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Current Practices, Perceptions and Challenges of Telehealth in the Treatment of Mental Health in the U.S. Department of Veterans Affairs

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CURRENT PRACTICES, PERCEPTIONS AND CHALLENGES OF TELEHEALTH IN THE TREATMENT OF MENTAL HEALTH IN THE U.S. DEPARTMENT OF VETERANS AFFAIRS

by

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Abstract

Currently there are 17,964,242 million Veterans living in the U.S. Around 50% of these Veterans are over 65 years of age. Many U.S. service members – both active and retired, experience trauma and dysfunction in restructuring their lives. Mental health problems are reported in over 50% of Veterans both in active service and retired. According to the U.S. Department of Veterans Affairs (VA), ten times more suicides are reported among Veterans who did not register with the VA compared to those who do register. Longer deployments, shorter times at home between the deployments and combat exposure are the greatest contributors of physical and psychological health problems. Combat exposure has been linked with most cases of PSTD. This creates a greater need for mental health services to Veterans than any other forms of treatment. Due to the complex nature of Veterans population, characterized by an aging majority and location of many Veterans in rural areas, delivering mental health services is a huge challenge for the VA. The VA has been making efforts to ensure that all Veterans can access mental health services from where they are. Out of these efforts, integration of telehealth services to improve access to mental health care services has yielded promising results but this is not without challenges. This dissertation explores the current practices, perceptions and challenges of telehealth in the treatment of mental health in the U.S. Department of Veterans Affairs (VA).

ACKNOWLEDGMENTS

I considered it to be a great honor to serve my country when I enlisted in the United States Armed Forces in 1973. At the time, many of the young people were protesting the Vietnam War. I had no expectations of attending college due to my parent's lack of funds and my blasé attitude towards school itself. I became a man in service to this great country. I find it very ironic, since I never had the desire to continue my education back then and instead enlisted, that now I am writing an acknowledgment page to all the people who helped me along my journey to complete my Doctorate Degree and specifically this dissertation.

I want to first thank all my fellow veterans. The amount of lost lives of those brave souls who fought in any of the wars and conflicts since this country was formed has always been too many. In addition, the veterans who came back alive with injuries or in the instance of this paper, mental issues, have searched for many years for someone or something to assist them in their reinstitution back into a normal life. Telehealth has become a godsend to many veterans who just cannot get access to the care they need.

Army life introduced me to the crazy, ever changing world of healthcare. After a twenty-five-year detour away from healthcare, I eventually found my way back around the same time I coincidentally started my journey back to my education. Each step through each educational program I have been accepted into and graduated from have had specific people who have been instrumental in me getting to the place I am now. First and foremost, my beautiful wife Nancy, has been by my side for forty-two years now and has inspired me to be the best man I can be. I would not be anywhere without her love and encouragement with me desiring to be a lifelong learner. Thank you, my love.

My desire to set a good example to my three children and show them exactly what the power of learning can help you accomplish. They are the love of my life and I only hope you know just what an inspiration you were to me. Thank you, Eric, Allison and Lindsay.

My parents who did not live to see me achieve this once in a lifetime accomplishment, would have been very proud I am certain. They always gave me everything I needed in life.

They never had much themselves but always saw to it that I was taken care of. Thank you, Mom and Dad, I love and miss you every day.

I grew up under the watchful eye of my three Grandparents. They had the brunt of raising me and teaching me the old school way a young man should conduct themselves. Love life they said, respect authority and treat women with reverence. They were wise beyond their years and made my childhood a wonderful experience. Thank you, Nan, Pop and Mom-Mom, I love and miss you every day.

I have been lucky to have two childhood friends that have lasted from kindergarten to present day. Jack and I joined the service together and went through many days of ups and downs. Pat has been a source of light in my life. We shared the craziness of working at the Post Office together. He has been there for me when I needed a friend and that's all you can ask of someone. I love both of you and cherish our friendship.

Finally, the newest members of my family, my three grandchildren, have shown me just why we live our lives in hope that we show a positive example to the young. These tiny humans have kept me young and helped me to go forward just by seeing all the energy they possess. Weston, my first, has given me the opportunity to give my wisdom to a boy again. He is so bright, and I am teaching him to be the best man he can be. My Sophie girl is full of life. She is so beautiful and exciting and smart. She is going to grow up in a world where women are blossoming and showing exactly what women can do to change the world. My last is Lily, just born. I have yet to meet her due to this horrendous COVID-19. She lives in Florida with my son and once I get to hold her, she will melt my heart like her niece and nephew before her. I love you all and hope I get to see many years of you growing up and becoming a wonderful man and women.

I have two people who have assisted me in my research and editing this paper. My very good scholarly friends, Luke and Peter have given me the assistance I sorely needed and helped me form and shape this paper into the accepted document it became. Thank you, my friends.

Specifically, for this program and paper, I have several people to be grateful for. Dr Larry Starr introduced me to his dream program on a cold evening in Panera Bread in Wynnewood. I could see the excitement in his eyes and the passion in his voice that night.

He convinced me to keep going in my educational journey and sold me on his program that he said would change my life…I believed him and here I am, finished, exhausted and relieved.

As did all the of my fellow Cohort members who have finished, I am extremely appreciative of the many professors who helped me through the regular and dissertation classes. John Pourdehnad PhD, you are a wonderful man and I could listen to you speak all day long…your insight and wisdom are indeed an inspiration to all of us. Joe Sweeney, EdD, your empathetic and calm way of teaching not only guided me through your courses but gave me insight on just how to communicate and teach my own classes. I wished you could have seen me through the finish as my committee chairman, but you were there in spirit. Dominick Volini, PhD, our talks helped me many times to step back off that ledge from the many adverse periods I went through during these four years. Your assistance on my committee was so irreplaceable. Anthony Cosenza, PhD, last but certainly not least of the big three making up my dissertation committee, your class and service experience gave me the idea that I wanted to write a paper that would benefit veterans like you and me. Although my three years in the service were nothing compared to your career, your class and our discussions gave me insight into military life that I only heard about. Thank you all.

Steve Freeman, PhD and Tom Guggino gave me understanding into the art of research and preparing/presenting that research that I never knew before. Cohort one, the original group I was to be part of, helped guide me through everything they had experienced. I knew exactly what I needed to prepare for with their assistance. They were so diverse and intelligent as a whole and I learned as much from them as I did from the professors. Cohort Two, the group I eventually joined slowly dwindled down and eventually became a group of just four. William and Darshi, I loved being part of your group. We truly were a team and I know I have lifelong friends. Eugene, I never met anyone like you. You are brilliant and a man of the world, yet you took the time to speak to me as an equal. I am forever appreciative of how you helped me and consider me a friend.

Cohort Three, the one we merged with, all had much to do with my learning as did the other Cohorts.

Britt, Mike and Johnny, became people who I could not wait to get to class and hear their discussions and wisdom. Johnny, you have become a true friend, someone who has always been there for me when I needed you. I thank you all.

Larry, you asked everyone in the room on the first day of your Leadership class what kind of leader we believed we were and why were we in this program? I remember what answers I gave. I said I am a service leader, one who believes in giving back and helping all that I encounter during this journey called life. I also said the reason I am here is because I do want others to be proud of me, but I want to prove to myself that I can do this. Larry and everyone, I did it and I am a better mentor, a better leader and a better man because of this program. Thank you all.

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Chapter 1

INTRODUCTION

There are 17,964,242 veterans in the United States based on the most recent statistics from the U.S. Census Bureau (Table 1). These veterans require special services which include but not limited to health care and social services. The U.S. Department of Veterans Affairs (VA) is tasked with providing these services under its different agencies. One of these agencies is the Veterans Health Administration (VHA) which is tasked to providing health care services to veterans in the United States. VHA is the largest integrated healthcare system in the U.S. providing care at 1,255 health care facilities, including 170 VA Medical Centers and 1,074 outpatient sites of care varying complexity (VHA outpatient clinics) to over 9 million Veterans enrolled in the VA health care program.

Table 1: US Veterans (U.S. Census, 2018)

Veterans Statistics		
Civilian population 18 years and over	17,964,242	7.10%
PERIOD OF SERVICE		
Gulf War (9/2001 or later) veterans	3,764,194	21.00%
Gulf War (8/1990 to 8/2001) veterans	3,803,899	21.20%
Vietnam era veterans	6,384,412	35.50%
Korean War veterans	1,306,432	7.30%
World War II veterans	485,157	2.70%

Who is a veteran? Title 38 § 101 (2) of the Code of Federal Regulations defines the term "veteran" as "a person who served in the active military, naval, or air service, and who was discharged or released there-from under conditions other than dishonorable." Such an individual is termed as a protected veteran. Title 38 § 101 (3), (4), and (5) further defines the terms "surviving spouse", "child" and "parent" to specify other individuals who are indirectly may receive veteran benefits. Protected veterans are veterans who are eligible for special protection by the law or are accorded special privileges by virtue of their status. The Vietnam Era Veterans' Readjustment Assistance Act (VEVRAA) is a law that prohibits federal contractors and subcontractors from discriminating in employment against protected veterans and requires take affirmative action to recruit, hire, promote, and retain these individuals. Under VEVRAA, a protected veteran encompasses a disabled veteran, recently separated veterans, active duty or campaign badge veterans, and Armed Forces service medal veterans.

A disabled veteran is a veteran of the U.S. military, ground, naval, or air service who is entitled to compensation (or who but for the receipt of military retired pay would be entitled to compensation) under laws administered by the Secretary of Veterans Affairs; or a person who was discharged or released from active duty because of a service-connected disability. A special disabled veteran is a veteran who is entitled to compensation (or who for the receipt of military retired pay who would be entitled to compensation) under laws administered by the Department of Veterans Affairs for a disability: (A) rated at 30 percent or more; or (B) rated at 10 percent or 20percent in the case of a veteran who has been determined under 38 U.S.C. 3106 to have a serious employment handicap; or a person who was charged or released from active duty because of a service-connected disability. An "active duty wartime or campaign badge veteran" means a veteran who served on active duty in the U.S. military, ground, naval or air service during a war,

or in a campaign or expedition for which a campaign badge has been authorized under the laws administered by the Department of Defense.

A "veteran of the Vietnam era" means a person who: Served on active duty for a period of more than 180 days, and was discharged or released therefrom with other than a dishonorable discharge, if any part of such active duty occurred: (A) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or (B) Between August 5, 1964, and May 7, 1975, in all other cases; or Was discharged or released from active duty for a service-connected disability if any part of such active duty was performed: (A) In the Republic of Vietnam between February 28, 1961, and May 7, 1975; or (B) Between August 5, 1964, and May 7, 1975, in all other cases. An "armed forces service medal veteran" means a veteran who, while serving on active3 duty in the U.S. military, ground, naval or air service3, participated in a United States military operation for which an Armed Forces service medal was awarded pursuant to Executive Order 12985.

A "recently separated veteran" means any veteran during the three-year period beginning on the date of such veteran's discharge or release from active duty in the U.S. military, ground, naval, or air service. Protected veterans may have additional rights under USERRA – the Uniformed Services Employment and Reemployment Rights Act.

VA History

According to the VA, its roots can be traced back to 1636, when Pilgrims of Plymouth Colony were at war with the Pequot Indians. The Pilgrims passed a law that stated that disabled soldiers would be supported by the colony. In 1776, the Continental Congress encouraged enlistments during the Revolutionary War, providing pensions to disabled soldiers. In the early days of the Republic, individual states and communities provided direct medical and hospital care to veterans.

In 1811, the U.S. federal government authorized the first domiciliary and medical facility for veterans. Also, in the 19th century, the nation's veterans' assistance program was expanded to include benefits and pensions not only for veterans, but also their widows and dependents. Following the Civil War, many state veterans' homes were established. Since domiciliary care was available at all state veterans' homes, incidental medical and hospital treatment was provided for all injuries and diseases, regardless of service origin. Indigent and disabled veterans of the Civil War, Indian Wars, Spanish-American War, and Mexican Border period, as well as the discharged regular members of the Armed Forces, received care at these homes.

When the U.S. entered World War I in 1917, Congress established a new system of veteran's benefits, including programs for disability compensation, insurance for service personnel and veterans, and vocational rehabilitation for the disabled. By the 1920s, three different federal agencies administered the various benefits:

The Veterans Bureau, the Bureau of Pensions of the Interior Department, and the National Home for Disabled Volunteer Soldiers. The first consolidation of federal veterans' programs took place August 9, 1921, when Congress combined all World War I Veterans programs to create the Veterans Bureau. Public Health Service veterans' hospitals were transferred to the bureau, and an ambitious hospital construction program for World War I Veterans commenced.

World War I was the first fully industrialized war, and as a result, soldiers who were exposed to mustard gas, other chemicals and fumes required specialized care after the war. Tuberculosis and neuro-psychiatric hospitals opened to accommodate veterans with respiratory or mental health problems. Most existing VA hospitals and medical centers began as National Homes, Public Health Service, or Veterans Bureau hospitals.

In 1924, veterans' benefits were expanded to cover disabilities that were not service-related. In 1928, admission to the National Homes was extended to women, National Guard and militia veterans.

The second consolidation of federal veterans' programs took place on July 21, 1930, when President Herbert Hoover signed Executive Order 5398 and elevated the Veterans Bureau to a federal administration—creating the Veterans Administration—to "consolidate and coordinate Government activities affecting war veterans." At that time, the National Homes and Pension Bureau also joined the VA. The three component agencies became bureaus within the Veterans Administration. Brigadier General Frank T. Hines, who had directed the Veterans Bureau for seven years, was named the first Administrator of Veterans Affairs, a job he held until 1945.

Following World War II, there was a vast increase in the veteran population; thus, Congress enacted large numbers of new benefits for war Veterans—the most significant of which was the World War II GI Bill, signed into law June 22, 1944. Modernizing the VA for a new generation of Veterans was crucial, and replacement of the "Old Guard" World War I leadership became a necessity. It is said the GI Bill had more impact on American life than any law since the Homestead Act of 1862. The GI Bill placed the VA second to the War and Navy Departments in funding and personnel priorities.

The VA Home Loan Guaranty Program is the only provision of the original GI Bill that is still in force. Between the end of World War II and 1966, one-fifth of all single-family residences built were financed by the GI Bill for either World War II or Korean War Veterans. From 1944 through December 1993, the VA guaranteed 13.9 million home loans valued at more than $433.1 billion.

Eligible loan guaranty users are now able to negotiate loan terms, including the interest rate, which helps VA loan participants to compete in the housing market. The loan guarantee program no longer has a terminating date and can be used by any veteran who served after September 16, 1940, as well as men and women on active duty, surviving spouses and reservists.

To assist veteran between discharge and reemployment, the 1944 GI Bill also provided unemployment benefits of $20 per week for a maximum of 52 weeks. It was a lesser amount than the unemployment benefits available to non-veterans. This assistance avoided a repetition of the World War I demobilization, when unemployed veterans were reduced to relying on charities for food and shelter. Critics dubbed the benefit the “52-20 Club” and predicted most veterans would avoid jobs for the 52 weeks that the checks were available. However, only a portion of veterans were paid the maximum amount available. Less than one-fifth of the potential benefits were claimed, and only one out of 19 Veterans exhausted the full 52 weeks of checks.

In 1945, General Omar Bradley took the reins at the VA and began its transformation into a modern organization. In 1946, Public Law 293 established the Department of Medicine and Surgery within the VA, along with numerous other programs like the VA Voluntary Service. The law enabled the VA to recruit and retain top medical personnel by modifying the civil service system. When Bradley left in 1948, there were 125 VA hospitals. The VA was elevated to a cabinet-level executive department by President Ronald Reagan in October 1988. The change took effect March 15, 1989, and administrative changes occurred at all levels. President George H. W. Bush hailed the creation of the new Department, saying, "There is only one place for the Veterans of America, in the Cabinet Room, at the table with the President of the United States of America." The Veterans Administration was then renamed the Department of Veterans Affairs, and continued to be known as the VA. The VA’s Department of Medicine and Surgery,

established in 1946, was re-designated as the Veterans Health Services and Research Administration at that time, though on May 7, 1991 the name was changed to the Veterans Health Administration (VHA).

Veterans' Healthcare

The VHA, with its specific mandate for providing medical services to veterans, evolved from the first federal soldiers' facility established for Civil War veterans of the Union Army. On March 3, 1865—a month before the Civil War ended and the day before his second inauguration—President Abraham Lincoln signed a law to establish a national soldier and sailors asylum. Renamed the National Home for Disabled Volunteer Soldiers in 1873, it was the first-ever government institution created specifically for honorably discharged volunteer soldiers. The first national home opened November 1, 1866, near Augusta, Maine. The national homes were often called "soldiers' homes" or "military homes," and only soldiers who fought for the Union Army—including U.S. Colored Troops—were eligible for admittance. These sprawling campuses became the template for succeeding generations of federal veterans' hospitals.

By 1929, the federal system of national homes had grown to 11 institutions that spanned the country and accepted Veterans of all-American wars. But it was World War I that brought about the establishment of the second largest system of Veterans' hospitals. In 1918, Congress tasked two Treasury agencies -- the Bureau of War Risk Insurance and Public Health Service -- with operating hospitals specifically for returning World War I veterans. They leased hundreds of private hospitals and hotels for the rush of returning injured war veterans and began a program of building new hospitals.

Today's VHA--the largest of the three administrations that comprise VA--continues to meet veterans' changing medical, surgical and quality-of-life needs.

New programs provide treatment for traumatic brain injuries, post-traumatic stress, suicide prevention, women veterans and more. The VA has opened outpatient clinics, and established telemedicine and other services to accommodate a diverse veteran population and continues to cultivate ongoing medical research and innovation to improve the lives of America's service people.

