

ACCESS TO BEHAVIORAL HEALTH CARE

for Geographically Remote Service Members
and Dependents in the U.S.

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Preface

It is well established for civilian populations that persons farther away from medical care are less likely than others to seek or use health care services, including behavioral health care services (treatment for mental, behavioral, or addictive disorders). With many service members now returning to the United States from the recent conflicts in Iraq and Afghanistan, concern over adequate access to behavioral health care has risen. There is limited data on how many service members and dependents reside in locations remote from behavioral health providers and the resulting impact on their access to and utilization of care. Similarly, little is known about the effectiveness of existing policies and other efforts to improve access to services among this population. This report seeks to fill that gap.

The RAND National Defense Research Institute (RAND NDRI) was asked to assess how many service members and dependents are geographically distant from behavioral health care, as well as the characteristics of this population and the effects of remoteness on their use of behavioral health care. RAND NDRI was also asked to assess existing efforts to improve access for remote service members and dependents and to make recommendations for addressing gaps in current policy and practice.

This report summarizes our findings. It will be of particular interest to Department of Defense policymakers and command and line leadership, as well as planners, managers, and providers of behavioral health care.

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Summary

Although it is a well-recognized problem in civilian and veteran populations, geographic remoteness from health care among service members and their dependents has not, until recently, received the same attention. With many service members now returning to the United States from the recent conflicts in Iraq and Afghanistan, concern over adequate access to behavioral health care (treatment for mental, behavioral, or addictive disorders) has risen. Anecdotal reports describe particularly difficult conditions for some service members seeking behavioral health care, as well as the tremendous difficulties faced by families of reintegrating service members who do not receive adequate behavioral health care. Yet data remain very sparse regarding how many service members (and their dependents) reside in locations remote from behavioral health providers and the resulting impact on their access to and utilization of care. Little is also known about the effectiveness of existing policies and other efforts to improve access to services among this population. This report seeks to fill these gaps, focusing on three primary research aims and associated research questions:

- Aim 1: How many service members and dependents are remote from behavioral health care?
- Aim 2: How does remoteness affect access to and use of behavioral health care?
- Aim 3: What are current gaps in policy and practice for improving access to care among remote service members and dependents, as well as some promising solutions?

Findings for Aim 1: How Many Service Members and Dependents Are Remote from Behavioral Health Care?

To answer this question, we conducted a geospatial analysis using three main data sources: (1) the residential location of service members and dependents, (2) the location of behavioral health services, and (3) information regarding insurance coverage and regulations surrounding access to these services for different military subpopulations.

A number of patterns emerged from our data analysis. First, we found that roughly 1.3 million individuals (some 300,000 service members and an additional 1 million dependents) were at risk of living in an area remote from behavioral health care—that is, more than 30 minutes away from behavioral health care or in a low provider density area. As the most numerous group, Army service members contributed most heavily to these counts, especially members of the National Guard/Reserve (NG/R). A disproportionate number of Coast Guard service members also contribute to active component remoteness counts. A significant percentage of remote active component service members live within a Prime Service Area but more than a 30-minute drive from a military treatment facility (MTF), necessitating long drives to receive care. Active component service members are more likely to be remote if they are older, higher ranking, more educated, and married; this pattern was not found for the NG/R. Finally, and especially pertinent for the highly mobile military population, remoteness is not a static property but a risk that any service member or dependent could encounter over time. Over a five-year span, 10 percent of active component and 50 percent of NG/R service members spent at least some time in a remote area.

A significant limitation of this analysis is that we did not have access to the number of full-time equivalent behavioral health providers at MTFs, and therefore could not estimate potential shortages in military providers for populations within the MTF catchment area. Our analyses of community provider shortages were also hampered by limited access to TRICARE purchased care provider data. Finally, we were not able to specifically examine specialization of providers with the age, deployment history, or other characteristics of military service members or dependents. Such information might have helped match

expected patient needs with provider characteristics—for example, to examine whether areas with military children had a sufficient number of child and adolescent therapists within a 30-minute drive.

Findings for Aim 2: Findings: How Does Remoteness Affect Access to and Use of Behavioral Health Care?

