS Guidance Criteria can be suggested regarding the balance between safety and therapeutic needs for patients, staff and family members?** At this point, two items are recommended to improve MHS Guidance Criteria regarding the balance between safety and therapeutics. The first is to require an assessment process consisting of a pre-assessment (population, services, environmental risks, etc.) with a literature review validating that aspects of safety and therapeutics regarding finishes, furnishings, hardware and fixtures were explored and applied to the facility design. A design assessment prior to facility handover would then be conducted to ensure that specifications and requirements were met regarding a safe and therapeutic design. Finally, a Post-Occupancy Evaluation must be conducted to further add to the knowledge base regarding the determination of whether or not the facility design met the needs of the patient population, the staff and others that utilize the facility. Understanding that innovations and developments continue to evolve, this process would validate that all bases were covered with the intention of designing the optimal safe and therapeutic facility that could also positively influence future designs. The second item is to develop a required checklist to compliment the assessment process, indicating items that are required or mandatory and items that are recommended or optional. Currently, no such information exists as all items are recommended and more stringent or direct guidance is needed to enhance the aspects of the MHS In-Patient Behavioral Health Facility.
Recommendations and Future Studies

As previously mentioned, one of the best sources of information and data collection (if time allows) is to actually talk with the healthcare professionals that are providing the “hands on” patient care on a daily basis. Guidance Criteria documents are excellent sources to review historically documented items that are currently available and in use, but current innovations, ideas and new concepts based on daily experiences from the healthcare provider may present the most accurate and updated concepts to continue the process of enhancing safety and therapeutics for the In-Patient Behavioral Health Patient Population. Therefore, the following recommendations are suggested based on concepts that evolved through interviews and document review regarding space enhancement recommendations within an In-Patient Behavioral Health Facility:

1. **Safety - Ceiling Height** – Guidance criteria specifies 9’ as the minimal requirement for ceiling heights, but a Behavioral Health Specialist was able to jump and reach the ceiling that measured 8’5”. Therefore and for safety sake, recommend that this guidance be re-reviewed to determine if a taller requirement is warranted (perhaps 10’). No evidence exists validating any problems that have been encountered with 9’ ceiling heights but when a 5’6” man can easily jump and gain access, this could be a potential future safety concern.

2. **Safety – Night Light** – Guidance criteria recommends that Night Lights be utilized at a minimum within patient lavatories. No night lights were observed within any facility (and it may be due to the time of day) but emplacement of these lights within the lavatory as well as one positioned along the room wall aids in limited light visibility (night). Night lights cater to the patient who needs to use the lavatory, mitigating the chances of falls which could cause further problems and complications.

3. **Safety – Grab Bars** – Grab bars are recommended for inclusion in patient lavatories for safety. However, as they are only recommended, no bars were observed in the Private Patient Spaces that were
observed. Regardless, both vertical and horizontal bars should be emplaced in patient lavatories (ligature free variants) in the event they are required by the patient.

4. **Safety** – Patient Observation Mirrors – Re-purposed facilities typically have blind spots and areas of poor visibility. Upon conducting on-site observations at CRDAMC and WRNMMC, it was noted that observation mirrors were only included in seclusion rooms. Several Therapy and Communal Spaces (e.g. – Art Therapy Room, Exercise Room and all Patient Rooms) consisted of areas where observation was poor. Emplacement of these mirrors assist with increasing visibility and are paramount toward enhancing patient safety.

5. **Safety and Therapeutics** – Impact Resistant Wood-Grain Floors – Flooring that exhibits a wood-grain appearance provides the preferred residential feel beyond the institutional tiled look. Furthermore, a durable impact resistant variant exists that in the event of a take-down, this flooring could mean the difference between a bruise or a break for a patient of staff member.

6. **Therapeutics** – Acoustic Ceilings – Along with increasing the minimal ceiling height to 10’, acoustic ceilings should also be incorporated to absorb unwanted sound and increase patient privacy. Addition of this item may reduce patient agitation and stress and improve their overall disposition.

7. **Therapeutics** – Chalkboard Walls – An item that evolved from an interview with a staff member was the concept of a chalkboard wall. The provider advised that he has a patient that loves to draw and a large chalkboard wall would aid in keeping her happy and content. Furthermore, art therapy is a popular concept regarding treatment for Behavioral Health patients. A chalkboard wall would not have any ligatures or corners, provides more than enough space to conduct artistic activities and the materials (chalk) cannot be utilized as a weapon and exists in a non-toxic variant in the event it is consumed.

8. **Therapeutics** – Display Case for Artwork – Adding to the residential feel but also seeking a means to enhance the ability to re-instill pride and dignity within this unique patient population, display cases should be made available to showcase patient artwork. Fully recessed versions are available with shatter proof glass and desired locking / access mechanisms that would make them safe for patients and staff.
The service-member that qualifies for admittance to an In-Patient Behavioral Health Facility is a unique service-member that requires a safe and therapeutic environment to remedy identified issues but also to ensure they do not cause harm to themselves or others which could ultimately result in death. As stated by General Creighton Abrams, Jr. who was the 26th Chief of Staff of the Army, “Soldiers are not IN the Army; Soldiers ARE the Army” (HQDA, 2012). Although that statement was made regarding Army soldiers, it can be applied to all service-members in general as the invisibly wounded are an integral part of the military and deserve the appropriate level of care with dignity and respect as any other service-member with physical wounds. Finally and as stated previously in the 1971 U.S. court case of Wyatt v. Stickney, it was ruled that psychiatric patients have a right to quality physical environments that support treatment goals (Shepley, 2013) and as Americans, we have an obligation to ensure that our sick and wounded are properly treated.