The VHA operates one of the largest health care systems in the world and provides training for a majority of America's medical, nursing and allied health professionals. Roughly 60 percent of all medical residents obtain a portion of their training at VA hospitals; and VA medical research programs benefit society at-large. The VA healthcare system has grown from 54 hospitals in 1930 to 1,600 health care facilities today, including 144 VA Medical Centers and 1,232 outpatient sites of care of varying complexity.

VA Organizational Characteristics

The Government of the United States is divided into three major branches including the Legislative Branch, the Executive Branch, and the Judicial Branch. The Executive Branch which is headed by the President and the Vice President is further divided into 15 other Departments. The Department of Veteran Affairs is one of these departments (Figure 1). The U.S. VA includes three closely related but different organizations (Figure 2) each headed by an undersecretary; namely, VA Health Care (VHA), VA Benefits (VBA) and VA National Cemeteries. Veterans invariably engage with all three entities. VA National Cemeteries deals with according the last respects for fallen soldiers as well as for maintenance of VA cemeteries. VBA and VHA are actively involved in the wellbeing of both active and retired veterans.

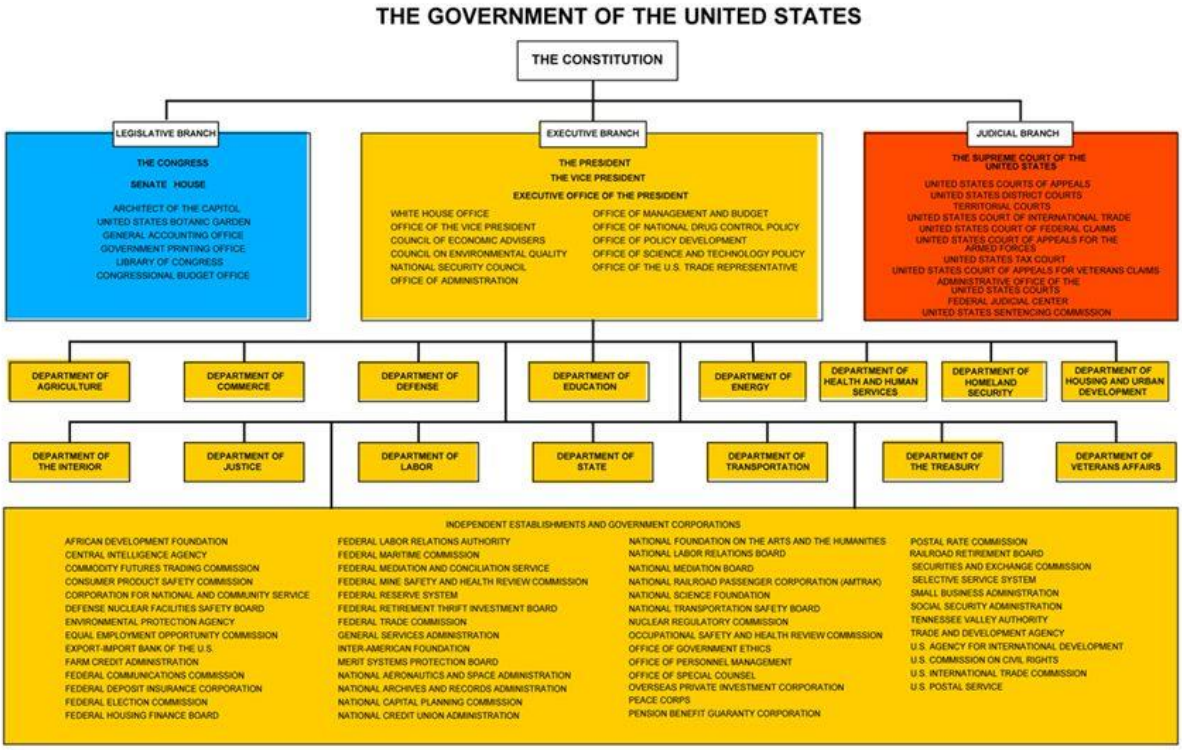
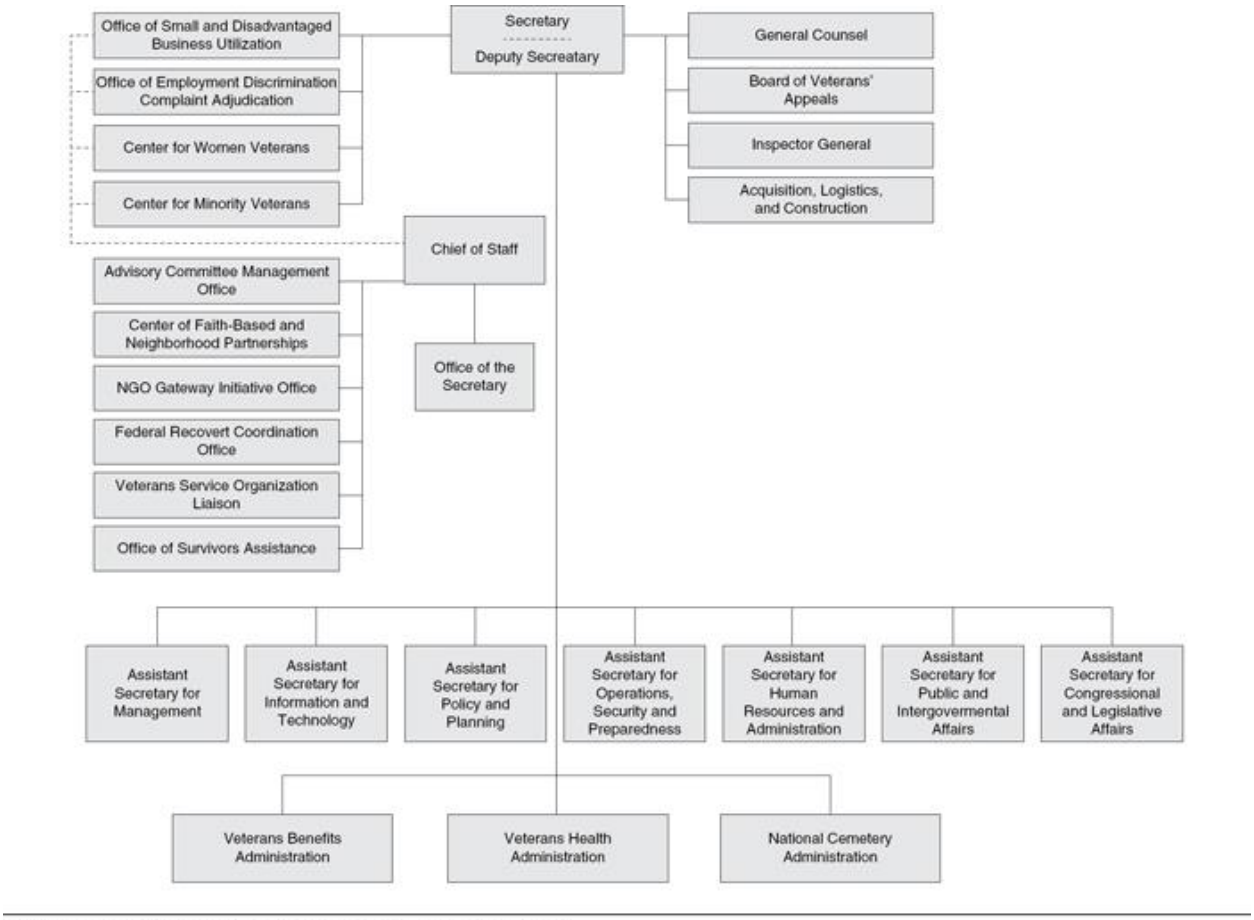


Figure 1: Structure of the Government of the United States

The VBA is primarily concerned with financial assistance and social welfare of veterans including initial veteran registration, eligibility determination, and five key lines of business (benefits and entitlements): Home Loan Guarantee, Insurance, Vocational Rehabilitation and Employment, Education (GI Bill), and Compensation and Pension (see Figure 2). VHA provides health care in all its forms, as well as for biomedical research (under the Office of Research and Development), Community Based Outpatient Clinics (CBOCs), and the Regional Medical Center. VA and VHA will be used interchangeably in this dissertation.

Figure 2: Organizational Structure of the US Department of Veterans Affairs



SOURCE: U.S. Department of Veterans Affairs, http://www.va.gov/ofcadmin/docs/vaorgchart.pdf.

The VA is the second largest federal department with over 340,000 employees. Among the many professions represented in the vast VA workforce are physicians, nurses, counselors, statisticians, architects, computer specialists, and attorneys. As advocates for veterans and their families, the VA community is committed to providing the very best services with an attitude of caring and courtesy. The VA comprises a Central Office (VACO), which is in Washington, DC, and field facilities throughout the Nation administered by its three major line organizations: Veterans Health Administration, Veterans Benefits Administration, and National Cemetery

Administration. Services and benefits are provided through a nationwide network of 144 medical centers, 1203 community-based outpatient clinics, 300 Vet Centers, 56 Regional Offices, and 131 National and 90 State or Tribal Cemeteries (Statistics current as of August 10, 2015).

Functions of the VA

Since its establishment in 1930, the VA has sought to provide veterans with access to health care services as well as compensate them in accordance with their specific level of dysfunction. Compensation is in form of financial support and extent of medical coverage. The federal government is the primary funder of the VA. In FY 2019, Congress approved almost $217 billion. On March 11, 2019, Congress approved yet another heft funding increase for the 2020 fiscal year. The $1.4 trillion budget includes $217 billion for VA operations, which is the largest budget in VA history.

VA functions are best analysed through the benefits its offers to veterans. First are the educational benefits which are well articulated in the GI Bill. The Post-9/11 GI Bill (Chapter 33) helps veterans pay for school or job training. If a veteran served on active duty after September 10, 2001, they may quality for the Post-9/11 GI Bill. A veteran can receive up to 36 months of benefits including tuition fee, money for house (if you are in school for more than half time), money for books and suppliers and money to help one move from a rural are to go to school.

The VA offers a certificate of eligibility for VA direct or VA-backed home loans. Veterans who qualify for the loans must first meet the minimum active-duty service requirement based on when one served and must not have been discharged dishonourably. If one does not meet the minimum service requirements to receive the certificate of eligibility, they may be able to get the certificate if they were discharged for hardship, early out, reduction in force, certain medical conditions, or a service-connected disability.

The VA also provides life insurance for veterans and their families. Other VA benefits include disability compensation, support for veteran-owned small businesses, veterans' pension, aid and attendance or household allowance, disability housing grants, and other life insurance options.

VA Resource Challenges

The number of veterans both active and retired continues to increase limiting the VA's resources at hand. Currently there are 17,964,242 million veterans living in the U.S., 7.10 percent of the population (Table 1). Of those, 90.80 percent are male while 9.2 percent are female (Table 3). In terms of age, 23.60 percent are 75 years and over, 26.50 percent are between 65 and 74 years, 17.70 percent are between 55 and 64 years, 23.10 percent are between 35 to 54 years and 9.10 percent are between 18 and 34 years (Table 3). A majority (42 percent) served during the Gulf War (Table 1). Another 35.50 percent served during the Vietnam war, 7.3 percent during the Korean War and 2.7 percent during World War II. Racially, 14,698,804 (81.80 percent) are whites, and 2,150,689 (12.00 percent) are black or African Americans (Table 4). These veterans are distributed across every state in the U.S. (Figure 3). Three states – California, Florida, and Texas -- have more than 1 million veterans. Another 10 states have more than 500,000 – Arizona, Georgia, Illinois, Michigan, New York, North Carolina, Ohio, Pennsylvania, Virginia and Washington.

Figure 3: Total Number of Veterans by State

Veterans Statistics by Gender		
SEX		
Male	16,311,444	90.80%
Female	1,652,798	9.20%

Table 2: Veterans Statistics by Gender

Veterans Statistics by Age		
AGE		
18 to 34 years	1,631,749	9.10%
35 to 54 years	4,158,398	23.10%
55 to 64 years	3,183,388	17.70%
65 to 74 years	4,752,276	26.50%
75 years and over	4,238,431	23.60%

Table 3: Veterans Statistics by Age

RACE AND HISPANIC OR LATINO ORIGIN		
White alone	14,698,804	81.80%
Black or African American alone	2,150,689	12.00%
American Indian and Alaska Native alone	141,438	0.80%
Asian alone	308,983	1.70%
Native Hawaiian and Pacific Islander alone	41,271	0.20%
Some other race alone	244,340	1.40%
Two or more races	378,717	2.10%
Hispanic or Latino (of any race)	1,284,854	7.20%
White alone, not Hispanic or Latino	13,783,229	76.70%

Table 4: Veterans Statistics by Race and Hispanic or Latino Origin

Veterans Statistics based on Disability		
Civilian population 18 years and over for whom poverty status is determined	17,655,674	(X)
With any disability	5,170,500	29.30%
Without a disability	12,485,174	70.70%

Table 5: Veterans Statistics by Disability

According to Warner, Denning, Meisnere, and Warner (2014), at the end of 2011, there were nearly 2.4 million total service members in the armed forces (1.5 million in the active component and 856 in the reserve component) (Table 1). More than 2.6 million service members have been deployed in support of Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF) since September 11, 2001. These service members, during active duty and after retirement, constitute a massive population of veterans in need of a broad range of healthcare services. Providing VA medical facilities with enough medical personnel to attend to a large population of veterans needing healthcare services is one of the greatest challenges that the VA has been facing over the years.

In an article dated March 14, 2020, Zachery Cohen of CNN documented the escalating VA staffing shortage concerns amid coronavirus outbreak. According to Cohen, there are 49,000 vacant positions across the department which employs more than 390,000 people. As mentioned earlier, FY 2020's budget increased and is set to do so again for FY 2021, yet tens of thousands of jobs remain unfilled. The impact of the staff shortage will soon be realized when the medical personnel at the 1,243 VA health care facilities across the country are overwhelmed by a significant rise in patients. The VA confirmed the first case of COVID-19 in early March. Fifteen other cases are either confirmed or presumed positive across other VA facilities in

Nevada, Louisiana, Washington State, Georgia, South Dakota and Colorado (Cohen, 2020). Cohen notes that in areas (Figure 3) where the system is already overwhelmed, majority of the veterans are elderly and are at highest risk of contracting the virus. According to Cohen, VA spokeswoman Christina Mandreucci told CNN staffing issues are not in any way impacting VA response to COVID-19, yet there has been devastating results from VA in its efforts to address staffing challenges over the years.

According to Cohen, the struggle to contain the coronavirus outbreak has illuminated the VA's failure to fill key positions at medical facilities across the country.

Physical and Psychological Health Consequences of Deployment

A large majority of U.S. service members - both active and retired, experience trauma and dysfunction in restructuring their lives (Meyer, Mahoney, Stanton, Cho, Moore-Downing, & Bayley, 2017). Mental health problems are reported in over 50 percent of veterans (both active in service and retired) (Morland, 2010) and while many are able to recover from trauma and suffer minimal dysfunctions, one in every five experience traumatic events that create chaos and havoc in their lives (Lindsay, Kauth, Hudson, Martin, Ramsey, Daily, & Rader, 2015). According to the U.S. Department of Veteran Affairs (VA), ten times more suicides are reported among veterans who did not register with the VA compared to those who did register (Fosse, 2010).

According to Warner, Denning, Meisnere, and Warner (2014), longer deployments, shorter times at home between the deployments and combat exposure are the greatest contributors of physical and psychological health problems that most veterans emerge with. Longer deployments and short times at home during the deployments results cause problems in returning home, reconnecting with family members, finding employment, and returning to school. Physical and psychological health problems related to exposure to combat such as

traumatic brain injuries (TBI), posttraumatic stress disorder (PSTD), and physical injuries such as amputations makes reintegration more difficult. Warner et al. (2014) note that combat exposure and PSTD are linked. In a review of 29 studies of OIF and OEF military personnel, combat exposure was found to be the only factor that was consistently associated with PSTD and that other factors often appear to associate with PSTD were simply factors related to combat exposure.

Military Sexual Trauma (MST) defined as severe or threatening sexual harassment and sexual assault that occurs while serving in the military is an important risk factor for PSTD. While MST occurs in male servicemen, it is more prevalent among women. Krajewski-Jaime, Whitehead, and Kelman-Fritz (2013) explored the challenges and needs faced by female combat veterans. The VA reports an estimated 20 percent of females sought treatment due to MST, while another 20 percent sought treatment due to repeated exposure of combined sexual harassment (Krajewski-Jaime, Whitehead, & Kelman-Fritz, 2013). This makes the total 40 percent which is disturbing. Warner et al. (2014) note that a representative survey of Department of Defense (DOD) service members found that in 2012, 6.1 percent of active-duty women and 1.2 percent of active duty men experienced unwanted sexual contact. A majority of these incidents go unreported and will surface as PSTD later in the lives of these veterans. Thirty-three percent of women and 10 percent of men who experienced unwanted sexual contact reported the incident to a DOD authority.

Non-reporting of these cases is attributed to a tendency in the system to keep such reports confidential and possible retaliation from the offenders (Warner et al., 2014). Deployment to a war zone can result in multiple adverse psychological and physical health conditions.

The VA's Current Mission

The VA tracks performance based on the refreshed VA FY2018-2021 Strategic Plan, which contains its goals, strategies, and performance measures. The VA's goals are having veterans choose the VA for easy access, greater choices, and clear information to make informed decisions. Veterans receive highly reliable and integrated care and support and excellent customer service that emphasizes their well-being and independence throughout their life journey. Veterans trust the VA to be consistently accountable and transparent.