To answer this question, we first reviewed evidence in veteran and civilian populations concerning the impact of geographic remoteness on care-seeking and patterns of health care use. We then used our geographic definition of remoteness from Aim 1 to analyze medical claims data from TRICARE (including care received directly at military treatment facilities, as well as purchased care received from the community and reimbursed by TRICARE), conducting a longitudinal analysis of the impact of living in a remote area on use of behavioral health care.

Studies of civilian populations suggest that remoteness-related disparities in treatment (1) reduce access to care of any type and (2) increase the likelihood of receiving care in nonspecialist settings.

Our longitudinal analysis of TRICARE claims data revealed striking disparities in service use among the active component service members, which resemble in important ways similar disparities in the civilian population. In particular, we observed that remote service members (1) made fewer visits to any specialty behavioral care provider and (2) made fewer psychotherapy visits than nonremote service members.

As in the civilian population, differences related to remoteness with respect to nonspecialist care and use of psychiatric medications are much smaller in magnitude. In fact, there is some evidence of a substitution of nonspecialist care for specialist care in the active component that warrants further investigation. In contrast with the active component, we found no evidence that remoteness influences receipt of behavioral health care among either the active duty or the inactive Guard/Reserve.

A notable limitation of this analysis is that we do not have information on need or preferences for behavioral health care. If there are differences in need or preferences between remote and nonremote individuals, then the observed differences in use of care might not result simply from differences in access. The pattern of results, with differ-

ences in care specific to certain types of treatment that are less available in remote areas, suggests that our findings reflect differences in access, but alternative explanations cannot be definitively ruled out. To assess these alternative explanations empirically, we would need epidemiological data linked to service use data, such as that available in the Millennium Cohort Study.

Findings for Aim 3: What Are Current Gaps in Policy and Practice and Some Promising Solutions for Improving Access to Care?

Drawing on academic literature, white papers, and reports, we identified best practices for improving access to behavioral health care among military, veteran, and civilian populations in both military and civilian health care systems. We also examined existing programs and policies for addressing access to care among service members and dependents, consulting with experts on this as well.

In reviewing existing policies and programs, we discovered Department of Defense (DoD) guidelines for access to care but no evidence that DoD monitors adherence to those guidelines. We also identified two promising pathways for improving access to care among remote military populations: (1) telehealth and (2) collaborative care that integrates primary care with specialty behavioral care. Although the Military Health System (MHS) is taking steps to integrate these models into its care, we found the need for more systemwide assessments of the impact on outcomes, development and testing of innovative practices, and removal of existing technical and regulatory barriers to those practices' widespread implementation and use.

Recommendations

We recommend that DoD create an infrastructure for systematically monitoring and improving access to behavioral health care for service members and their families. Within this infrastructure, DoD should:

1. **Establish clear policies for enhancing remote service member and dependent access to behavioral health care by**

- a. setting an official standard of a maximum 30-minute drive to behavioral health specialty care
 - b. working quickly on closing the gap for active component service members, as a target near 100 percent access to behavioral health specialty care within the United States is within reach
 - c. setting goals for increasing access for NG/R service members and military dependents.
2. **Monitor implementation of these policies by**
- a. establishing the computing infrastructure and data visualization capabilities to support an interactive data portal to monitor access to care for service members and dependents
 - b. making this monitoring system part of a larger effort to develop, test, and assess alternative methods of delivery for behavioral health care in remote settings
 - c. supporting this monitoring effort by requiring regional managed-care contractors to share their provider database with DoD and to regularly update this database and provide all required data fields, to the best of their ability, which will make monitoring access to care outside of MTFs feasible.
3. **Take steps to improve remote behavioral health care by**
- a. continuing to innovate and collect systemwide evidence on the effectiveness of telemental health and collaborative care treatment in military populations
 - b. removing outdated technical and regulatory barriers to telemental health and collaborative care approaches to behavioral health within the MHS
 - a. feeding the collected evidence back into monitoring systems so that it can systematically improve both access to and quality of care.

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We gratefully acknowledge the assistance of the many experts we consulted during the course of this research, many of whom continued contact with us throughout the study and shared data that formed a critical part of our analyses. These included contacts at the Veterans Health Administration, the Defense Installation Spatial Data Infrastructure, the TRICARE Management Authority, the Defense Manpower Data Center, and many others. Special thanks also to RAND Military Fellows LTC Adam Albrich, Lt Col Charlie Underhill, and Lt Col Michael Foutch for their expert advice and consultation throughout the project. We also are grateful to our reviewers, Dr. Alan N. West (Veterans Affairs, Office of Rural Health) and Dr. Tamara Dubowitz (RAND Health) for their thoughtful and rigorous review of this report.