Future Research regarding Safety and Therapeutics within In-Patient Behavioral Health Facilities should focus on the newly completed facilities of the Fort Belvoir Community Hospital in Virginia, the Carl R. Darnall Army Medical Center in Texas and the Martin Army Community Hospital in Georgia to review and analyze design improvements not only within brand new facilities but facilities that were specifically designed for the Behavioral Health Patient.
REFERENCES


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<td>Finishes &amp; Furnishings</td>
<td>Furniture - General</td>
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<td>Comforter for bed that can be disassembled and stored out of reach</td>
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<td>Bed - General</td>
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<td>Mattress should consist of a mattress base and mattress topper</td>
<td>All cords less than 12&quot; in length to be locked in place.</td>
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<td>Finishes &amp; Furnishings</td>
<td>Bed - Medical Needs</td>
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<td>Acoustic ceiling panels with exposed edges</td>
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<td>Wardrobe - Shelving Unit</td>
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<td>Plastic bins in open shelving units</td>
<td>Bed should have no drawers, no doors, and should be easy to open.</td>
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<td>Flooring - General</td>
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<td>Colored or uncolored tile with a wood-like texture</td>
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<td>Flooring - Baseboards</td>
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<td>A fiber-based hardwood</td>
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<td>Special finishes in the patient room</td>
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<td>Artwork can be therapeutic or decorative in nature</td>
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<td>Walls will be made of either partition walls or a solid material</td>
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</table>

### Built Environment Factors (BEF) - Space Layout (SL), Hardware & Fixtures (HF) and Finishes & Furnishings (FF)

#### Private Patient Space (P)

- **Door - Hinges**
  - Door hinges should be concealed (No Data)
- **Light fixtures**
  - Light fixtures will be so arranged that light will not strike any medical equipment, medications, or other items on the wall. (No Data)

#### Communal Space (C)

- **Door - Locksets**
  - Door locksets are so arranged that the lock is not in a vertical line with the deadbolt and is of a type that cannot be jammed or forced. (No Data)

#### Therapy Space (T)

- **Door - Closers**
  - Door closers shall be of the automatic type with adjustable stops. (No Data)

### Built Environment Space (BES) - Private Patient Space (P), Communal Space (C) and Therapy Space (T)

- **Patient Observation Mirrors**
  - Mirrors should be located in patient areas to allow patients to see a complete view of the wall behind the mirror. (No Data)

- **Light fixtures**
  - Light fixtures will be so arranged that light will not strike any medical equipment, medications, or other items on the wall. (No Data)

- **Door - Closers**
  - Door closers shall be of the automatic type with adjustable stops. (No Data)

### In-Patient Behavioral Health Facilities - Finding the Balance between Safety and Therapeutics

- **Patient Observation Mirrors**
  - Mirrors should be located in patient areas to allow patients to see a complete view of the wall behind the mirror. (No Data)

- **Light fixtures**
  - Light fixtures will be so arranged that light will not strike any medical equipment, medications, or other items on the wall. (No Data)