The VA transform business operations by modernizing systems and focusing resources more efficiently to be competitive and to provide world-class customer service to Veterans and its employees (Department of Veterans Affairs – FY 2019 Agency Financial Report).

According to the VA – FY 2019 Agency Financial Report, despite a committed effort to improve access to care at VA facilities and through enhanced community care and telehealth options, access continues to be a significant challenge for the VHA. For more than a decade, the OIG, GAO, VA, and others have issued numerous reports regarding concerns with delays or barriers to accessing VA care. These include lengthy or inaccurately recorded veteran wait times for appointments, poor scheduling practices, consult management backlogs, and concerns with care in the community.

In a commentary dated July 2008, Michael F. Mayo-Smith, then Chief Consultant, Primary Care at the VA, noted that access is one of the key domains of value for VHA. Mayo-Smith (2008) defined four dimensions of access namely geographical, financial, cultural, and timeliness. The development of Community Based Outpatient Clinics (CBOCs) was an effort on the part of VHA to improve the geographical availability of its services.

The commentary must have influenced research and actions by the VA towards addressing problems of accessibility to healthcare services for veterans.

Thus, the problem of accessibility is a composition of a broad range of problems that emerge from VA's shortage of medical personnel and health care facilities in rural areas. Budget allocation appears to increase with every fiscal year, leaving the administration with as much funds as it requests to take ensure access to health care services for all eligible veterans. Recently the VA has made significant progress in digitizing health care services to address the problem of accessibility.

Telehealth is the model of health care that focuses on digitizing delivery of health care services. Though not without challenges, evidence as shall be presented in this literature evidences that telehealth is revolutionizing the health care industry, particularly helping VHA realize its goals.

Onset and Emergence of Telehealth

Telehealth has surfaced as an affordable model of health care that improves accessibility and has become increasingly important to healthcare agencies globally (Gupte, Vimalananda, Simon, Clark, & Orlander, 2016. The concept of telehealth emerged as early as 1879 when the telephone was used instead of direct care office visits (Lustig, 2012). In 1925, a cover of the *Science and Invention* (Figure 4) showed a physician diagnosing a patient by radio and proposed the creation of a device that would allow for the video examination of a patient over distance (Lustig, 2012).

Figure 4: Telehealth Predicted in 1925

Since the 1920s, the radio has been used to give medical advice to healthcare practitioners located in clinics on ships at sea ("GlobalMed" 2018). GlobalMed, an international provider of telehealth solutions, announced that the U.S. Navy recently used GlobalMed's technology to conduct its first-ever portable telemedicine broadcast from a ship at sea, transmitting vital signs and ear, nose, throat, head/neck skin examinations from the U.S. Navy hospital ship Mercy. On March 9 (Figure 5), the Navy used their technology to perform its first-ever underway tele procedural mentorship: tourniquet placement, needle thoracostomy, and cricothyroidotomy.

PACIFIC OCEAN (March 9, 2018) Lt. Cmdr. Art Ambrosio, above, observes as Hospitalman John Meeks conducts a cricothyroidostomy on a mock patient during a procedural mentorship scenario aboard the U.S. Navy hospital ship USNS Mercy (T-AH 19). Mercy is deployed in support of Pacific Partnership 2018, whose mission is to work collectively with host and partner nations to enhance regional interoperability and disaster response capabilities, increase stability and security in the region, and foster new and enduring friendships across the Indo-Pacific Region. (U.S. Navy photo by Mass Communication Specialist 2nd Class Kelsey L. Adams/Released)

Figure 5: Pacific Ocean (March 9, 2018).

The World Health Organization describes telehealth as one element within the broader category of information and communication technologies (Ryu, 2012). Telehealth involves the use of telecommunications and virtual technology to deliver healthcare outside of traditional health-care facilities. Telehealth, which requires access to telecommunications, is the most basic element of "eHealth," which uses a wider range of information and communication technologies (ICTs) (Ryu, 2012). Telehealth examples include virtual home health care, where patients such as the chronically ill or the elderly may receive guidance in certain procedures while remaining at home (Ryu, 2012). Telehealth has also made it easier for health care workers in remote settings to obtain diagnostic guidance from professionals elsewhere regarding care and referral of patients. Training can sometimes also be delivered via telehealth schemes or with related technologies such as eHealth, which make use of small computers and internet (Ryu, 2012).

The VA defines telehealth as the use of technology and data to improve the way care is delivered. The agency's website, https://telehealth.va.gov/, identifies three delivery channels. Home telehealth occurs when the patient remains at home while the VA provider is elsewhere.

The patient can send important health data from home or via a mobile device to the provider and can receive health advice and support. Clinic telehealth occurs when the patient visits a community VA clinic for treatment and the VA clinic specialists communicate with other specialists located in medical centers nationwide. Hospital telehealth, like Clinic telehealth, requires the patient to visit a VA hospital where specialists can consult with others located in other VA hospitals.

Adam Darkins, who was Chief Consultant of Telehealth Services for the VA from 2003 to 2014, redefined functional telehealth areas by expanding the channels and defining six groups of technologies: Home Telehealth (HT), Clinical Video Telehealth (CVT), Store and Forward Telehealth (SFT), Teleradiology, Secure Messaging, and Mobile Health. HT involves monitoring acute and chronic care and health promotion for patients at home via video and the use of mobile devices. CVT is real-time videoconferencing between veterans and VA medical centers and Community-Based Outpatient Clinics (CBOCs) to replace face-to-face consultations. SFT involves the acquisition, storage, and forwarding of clinical images for review.

Secure Messaging is the timely and secure text-based communication between VA clinicians and patients via mobile phones. Mobile health is the use of smartphone applications by patients to self-manage their health condition 24/7 (Gupte, 2016).

Telemedicine is a term coined in the 1970s with a literal meaning “healing at a distance” (Ryu, 2012). Telehealth is sometimes discussed interchangeably with telemedicine. The Health Resources and Services Administration (HRSA) an agency of the U.S. Department of Health and Human Services, the primary federal agency for improving access to health care services for people who are uninsured, isolated or medically vulnerable, distinguishes telehealth from telemedicine in its scope, defining telemedicine only as describing remote clinical services, such

as diagnosis and monitoring, while telehealth includes preventative, promotive, and curative care delivery. (The Health Resources and Services Administration. 2017-04-28). Telemedicine signifies the use of ICT to improve patient outcomes by increasing access to care and medical information. The World Health Organization (2009) has adopted the following broad description for telehealth: "The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities" ("Global Observatory for eHealth series – Volume 2", 2014, p.9). The four elements germane to telemedicine are its purpose to provide clinical support, its ability to break geographical barriers, use of ICT, and its goal to improve health outcomes.

The Global Observatory for eHealth series – Volume 2 report, classifies telemedicine applications into two basic types, according to the timing of the information transmitted and the interaction between the individuals involved – be it health professional-to-health professional or health professional-to-patient. Store-and-forward, or asynchronous, telemedicine involves the exchange of pre-recorded data between two or more individuals at different times. The two basic approaches to telemedicine are applied to a wide array of services in diverse settings, including tele dermatology, telepathology, and teleradiology. Telemedicine holds great potential for reducing the variability of diagnoses as well as improving clinical management and delivery of health care services worldwide by enhancing access, quality, efficiency, and cost-effectiveness.

Telemedicine can aid communities traditionally underserved – those in remote or rural areas with few health services and staff – because it overcomes distance and time barriers between health-care providers and patients.

Scope and Significance of the Challenges

According to the U.S. Census Bureau (2018), approximately twenty million veterans live in the United States. They reside in every state and in nearly every county across the nation. About five million veterans lived in areas designated as rural by the U.S. Census Bureau during the 2011-2015 periods. The greatest challenge faced by most veterans is re-entering civilian life after returning from war. Although rates of unemployment and homelessness for veterans have decreased in some states, these issues together with mental illnesses are still highly prevalent in the District of Columbia, New York, Hawaii, California, Oregon, and Washington just to name a few.

Among the challenges limiting the VA's reach within rural areas are lack of training, technology support, and quality management. Other challenges have emerged such as an increased prevalence of mental/behavioral problems among combat veterans in rural areas and negative attitudes about the use of technology by older veterans (Morland et al., 2013).

Mental/behavioral problems among older veterans in rural areas are common, costly and comparatively difficult to diagnose (Strachan, Gros, Yuen, Ruggiero, Foa, & Aciemo, 2012). Most veterans who seek professional treatment do so when their health conditions worsen but did not want to seek help earlier because of cost barriers and perceived social stigma (Morland et al., 2013).

Current forms of telehealth have been associated with some of the tele-mental health-related negative attitudes and experiences within the ethnically/racially diverse population of

U.S. veterans. Some find it helpful and useful while others do not (Morland et al., 2013). At the time of the study, most (77.9 percent) of the 416,338 VHA-users who were eligible for purchased care based on distance lived in rural counties. Approximately 16 percent of these lived in primary care shortage areas, while the majority (70.2 percent) lived in mental health care shortage areas (Ohl, Carrell, Thurman, Weg, Pharm, Mengeling, & Vaughan-Sarrazin, 2018). Most lived in counties that lacked specialized health care providers (e.g. cardiologists, pulmonologists, and neurologists). Counterintuitively, VHA played a greater role in delivering healthcare for the overall adult population in counties that were farther from VHA facilities. As reported by Ohl et al., (2018) 30.7 VHA-users /1000 adults in counties over 40 miles from VHA facilities, vs. 22.4 VHA-users / 1000 adults in counties within 20 miles of VHA facilities.

Mental health in the VA

To determine whether telehealth and telemedicine have the potential to address the mental health problems of veterans, it is necessary to assess their impact in the healthcare industry at large. Mental health is one of the greatest challenges to veterans. It comes with stigma and stereotypes. Throughout the history of warfare, service members have been placed in unimaginable situations, often situations in which they have to make difficult decisions.

In *Psychology Today*, Michael B. Brennan PsyD points out that frequently, decisions made during deployment have lifelong consequences. Many veterans have expressed a desire to be the person they were before they experienced trauma, and they often try to suppress or avoid memories of the trauma they have lived through (Brennan, 2017). However, the use of avoidant coping strategies has been found to be counterproductive in the long run.

By attempting to avoid the traumatic events they have experienced, service members end up exacerbating the intensity and frequency of their trauma memories and the sequelae and

symptoms of those memories over time. The difficulties veterans encounter in trying to re-establish their lives coupled with traumatic experiences of war cause many to develop mental health problems.

To link providers relevant to the health and well-being of veterans, the VA created *VA's Community Provider Toolkit* (https://www.mentalhealth.va.gov/communityproviders/). One challenge noted by the website is that, "Civilians may not be aware of the unique challenges that separating from military service and returning to civilian life can present" These challenges include relating to people who do not know or understand what military personnel have experienced (and many civilians don't know that they don't know!). Families may have created new routines during absences and both the family, and the Veteran will have to adjust to changes. When moving to a new base or post, the military helps its personnel and families adjust. This structure is often lacking when someone separates from the military. The veteran and their family may have to find new ways to join or create a social community. A veteran may have never looked for, applied for, or interviewed for a civilian job, especially if he or she had a career in the military. These are new skills he or she will have to learn and master.

Some veterans suffering with mental health symptoms do not disclose their mental health symptoms because of the fear of the stigma associated with the diagnosis. Shrivastava, Bureau, and Johnson (2012), assert that although the quality and effectiveness of mental health treatments and services have improved greatly over the past 50 years, therapeutic revolutions in psychiatry have not yet been able to reduce stigma.

Stigma is regularly experienced, isolates people and delays treatment of mental illness, which in turn causes great social and economic burden. All individuals who qualify for VA healthcare are eligible for mental health services.

In the City of Philadelphia, health providers listed under the VA include Philadelphia VA Medical Centre, Philadelphia Multiservice Center, Philadelphia Vet Center, Philadelphia Vet Centre NE, and New Philadelphia Clinic.

In addition, the Corporal Michael J Crescenz VA Medical Centre offers a comprehensive array of services focused on improving the health and well-being of veterans and their families in south-eastern Pennsylvania and southern New Jersey. Its services include preventive care, outpatient, residential, inpatient and emergency care. In addition to clinical programs, this center conducts clinical research to advance its knowledge and improve its clinical programs. The facility is staffed by approximately 2,750 employees and supports 142 acute care beds and 135-bed Community Living Center. The CMCVAMC also operates community-based outpatient clinics in Burlington County, NJ, Gloucester County, NJ, Camden, NJ, and Horsham, PA (Victor J. Saracini VA Outpatient Clinic) which more than 91,000 Veterans visited in 2017. More than 55,000 Veterans are enrolled for health care at CMCVAMC, with nearly 590,000 visits in 2017. The Medical Center has an operating budget of more than $540 million and focuses on several mission areas: providing health care, conducting medical research, training health care professionals for the future, and being prepared to serve in the event of a crisis or emergency.

Accessibility

The VA's mental health care delivery systems are comprehensive, covering all mental health conditions experienced by veterans. Access to the appropriate level of care and undisrupted care are vital facility design imperatives.

However, most veterans choose to settle in remote areas where healthcare services are underdeveloped. According to the VA Office of Rural Health (2016), Office of Rural Health, almost a quarter of all Veterans in the United States, 4.7 million returns from active military

careers to reside in rural communities. Veterans choose rural communities for a variety of reasons: closer proximity to family, friends and community; open space for recreation, more privacy; lower cost of living; or less crowded towns and schools. There are 4.7 million rural and highly rural Veterans with 2.7 million enrolled in the VA. As a result, most of the VHA services may be inaccessible for these veterans. Updated information from the US Census Bureau (2017) evidences that about 5 million (24.1 percent) US veterans 18 years and older lived in areas designated as rural between 2011 and 2015.

Just under half of all rural veterans lived in the Southern United States (45.9 percent) followed by 26.4 percent in the Midwest, 14.1 percent in the West, and 13.7 percent in the Northeast (US Census Bureau, 2017). During the 2011-205 periods, 5.2 percent of all rural veterans and 15.4 percent of all rural nonveterans were not covered by any type of health insurance plan. Of the rural veterans who had health insurance during this period, 30.3percent had private insurance only, 24.6 percent had public insurance only, and the remaining 45.1percent had a combination of private and public insurance (US Census Bureau, 2017).

Underserved Population

The Health Resources and Services Administration (HRSA), an agency of the U.S. Department of Health and Human Services, is the primary federal agency for improving health care to people who are geographically isolated, and economically or medically vulnerable. The HRSA identifies areas or facilities that have insufficient provider capacity to meet the needs of that area or population.

These shortages may be geographic-, population-, or facility-based. In terms of geographic area, underserved population refers to a shortage of providers for the entire population within a defined geographic area.

The geographical area under discussion here is the greater Philadelphia area. The shortage of providers for a specific population group within this area, focuses on veterans with mental health problems.

Regarding facilities and based on HRSA guidelines, there is the specific number of patients accorded to each caregiver that must not be exceeded. Once exceeded, an area, population or facility is designated as underserved. Medically underserved areas (MUAs) and medically underserved populations (MUPs) identify various geographic areas and population groups that have insufficient access to primary care services. The type of geographical area associated with MUAs can vary and the designation is based on having a shortage of primary care health services for the target population (Datawarehouse.HRSA.gov, n.d.). MUPs are specific sub-groups living in a defined geographic area with a shortage of primary care health services (Datawarehouse.HRSA.gov, n.d.). These groups may face economic, cultural or linguistic barriers to health care. They include the homeless, low-income, Medicaid-eligible, Native American, and migrant farmworkers, but also veterans. MUA/P designations are based on the Index of Medical Underservice (IMU) (Datawarehouse.HRSA.gov, n.d.).

IMU score is calculated using four criteria: population-to-provider ratio, percent of the population below the federal poverty level, percentage of population over age 65, and the infant mortality rate (Datawarehouse.HRSA.gov, n.d.). IMU scores range from 0 to 100, with zero representing the completely underserved. Philadelphia has several areas designated as either MUP or MUA and veterans with mental health issues represent a significant portion.

Of the 14 designated areas within Philadelphia Country, IMU scores range from a high of 61.0 (Philadelphia Service Area) to a low of 43.3 (West Park/Market Service Area and Mantua/University City Service Area.

Research Problem

Jerome P. Whiteman, the VA's national director of clinic practice management and a Marine veteran accused the department under President Trump of having "a secret VA wait list" for veterans seeking health care (Davidson, 2019). Whiteman said the scandals that shamed the department during the Obama administration are still ongoing. Specifically, in 2014, while President Obama was in office, a scandal emerged over the cover-up of long patient wait times. The cover-up included falsifying records to indicate the wait for medical service was shorter than it really was (Davidson, 2019). Congress investigated the matter leading Eric Shineski, then VA Secretary and former Army general and chief-of-staff, to step down (Davidson, 2019). According to Whiteman, figures from internal reports indicate the actual number of veterans waiting for VA healthcare were much higher than the numbers publicly disclosed. The *Washington Post* was provided with the internal reports from which Whiteman read.

In March 2019, President Trump issued an executive order (Executive Order 13860 of March 4, 2019: Supporting the Transition of Active Duty Service Members and Military Veterans into the Merchant Marine) doing away with a regulation that prevented veterans from shifting their healthcare to private doctors (Rein, 2019). The goal of the order was to expand access to private care, especially for underserved population of veterans in rural and congested areas if they have a 30-minute drive to receive primary care (Rein, 2019).

This dissertation examines the conflict between the mission of the VA to provide health services and the performance of the VA to deliver their services. Specifically, it considers the opportunity afforded to the VA to expand their access to veterans by diversifying their healthcare delivery to include a telehealth system rather than to rely only on designated VA hospitals and clinics.