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Abbreviations

CALM	Coordinated Anxiety Learning and Management
CBOC	community-based outpatient clinic
CBSA	core-based statistical area
CBT	cognitive behavioral therapy
CCS	Clinical Classifications Software
CDP	Center for Deployment Psychology
CPT	Corporate Procedural Terminology
DCoE	Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury
DEERS	Defense Enrollment Eligibility Reporting System
DMDC	Defense Manpower Data Center
DoD	Department of Defense
E&M	evaluation and management
ESRI	Economic and Social Research Institute
FTE	full-time equivalent

HIPAA	Health Insurance Portability and Accountability Act
HPSA	health professional shortage area
HRR	hospital referral region
HRSA	Health Resources and Services Administration
MHPSA	mental health professional shortage area
MHS	Military Health System
MTF	military treatment facility
NDRI	National Defense Research Institute
NEC	not elsewhere classified
NG/R	National Guard/Reserve
NIMH	National Institute of Mental Health
NSDUH	National Survey on Drug Use and Health
ORCHCP	Office of Rural and Community Health & Community Partnerships
ORH	Veterans Health Administration Office of Rural Health
PCM	primary care manager
PCP	primary care practitioner
PSA	Prime Service Area
PITE	Point in Time Extract
PTSD	posttraumatic stress disorder
RESPECT-Mil	Re-Engineering Systems of Primary Care for PTSD and Depression in the Military
ROTC	Reserve Officer Training Corps

RUCC	Rural-Urban Continuum Code
SAMHSA	Substance Abuse and Mental Health Services Administration
T2	National Center for Telehealth and Technology
TBI	traumatic brain injury
TMA	TRICARE Management Activity
TMH	telemental health
TPR	Tricare Prime Remote
TRO	TRICARE Regional Office
TTWRL	Telehealth and Technology Web Resource Locator
USPHS	United States Public Health Service
VA	Department of Veterans Affairs
VHA	Veterans Health Administration

Introduction

It is well established for civilian populations that persons farther away from medical care are less likely than others to seek or use health care services, including behavioral health care services (White, 1986; Beard-sley et al., 2003)—that is, treatment for mental, behavioral, or addictive disorders. The same is true of veterans (Fortney et al., 1998; Schmitt, Phibbs, and Piette, 2003; McCarthy et al., 2007; Pfeiffer et al., 2011). For example, sharp reductions in care-seeking are evident at a distance of five miles or more from providers (U.S. Government Accountability Office, 2011). The response of the Department of Veterans Affairs (VA) to concern over health care access for geographically remote veterans has resulted in a variety of policy responses, including (1) the implementation of continuous geospatial monitoring of veterans' access to care; (2) a VA policy that 70 percent of veterans should live within a 30-minute drive of care;¹ (3) the development and extensive testing of telehealth capabilities for providing behavioral health care; (4) the deployment of Vet Centers across the United States to provide greater access to counseling services, including mobile Vet Centers for veterans in remote locations; and (5) the establishment of community-based outpatient clinics that are satellites of VA medical centers to treat more remote populations.

Although it is a well-recognized problem in civilian and veteran populations, geographic remoteness from care among service members and their dependents has not, until recently, received the same atten-

¹ Except for populations defined as *highly rural*, where the standard is a 60-minute drive (Mengeling and Charlton, 2012).

tion. With many service members now returning to the United States from the recent conflicts in Iraq and Afghanistan, concern over adequate access to behavioral health care has grown. Anecdotal reports from news and other sources describe barriers for some service members seeking behavioral health care, as well as difficulties faced by families of reintegrating service members who do not receive adequate behavioral health care (Lazare, 2013). Yet little is known about how many service members and dependents reside in locations remote from behavioral health providers and how this affects their access to care. Little is also known about the effectiveness of existing policies and other efforts to improve access to services among this population. This report seeks to fill that gap, focusing on three primary research aims and associated research questions.

Aim 1: How many service members and dependents are remote from behavioral health care? We analyzed geographic information (geospatial analysis) using three main data sources: (1) the residential location of service members and dependents, (2) the location of behavioral health care services, and (3) information regarding insurance coverage and regulations surrounding access to these services for different military subpopulations. We also conducted a literature search to help develop the appropriate driving-distance guidelines for our working definition of remoteness. Finally, we examined demographic characteristics of the military population residing in remote locations. We discuss these results in Chapter Three.