- **Door - Closers**
  - Door closers shall be of the automatic type with adjustable stops. (No Data)
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<td>F,P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Ceiling - Curtain Tracks</td>
<td>No Data</td>
<td>No Data</td>
<td>Not recommended for use. If used, they must be flush mounted right to the ceiling with no cords or chains - can be used as ligatures.</td>
<td>No Data</td>
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<td>C</td>
<td>Hardware &amp; Fixtures</td>
<td>Signage - Ceiling</td>
<td>No Data</td>
<td>No Data</td>
<td>Lighted on Photolumination signs. Should install and color coordinated with full length老年人/elderly shuttle to be used on a loading bay.</td>
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<td>Fire Sprinklers</td>
<td>No Data</td>
<td>No Data</td>
<td>Fire sprinklers with facade heads are preferred to provide a double safety layer.</td>
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<td>HVAC Grilles and Vent Covers</td>
<td>No Data</td>
<td>No Data</td>
<td>Small perforated grills with tamper resistant fasteners are recommended. Raking or job style ventilation should be recessed with isolated ligature pockets.</td>
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<td>Windows - General</td>
<td>No Data</td>
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<td>Metal windows should have a window designer designed to restrict the opportunities for patient harm (breakout, and damage, shards as weapons, etc.)</td>
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<td>Window covering hardware - Blinds or Shades</td>
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<td>More blinds between layers of safety glass or roller shades without patient access to knock down the screen (if ligatures) are preferred.</td>
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<td>Hardware &amp; Fixtures</td>
<td>Cabinet Pulls</td>
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<td>Cabinet pulls should be either recessed, have no protruding openings or be of a closed type.</td>
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<td>Electrical Switches and Outlets</td>
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<td>All electrical device switches, outlets, cover plates must have tamper resistant screws, polycarbonate materials &amp; GFCI switch or circuit protection.</td>
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<td>C</td>
<td>Hardware &amp; Fixtures</td>
<td>Fire Extinguishers and Alarm Pull Stations</td>
<td>No Data</td>
<td>No Data</td>
<td>All pull stations and extinguisher cabinets are secured. All staff must be very large at all times and the doors shall be locked for quick ID.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>C</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Door - Soft Suicide Prevention</td>
<td>No Data</td>
<td>No Data</td>
<td>Soft Suicide Prevention devices must be recessed or otherwise removed with photos finish. It should not affect an attached patient and cannot be locked down.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>P</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Door - Ventilated Event Reduction</td>
<td>No Data</td>
<td>No Data</td>
<td>Ventilated Event Reduction Door for private rooms. Can be used in patient rooms.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Grab Bars</td>
<td>No Data</td>
<td>No Data</td>
<td>Should be fastened to wall with a worked to non-pierced plate on the bottom to prevent anchor points.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Vertical Grab Bars</td>
<td>No Data</td>
<td>No Data</td>
<td>Vertical grab bars can be modified away from one side, but some bars now new mods that are grasped from entire side</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Faucets and Valves</td>
<td>No Data</td>
<td>No Data</td>
<td>Faucets and valves are available in a variety of materials and temperature control to change hot and cold valve to allow for ease of use.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Waste and Supply Piping</td>
<td>No Data</td>
<td>No Data</td>
<td>Waste and supply piping should be enclosed and not accessible by patients.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Toilet Flush Valve</td>
<td>No Data</td>
<td>No Data</td>
<td>Removable in the wall and activated by a push button.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>P,C</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Shower control valves</td>
<td>No Data</td>
<td>No Data</td>
<td>Simple sensor activated with palm temperature to stop with a single warning valve or ligature.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>P,C</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Shower Heads</td>
<td>No Data</td>
<td>No Data</td>
<td>Shower Heads should be in a fixed position.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>P,C</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Shower control panel</td>
<td>No Data</td>
<td>No Data</td>
<td>Remote call and dial panel with no ligature points. Battery powered units are attached to the wall.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>P,C</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Shower / Floor Drains</td>
<td>No Data</td>
<td>No Data</td>
<td>Floor drains are located with security covers to patient zones. When a depression of 1/8&quot; is generated it is allowed, shaming water floor should be accessed.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>BES</td>
<td>BEF Category</td>
<td>BEF - Detail</td>
<td>DOQ Criteria</td>
<td>VA Criteria</td>
<td>NAPHS Criteria</td>
<td>TS Criteria</td>
<td>Color</td>
<td>Criteria Image</td>
<td>Notes / Comments</td>
</tr>
<tr>
<td>----</td>
<td>-----</td>
<td>-------------------</td>
<td>---------------------------</td>
<td>--------------</td>
<td>-------------</td>
<td>----------------</td>
<td>-------------</td>
<td>-------</td>
<td>----------------</td>
<td>------------------</td>
</tr>
<tr>
<td>59</td>
<td>P</td>
<td>Hardware &amp; Fixtures</td>
<td>Night Light</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>60</td>
<td>P.C</td>
<td>Hardware &amp; Fixtures</td>
<td>Nurse or Emergency Call Systems</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>61</td>
<td>P.C.T</td>
<td>Hardware &amp; Fixtures</td>
<td>Clothing Rods or Hooks</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>62</td>
<td>P</td>
<td>Space Layout</td>
<td>Patient Room, Bedroom 1 Bed</td>
<td>BRNP1 (NSF - 180)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>63</td>
<td>P</td>
<td>Space Layout</td>
<td>Patient Room, Bedroom 2 Bed</td>
<td>BRNP1 (NSF - 240)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>64</td>
<td>P</td>
<td>Space Layout</td>
<td>Toilet, Patient</td>
<td>TLSJ1 (NSF - 60)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>65</td>
<td>P</td>
<td>Space Layout</td>
<td>Toilet/Shower, Psychiatric</td>
<td>TCTP3 - One per In-Patient (NSF - 90)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>66</td>
<td>T</td>
<td>Space Layout</td>
<td>Seclusion / Isolation Room</td>
<td>BRMP (NSF - 140)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>67</td>
<td>T</td>
<td>Space Layout</td>
<td>Psych, Seclusion, Anterosom</td>
<td>BRMP (NSF - 60)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>68</td>
<td>T</td>
<td>Space Layout</td>
<td>Toilet, Seclusion</td>
<td>TLSJ (NSF - 90)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>69</td>
<td>T</td>
<td>Space Layout</td>
<td>Treatment Room</td>
<td>TRMP (NSF - 120)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>70</td>
<td>T</td>
<td>Space Layout</td>
<td>Exam Room</td>
<td>EXMPR - One per 100 people (NSF - 100)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>71</td>
<td>T</td>
<td>Space Layout</td>
<td>Restraint Room</td>
<td>BRNP (NSF - 130)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>72</td>
<td>T</td>
<td>Space Layout</td>
<td>Group Therapy Room</td>
<td>GPRM (NSF - 110)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>73</td>
<td>T</td>
<td>Space Layout</td>
<td>Screening Room</td>
<td>SPRM (NSF - 120)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>74</td>
<td>T</td>
<td>Space Layout</td>
<td>Bio-Feedback / Sensory Room</td>
<td>BPRM - May be equipped with normal resting equipment (NSF - 120)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>75</td>
<td>C</td>
<td>Space Layout</td>
<td>Multi-Purpose Activity Room</td>
<td>MRMP (NSF - 100)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>76</td>
<td>C</td>
<td>Space Layout</td>
<td>Exercise / Noisy Activity Room</td>
<td>EXRP (NSF - 100)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>77</td>
<td>C</td>
<td>Space Layout</td>
<td>Quiet Activity Room</td>
<td>QPARM (NSF - 100)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
</tr>
</tbody>
</table>

**NOTES**

Technical and Telephone in private rooms will not be provided or utilized.

**System**

Shower stalls are not durable and will not be utilized.

**Group**

Shower stalls are for single patients and are not necessarily needed for all common areas.

**Room**

Shower stalls should be concealed or have a custom made shower seat.

**Patient**

Shower stalls should be designed for patient convenience and privacy.

**Safety**

Shower seats are not typically available in patient care areas - a patient can calm down here if overstimulated by music or loud activity.

**Notes**

Shower stalls should be designed to provide comfort for the patient.

**Criteria**

Shower stalls should be designed to provide comfort for the patient.