Research Questions

The primary purpose of this dissertation is to evaluate the VA's efforts to promote mental health accessibility using telehealth for the underserved population of veterans in Philadelphia. This is a necessary precursor to identifying possible solutions that, when implemented, will improve the applicability of telehealth among older veterans with mental/behavioral issues in rural areas across the United States. According to the 2012 U.S. Census brief, veterans age 65 or older numbered in excess of 12.4 million. These veterans served in conflicts around the world including World War II, the Korean War, the Vietnam War, and even in the Persian Gulf War. As veterans age, the Department of Veterans Affairs (VA) will provide benefits and services that address a variety of issues including the changing health risks they face, as well as financial challenges through VA benefits and health services ("Department of Veterans Affairs," n.d.). The two research questions are:

1. How has the VA addressed Telehealth Mental Accessibility for the underserved populations of Veterans?
2. How can Telehealth Mental Accessibility be improved and sustained?

Research Methodology

To answer these two questions, I used a case study approach that focuses on specific programs, projects and settings, rather than individuals (Cresswell, 2016). I posed questions on the effectiveness of telemedicine to address the veterans' mental health problems. It began by defining the scope of mental health problems of telehealth, then the scope of telemedicine and practices of telemedicine that have proven useful in addressing challenges in healthcare delivery, and the effectiveness of the practices applied in the context of veteran's mental health problems.

Data were obtained from a variety of sources, including VA official websites and progress reports released by the VA over the past five years. Without the need to conduct interviews or questionnaires, the questions raised in this study were answered through secondary data from credible online sources.

Chapter 2

LITERATURE REVIEW

Introduction

According to the National Institute of Mental Health, in the United States nearly one in five U.S. adults lives with a mental illness (46.6 million people in 2017) (National Institute of Mental Health, 2019). Mental illnesses include many different conditions that vary in degree of severity, ranging from mild to moderate to severe. The National Institute of Mental Health (NIH) identifies two broad categories can be used to describe these conditions: Any Mental Illness (AMI) and Serious Mental Illness (SMI). AMI encompasses all recognized mental illnesses. SMI is a smaller and more severe subset of AMI.

Compared to the population, U.S. veterans suffer from a disproportion of mental health problems and dysfunction (Morland, 2013). The traumatic experiences of war that develop, mostly as a result of losing friends, yield depression, Post-Traumatic Stress Disorder (PTSD), and other health problems associated with trauma (Jones & Wessely, 2009). According to the RAND Center for Military Health Policy Research (2008) 20percent of vets who served in either Iraq or Afghanistan suffer from either major depression or post-trauma tic stress disorder. Moreover, 19.5percent of vets in these two categories have experienced a traumatic brain injury.

These three service-related disorders alone have an enormous impact on the demand for veteran mental health treatment (National Veterans Foundation, 2018).

Veteran mental health services are essential in order to help returning vets recover from their combat experiences and mental health issues related to their military service. There are a number of troubling statistics which show that not enough is being done and that many of our veterans are not receiving adequate care (National Veterans Foundation, 2018).

According to the U.S. Government Accountability Office, 2.1 million veterans received mental health treatment from the U.S. Department of Veterans Affairs in the five year period from 2006 through 2010. A study by the Substance Abuse and Mental Health Services Administration revealed that only 50 percent of returning vets who need veteran mental health treatment are expected to receive these services (National Veterans Foundation, 2018).

According to The Department of Veterans Affairs, majority of elderly veterans – over 65 years who happen to make the largest population of US veterans, are concentrated in the rural areas where quick access to health facilities is a major problem (Jones & Wessely, 2009). Almost a quarter of all veterans in the United States, 4.7 million, return from active military careers to reside in rural communities.

Veterans choose rural communities for a variety of reasons: closer proximity to family (most of who enlist come from these areas so when they leave or retire, they prefer life back at home) friends and community; open space for recreation; more privacy; lower cost of living; or less crowded towns and schools. While veterans may enjoy the benefits of rural living, they may also experience rural health care challenges that are intensified by combat-related injuries and illnesses (“VA.gov: Veterans Affairs,” 2016).

Compared to urban areas, rural communities tend to have higher poverty rates, more elderly residents, residents with poorer health, and fewer physician practices, hospitals and other health delivery resources. It may be difficult for rural veterans and their caregivers to access health care and other services due to rural delivery challenges, include hospital closings due to financial instability, fewer housing, education, employment and transportation options, greater geographic and distance barriers, limited broadband internet, higher uninsured rates, and difficulty of safely aging in place in rural America ("VA.gov: Veterans Affairs," 2016).

An option to support veterans who need health services is telehealth/telemedicine. The potential of telehealth and telemedicine resides in its ability to provide healthcare, including diagnosis and treatment, without direct contact but by enabling also continuous monitoring of the lifestyle of veterans living in rural areas across the United States (Jung & Padman, 2015). To understand how one might determine the potential of telehealth and telemedicine in addressing mental problems of veterans in rural areas across the United States, it is important to explore a wide range of research regarding the applicability of telehealth and telemedicine.

This review of the telehealth and telemedicine literature will begin with an overview of what constitutes mental health problems among the veterans. It will continue with review of the Department of Veterans Affairs to understand how the agency functions in addressing health problems of veterans. It will then offer a contextual definition of telehealth and telemedicine within the context of veterans' health. Additionally, it will assess the theory of disruptive innovation within which telehealth and telemedicine are examined in relation to business strategies. The review concludes with a critical analysis of the literature, resulting in a conceptual framework of telehealth and telemedicine for veterans' mental health that drives the study. In total, it provides a summary of telehealth and telemedicine within the Department of Veterans

Affairs and the healthcare industry at large as a lens to examine the potential of telehealth and telemedicine in addressing the mental health problems of veterans in rural areas across the United States.

Veterans Mental Health

The Department of Veterans' Affairs was formed in 1930 as a unified body of previously existing government agencies including the Veterans Bureau, Bureau of Pensions of Interior Department and the National Home for Disabled Volunteer Soldiers.

Since then, the number of veterans' health facilities has increased. After World War II and the Vietnam War, problems of homelessness and mental health problems remain a huge challenge for the VA. The number of veterans enrolled for disability compensation for PTSD increased from 120,000 veterans in 1999 to more than 280,500 in 2007 (Department of Veterans Affairs VA History, 2005).

Compared to the general population, US, veterans are disproportionately affected by psychological dysfunction as a result of service-related traumatic experiences, which leads to similarly disproportionate levels of incarceration, homeless, and aberrant behaviors. As the US has been at war in Afghanistan since 1999 (The Associated Press, 2020) devastating experiences for many of those who have served and returned home alive has been described (Darkins, 2014). Many veterans and their families struggle to return to their civilian lives. The difficulties they encounter due to physical, emotional, social, and spiritual traumatic experiences of war, cause many veterans to develop mental health problems and exacerbates those problems present before their military service.

Hige, Auchterlonie, and Milliken (2006) reported the relationship between combat deployment and the use of mental health care during the first year after return from wars in Iraq,

Afghanistan, and other middle east zones. Their study examined the relationship between screening results, the actual use of mental health services, and attrition from military service. The reported prevalence of mental health problems among service members who served in Iraq was 19.1 percent, 11.3 percent for those who served in Afghanistan, and 8.5 percent for those who served in other places (Hige, Auchterlonie, & Milliken, 2006). Post deployment analysis attributed the problem to combat experiences, and insufficient military services funding (Hige, Auchterlonie, & Milliken, 2006).

Thirty-five percent of members who served in the Iraq war accessed mental health services in the first year of their return. Of these, 12percent were found to have mental health problems (Hoge, Auchterlonie, & Milliken, 2006).

Due to events that may have occurred before serving, during service or after serving in the military, veterans may be affected by various social and psychological factors such as separation from families and experiencing brutal killings. Most of these factors are common knowledge and are often discussed in the context of Post-traumatic stress disorder (PTSD) among veterans who are serving or have recently served in the Afghanistan or Iraq war (Matson, 2011).

HealthCare for Re-entry Veterans

According to Finlay, Stimmel, Blue-Howells, Rosenthal, Mguire, Binswarnger, and Timko (2015), after incarceration, many who return face challenges transitioning to their home's families, and work environments. Many are not able afford medical treatment and develop mental health problems or disorders that emanate from substance abuse. Evidence shows that after for re-entry, the rate of access to health care declines.

Finlay et al. (2015) explain that most ex-prisoners do not have medical insurance coverage or health care services are not accessible and these ex-prisoners lack motivation to seek treatment. Mental health disorders and substance abuse, when left untreated result in homelessness, recurring criminal behaviour, and mortality. Newly released prisoners also find difficulty securing employment opportunities and have limited access to financial and community support.

According to the Bureau of Justice Statistics report, military veterans made up about 8percent of prisoners from 2011 to 2012 (Bronson, Carson, Noonan, & Berzofsky, 2015). Imprisoned veterans face many challenges to re-entry with more than half reporting mental health disorders. Among incarcerated veterans who served in Iraq and Afghanistan, 43percent were reported to have alcohol abuse disorder and 37percent drug use disorder (Hoge, Auchterlonie, & Milliken, 2006). In a national sampling of incarcerated veterans, 30percent were reported to be homeless at one point after incarceration (Finlay et al., 2015). More significantly, the risk of mortality following exit from prisons is higher for veterans in the general population.

Veterans face additional challenges. For example, some veterans suffer from PTSD related to combat experiences, sexual trauma, or other traumatizing events that may have occurred in their lives and culminate in involvement with the justice system. Among veterans in prison and jail 25 to 35percent were found to have combat experience. Combat-related PTSD was evidenced in 38percent of incarcerated veterans who served in the Afghanistan Iraq war (Bronson et al., 2015). For comparison, adults addicted to opioid analgesics, have frequent involvement with the criminal justice. Such individuals are less likely to access employment and healthcare services.

Even when they secure employment, they are not able to work for long because of substance abuse. According to Finlay et al. (2015), little is known about VA mental health or substance use disorder treatment after establishing contact with the HCRV program.

According to Addictioncenter.com (n.d.) veterans with PTSD are often prescribed anxiety medications, most of which are highly addictive. Even veterans without PTSD can become addicted to painkillers prescribed for combat-related injuries. Veterans taking these drugs may develop a dependence on them, meaning a tolerance to their effects and symptoms of withdrawal when quitting. As time goes on, veterans may spiral into full-blown addiction, which is characterized by compulsive drug-seeking behavior.

In 2007, the VA established the Health Care for Re-entry Veterans (HCRV) to address the health needs of previously incarcerated veterans. According to the website, https://www.va.gov/homeless/reentry/asp, the HCRV program is "designated to promote success and prevent homelessness among Veterans returning home after incarceration" (n.d.) HCRV personnel reach out to veterans in prisons who are about to be released and links them to healthcare services and other transition services offered by the VA. According to Finlay et al. (2015), treatment use after imprisonment is highly varied. Mental health treatment of individuals after imprisonment ranges from 3percent to 50percent and 12percent to 61percent for substance abuse. In the Department of Labour, there is a program for transition of incarcerated veterans which is under HCRV that works to provide employment for veterans after imprisonment. The program reported that 39percent of veterans seen used outpatient or inpatient VA treatment after prison (Finlay, et al. 2015).

Owing to the high prevalence of mental health problems after imprisonment, the need to connect formerly incarcerated veterans with health care services is key. Finlay et al. (2015)

sought to understand what happens within the HCRV program with an aim to provide information that might help in quality improvement. According to Finlay et al. (2015), the HCRV program can provide lessons for other healthcare and public health programs that work to link individuals with treatment after prison. Reaching out to these incarcerated veterans would not be possible were it not for a telemedicine practice, which will require substantial additional investment.

In 2014, U.S. President Barak Obama earmarked $415 billion to address delays experienced at the Department of Veteran Affairs healthcare facilities in the Veterans Access, Choice and Accountability Act. As of August 2016, according to a report by the *New York Times*, veterans reported improvement following the funding increase (Phillipps, 2016). However, the report notes that veterans were waiting longer to see health care providers than they were two years ago, and more are languishing with extreme wait times. The most recent data from the VA indicated that 526,000 veterans are on the waiting list for more than a month and approximately 88,000 of them had been waiting for more than three months by the time the report was issued (Phillipps, 2016). The push for legislative changes within the VA came after alarming reports indicated that many veterans continue to die waiting for care at different hospitals. In the article, Phillipps (2016), notes that a White House based investigation also reported cases of fund embezzlement which led then Secretary of VA, Eric Shinseki, to resign.

In August 2014, President Obama signed the $16 billion VA overhaul into law (Griffin, Bronstein, & Cohen, 2014). The move increased patient processing by 10percent, but the wait for primary care has gone up since 2014 and the number of veterans having to wait for more than 30 days increased by about 50percent (Philips, 2016). This may be because most veterans access healthcare from sources other than VA. Some areas have long waits (Philips, 2016). Veterans in

Roseburg City, Oregon waited two times longer than elsewhere. In Fayetteville, North Carolina and Denver, Colorado patients had to wait for more than a month for scheduled appointments. Veterans claimed staff members manipulated the books to make it appear that the next available appointment was the patient's preferred date of appointment. An audit in Colorado Springs reported that, while records showed veterans were scheduled for a same-day appointment, they had waited for 76 days (Philips, 2016).The Secretary of Veterans' Affairs, Charles Darkins, who has seen the VA through most of its telehealth implementation programs, attributed the increase in waits to the larger number of veterans the VA has to deal with.

History of Electronic Information Communication Applied to Health

Telehealth and Telemedicine

For telehealth to become an integral part of a healthcare system there is a need to establish common ground among the approaches used (Krupinski & Bernard, 2014). According to Krupinski and Bernard (2014), out of 80 reviews on telemedicine research, 21 (26 percent) found telemedicine effective, 18 (22.5 percent) reviews labeled the evidence on telemedicine as promising but incomplete, and the rest of the reviews termed the evidence inconsistent and limited. The researchers summarized that less than half (48 percent) of the research examined showed or approached positive outcomes and identified problematic areas in telemedicine which entailed economic analysis and assessment of benefits to the patients.

Bergmo (2009), in a systematic review of whether the economic evaluation in telemedicine can be trusted, raised important concerns. A systematic literature search in all relevant databases was conducted and forms the basis for addressing these issues. Only articles published in peer-reviewed journals and written in English from 1990 to 2007 were analyzed.

The literature search identified 33 economic evaluations where both costs (resource use) and outcomes (non-resource consequences) were measured. Bergmo (2009) noted that most evaluations employed measures that yielded multiple outcomes and the effects were analyzed using separate cost-consequence methods. However, most studies did not provide information on perspective and costing methods with inadequate statistical evidence. Bergmo (2009) argues that such problems emanated from lack of standardized methods to perform economic analysis on telehealth programs. The reason is that factors in each economic evaluation are accounted for and weighed differently and different cost models are used.

As a result, Bergmo (2009) recommended some approaches to telehealth economic evaluations, suggesting two ways to expand study findings and applicability. Firstly, scholars should use trial designs that clearly reflect a normal patient caseload and daily practice. Secondly, there is a need to employ modeling techniques on available data to estimate projected costs and outcomes of varying alternatives. The advantage of modeling is that it allows for systematic alteration of various important parameters of real and simulated data sets to determine the impact of clearly defined economic outcomes. The validity of such projections can then be determined by comparing the actual outcomes. Such an approach would require teaming up of individuals from across various disciplines rather than the typical non-academic researchers on telehealth.

According to Doarn, Pruitt, Jacobs, Harris, Bott, Riley, and Oliver, (2014), applying telecommunications and information systems in healthcare is not new; rather such an approach spans most new technologies in the current practice of medicine and has formed an integral part of care delivery in remote areas in the past few decades. However, the terminologies and definitions of telehealth and telemedicine vary in different contexts. Doarn et al., (2014) explore

the definitions of telehealth or telemedicine across the U.S. to come up with a clear understanding of what each government agency means when it uses the terms. The U.S. Government, through the Health Resources and Service Administration in the U.S. Department of Health and Human Services, developed the Federal Telemedicine (FedTel) Working Group. Through FedTel, members responded to a survey conducted to establish the meaning of terms associated with telehealth. According to the results of the survey, many definitions were similar, but some differences were notable in legislative intent and population served by each agency (Doarn et al., 2014).

The results suggested that a standard nomenclature that defines these terms may benefit efforts to advance the use of telemedicine and telehealth in addressing new demands. Doarn et al. (2014), notes that private entities as well as other government entities have their own definition of telehealth and telemedicine, all based on reviews of literature or evidence. For these groups to come together and establish treatment and performance standards in telehealth, they must speak in one language.

Disruptive Innovation

Disruptive innovation describes a change in conventional ways of doing business by restructuring knowledge of causes and solutions to a problem, which can meet the needs of the larger proportions of customers. The term “disruptive innovation” was coined by Clayton Christensen, a former professor at the Harvard Business School (2016). Christensen (2016) described the simplification of products and services that typically focus on market segments with many customers. Rather than concentrating on products that serve a large customer

segment, a disruptive innovation provides products and services that can meet the same needs but for the entire customer population.

According to Gupte et al. (2016):

> Electronic consultations (e-consults) offer rapid access to specialist input without the need for a patient visit. E-consult implementation began in 2011 at VA Boston Healthcare System (VABHS) … The e-consult mechanism is frequently utilized for its initial intended purpose. It has also been adopted for unexpected clinical and administrative uses, developing into a "disruptive innovation" and highlighting existing gaps in mechanisms for provider communication. Further investigation is needed to characterize optimal utilization of e-consults within specialty and the medical center, and what features of the e-consult program, other than volume, represent valid measures of access and quality care.