**Notes**

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**Criteria**

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**Notes**

Shower stalls should be designed to provide comfort for the patient.

**Criteria**

Shower stalls should be designed to provide comfort for the patient.

**Notes**

Shower stalls should be designed to provide comfort for the patient.
<table>
<thead>
<tr>
<th>#</th>
<th>DES</th>
<th>BEF Category</th>
<th>BEF - Detail</th>
<th>DOD Criteria</th>
<th>VA Criteria</th>
<th>NAPHS Criteria</th>
<th>Full Criteria</th>
<th>Criteria Image</th>
<th>Image Source</th>
<th>Notes / Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>T</td>
<td>Space Layout</td>
<td>Interview / Consult Room</td>
<td>OFFDC2 - One space per provider if encounters are between BEF: 1,000 - 3,999 annually (NSF - 120)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>T</td>
<td>Space Layout</td>
<td>Team Collaboration Room</td>
<td>OFFDC3 - Minimum of 2 per facility. An additional added if consultation rooms exceed 8 (NSF - 120)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>T</td>
<td>Space Layout</td>
<td>Toilet Room, Patient, Therapy Area</td>
<td>9.5.101 - Add additional if consultation rooms exceed 8 (NSF - 120)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>C</td>
<td>Space Layout</td>
<td>Toilet Room, Patient, Communal Area</td>
<td>9.5.101 - Add additional if consultation rooms exceed 8 (NSF - 120)</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td>No Data</td>
<td></td>
</tr>
</tbody>
</table>
### Walter Reed National Military Medical Center
#### Behavioral Health Department - In-Patient Behavioral Health Ward

#### Top 3 Admissions based on diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Depression</td>
<td>625</td>
<td>620</td>
<td>635</td>
<td>630</td>
<td>TBD</td>
</tr>
<tr>
<td>2) Post-Traumatic Stress Disorder</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3) Psychosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Number of Patients seen annually

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>625</td>
<td>620</td>
<td>635</td>
<td>630</td>
<td>TBD</td>
</tr>
</tbody>
</table>

#### Average Length of Stay (LOS) since 2010?

Average LOS from 2010 - 2013 was 24 days. Average LOS from 2014 - present is 13 days.

#### Date Facility was built / renovated.

Facility renovation was completed in 2012.

#### Facility Name and Location.

Walter Reed National Military Medical Center
Bethesda, Maryland

#### Facility Hours of Operation.

24 Hour Operations

#### Brief History - Reason for Construction.

Closing of Walter Reed in Washington, D.C.

#### Number of Patient Rooms.

14 patient rooms

#### Total Square Footage of In-Patient Facility.

20,658 square feet

#### Number of Beds at Facility.

28 Bed Capacity

#### Number Single/Double Occupancy Rooms.

All Patient Rooms are Double Occupancy

#### Staffing Model by Number and Type.

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychiatrists</td>
<td>3</td>
</tr>
<tr>
<td>Psychologist</td>
<td>1</td>
</tr>
<tr>
<td>Social Workers</td>
<td>4</td>
</tr>
<tr>
<td>Case Managers</td>
<td>2</td>
</tr>
<tr>
<td>Registered Nurses</td>
<td>8</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>1</td>
</tr>
<tr>
<td>Licensed Practical Nurses</td>
<td>8</td>
</tr>
<tr>
<td>Behavioral Health Specialists</td>
<td>10</td>
</tr>
<tr>
<td>Administrative Specialist</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Services Provided at the Facility.

Acute Psychiatric Hospitalization, Stabilization and disposition to a lower level of care.
### Top 3 Admissions based on diagnosis

<table>
<thead>
<tr>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Post-Traumatic Stress Disorder</td>
</tr>
<tr>
<td>2) Adjustment Disorder with depressed mood</td>
</tr>
<tr>
<td>3) Adjustment Disorder with anxiety and depressed mood</td>
</tr>
</tbody>
</table>

### Number of Patients seen annually

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>464</td>
<td>460</td>
<td>488</td>
<td>492</td>
<td>TBD</td>
</tr>
</tbody>
</table>

### Average Length of Stay (LOS) since 2010?

- Average LOS from 2010 - 2013 was 7 days.
- Average LOS from 2014 - present is 7 days.

### Date Facility was built / renovated.

- Facility was built in 1964 and renovated in 1984. In 2006, the facility was repurposed for Behavioral Health needs.

### Facility Name and Location.

- Carl R. Darnall Army Medical Center
- Fort Hood, Texas

### Facility Hours of Operation.

- 24 Hour Operations

### Brief History - Reason for Construction.

- Hospital was built to support military population. Currently supports 1 Division (+) and a Power Projection Platform.

### Number of Patient Rooms.

- 6 patient rooms

### Total Square Footage of In-Patient Facility.

- 10,586 square feet

### Number of Beds at Facility.

- 16 Bed Capacity

### Number Single/Double Occupancy Rooms.

- Patient Rooms are Double Occupancy but two are Quadruple Occupancy.

### Staffing Model by Number and Type.

- 3 Psychiatrists
- 3 Case Managers
- 16 Registered Nurses
- 3 Licensed Practical Nurses
- 12 Behavioral Health Specialists
- 1 Administrative Specialist

### Services Provided at the Facility.

- Acute Psychiatric Hospitalization, Stabilization and disposition to a lower level of care.

---

#### Facility Layout Diagram

[Diagram of Carl R. Darnall Army Medical Center, Behavioral Health Department - In-Patient Behavioral Health Ward]

- Total Combined Square Footage: 10,566 SQ FT
- Private Space: 20.9% (2,206 SQ FT)
- Clinical Space: 13.3% (1,463 SQ FT)
- Communal Space: 19.1% (2,060 SQ FT)
- Therapy Space: 8.2% (927 SQ FT)
- Other Space: 38.5% (4,077 SQ FT)
In-Patient Behavioral Health Facilities - Finding the Balance between Safety and Therapeutics

APPENDIX D - WRNMMC AND CRDAMC BEF AND GUIDANCE CRITERIA ADHERENCE SUMMARY

Built Environment Factors (BEF) - Space Layout (SL), Hardware & Fixtures (HF) and Finishes & Furnishings (FF)

Built Environment Space (BES):  P = Private Patient Space, T = Therapy Space and C = Communal Space

<table>
<thead>
<tr>
<th>#</th>
<th>BES</th>
<th>BEF Category</th>
<th>BEF - Detail</th>
<th>DOD Criteria</th>
<th>VA Criteria</th>
<th>NAPHS Criteria</th>
<th>FD Criteria</th>
<th>Criteria Image</th>
<th>Image Source</th>
<th>Fac Image - CRDAMC</th>
<th>Fac Image - WRNMMC</th>
<th>Notes / Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Furniture - General</td>
<td>No Data</td>
<td>Comfortable furniture that cannot be disassembled and used as a weapon.</td>
<td>Early closed, upholstered &amp; heavy if not anchored to mitigate throwing or barricading. Design exist that look non-institutional.</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
<td></td>
<td>WRNMMC compliant with lighter furniture CRDAMC had lighter weight, shatterproof furniture.</td>
</tr>
<tr>
<td>2</td>
<td>P</td>
<td>Finishes &amp; Furnishings</td>
<td>Bed - General</td>
<td>No Data</td>
<td>Beds should consist of a heavy duty platform with rounded edges. Restraints on the bed frame rails may need to be incorporated.</td>
<td>Securely anchored in place without wire springs or storage drawers.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td>N/A</td>
<td>N/A</td>
<td>Beds compliant at CRDAMC but WRNMMC beds had drawers enabling patient hiding spaces.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>P</td>
<td>Finishes &amp; Furnishings</td>
<td>Bed - Medical Needs</td>
<td>No Data</td>
<td>Manual Hospital Bed utilized with inoperable or removed wheels (headboards, footboards and rails provide hazards)</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td>N/A</td>
<td>N/A</td>
<td>No Medical Beds viewed or required for current patient population.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>P</td>
<td>Finishes &amp; Furnishings</td>
<td>Bed - Medical Needs, Electrically Operable</td>
<td>No Data</td>
<td>Electric hospital beds may be substituted for platform beds with all cords less than 12” in length to prevent abuse.</td>
<td>Bed will have tamper resistant features. Various obstructions have built-in feature for the control and reduced length cords.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td>N/A</td>
<td>N/A</td>
<td>No Medical Beds viewed or required for current patient population.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>P</td>
<td>Finishes &amp; Furnishings</td>
<td>Bed Mattress</td>
<td>No Data</td>
<td>Mattress should be anti-microbial and abuse resistant as well as comply with NFPA 101 Life Safety Code.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
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</tr>
<tr>
<td>6</td>
<td>P</td>
<td>Finishes &amp; Furnishings</td>
<td>Wardrobe - Shelving Unit</td>
<td>No Data</td>
<td>Plastic bins &amp; open shelving units either built in or furniture. Units should have no drawers, upholstered tops, fixed non-adjustable shelves and should be anchored in place.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
<td></td>
<td>Hook free, solid units at both facilities. However, not present in all rooms at WR and CRDAMC are not fixed to the floor.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Flooring - General</td>
<td>No Data</td>
<td>Colored or wood grain shown and create a residential feel and strongly recommended for inpatient units. 2x2 tiles with no exposed edges are also acceptable.</td>
<td>Sheet, tile or unfinishable vinyl should be utilized. If carpet is used, should be broadloom or even with anti-microbial yarn and non-moisture absorbing backing.</td>
<td>No Data</td>
<td>NAPHS Design Guide for BH Facilities</td>
<td></td>
<td></td>
<td>Plans tile floor with “institutionsized” look. Wood grain, impact resistant flooring is preferred.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Flooring - Baseboards</td>
<td>No Data</td>
<td>A rubber based baseboard simulates wood base profiles, creating a residential image without sacrificing safety.</td>
<td>Wall and floor joint will be sealed with a pick-resistant sealant. A rubber wood base design simulates wood base profiles, creating a residential image without sacrificing safety.</td>
<td>No Data</td>
<td>Department of Veterans Affairs Design Guide</td>
<td></td>
<td></td>
<td>Basewalls of rubber or antiqued tile. Rubberized wood would complement therapeutic and safe look.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Walls - General</td>
<td>No Data</td>
<td>Warms color accents avoid an institutional look. High impact panels with a wood grain texture creates the appearance of wood wainscots.</td>
<td>Impact and/or abunion resistant paper based on metal stud with a painted finish.</td>
<td>No Data</td>
<td>Department of Veterans Affairs Design Guide</td>
<td></td>
<td></td>
<td>Both facilities wall were either white or tan with no themes, styles or designs - lacking therapeutic qualities.</td>
<td></td>
</tr>
</tbody>
</table>
### In-Patient Behavioral Health Facilities - Finding the Balance between Safety and Therapeutics