According to Grady (2014), the healthcare sector has undergone technological advances in the past decade, hence the need for practitioners to integrate incoming technology, develop best practices of use, and synthesize policies to regulate and evaluate the effectiveness of new technology. Grady (2014) explores the concept of disruptive innovation and references data that support its necessity in the healthcare industry, particularly in nursing. She focuses on telehealth as a case study of disruptive innovation in healthcare. Along those same lines, Brooks (2014) explores cloud-based resources as disruptive innovation strategies that can reconfigure healthcare delivery. According to the author, cloud-based convergent infrastructure is a potential hub for resources and can optimize communication network. Cloud-based convergent infrastructure has not been exploited to enhance communication network in the field of healthcare delivery, which makes it a potential idea that can be implemented together with telehealth as a good network of communication is vital for the proper functioning of telehealth.

Jung and Padman (2015) note that healthcare is the largest sector in many economies across the world but is often left behind when it comes to the use of innovations in revolutionizing patient care and service organization.

According to the authors, disruptive innovation models in healthcare that utilize current information, communication, and technology platforms have the potential to revolutionize healthcare delivery and management. With the demand for medical care increasing every day, hence the need for new models.

Currently, new techniques and methods such as online consultations are being studied and developed; they do not rely on physical contact between patient and doctor as the model of care delivery. Current patient-centred care has evolved to a great extent. Advancements have brought in the use of portal technologies to inform, engage, and support patient shared decision making. Jung and Padman (2015), for instance, introduce different types of digital-oriented innovations in healthcare and discuss in detail the current streams of healthcare delivery innovations.

The authors also address the potential of online based care delivery that includes web portal services, online consultations, and other evolutionary mechanisms. For example, VA partnerships with Walmart, Philips, and T-Mobile as discussed in a latter section, is an illustration of the digital-oriented innovations in healthcare.

According to Sensmeier (2012), disruptive innovation in healthcare can lead to a new system that provides care focused on each patient's needs. Due to advances in therapeutic and diagnostic technologies, nurses and physician assistants can diagnose and treat disorders that would have required the intervention of physicians. Accurate new tests and detailed protocols allow these clinicians to diagnose conditions as simple as strep infections and as serious as diabetes. In addition, studies have shown that non-physician workers typically devote more time to patients during consultations than physicians, with greater emphasis on prevention and health maintenance.

These studies also confirm that given comparable training, NPs can provide care of comparable quality (Sensmeir, 2012). Examples of disruptive innovations in healthcare include the use of miniaturized blood glucose meters that patients can take along wherever they go. As a result, patients can self-manage most aspects of diabetes more effectively and conveniently, whereas in the past, they would have access to treatment solely through healthcare professionals.

Home Based Telehealth for Veterans

Houston (2014) reports that the VA focuses on three services provided via tele-practice: clinical video telehealth (CVT), home telehealth (HT), and store and forward telehealth (SFT). Through clinical video telehealth, a remote patient can use real-time interactive videoconferencing to receive mental health services and specialty consultations. Home telehealth is a way for providers to monitor and manage patients with acute and chronic diseases while they are living at home.

Home telehealth strives to improve clinical outcomes and reduce the need for further hospitalizations or complications. The store-and-forward telehealth program uses technology to obtain and transfer a patient's health care information between providers. Each service area has its own national training center, operated Training Systems (OTS), at various locations across the United States. An Operator Training System (OTS) is nothing less than a flight simulator for industrial processes. With an OTS it is possible to train medical personnel. According to the demands on site different tasks and situations can be trained at any time. Various questions concerning complex process situations can be answered. Training scenarios are set up by a trainer and repeated as often as necessary without any impact on the actual process. Training typically includes start-up and shut down, change of load or product and critical process situations. Control strategies can be verified without any restrictions from the ongoing

production. As of 2012, almost 600,000 patients were receiving telemedicine services making VA a national leader in telehealth services (Dennis, Gladden, & Noe, 2012).

Researchers at Flinders University in Australia conducted a qualitative study in which they sought to transition a home telehealth project into a sustainable, largescale service. In the study, the researchers wanted to determine if a small-scale home telehealth project can be expanded in collaboration with existing large-scale outreach services (Wade, Taylor, Kidd, & Carati, 2016). Transitioning telehealth project services into large scale coverage is often a difficult process. Hence, the researchers were looking for a preferred implementation approach. Telehealth can be used to deliver specialized services to patients at home offering either rehabilitation or palliative care which patients would otherwise access from hospitals.

The Flinders University Telehealth in the Home: Palliative and Aged Care trial (FTH trial) ran for one and half years (2013-2014) in Southern Adelaide, Australia. The program developed telehealth models, offering palliative, rehabilitative, and aged care. For palliative care and rehabilitation, medical, nursing and allied health staff used video consultations to monitor physical activity, weight, and self-assessment applications to obtain status reports of the patients. Specialized geriatricians used video assessments to monitor aged people in age care facilities.

About a preferred implemental approach, several commented that there were no easy answers, and most engaged in extended ‘thinking aloud’ about different options. The authors reported overall strong support for wider implementation of home telehealth, however there was a diversity of views on the form of operations, with no one approach standing out. Taking each component in turn” (Wade et al., 2016). When asked who would take responsibility for clinical standards, and quality improvement, five interviewees suggested government, four that there should be a new organization formed with strong community involvement, two wanted primary

health networks to run the system, two preferred commercial companies, and one wanted an existing government-owned body to operate the service. Three proposed many models, and two interviewees did not answer the question in a classifiable way (Wade et al., 2016).

With regard to models of care, interviewees noted that introducing home telehealth altered the model of care to being more structured; palliative care services changed from an environment where individual clinicians operated according to their own preferences, to a system with set criteria for data gathering and responses to patient status. In aged care, a structured nursing assessment was introduced before the telehealth consultation. There was substantial reduction in travel time for staff, clinical interventions increased and were on time for palliative patients, and rehabilitation patients at home could now receive more healthcare with positive outcomes. Previously, aged people could not receive specialized assessment, but the video monitoring enabled such processes.

Miller (2007), notes that since that 1990s, there have been various challenges faced in the development of sustainable and largescale telehealth services. Perhaps the greatest enthusiasm for telehealth lies with its potential to provide high-quality care to remote patients living in medically underserved communities (Miller, 2007). Because physicians and advanced technologies tend to be concentrated in certain regions and countries, rural residents and those living in inner city areas and developing nations typically go without sufficient levels of service. In the U.S., this is reflected in the uneven distribution of physicians across hospital referral regions; in 1999 the generalist workforce varied nearly three-fold, ranging from 39 to 113 per 100,000 between the highest and lowest regions in the country. Such variation is even more pronounced among medical specialists, which varied by nearly six times and ranged from 12 to

69 per 100,000 (Miller, 2007). Part of the uneven distribution may be related to the uneven distribution of across the country of physician resident training (Figure 6).

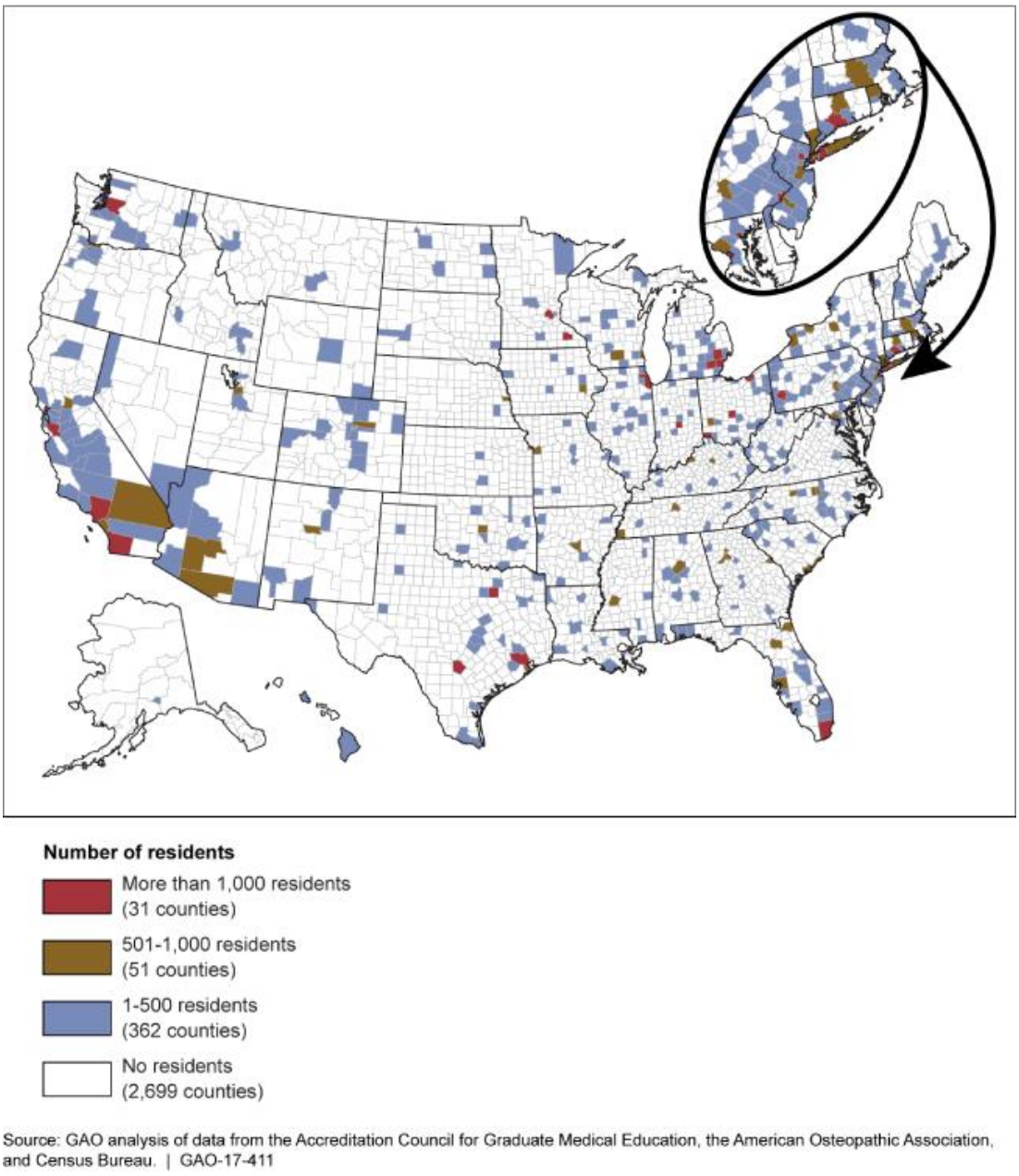


Figure 6: Resident Physician Workforce Distribution (https://www.gao.gov/products/GAO-17-411)

Wade et al. (2016) defined three major phases of telehealth integration as initiation, sustainability, and large-scale uptake.

They evaluated 36 telehealth services in Australia using a grounded theory approach and reported that the main drivers of the initial implementation are the champions and that a successful transition to sustainable operations is enabled by clinicians.

Telehealth champions are the modern pioneers who function as part of innovative telehealth teams. They serve as the agents of change who bring together knowledge of disruptive technologies to advocate for improvement in established healthcare systems.

The study defined sustainability as the ability to operate in the future while competently dealing with incoming threats. The model for sustainable operations in telehealth, as designed by that study, is presented in Figure 7.

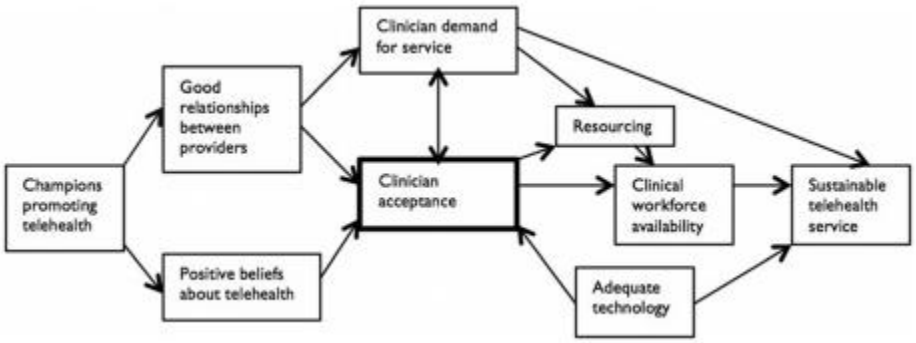


Figure 7: Model of Telehealth Service Sustainability (Wade et al., 2016)

In Australia, telehealth services are launched on a small scale by champions who then proceed to improve relationships between providers. Rather than building individual relationships, the study suggested establishing models of care that would enhance individual relationships. While telehealth could be primarily driven by patient demand, the results of the study suggested that clinician acceptance is more important. For instance, the introduction of sharable electronic records and a campaign to have more patients enroll did not work because clinicians and healthcare organizations resisted the system (Wade et al., 2016).

The other important factor for the successful development of a sustainable home telehealth program is the use of appropriate technology. Challenges faced by organizations implementing IT projects in healthcare systems include covering structures, incentives, policies, changes to work process, training, and work culture issues.

Clinicians can have problems with integration of IT services. The most frequent is that IT departments place such services at the bottom of their list of priorities. The Flinders Telehealth in the Home: Palliative and Aged Care in SA South Australia (FTH trial) funded through the Australian Government Department of Health had dedicated staff that ensured that such problems did not occur. Given the prevalence of smartphones and tablets in modern society, using patients' own devices was found to enable a broader uptake of the technology.

However, some impoverished individuals as well as those with visual impairments, limited digital literacy, and cognitive limitations were hard to integrate into the program (Wade et al., 2016). Unfortunately, this group of people often has chronic conditions and greater need for such services. For this reason, the FTH trial program saw it as necessary that the system provide the devices, connectivity, and network management such that health services interested in benefiting from telehealth will have to incur the cost of the devices used by patients. The advantage of this approach is that healthcare organizations can have devices designed with limited but necessary capabilities and only the required functions and reliable connectivity provided (Wade et al., 2016).

The model that interviewees preferred is the consortium; it has been successfully used by the Ontario Telemedicine Network (Wade et al., 2016), wherein a non-profit organization established by a consortium became the largest healthcare provider of telehealth infrastructure in one region.

Telehealth services were launched on a small scale by champions who then proceed to improve relationships between providers. The researchers determined that such approach would not translate well in Australia where the health system is more fragmented and competitive because major stakeholders are not willing to support collaborations. The study, however, determined that small scale startups such as community practice could make a huge impact before moving to the normalization stage where major stakeholders are required to come in. Wade et al. (2016), concluded that telehealth is a complex intervention and its initiation and implementation is inevitably accompanied by some resistance. However, with the right models developed to steer the system, it will bring overwhelming benefits to the community and stakeholders. The current work does not seek to develop a design that would address the complex problem identified in the implementation of telehealth in the U.S. A review of the design tested in Australia aids in understanding telehealth dynamics in the U.S. as a foundation to further probing issues as identified herein.

Rural Telehealth

Singh, Mathiassen, Stachura and Astapova (2010) undertook a case study which provided deep insights into the innovation's social dynamics. Punctuated equilibrium theory helped present and make sense of the process. They identified antecedent conditions and outcomes and distinguished between episodes and encounters based on the disruptive effects of events.

The aim of the project was to examine the adoption of telehealth in a rural public health district. Singh et al. (2010) developed a qualitative study of the largest public health district in Georgia. Twenty-five semi-structured interviews with 19 decision makers and professionals, direct observations, published papers, grant proposals, technical specifications, and other written materials. Several key factors resulted in the formation of a sustainable rural telehealth system.

One variable was the high degree of collaboration among the users within the district the local community as well as external stakeholders. The rural telehealth system was well equipped with fully functioning outreach clinics. Participation and generative capability cultivated by local champions enabled individuals to overcome barriers by exploiting available technology and financial options.

Singh et al. (2010) concluded that extensive internal and external collaborations and the use of new technologies by well trained personnel enable creation of a rural telehealth system that will ultimately address the long-standing problem of poor accessibility of healthcare services for people living rural areas.

Public health institutions provide a variety of health services from primary to allied care to individuals eligible for Medicaid. In rural areas, many people cannot be categorized as low-income earners because they are not poor enough to qualify for Medicaid. Many people living in rural areas do not have advanced education and are over retirement age (65 years). In addition, most retired veterans opt to reside in the rural areas because life there is less expensive, and they prefer solitary environments due to mental distress. As such, many veterans who really need health attention are found concentrated in needy rural environments.

While past research has focused on telehealth at an individual level (Croteau & Vieru, 2002; Gagnon et al., 2003; Chau & Hu, 2004;), Singh et al. (2010) proved that telehealth can deliver timely and affordable care across rural institutions.

Patient Safety in Telehealth

Based on the findings of the influential Institute of Medicine (IOM) report *To Err is Human: Building a Safer Health System* (Kohn, Corrigan, & Donaldson, 1999), Monteagudo, Salvador, and Kun (2014) examined patient safety in large-scale telehealth systems.

Drawing from the principles described in the IOM report, Monteagudo, Salvador, and Kun (2014) proposed a theoretical framework and identified differential characteristics of telehealth elements while emphasizing the level of telehealth system and its subsystems. The increasing integration of Information Communication Technology (ICT) support in healthcare has led to increased concern for patient safety in eHealth systems.

Nevertheless, telehealth was not featured in any of these issues. The major thrust of the report was a four-part plan, intended to create financial and regulatory incentives to create a safer health care system and a systematic way to integrate safety into the process of care. The authors note that the concerns for patient safety in telehealth emanate from data protection and confidentiality, but other aspects of patient safety such as interoperability in telehealth have been cited by other authors. According to Monteagudo, Salvador, and Kun (2014), there has been an increase in the risks involved in maintenance of privacy in data keeping due to both human error and malicious actions. In addition, developers of these wireless communication systems may also be creating risks such as vulnerability of patient data and co-creating value. The authors also cite social risks because there may be unfairness in the distribution of the resources to vulnerable and impoverished populations. Other issues cited include over-dependence on technology, which might pose health hazards due to electromagnetic radiation associated with wireless communications and sensor networks. External risks such as chemical and biological accidents are also concerns with the use of different devices in telehealth systems.

The patient safety and security concerns that arise in the use of telehealth systems also span other health systems based on ICT. However, concerns regarding safety and security in telehealth systems are substantially different due to the nature of telehealth. These differences arise due to the unique environment in which telehealth systems serve, profiles of targeted

populations such as veterans, and the organization and business models involved in integration. For this reason, the authors acknowledge that there exist new risks and limited experience in handling such problems. Initially, telehealth implementation was confined to pilot studies as well as small-scale actual implementations and testing conditions far from real situations. However, this practice has shifted, and trial programs are now being carried out covering vast regions.

As a result, serious challenges emerge based upon design of the systems, implementation, and model of operation. Monteagudo, Salvador, and Kun (2014) note that conventional clinical systems and patient safety measures used in traditional health organizations cannot offer a working structure, process, and outcomes to deal with patient safety in telehealth.

Telehealth supported care is care that administered through virtual communication technologies. Such care accepts and adopts new models that place patient safety at the center of their implementation. The success of any telehealth program depends on the confidence of the players involved, stakeholder collaboration among other factors aforementioned; it is a necessity for the systems to offer proper safety for acceptance by clinicians and patients. Many large ICT systems tend to approximate security measures by adopting good practices. However, such measures eliminate only some obvious risks. Clearly, this is insufficient for the capacity of telehealth which is constantly widening. Therefore, it is important to consider patient safety in telehealth systems right from the initial steps instead of seeking solutions at mature stages of the implementation process. Monteagudo, Salvador, and Kun (2014) proposed the Interactive Social-Technical Analysis (ISTA) to tackle patient safety in ICT systems. Many unintended and undesired consequences of Healthcare Information Technologies (HIT) flow from interactions between the HIT and the healthcare organization's sociotechnical system—its workflows, culture, social interactions, and technologies (Harrison, Koppel, & Bar-Lev, 2007).

A conceptual model explaining these processes is the Interactive Sociotechnical Analysis (ISTA). Harrison, Koppel, and Bar-Lev, (2007) identify four key features of ISTA; One is the importance of examining *actual uses* of HIT ("HIT-in-use"), rather than uses that were planned or envisioned by designers or managers.

Second is the impact on HIT use of technical and physical settings of work. Third are the users' renegotiation and reinterpretation of HIT features. Fourth are the interaction and interdependence among social and technical systems and recursive relations among sociotechnical subcomponents. The ISTA approach focuses on a recursive process that appears when introducing new ICT applications. The authors acknowledge that Telehealth has great potential to transform healthcare but cannot reach sustainable levels if patient safety concerns that arise are not equally tackled.

The Potential of Telehealth

A wide body of research has demonstrated that telehealth and general technology-supported care is not only feasible but at some point, can be equal to or better than conventional care delivery methods. Telehealth has potential benefit to nearly all clinical systems, either as a cost benefit model of care or timely delivery of care. One might even argue that telehealth can be held to much higher standards than conventional approaches to care.

Krupinski and Bernard (2014) state that there are a number of factors that makes telehealth so different from conventional care. As the technology changes, the VA must continue making efforts to verify the validity and reliability of the new aspects of the technology and develop guidelines for its use. However, such a process takes time and requires hefty funding as well as research. One way to deal with this is modelling technologies that are cost-effective even as they keep changing.

According to Krupinski and Bernard (2014), the Department of Veterans Administration is one of the sectors that hosts rich opportunities for telehealth evaluation research and can be used to develop guidelines.

The VA has utilized several telehealth supported systems in recent years and vertically integrates telehealth as a closed system that is client based, making it the ideal platform to generalize best practices in telehealth. Jia et al. (2009), conducted a four-year longitudinal study of chronic effects of home telehealth on avoidable hospitalization. The results revealed that those enrolled in the VA patient-centered Care Coordination Home Telehealth (CCHT) program were less likely to be admitted to hospital than veterans who did not enroll. The study demonstrated that Telehealth programs have long-term effects in increasing the rate of preventable hospitalization.

Developing Guidelines for the use of Telemedicine

The American Telemedicine Association (ATA) was established in 1993 to promote the accessibility of healthcare for patients and healthcare professionals by employing telecommunication technologies. Individuals, companies, and other healthcare entities can enroll as members of the ATA. ATA has established guidelines for the use of telehealth and continues to provide more as technology shifts. Some of the important guidelines include the Core Standards for Telemedicine operations and the Expert Consensus Recommendation for Videoconferencing-Based Tele presenting.

The ATA guidelines cover a wide range of clinical specialties. For example, in radiology, ATA principles cover practices in digital image acquisition, storage, transfer, and display of data and images. The surgical practice of telemedicine guidelines is provided by the Society of American Gastrointestinal and Endoscopic Surgeons.

There are other regulations developed by professional groups, but some of them may not be included in the ATA guidelines, such as those developed by the American Academy of Dermatology and the American Medical Association. Existing international guidelines include the European Code of Practice for Telehealth that is based on research activities that validated the use of the said technologies.

The ATA drafted its first set of guidelines in 1999 but the first formal set of ATA practice guidelines were formulated in 2004. Clinical and administrative issues are thoroughly covered by the guidelines as well as regulations for design and implementation of care models. Efforts to develop such guidelines created the framework to address future problems in terms of administrative and clinical aspects associated with telemedicine. Krupinski and Bernard (2014) note that the compliance with the ATA guidelines does not guarantee successful outcomes but provides a clear path to start evaluating situational risks when incidents occur. As mentioned earlier, one of the factors that make telemedicine unique is the fact that it is based on a rapidly changing technology. For this reason, there is need to keep revising the guidelines for use in evaluating the design and implementation of Telehealth approaches. When the right guidelines are in place, it will be easier for new models of healthcare to be integrated while taking note of the arising patient safety concerns. Telemedicine would then become a success when patients and clinicians are sure that they are protected by the effective guidelines for practice.

The VA faces various challenges in dealing with the mental health of veterans living in rural areas. Veterans entering civilian life face many challenges in re-organizing their lives. Most enlisted young and grew used to doing things the military way and now have to know how to live like normal people utilizing public services like everyone else. These challenges associated with re-organization of civilian life can escalate to mental health problems and addictions.

Under the administration of former President Barack Obama, the VA underwent some reforms facilitated by a budget increase. Long waits in VA hospitals was among the major problem addressed. However, as shown in the review, VA hospitals are still experiencing worryingly long waits.

The VA has identified telehealth and telemedicine as a probable solution to the problems of accessibility. With telehealth and telemedicine, the VA has been able to reach more veterans especially those in the rural areas. Telemedicine is described as a disruptive innovation in the area of medicine because it cuts cost of care and enables veterans to access medical services way much better than what conventional approaches provide. Telemedicine remains a promising approach to increase the accessibility of healthcare for veterans living in rural areas.

Chapter 3

METHODOLOGY, RESULTS AND DISCUSSION

Methodology

Research Questions

The primary purpose of this dissertation is to describe and evaluate the efforts that the Department of Veteran Affairs has been making in promoting mental health accessibility using telehealth for the underserved population of veterans. The research also aims to identify the barriers limiting the development of telehealth services. There are two research questions:

1. How has the VA addressed Telehealth Mental Accessibility for the underserved populations of Veterans?
2. How can Telehealth Mental Accessibility be improved and sustained?

The Literature Review chapter focused on Research Question 1 and presented the history, context, and development of telehealth generally and the VA. Specifically, the literature indicates that telehealth has the capability to address the problem of inaccessibility of mental health services for older veterans living in the rural areas. This chapter presents the methodology applied to respond to Research Question 2. To appreciate the current reality of telehealth and to consider its challenges, problems and opportunities, the researcher conducted comprehensive review of the latest developments that VA has made.

Research Design

In evaluating the effectiveness of telehealth and telemedicine in addressing veterans' mental health problems, a case study approach was selected.

Case studies involve in-depth examination that focuses on specific programs, projects or settings, rather than individuals (Cresswell, 2016). This case study investigated questions on the effectiveness of telemedicine in addressing the veterans' mental health problems. It begins by defining the scope of mental health problems of telehealth, then the scope of telemedicine and practices of telemedicine that have proven useful in addressing challenges in healthcare delivery, and the effectiveness of the practices applied in the context of veteran's mental health problems.

Data Collection and Interpretation

Information was obtained from a variety of online sources which including VA websites and progress reports released by the VA between 2015 and 2020. All reported progress the VA has made has been documented in order to assess the steps that VA is taking to address mental health accessibility of rural veterans and the challenges that are being faced and possible solutions to these challenges.

Ethical considerations and limitations

Ethical considerations made in this paper are that all secondary sources of data are credible and reliable sources. All online sources that have been referenced in this paper are websites of credible organizations designated as ".org" or departmental websites designated as ".gov" as well as online platforms of credible news sources such as ABC news, CNN, and New York Times.

This chapter presents the observations made from a review of VA information accessed via websites between 2015 and 2020. Topics included the collaborations it is engaged in, the outstanding programs it is currently running and the major challenges it is currently facing. The observations show two groups of results.

1. Current Situation
    a. The VA has been criticized by the U.S. Government Accountability Office (GAO), an independent, nonpartisan agency that works for Congress, often called the "congressional watchdog," because it examines how taxpayer dollars are spent and provides Congress and federal agencies with objective, reliable information to help the government save money and work more efficiently. The VA has also been criticized by veterans' organizations and the press. These criticisms concern substandard care and excessive wait times afforded to American veterans.
    b. The VA is hindered by its outdated bureaucratic regulations. Some argue the pathway forward is through streaming and increasing flexibility.
2. My Recommendations
    a. The VA requires a comprehensive and integrated telemedicine/telehealth program with a robust outreach process to engage rural constituencies and expand service levels.
    b. The VA health system has to integrate and partner with private sector providers to reduce case load and provide services

What follows is a discussion of the efforts that the VA is making to address said challenges in a bid to improve mental health accessibility for the underserved populations of veterans in rural areas across the United States.

VA placed on the High-Risk List

The government's decision to address the challenges identified by the Government Accountability Office (GAO) by placing VA on its High-Risk List is one of the major steps

allowing the VA to expand telehealth mental health accessibility among underserved population of veterans (U.S. Government Accountability Office, 2015).

The move is meant to place the VA on the government's priority risk to ensure that it is one of the agencies that will be receive focus until it is able to run all activities within its mandated scope. The VA is a very important agency and the government placed the agency on its High-Risk List to ensure that, among all the other challenges the government faces, the VA's challenges will be prioritized. MUPs and MUAs appear in the context of VA's coverage because it has not had a conspicuous platform to air its grievances to the government, but now it does.

The GAO reviews its High-Risk List every two years and readjusts the list according to the potency of the risks and vulnerabilities that each government agency faces (Office of Public and Intergovernmental Affairs, 2016). When the VA came up for review, Acting Secretary Robert Wilkie noted that the Trump administration was serious about doing business differently to improve Veteran's care. During its initial assessment in 2015, the GAO identified five specific risk areas for the VA. They were ambiguous and inconsistent processes, inadequate oversight and accountability, information technology challenges, inadequate training for VA staff, and unclear resource needs and allocation priorities.

The GAO found out that the way in which the Department of Veterans Affairs' (VA) Veterans Health Administration (VHA) calculates veteran mental health wait times may not always reflect the overall amount of time a veteran will wait for care. According to the report, VHA uses a veteran's preferred date (determined when an appointment is scheduled) to calculate the wait time for that patient's full mental health evaluation, the primary entry point for mental health care. Of the 100 veterans whose records GAO reviewed, 86 received full mental health

evaluations within 30 days of their preferred dates. On average, this was within 4 days (U.S. Government Accountability Office, 2015).

The GAO also found that conflicting access policies for allowable wait times for a full mental health evaluation—14 days (according to the VHA's mental health handbook) versus 30 days (set in response to recent legislation) from the veteran's preferred date—created confusion among VAMC officials about which policy they are expected to follow. These conflicting policies are inconsistent with federal internal control standards and can hinder officials' ability to ensure veterans are receiving timely access to mental health care (U.S. Government Accountability Office, 2015). According to the report, the VHA monitors access to mental health care, but the lack of clear policies on wait time data precludes effective oversight. GAO found the VHA's wait-time data may not be comparable over time and between VAMCs. Specifically, the policies did not allow for over time comparison of data. According to the report, VHA has not clearly communicated the definitions used, such as how a new patient is identified, or changes made to these definitions. This limits the reliability and usefulness of the data in determining progress in meeting stated objectives for veterans' timely access to mental health care (U.S. Government Accountability Office, 2015).

Based on the findings on inconsistent policies, the VA formulated a comprehensive action plan to address areas of GAO concern about conflicting policies. First, the VA proposed reducing ambiguity and red tape, specifically replacement of outdated policy documents. So far, the VA has eliminated more than 235 expired directives and 85percent of all outdated manuals.

This was to ensure that the new policies, directives and manual guidelines would consider MUPs and MUAs. Secondly, the VA proposed the elimination of bureaucracy and streamlining of the decision-making process through reduction of central office staff positions by 10percent.

This brought together policy and operations functions in mental health, primary care, and geriatrics to improve support to field activities and veteran-facing services ensuring that even the marginalized populations could access mental health care.

Third, the VA proposed the strengthening of internal oversight and accountability. The Veterans Health Administration established the Office of Integrity to consolidate its compliance, ethics, and oversight programs under a single executive, and moved swiftly to establish an internal audit function and associated governance committee that provides the Under Secretary for Health with an independent and objective way to assess operations (U.S. Government Accountability Office, 2015). This was in consistent with GAO findings that when open access appointments are used, data are not comparable between VAMCs. Open-access appointments are typically blocking of time for veterans to see providers without a scheduled appointment. GAO found inconsistencies in the implementation of these appointments, including one VAMC that manually maintained a list of veterans seeking mental health care outside of VHA's scheduling system. Without guidance stating how to manage and track open-access appointments, data comparisons between VAMCs may be misleading. Moreover, VAMCs may lose track of patients referred for mental health care, placing veterans at risk for negative outcomes (U.S. Government Accountability Office, 2015).

Fourth, the VA proposed modernization of information technology and support. VA's Electronic Health Record modernization program will enable seamless care and full interoperability with the Department of Defense's electronic health record modernization solution and enhance the ability to exchange Veteran health data with community health partners (U.S. Government Accountability Office, 2015). These recommendations were in response to GAO findings that Both VAMC and CMHC officials reported experiencing technical challenges,

particularly related to the transfer of medical files and the use of tele mental health technology. Two VAMCs reported depending on secure fax to exchange information because the VAMCs and the CMHCs used different computer systems. VHA officials said they plan to provide an internal report to VAMCs recommending, among other things, that VAMCs and CMHCs establish standards and plans for sharing information to reduce the impact on care and workload while ensuring confidentiality.

Fifth, it proposed the clarification of resource needs and priorities. VA established a centralized manpower management office to integrate staffing processes and transformed its financial management methods to improve resource planning and allocation. These recommendations were guided by GAO findings that Although VHA considered their hiring initiative a success, officials at the five VAMCs GAO visited reported a number of challenges in hiring and placing mental health providers, including; Pay disparity with the private sector, Competition among VAMCs, Lengthy hiring process, lack of space, lack of support staff, and nationwide shortage of mental health professionals (U.S. Government Accountability Office, 2015).

Officials at all the VAMCs that GAO visited said that VHA salaries for mental health professionals were not competitive with private sector salaries (U.S. Government Accountability Office, 2015). For example, officials at one VAMC said they experienced difficulties in recruiting mental health staff, such as psychiatrists, and lost prospective hires to the private sector.

Competition among VAMCs; Officials at three of the five VAMCs GAO visited also stated that, because every VAMC across the country was trying to fill mental health staff positions at the same time during the hiring initiative, competition among the different VAMCs

was high. For example, officials at one VAMC said they made offers to candidates who then used those offers as leverage to secure higher offers at other VAMCs (U.S. Government Accountability Office, 2015).

GAO reported Lengthy hiring process; Even when candidates were available to fill positions, officials at four of the five VAMCs GAO visited stated that VHA's lengthy hiring process—which could take anywhere from 3 months to more than 1 year—was a challenge, possibly resulting in losing candidates who took positions elsewhere during that time. Officials at one VAMC attributed the delays to a lack of human resources staff to complete the administrative side of the hiring process. Despite the VAMC's staff growing significantly as a result of VHA's hiring initiatives, officials said the VAMC did not hire any additional human resources staff, which increased the workload of existing staff and contributed to hiring delays (U.S. Government Accountability Office, 2015).

According to U.S. Government Accountability Office (2015), once the hiring process was completed, officials at four of the five VAMCs and all five CBOCs that GAO visited reported difficulties getting mental health hires in place to provide care due to a lack of sufficient space. All of the VAMCs GAO visited had either recently completed or were in the process of undergoing expansions of mental health space in their VAMC or CBOC buildings. Officials at one of the CBOCs GAO visited said that although they moved into their current facility in July 2014, by April 2015, they were already struggling with space constraints (U.S. Government Accountability Office, 2015).