**Built Environment Factors (BEF) - Space Layout (SL), Hardware & Fixtures (HF) and Finishes & Furnishings (FF)**

<table>
<thead>
<tr>
<th>Page</th>
<th>Type</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Ceiling - General</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-accessible solid gypsum board painted ceiling. Key lockable access panels will be required.</td>
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<td></td>
<td></td>
<td></td>
<td>Ceilings shall be at least 9’ in height to prevent patient access.</td>
</tr>
<tr>
<td>11</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Ceiling - Acoustic Privacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ceilings shall be at least 9’ in height to prevent patient access.</td>
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<td></td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>12</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Artwork</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All art should be glazed with heavy beveled frames, top sealed with tamper-resistant screws (no ligatures). Murals are actually preferred.</td>
</tr>
<tr>
<td>13</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Lavatory - Walls</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Data</td>
</tr>
<tr>
<td>14</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Lavatory - Ceiling</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ceilings shall be at least 9’ in height to prevent patient access.</td>
</tr>
<tr>
<td>15</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Lavatory - Floors</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Floor will be seamless epoxy, sheet vinyl or ceramic tile. One-piece flooring (European style) that drains to a central location is preferred.</td>
</tr>
<tr>
<td>16</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Lavatory - Floors - Shower</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ceiling height less than 9’. Painted gypsum board but bland colors - not therapeutic in either facility.</td>
</tr>
<tr>
<td>17</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Lavatory - Shower Seat</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>No Data</td>
</tr>
<tr>
<td>18</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Lavatory - Vanity</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Vanity top/basins provide a residential appearance. Work hanging units that are difficult to be anything more are acceptable as well.</td>
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<tr>
<td></td>
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<td></td>
<td>Basin bowls shall contain a sink and a handwashing station.</td>
</tr>
<tr>
<td>19</td>
<td>P,C,T</td>
<td>Finishes &amp; Furnishings</td>
<td>Lavatory - Soap Dishes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Soap dishes comply with guidance. Both sinks had soap dispensers - Rapid soap.</td>
</tr>
<tr>
<td>Built Environment Factors (BEF) - Space Layout (SL), Hardware &amp; Fixtures (HF) and Finishes &amp; Furnishings (FF)</td>
<td>P,C,T</td>
<td>Finish &amp; Furnishings</td>
<td>Lavatory - Toilet</td>
</tr>
<tr>
<td><strong>Built Environment Space (BES): P = Private Patient Space, T = Therapy Space and C = Communal Space</strong></td>
<td></td>
<td></td>
<td>Lavatory - Toilet Paper Holder</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Lavatory - Mirrors</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Paper Towel Dispenser</td>
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<td></td>
<td></td>
<td></td>
<td>Soap Dispenser</td>
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<td>Telephones</td>
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<td></td>
<td></td>
<td></td>
<td>Kitchen Appliances</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Television Sets</td>
</tr>
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<td></td>
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<td>Desks - Patient</td>
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<td></td>
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<td></td>
<td>Desk Chairs - Patient</td>
</tr>
<tr>
<td>Built Environment Factors (BEF)</td>
<td>Space Layout</td>
<td>Hardware &amp; Fixtures</td>
<td>Finishes &amp; Furnishings</td>
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</tr>
<tr>
<td>31</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Patient Observation Mirrors</td>
</tr>
<tr>
<td>32</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Door - General</td>
</tr>
<tr>
<td>33</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Door - Hinges</td>
</tr>
<tr>
<td>34</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Door - Closers</td>
</tr>
<tr>
<td>35</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Door - Locksets</td>
</tr>
<tr>
<td>36</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Door - Smoke Seals</td>
</tr>
<tr>
<td>37</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Door - Pressure Sensor</td>
</tr>
<tr>
<td>38</td>
<td>P,C,T</td>
<td>Hardware &amp; Fixtures</td>
<td>Light Fixtures - General</td>
</tr>
<tr>
<td>39</td>
<td>P,C</td>
<td>Hardware &amp; Fixtures</td>
<td>Ceiling - Curtain Tracks</td>
</tr>
<tr>
<td>ID</td>
<td>Section</td>
<td>Feature</td>
<td>Requirement</td>
</tr>
<tr>
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<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>41</td>
<td>Hardware &amp; Fixtures</td>
<td>Fire Sprinklers</td>
<td>No Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HVAC Grilles and Vent</td>
<td>No Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Covers</td>
<td>Small perforated grilles with tamper-resistant fasteners are acceptable.</td>
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<td></td>
<td></td>
<td></td>
<td>Existing units (cold style radiators) should be protected with vandal-resistant covers.</td>
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<td></td>
<td></td>
<td>Windows - General</td>
<td>Heavy gauge with insulated double glazing; masked with a convex louver and</td>
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<td></td>
<td></td>
<td>swing and opening should not exceed 45°.</td>
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<td></td>
<td>Glazed Safety Glass is authorized but tempered glass is preferred with</td>
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<td></td>
<td></td>
<td>appropriate glazing (IAW guidelines - openings [if applicable] limited to 45°).</td>
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<td></td>
<td>Each patient room shall have a window designed to limit the opportunity for</td>
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<td></td>
<td>patient harm (impact, anchorage, chocking, etc.).</td>
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<td></td>
<td></td>
<td>Hardware &amp; Fixtures</td>
</tr>
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<td></td>
<td>HVAC Grilles shall be secured with small perforations eliminating tie-off</td>
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<td></td>
<td></td>
<td>points or shall be high enough away from patient access.</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>Windows compliant with guidance at both facilities.</td>
</tr>
<tr>
<td>42</td>
<td>Hardware &amp; Fixtures</td>
<td>Windows - General</td>
<td>Window covering hardware - Blinds or Shades</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mini-blinds between layers of safety glass or roller shades without patient</td>
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<td></td>
<td></td>
<td>access to tilting equipment are acceptable.</td>
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<td></td>
<td>All electrical device (switches, outlets, etc.) shall be recessed or</td>
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<td></td>
<td></td>
<td></td>
<td>designed to minimize patient access.</td>
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<td>All electrical device (switches, outlets, etc.) shall be recessed or</td>
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<td>designed to minimize patient access.</td>
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<td>All electrical device (switches, outlets, etc.) shall be recessed or</td>
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<td>designed to minimize patient access.</td>
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<td>All electrical device (switches, outlets, etc.) shall be recessed or</td>
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<td></td>
<td></td>
<td></td>
<td>designed to minimize patient access.</td>
</tr>
<tr>
<td>43</td>
<td>Hardware &amp; Fixtures</td>
<td>Windows - General</td>
<td>Window covering hardware - Blinds or Shades</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pulls shall be either recessed, have no protruding openings or be of a</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>closed type.</td>
</tr>
<tr>
<td>44</td>
<td>Hardware &amp; Fixtures</td>
<td>Windows - General</td>
<td>Window covering hardware - Blinds or Shades</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pulls shall be either recessed, have no protruding openings or be of a</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>closed type.</td>
</tr>
<tr>
<td>45</td>
<td>Hardware &amp; Fixtures</td>
<td>Cabinet Pulls</td>
<td>Cabinet pulls should be either recessed, have no protruding</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>openings or be of a closed type.</td>
</tr>
<tr>
<td>46</td>
<td>Hardware &amp; Fixtures</td>
<td>Electrical Switches and</td>
<td>All electrical device (switches, outlets, etc.) shall be recessed or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Outlets</td>
<td>designed to minimize patient access.</td>
</tr>
<tr>
<td>47</td>
<td>Hardware &amp; Fixtures</td>
<td>Fire Extinguishes and</td>
<td>Pull stations and extinguisher cabinets are locked. All staff must carry</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Alarm Pull Stations</td>
<td>keys at all times and they should have a red plastic ring attached for quick</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>access.</td>
</tr>
<tr>
<td>48</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Door - Soft</td>
<td>Soft Suicide Prevention Door</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suicide Prevention</td>
<td>Attached by magnets for easy removal with photo finish. It can be</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>attached for quick ID.</td>
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<td></td>
<td></td>
<td>Door shall be ADA or ANSI compliant enabling providers to transfer patients</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>using portable lifting equipment. Threshold design will prevent accidental</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>tipping.</td>
</tr>
<tr>
<td>49</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Door - Sentinel</td>
<td>Sentinel Event Reduction Door</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Event Reduction</td>
<td>Provides privacy between two patient rooms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sentinel Event Reduction Door</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Provides privacy between two patient rooms.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sentinel Door shall be ADA or ANSI compliant.</td>
</tr>
<tr>
<td>50</td>
<td>Hardware &amp; Fixtures</td>
<td>Lavatory - Grab Bars</td>
<td>Should be fixed to the wall with a welded horizontal plate on the bottom</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>to prevent patient access. Swinging grab bars shall not be used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pulls shall be recessed, have no protruding openings or be of a closed type.</td>
</tr>
</tbody>
</table>

*Note: No Data indicates information not provided in the document.*
| 51 | P,C,T | Hardware & Fixtures | Lavatory - Vertical Grab Bars | No Data | Should be flush to the wall with a welded horizontal plate on the bottom to prevent anchor points. Swinging grab bars should not be used. | N/A | N/A | No grab bars within Private Patient Spaces. |
| 52 | P,C,T | Hardware & Fixtures | Lavatory - Faucets and Valves | No Data | No Data | Faucets and valves are available that are ligature resistant, allow temperature control and water flow and range from push button to motion sensor activation. | N/A | N/A | Both facilities compliant with guidance - push button activated. |
| 53 | P,C,T | Hardware & Fixtures | Lavatory - Waste and Supply Piping | No Data | Waste and Supply Piping should be enclosed and not accessible by patients. | No Data | N/A | Both facilities compliant with guidance - pipes enclosed and/or not accessible to patient. |
| 54 | P,C,T | Hardware & Fixtures | Lavatory - Toilet Flush Valve | No Data | Replaced in the wall and activated by a push button. | No Data | N/A | Both facilities compliant with guidance - push button activated. |
| 55 | P,C | Hardware & Fixtures | Lavatory - Shower control valves | No Data | Single sensor activated with preset temperatures to 130 with a single mixing valve with no ligatures. | No Data | N/A | Control valves compliant with guidance at both facilities. |
| 56 | P,C | Hardware & Fixtures | Lavatory - Shower Heads | No Data | Shower Heads should be in a fixed position. | No Data | N/A | Shower head compliant with guidance at both facilities. |
| 57 | P,C | Hardware & Fixtures | Lavatory - Shower control panel | No Data | Replaced stainless steel panels with no ligature points. Solid surface wall panels are attractive, durable and preferred. | No Data | N/A | WINWMMC utilizes Wall pack but CRDAMC does not. |
| 58 | P,C | Hardware & Fixtures | Lavatory - Shower / Floor Drains | No Data | Drains are attached with security screws to patient access. Where a depression of 4” or greater is achieved, slippage entire floor to drain is preferred. | No Data | N/A | WINWMMC compliant with guidance but CRDAMC is not - patient could tamper with screens. |
| 59 | P | Hardware & Fixtures | Night Light | No Data | Provided in all patient rooms and bathrooms to prevent patient falls and allow staff to verify patient well being during the night without additional lights. | No Data | N/A | No Night Lights in Private Rooms. |
| 60 | P,C | Hardware & Fixtures | Nurse or Emergency Call Systems | No Data | Patient Room pull cords shall be no longer than 12” and Patient Toilet pull cords shall be no longer than 4”, both shall be of lightweight as possible. | No Data | N/A | No Emergency or Call Station devices observed in Private Patient Space. |
In-Patient Behavioral Health Facilities - Finding the Balance between Safety and Therapeutics