About lack of support staff, GAO reported that Four VAMCs they visited reported that a lack of non-clinical support staff resulted in providers taking on some of the administrative burden, which reduced their clinical availability.

For example, officials at one VAMC said that while the recent hiring initiatives added staff to improve access, without a corresponding initiative for hiring support staff, providers are now also scheduling patient appointments, addressing office equipment issues, and handling phone calls about administrative issues, in addition to their clinical duties (U.S. Government Accountability Office, 2015).

To discover the nationwide shortage of mental health professionals, GAO reported that Officials at three VAMCs they visited reported that the nationwide shortage in mental health professionals also presented a hiring challenge. According to the Department of Health and Human Services' (HHS) Substance Abuse and Mental Health Services Administration, the nation faces a current shortage in the mental health and addiction services workforce, and that shortage is expected to continue.53 As of July 2015, there were about 4,000 areas designated as having a shortage of mental health professionals, which HHS's Health Resources and Services Administration projected would require almost 2,700 additional mental health providers to fill the need in these underserved areas (U.S. Government Accountability Office, 2015).

In addition to addressing the GAO high-risk areas, the VA continually responds to GAO recommendations on VA operations throughout each year (U.S. Government Accountability Office, 2015). At any given time, there are 80 to 100 open recommendations about VA health care. Overall, the VA has succeeded in closing approximately 377 recommendations since 2009 and is committed to closing as quickly as possible all 22 recommendations that GAO has identified as high priority (U.S. Government Accountability Office, 2015).

Development of a mental health outpatient services design guide.

One of the most important developments made last year was the creation of a Mental Health Outpatient Design Guide to help the VA better understand the requirements of Outpatient

Mental Health Services (Mental Health Outpatient Services Design Guide, 2018). The Guide stipulates general space equipment planning, as well as functional and technical requirements for outpatient health. The Guide addresses general space and equipment planning, as well as functional and technical requirements for outpatient mental health. The document is more specific compared to the previous documents which combined guidelines for both inpatient and outpatient veterans. The current document includes integration of mental health providers into primary care, general mental health clinics, specialty mental health outpatient programs, and psychological rehabilitation and recovery centers.

The VA Mental Health Outpatient Services Design Guide was been developed as a stand-alone document in contrast to the 2010/2014 edition of the VA Mental Health Design Guide, which addresses both inpatient and outpatient mental health care. It was determined that a single Design Guide could not efficiently address the extensive array of services that are provided by VA. Thus, separate documents for outpatient and inpatient care were deemed essential. The document focuses on the continuum of outpatient services offered by the VA. It includes integration of mental health providers into primary care; general mental health clinics; specialty mental health outpatient programs; psychosocial rehabilitation and recovery centers; and a range of settings that provide health care to homeless Veterans (Mental Health Outpatient Services Design Guide, 2018).

The Mental Health Outpatient Services Design Guide is a comprehensive move to ensure the VA is positioned to provide mental health services to all veterans from medically underserved populations and areas. The guide identifies six levels of care for VA mental health. Level 1 is the self-directed care. It encompasses the biblio-therapy, web-based mental health programs.

Such programs are very effective in maximizing the number of veterans receiving care. Level 2, designated as PACT, includes primary care mental health integration (PCMHI). This is the integration of mental health into primary care. Level 3 includes general mental health such as the behavioral health interdisciplinary program (BHIP-Team based care). Level 4a entails specialty outpatient programs. Level 4b involves the community-based/focused programs. Level 5 focuses on residential rehabilitation and treatment programs (RRTPs). Level 6 covers inpatient mental health services. This categorization ensures that every level of mental health is covered, which eliminates situations where veterans are kept on a waiting list because there is no defined guidelines concerning care they should receive (Mental Health Outpatient Services Design Guide, 2018).

VA opening access to private care

As part of the comprehensive plan that VA formulated after the GAO report, in March 2018, the VA expanded access for veterans to private physicians at taxpayer expense. The $55 million venture makes a five-year commitment to addressing shortcomings in the VA, which is still struggling with delays after the 2014 scandal. As discussed earlier, improvements have been made by the VHA to address long delays experienced by veterans across VA facilities (Phillips, 2016). However, 526,000 veterans were still on the waiting list with about 88,000 waiting for more than three months by the time the New York Times made the report. By allowing veterans access to private care, the VA hoped that it would significantly reduce the delays experienced at VA health facilities.

With access to private care, more than one-third of veterans can now receive treatment in other private facilities other than VA designated facilities through the program called “Choice” (Steinhauer, 2019). Through the VA Mission Act (S. 2372), an additional 640,000 veterans will

be able to access private care (Rein, 2018). The VA is required by the Act to negotiate a contract for veterans to seek care at private clinics.

Video telehealth for primary care and mental health services

The advancement of video telehealth for primary care and mental health services has yielded positive results. Video delivery of mental health treatments is very similar to in-person treatments. Video telehealth for mental treatment carries lower implementation cost and the healthcare utilization costs are also low compared to in-person treatment. Video has also been used for diagnosis of mental health conditions and it has been used to treat chronic pain. There is no evidence, yet that video telehealth is used for primary care for conditions other than chronic pain.

The telehealth-related provisions in the Veterans Affairs (VA) Maintaining Systems and Strengthening Integrated Outside Networks (MISSION) Act of 2018 (VA Mission Act S. 2372) is the most important move the VA has made to improve mental health accessibility to underserved populations. MISSION allows VA providers to administer care to veterans using telehealth, regardless of where in the United States the provider or veteran is located. This would not have been possible without video telehealth. The qualitative interviews and focus groups indicate that video treatment is like in-person treatment in patient satisfaction, number of sessions completed, cost, and cost-effectiveness, and clinically significant outcomes such as quality of life.

In one study, the agency reported its in using video telehealth tablets to address access barriers in veterans (Zulman, et al., 2019). The researchers examined tablet adoption and reach between 5/1/2016 and 9/20/2017. The researchers surveyed 68 facility telehealth coordinators to determine the most common implementation barriers and facilitators, and then conducted

interviews with telehealth coordinators and regional leadership to identify strategies that facilitated tablet distribution and use. The results indicated that 86 VA facilities spanning all 18 geographical regions, distributed tablets to 6,745 patients (Zulman, et al., 2019). Those who received the tablets were on average 56 years old with 53percent living in the rural areas and 75percent already diagnosed with mental illnesses. The researchers found that about 4 in 5 tablet recipients used the tablets during the evaluation period. In multivariate logistic regression, tablet recipients were more likely to use their tablets if they were older and had fewer chronic conditions (Zulman, et al., 2019). Implementation barriers included insufficient training, shortage of staff, and provider disinterest. The researchers identified site readiness assessments, local champions, licensure modifications, and use of mandates and incentives as the strategies that would improve the implementation of home-based video telehealth.

In February 2019, the U.S. Department of Veterans Affairs (2019) through its Evidence Synthesis Program, released a report "Evidence Brief: Video Telehealth for Primary Care and Mental Health Services." The report detailed in table form, data abstraction of systematic reviews that the program found reported credible information. The report details all the number of studies that were excluded as sources of evidence for video telehealth for primary and mental health services. The exclusions reasons as indicated in the report were; 1=Ineligible population, 2=Ineligible intervention, 3=Ineligible comparator, 4=Ineligible outcome, 5=Ineligible setting, 6=Ineligible study design, 7=Ineligible publication type, 8=Outdated or ineligible systematic review. According to the report, the systematic reviews selected as credible sources of evidence must have met certain aims, search details or eligibility criteria.

In particular, the reviews must have been on tele-therapy for veterans with PSTD. Articles were included if they reported on the use of tele-therapy (e.g videoconferencing,

telephone) for PSTD with ex service personnel and excluded if they reported on online-only interventions (U.S. Department of Veterans Affairs, 2019) (Appendix II).

According to the report, one of the studies (Turgoose, 2014) reported that out of 41 included studies, sample size ranged from 1- 600 participants. 28 studies had experimental designs, 8 were non-experimental (surveys, or study descriptions only), 3 were single case studies, 1 was qualitative, 1 was a retrospective cost analysis, and 1 was a secondary data analysis. 13 studies looked at attrition, drop-out and attendance rates. Authors did not report the number of studies that looked at patient satisfaction. 40 studies were conducted in US Veterans and 1 in Canadian Veterans. In most studies, participants had limited access to treatment due to living in remote or rural areas (U.S. Department of Veterans Affairs, 2019).

Turgoose (2014) also showed that No studies found significant differences in attrition between tele-therapy and in-person treatments, with one finding that those receiving tele-therapy attended significantly more sessions. There were no differences in the number of sessions attended before dropout occurred, except for one study which suggested that those receiving tele-therapy attended more sessions before dropping out of treatment. In addition, Turgoose (2014) also showed that no studies found any significant differences in satisfaction and acceptability between tele-therapy and in person treatment groups, with most reporting high levels of satisfaction with both (U.S. Department of Veterans Affairs, 2019).

According to the report (U.S. Department of Veterans Affairs, 2019), one study (Litwack, 2014), evidenced that Veterans reported high levels of satisfaction with both video and in-person diagnostic assessment including: (a) “how comfortable they felt with the clinician,” $t(28)=0.95$, $P=0.35$ (b) “how comfortable they felt with the interview material,” $t(28)=0.00$, $P=1.00$ (c) “the convenience of the assessment,” $t(28)=1.31$, $P=0.20$. Another study (Shore, 2008) indicated in

the report evidenced that It is cheaper to assess mental health through telehealth than in-person ($20,199 at established telehealth clinic vs $24,474 at new clinic vs $33,841 at in person clinic based on high salary costs). Based on the studies highlighted by that report, video telehealth indeed is among the VA's most innovative efforts to provide access to high-quality health care services to veterans across the United States especially those in remote rural areas.

The VA also gathers primary data for itself about the functionality of tele-therapy using video telehealth. Appendix I shows a survey that is directed to veterans who use the video telehealth to receive healthcare services. A veteran using video telehealth is prompted to fill in the survey after a session. With such surveys, the VA can track the progress of such interventions and knows the areas of improvement and it gets the morale to enlarge the scope of such services to more veterans in rural areas.

Anywhere to anywhere telehealth program for vets.

The VA MISSION Telemedicine Clarification Act of 2019 (HR 3228), introduced June 12 by U.S. Rep Earl "Buddy Carter" (R-GA), would enable professional trainees to take part in the Department of Veterans Affairs' "Anywhere to Anywhere VA Care" program, which allows the VA to treat veterans via telehealth no matter where they live. The bill aims to correct what its sponsors say is a flaw in the VA MISSION Act of 2018. That bill, signed into law in June 2018, opened the door to the use of connected health technology by authorizing the "Anywhere to Anywhere VA Care" program, unveiled one year earlier by then-Secretary Robert Shulkin, but it restricted care delivery to doctors.

The anywhere to anywhere program removes regulations and breaks geographical barriers so that the process of treatment can speed up and ease congestion in VA hospitals. VA practitioners can now use telehealth to connect with veterans in any state without the

limitations of the state licensure laws. The anywhere to anywhere program has greatly improved VA's delivery of healthcare because by the time VA released its FY 2019 financial report, exactly one year after the state limitations were removed, more than 900,000 veterans used VA telemedicine services in Fiscal Year 2019, an increase of 17% from Fiscal Year 2018 (Lum, Nearing, Pimentel, Levy, & Hung, 2019).

VA partnerships with Walmart, Philips, and T-Mobile

Through the Secretary's Center for Strategic Partnerships (SCSP, 2019), VA is partnering with telecommunication companies to help them serve even more veterans. Extending the VA's telemedicine network through partnerships aimed at improving access to connected health services for rural and remote veterans would ensure that the underserved populations have greater access to healthcare services. The goal of the Secretary's Center for Strategic Partnerships is simple: collaborate with companies that have a specific area of expertise that helps us innovate and deliver modern healthcare, through modern means, to veterans. Efforts on telehealth with the tech companies demonstrate hoe such partnerships are changing veterans' lives. These efforts include; Walmart donated space and technical support to host telehealth appointments to 100 rural locations when VA needed to find a way to reach rural Veterans who live far away from VA healthcare centers.

Phillips agreed to equip 10 veterans of Foreign Wars and American Legion posts with telehealth technology so veterans can receive care locally, in addition they have plans to expand this service to 100 rural locations.

Sprint, T-Mobile and Verizon pledged free VA video connect service to their veteran customers, so that these telehealth appointments can be carried out without any data charges to those who wore the uniform ("Secretary's Center for Strategic Partnerships" 2019).

In a case study, T-Mobile demonstrated the impact of its partnership with the VA. According to the case study (T-Mobile, 2019), T-Mobile provided 70,000 lines of service, enabling veterans to access VA care virtually, whenever they are. Avery Harrington, a retired War Veteran cited in the case study told T-Mobile, "My healthcare before telehealth was really non-existent. I keep my house in North Carolina, and my family stays in North Carolina. But when I needed medical appointments, I had to come home even if I was working in New York. I couldn't make them sometimes. It was either my job or getting healthcare." According to T-Mobile, Harrington is one of thousands of veterans benefiting from more flexible health care-amounting to more than 1.3 million video telehealth sessions in fiscal year 2019. Harrington added, "It's pretty amazing to open up your tablet or phone and start talking to your doctor. You can get problems fixed pretty quickly."

Mike Katz, Executive Vice President, T-Mobile said, "Not only is telehealth important and, for many, preferred right now with the COVID-19 crisis, but for millions of veterans living in rural America, it's sometimes the only option for regular healthcare" Katz added that T-Mobile's nationwide service keeps veterans in rural communities connected to their doctors and has bandwidth to support 800 percent surge in telehealth visits from the before the COVID-19 crisis began.

Chapter 4

CONCLUSION

After this review of the VA system focusing on how telehealth's role in improving accessibility to health care services, important lessons can be applied to other telehealth or rural-based dissemination efforts. The VA's investments in telehealth infrastructure and its collaborations with businesses and organizations are important for ensuring that every veteran in the United States whether serving or retired, can timely access quality health care. The veteran population continues to age, and the medical complexity adds on with age, timely access to quality healthcare, especially in rural and frontier areas, is essential to addressing healthcare challenges faced by the VHA. Innovative telehealth services that facilitate the timely access to quality health services for all veterans are subtle to address the challenges.

This project set out to understand the telehealth approaches by the VHA, current practices, challenges and opportunities. A lot of improvement has been made over the past five years. Most of these improvements stemmed from the problems that were uncovered in 2014 during the Obama administration when devastating delays were reported within VA hospitals. Since then, the VA has been making great efforts to clear its name as well as provide high-quality care to veterans with mental health services.

The VA's effort to extend the reach of its services is manifested in several important initiatives. The development of a mental health outpatient design guide was motivated by the fact that most veterans requiring mental health services are outpatients and not in-patients. Creating a proper action plan to address the high number of outpatients requiring mental health care was a crucial first step.

This offers healthcare professionals a guidepost to help diagnose the severity of mental health issues faced by veterans, whether mild or severe, and determine a course of treatment. The anywhere to anywhere initiative is also a great step towards eradicating MUPs and MUAs within VA health coverage. With the anywhere to anywhere initiative there will be a nationwide utilization of VA health facilities. In rural states, New Mexico, for example, veterans with mental health issues will be able to access care from VA facilities in better-served regions. The VA's partnership with Walmart, Philips, and T-Mobile is another step to ensuring that the goal of telehealth to provide access to healthcare to every veteran can be achieved. Future partnerships with other mobile phone companies, something the VA is currently exploring, will only enhance accessibility to veterans in underserved areas. Overall, there is a very positive response towards the advancement of telehealth. The Alabama VA replaced mobile health unites with telehealth centers while the Florida VA found new use for telehealth in treating PTSD. More states are continuing to find ways to serve all underserved populations and addressing mental health problems for all veterans in the United States.

Five Specific Risk Areas identified by the GAO

- Ambiguous and inconsistent policies,

Based on the findings on inconsistent policies, the VA formulated a comprehensive action plan to address areas of GAO concern about conflicting policies. First, the VA proposed reducing ambiguity and red tape, specifically replacement of outdated policy documents. So far, the VA has eliminated more than 235 expired directives and 85percent of all outdated manuals. This was to ensure that the new policies, directives and manual guidelines would consider MUPs and MUAs. Secondly, the VA proposed the elimination of bureaucracy and streamlining of the decision-making process through reduction of central office staff positions by 10percent. This brought together policy and operations functions in mental health, primary care, and geriatrics to improve support to field activities and veteran-facing services ensuring that even the marginalized populations could access mental health care.

- Inadequate oversight and accountability,

The Veterans Health Administration established the Office of Integrity to consolidate its compliance, ethics, and oversight programs under a single executive, and moved swiftly to establish an internal audit function and associated governance committee that provides the Under Secretary for Health with an independent and objective way to assess operations.

- Information technology challenges

VA's Electronic Health Record modernization program will enable seamless care and full interoperability with the Department of Defense's electronic health record modernization solution and enhance the ability to exchange Veteran health data with community health partners. VA also needs to work with VAMCs and CMHCs to establish standards and plans for sharing information to reduce on care and workload while ensuring confidentiality.

- Inadequate training for VA staff and Unclear resource needs and Allocation priorities

VA has already established a centralized manpower management office to integrate staffing processes and transformed its financial management methods to improve resource planning and allocation.