**Built Environment Factors (BEF)**

- **Space Layout (SL)**
- **Hardware & Fixtures (HF)**
- **Finishes & Furnishings (FF)**

### Hardware & Fixtures

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robe Hooks, Towel Bars</td>
<td>Should not be used due to hanging hazards.</td>
</tr>
<tr>
<td>Shower Rods or Hooks</td>
<td>Should not be used.</td>
</tr>
<tr>
<td>Ceiling Mounted Patient Lifts</td>
<td>Shall not be installed in patient rooms - rather - portable lifts should be used.</td>
</tr>
<tr>
<td>Medicine cabinets</td>
<td>Will not be used as it is difficult to observe dangerous items that could be placed in them.</td>
</tr>
</tbody>
</table>

### Space Layout

<table>
<thead>
<tr>
<th>Type</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Patient Space</td>
<td>Minimal square feet for a single patient room shall be 100 and each room shall have a window (minimal NSF - 100).</td>
</tr>
<tr>
<td>Double Occupancy Rooms</td>
<td>232 Net Square Feet.</td>
</tr>
<tr>
<td>Quadruple Occupancy Rooms</td>
<td>446 Net Square Feet.</td>
</tr>
</tbody>
</table>

### NOTES

- Robe Hooks, Towel Bars and Shower Rods should not be used due to hanging hazards.
- Medicine cabinets will not be used as it is difficult to observe dangerous items that could be placed in them.
- If present, shall be designed to minimize the opportunity for residents to cause injury.

---

61 P,T

- **Wardrobe and Telephones in private rooms will not be provided or utilized.**
- Fiberglass shower stalls are not durable and will not be utilized.
- Paper towel dispensers in patient accessible toilets are a concern if they have sharp edges and are not securely constructed.
- Shower stalls of a stainless steel suicide-resistant variant may be considered for use.
- Shower rods that fold away typically have many tubes and brackets that are hazardous and should not be used.
- Ceiling Mounted Patient Lifts shall not be installed in patient rooms - rather - portable lifts should be used.
- Glass (interior/interior) exposed in patient accessible areas should not yield shards when broken for use as weapons.

---

62 P

- **BRNP1:** Provide one for 50% of the patient beds projected for each care unit (NSF - 100).
- **BRNP2:** Provide one for 25% of the patient beds projected for each care unit (NSF - 230).

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63 P

- **TLTS2:** One per patient care area (NSF - 60).
- **TLTP3:** One per In-Patient Bedroom (NSF - 60).

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64 P

- **TLTP1:** One per unit for minor procedures (NSF - 175).
- **TRGM1:** One per unit for minor procedures (NSF - 175).

---

65 T

- **TLTP1:** One per unit for minor procedures (NSF - 175).
- **TRGM1:** Minimum of 1 but 4 per 4-mock rooms (NSF - 140).

---

66 T

- **BRN9:** One per patient care unit (NSF - 140).
- **BRNP5:** One per patient care unit (NSF - 140).
<table>
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<tr>
<th>Page</th>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>70</td>
<td>T</td>
<td>Space Layout</td>
<td>Exam Room</td>
<td>EKRG1 - One provided per clinic (vital signs, height, weight and EKG data collected here) (NSF - 120).</td>
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<td>Space Layout</td>
<td>Restraint Room</td>
<td>BRNP7 (NSF - 120)</td>
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<td>72</td>
<td>T</td>
<td>Space Layout</td>
<td>Group Therapy Room</td>
<td>OPMH1 - One space per every 5 providers and consult rooms greater than 5 (Space accommodates 5 people) (NSF - 240).</td>
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<td>73</td>
<td>T</td>
<td>Space Layout</td>
<td>Screening Room</td>
<td>ERG6 - One space per four provider offices (NSF - 120).</td>
<td>No Data</td>
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<td>T</td>
<td>Space Layout</td>
<td>Bio-Feedback / Sensory Room</td>
<td>OPMH3 - May be equipped with virtual reality equipment if authorized, else, one per facility (NSF - 120)</td>
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<td>C</td>
<td>Space Layout</td>
<td>Multi-Purpose Activity Room</td>
<td>PAYR1 - Space for 8-10 patients for music as well as alternate therapies (large) (NSF - 360).</td>
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<td>Space Layout</td>
<td>Exercise / Noisy Activity Room</td>
<td>PTE11 (NSF - 120)</td>
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<td>C</td>
<td>Space Layout</td>
<td>Quiet Activity Room</td>
<td>OPMH2 - May be equipped with virtual reality equipment if authorized, else, one per facility (NSF - 120).</td>
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<td>78</td>
<td>T</td>
<td>Space Layout</td>
<td>Interview / Consult Room</td>
<td>OEC12 - One space per provider if encounters are between 207 - 1,000 annually (NSF - 120).</td>
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<td>79</td>
<td>T</td>
<td>Space Layout</td>
<td>Team Collaboration Room</td>
<td>WRC1 - Minimum of 1 per facility. An additional added if consultation rooms exceeds 8 (NSF - 120).</td>
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### Built Environment Space (BES): P = Private Patient Space, T = Therapy Space and C = Communal Space

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<tr>
<td>80</td>
<td>T</td>
<td>Space Layout</td>
<td>Toilet Room, Patient, Therapy Area</td>
<td>TLTU1 - Add additional # consultation rooms exceed 8 (NSF - 60)</td>
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<tr>
<td>81</td>
<td>C</td>
<td>Space Layout</td>
<td>Toilet Room, Patient, Communal Area</td>
<td>TLTU1 - One male and one female per patient care area (NSF - 50)</td>
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