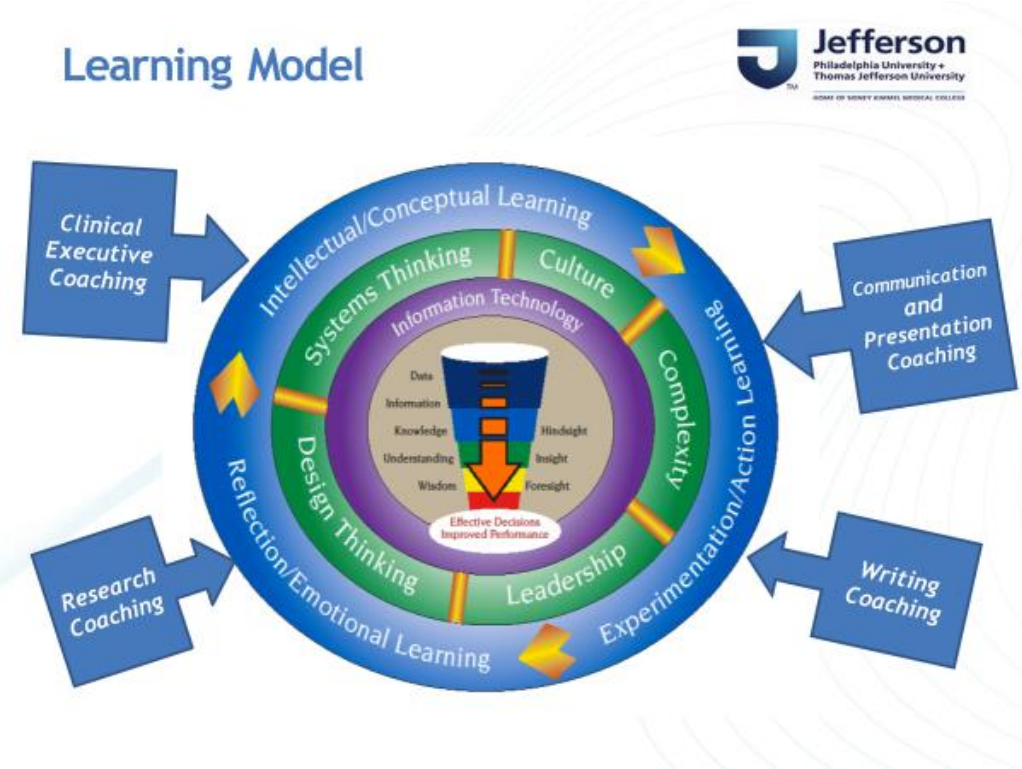
When I enrolled in the Strategic Leadership doctoral program, I hoped to gain a deep understanding of the major challenges facing the U.S. healthcare system from a leadership perspective. Through the process of researching and writing this dissertation, I learned that the laws and regulations both at state and federal level, which control the dynamics of the health care system, are integral to finding solutions to the challenges. When conceiving a doctoral dissertation, I was inclined towards a segment of the U.S. healthcare system which is greatly influenced by its leadership. The Veterans Health Administration appeared to have the most sensitive leadership issues as it deals with conflicting leadership perspectives on health care matters of a very vulnerable group of people, the veterans.

The U.S. Government Accountability Office placed the Department of Veterans Affairs in the Government's priority risk and produced a report of highlighting the achievements and challenges facing the department's VHA.

This reflects the weight of the veterans' health care system on the nation's overall healthcare. More than once, issues facing the VHA have surfaced in the mainstream media, showcasing the huge task that the congress must strike a balance between executive decisions and opinions of other stakeholders with regard to how the VA should be ran. Budget allocation and accessibility to health services have been at the center of these discussions.

I benefited greatly from the education model of my doctoral program (Figure 8) because it helped to shape my thinking about and development of the concepts I explored regarding veterans' health.

Figure 8: Doctor of Management in Strategic Leadership Education Model



The DSL education model is portrayed in a system with concentric rings. The outer ring describes the three models of learning. The three models are cognitive/conceptual learning, experimentation/action learning, and reflective/emotional learning. This dissertation is centered on cognitive/conceptual learning. According to the handbook, cognitive/conceptual learning occurs by exposure to academic and practice literature which describes theories, models, problems and opportunities in the global context, as demonstrated in this dissertation. The third ring of the DSL education model reflects the importance of information technology. This dissertation explores telehealth, which encompasses some of the most innovative ideas developed to address the problem of veterans' poor access to quality health care services in the United States.

The various courses offered in the program have had a great impact on my understanding of the dynamics of the laws and regulations governing the U.S. health care's system and how

good leadership plays an integral role in ensuring that these regulations properly direct the smooth running of a complex health care system. While the courses are theoretically informative, the combined DSL 801/DSL 802 Leadership research project and Executive education project respectively, had much more impact when it comes to putting the knowledge gained into practice. Those two courses, through this dissertation and other projects, gave the researcher a platform to put the knowledge into perspective.

Limitations

The efforts that VA has been making to address telehealth mental health accessibility for underserved populations are not without limitations. Firstly, there is still much political interference within the VA. While there are those non-political VA officials who are out to ensure that the VA prospers in its plan to provide high quality health services to all veterans, there are political leaders who want to mask the challenges that the VA is facing so that the government is not seen as irresponsible by the public. For instance, Jerome P. Whiteman, the VA's National Director of Clinic Practice Management accused the Trump administration of having a secret wait list of veterans. Whiteman claimed that the long hours of waiting that were uncovered in 2014 are still experienced by most veterans across the nation and the government is doing nothing about it. VA Hospitals have in fact reduced the time that veterans must wait to receive medical care. The problems that the VA is facing are a huge limitation to its progress.

The policies and guidelines under which the VA operates are not uniform. In fact, each state seems to operate differently when it comes to the VA. Now that the VA is no longer limited by state boundaries, there is need to harmonize the policies and guidelines that the VA operates under in all states. This lack of clear policies and guidelines have resulted in some areas receiving more attention than others and some veterans remaining underserved.

Moreover, the scope of telehealth has not yet been defined. While the VA is making progress by breaking state barriers and partnering with external technology companies, there is still much that is not known on how telehealth mental health services are to be carried out. VA practitioners in different states may be using different approaches in providing care to mental health patients.

Recommendations for Future Research

As political interference has limited the VA's efforts to provide full accessibility of telehealth mental healthcare to underserved populations, there is need for the VA to seek ways to eradicate this interference. Research that might address this issue may be directed towards identifying the impact of the government decisions on the VA's progress. Such research can also be directed at trying to elucidate the impact of a completely independent VA.

Future research should also be directed towards the development of common policies and guidelines under which telehealth services should be offered. Most VA practitioners have to undergo workshop training on how to provide telehealth services since this is a technology they may not have encountered during their years of study. The VA needs to formulate proper policies and guidelines to train VA practitioners as well as determine how telehealth services are to be offered. The potential of telehealth has not yet been fully utilized and as states continue to conduct independent research and implement their own procedures in delivery of care using telehealth, there will be a need to harmonize these guidelines especially now that VA practitioners can provide telehealth care to veterans irrespective of which state they are located.

In July 2019, the VA appointed its first ever Director of Artificial Intelligent (AI), Dr. Gil Alterovitz who was mandated to spearhead efforts to improve veteran care through artificial intelligence. Kshemendra Paul was appointed as the new chief data officer in September

(Vincent, 2019). His work is to develop and speed up the agency's approaches to data collection, management and security. Strong data is the foundation of efficient AI solutions.

The VA rolled out several AI-oriented efforts in 2019. The agency launched a biomedical science journal, on a study that demonstrates how the agency and technology company DeepMind Health developed an AI system that can predict life-threatening kidney disease before it surfaces. Together with IBM, the VA also launched an AI powered mobile application that is implicitly designed to help veterans spend less time searching the web to access VA's resources (Vincent, 2019). The VA also launched a National Artificial Intelligence Institute to foster strategic research and development efforts focused on veterans to make good use of the building technology.

With an aim of improving accessibility and quality of healthcare for veterans, the VA is also vigilant on how it can make use of emerging technologies in the medical field, not just telehealth. For example, the VA is pioneering new methods of integrating 3D-printing to plan surgeries, assist amputees, build bones and organs from scratch that perfectly integrate into human bodies. The agency is also looking into ways to integrate precision medicine to optimize treatment procedures (Vincent, 2019). With the advent of 5G, the agency is seeking to use high connectivity to practice precision surgery which will improve veteran's access to limited specialists for certain surgeries.

While there is still much research to be done and great strides to be made, it is evident that the VA is moving in a positive direction. This project demonstrated that both VA personnel and patients who have used telehealth services have found them largely helpful and beneficial. Ensuring that U.S. military members have access to the best healthcare after they muster out of service is critical.

The VA's reputation suffered considerably in recent years and it is vitally important that this agency has all the resources it needs to live up to its mission of serving those who have served their country

Thinking about Veterans health is mind blowing. While joining pieces of information together, it dawned to me that everything about Veterans' health is actually the cost of war. People tend to look at the cost of war in terms of fatalities and wounded, but there are other consequences that are hard to measure. This research has not focused on how the families of the Veterans in question cope with the situation. When I mention Veterans, I may be speaking about that one person who served during war but has not mentioned that that person is a father, a son, a mother, daughter, sister and so on. So, whenever there is an issue, it is about more than just the person who we call the Veteran. How the VA conducts its healthcare delivery to Veterans affects how these Veterans lead their lives. In this whole research, at no point did I feel the need to talk about the sufficiency or insufficiency of funds allocated to the VA because there is none. The VA is one of the highly funded Federal Departments, yet as documented, it fails to adequately meet its obligations. Every challenge that is experienced with Veterans health care points out to leadership. Who is making the decisions, which is responsible for deciding what will work and what will not work? Why we are still talking of problems in Veterans mental health care is because of the approaches, methods, initiatives, and policies in place. The Veterans population is not so complex that the VA cannot define a working formula of prioritizing the needs these Veterans.

Advancements in information technology have come to give us all an added advantage. Veterans do not fancy walking in and out of VA hospitals every now and then. They have families to take care of and business to do. They do not want all their lives after serving to be about treatment. The telehealth technology that I describe in this research eliminates hospital presence and helps Veterans live a considerable normal life free of numerous hospital visits.

Telehealth is working. It is an innovation that is changing the dynamics of the healthcare system. I personally have had physician appointments where the physician would either measure my temperature, blood sugar, and some other parameters using simple equipment, then we would engage in a conversation that would result to him changing a prescription for me and that

becomes the end of the conversation. Veterans with mental health problems require these kinds of frequent doctor visits to monitor their progress. With video telehealth, these appointments can be done with the patient at the comfort of his or her home. There are a number of initiatives that the VA has undertaken to complement telehealth such as allowing physicians to treat Veterans across state lines. VA needs to capitalize on these initiatives that enhance the reach to health care services to Veterans.

I plan to begin by writing commentaries on some the issues I have talked about. I want to be robust in responding to matters regarding Veterans mental healthcare. I want to publish in as many platforms as possible so that my voice can get heard. My aim is to get called in person for an opinion to personally present the big picture to those who make the decisions.

Indeed, successfully completing a research is a personal achievement but if the research is not acted upon to drive change, and then it remains to be an academic affair. My results generally tell the VA that it needs to be creative and innovative in the approaches it takes to address limited access to health care for Veterans.

I want to engage in conversations with as many people as possible and at some point; my ideas will reach the right person. Where I publish my work really matters. The outcome of this study shows that the complex dynamic of Veterans' population in the U.S. impedes their accessibility to mental health care, but with telehealth, there is a robust forward movement towards every Veteran being able to access quality mental health care services on time. For instance, regarding GAO findings, there is a shortage of medical health professionals and telehealth would assist in maximally utilizing the services of those who are already hired as VA looks out to hire more. The findings on the mental health outpatient services design guide address how optimizing the number of outpatients through proper design of outpatient services can increase the scope of telehealth usage, thus reaching more people. Opening access to private care distributes part of the burden that VA has had due to large number of Veterans seeking its health services.

Through telehealth, there can be a good collaboration between primary VA physicians of Veterans and private physicians. Anywhere to anywhere program ensures that through telehealth a Veteran can book an online appointment with a VA physician in another state where the wait

list is shorter. Partnership with tech companies such as Phillips, T-Mobile and Walmart add more resources to facilitate good network coverage and availing of outpatient telehealth centers and devices for Veterans in rural areas. This research helps in bringing together all these efforts and establishing a point of focus that VA can investigate and make mental health care services easily accessible to all veterans.

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Appendix A

A Survey that VA uses to improve Video Telehealth

Your feedback is important to us. Please take two minutes to let us know how we are doing by answering this short survey about your experience with your Telehealth appointment using mobile technology.

If you provide feedback, you may be contacted by VA. Serving you is our top priority.

Help us serve you better

Tell us about your experience during your recent Telehealth appointment.

By indicating how much you agree with the statements below, you directly help us improve VA healthcare.

This survey should take you approximately 2 minutes to complete.

Connecting to my VA Video Connect appointment was easy.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

The VA staff gave me information about connecting to my video Telehealth appointment.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

My provider listened to me during the appointment in a caring manner.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

My provider explained things to me in a way that was easy to understand.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

After my appointment, I was clear about my next steps of care.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

The provider made me feel at ease by explaining every step they took during my appointment.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

Telehealth reduces the need to travel long distances in order to meet with my provider.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree

5. Strongly Agree

I was able to see the provider clearly by video.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

I was able to hear the provider clearly by video.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

Overall, I am satisfied with the video Telehealth visit.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

I trust Telehealth as part of my overall VA healthcare.

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

Would you like to volunteer your demographic information to help VA better serve you?

1. Yes 2. No

Appendix B: Evidence Tables

APPENDIX C. EVIDENCE TABLES

DATA ABSTRACTION OF INCLUDED SYSTEMATIC REVIEWS

Author Year	Aims Search details Eligibility criteria	Numbers and designs of included studies applicable to present review; sample sizes	Patient characteristics from included studies applicable to present review	Intervention characteristics from included studies applicable to present review	Overall results (stratified by Key Question)
Turgoose 2018[1]	Teletherapy for Veterans with PTSD. CINAHL, PubMed, and PsycInfo databases plus searches in *Journal of Telehealth and Telecare* and *Journal of Telehealth and e-Health*. No information on search dates. Articles included if they reported on use of teletherapy (*eg*, videoconferencing, telephone) for PTSD with ex-service personnel and excluded if they reported on online-only interventions.	Out of 41 included studies, sample size ranged from 1-600 participants. 28 studies had experimental designs, 8 were non-experimental (surveys, or study descriptions only), 3 were single case studies, 1 was qualitative, 1 was a retrospective cost analysis, and 1 was a secondary data analysis. 13 studies looked at attrition, drop-out and attendance rates. Authors did not report the number of studies that looked at patient satisfaction.	40 studies were conducted in US Veterans and 1 in Canadian Veterans. In most studies, participants had limited access to treatment due to living in remote or rural areas.	In most cases, participants received specific equipment and software from the VHA. In 3 cases, participants used Skype or another videoconferencing application available on a smartphone. In 23 studies, participants traveled to local clinics for appointments. In 6 studies, participants received treatment in group settings. Interventions included: -Prolonged exposure (15 studies) -Cognitive processing therapy (8) -Cognitive behavioral therapy (5) -Behavioral activation (3) -Eye-movement desensitization and reprocessing (1) -Anger management (2) -Mindfulness (1) -General coping and psychoeducation interventions (2) Follow-up duration not reported, but authors found that reductions in PTSD symptoms were present at 3 and 6 months after treatment for all but 1 study examining effectiveness.	**KQ1:** "No studies found significant differences in attrition between tele-therapy and in-person treatments, with one finding that those receiving tele-therapy attended significantly more sessions. There were no differences in the number of sessions attended before dropout occurred, except for one study which suggested that those receiving tele-therapy attended more sessions before dropping out of treatment." "No studies found any significant differences in satisfaction and acceptability between tele-therapy and in-person treatment groups, with most reporting high levels of satisfaction with both."

Abbreviations: PTSD = post-traumatic stress disorder; VHA= Veterans Health Administration

DATA ABSTRACTION OF INCLUDED PRIMARY STUDIES

Data Abstraction of Observational Studies

Author Year	Study Design Sample Size Location	Patient Characteristics	Intervention vs Comparator Follow-Up	Setting	Overall Results (Stratified by Key Question)
Litwack 2014[2]	Within-subject crossover study N=30 New England	Trauma-exposed Veterans IE criteria: English-speaking Age (mean): 53 years Sex: 90% male Race: 79% white Rurality: NR	Participants completed PTSD diagnostic assessment both in person and via video. Assessments were administered 2 weeks apart by a doctoral-level clinician.	Video location: VA Medical Center In-person location: VA Medical Center	**KQ1:** Veterans reported high levels of satisfaction with both video and in-person diagnostic assessment including: (a) "how comfortable they felt with the clinician," t(28)=.95, *P*=.35 (b) "how comfortable they felt with the interview material," t(28)=.00, *P*=1.00 (c) "the convenience of the assessment," t(28)=1.31, *P*=.20
Shore 2007a,[3] Shore 2007b,[4] Shore 2008[5]	Within-subject crossover study N=53 Colorado	Rural Vietnam-era American Indians IE criteria: None Age (mean): 54 years Sex: 100% male Race: 100% American Indian Rurality: 100% rural	Participants completed mental health diagnostic assessment both in person and via video. Assessments were administered less than 2 weeks apart (average 10.8 days) by a psychiatrist.	Video location: Community Tribal Veterans Center In-person location: Private office in community	**KQ1:** There were no significant differences between patients' overall mean satisfaction between video and in-person groups (4.59 vs 4.68, *P*=NR). **KQ2:** It is cheaper to assess mental health through telehealth than in-person ($20,199 at established telehealth clinic vs $24,474 at new clinic vs $33,841 at in-person clinic based on high salary costs).