Aim 2: How does remoteness affect access to and use of behavioral health care? We first reviewed evidence for veteran and civilian populations of the impact of geographic remoteness on care-seeking and patterns of health care use, discussed in Chapter Three. There is no extant systematic analysis on whether (and how) remoteness affects military service members and dependents. We therefore used our geographic definition of remoteness from Aim 1 to analyze medical claims data from TRICARE (both direct care received at military treatment facilities [MTFs] and purchased care claims). We analyzed longitudinal data regarding the impact of living in a remote area on use of care, as we discuss in Chapter Four.

Aim 3: What are current gaps in policy and practice for improving access to care among remote service members and dependents, as well as some promising solutions? Despite the current lack of systematic evidence about geographic remoteness from behavioral health care among military populations (and its impact on care), there is a general awareness that this is a problem. The Department of Defense (DoD) has implemented initiatives and policies for improving access to care, some of which are specifically targeted at remote service members and dependents. Drawing on academic literature, white papers, and reports, we identified best practices for improving access to behavioral health care among military, veteran, and civilian populations. We also examined existing programs and policies for addressing access to care among service members and dependents, using both a comprehensive policy search and conversations with experts to gather data. Finally, we identified critical gaps in existing policies and programs and made recommendations to address those gaps through research, practice, and policy. We discuss Aim 3 analyses in Chapters Five, Six, and Seven.

Summary of Findings

Our geospatial analysis identified roughly 1.3 million military service members and dependents as geographically remote from behavioral health care (approximately 1 million dependents and 300,000 service members). In our longitudinal analysis, we found that 27 percent of service members experience remoteness from behavioral health care over a five-year period.

Our longitudinal analysis of claims data also indicated that *geographic remoteness is associated with lower likelihood of specialty behavioral health care (both therapy and drug treatment) among those with an existing behavioral health diagnosis.* Because of limits on data availability, we could not analyze the quality of care that was delivered or assess unmet need for service members and dependents who need behavioral health care but never seek treatment.

In our review of existing policies and programs, *we discovered guidelines for access to care, but no evidence of systematic monitoring*

of adherence to those guidelines. We recommend that DoD develop a system for monitoring drive time to specialty behavioral health care among service members and dependents, along with clear benchmarks for system performance (and consequences for not meeting those benchmarks). Finally, we identify two promising pathways for improving access to care among remote military populations: (1) telehealth and (2) collaborative care that integrates primary care with specialty behavioral health care. In both cases, we indicate areas where there is need for better evidence and assessment, barriers in existing policies and practices, and suggested solutions.

Scope of the Problem: How Many Service Members and Dependents Are Remote, and Who Are They?

Before we can evaluate interventions to improve access among remote service members and their families, we need to understand the size and scope of the problem. Determining how many service members and dependents are remote from behavioral health care requires: (1) finding data sources that identify the location of potential patients (service members and their families) and the location and availability of providers, (2) developing a working definition of remoteness that incorporates these data sources, and (3) using this remoteness definition in analyzing empirical data to estimate the number and location of various remote military populations. We use a variety of military and civilian data sources to provide our best estimate of remoteness from behavioral health care, regardless of whether the care is from a military or community provider.

Data Sources for Location of Service Members and Providers

Estimating the number of service members and dependents who are geographically remote from behavioral health care involved combining data from a wide variety of sources. We describe these sources and their variables in Appendixes A–D. Here, we briefly describe the data sources we used and the information we extracted from each.

To obtain the locations of service members and dependents, we obtained data from the Defense Enrollment Eligibility Reporting System (DEERS), which is collected and maintained by the Defense Manpower Data Center (DMDC). We analyzed geographic remoteness from behavioral health care for three types of military populations within DEERS: (1) active component service members, (2) National Guard/Reserve (NG/R) service members, and (3) dependents (spouses and children) of service members. Most analyses described in this chapter are based on a cross-sectional data extract from December 2012. Service member and dependent location was obtained from a derived variable in DEERS that locates individuals at their current location; thus, for example, mobilized NG/R service members are located at their duty station of record. Further details on files and variables extracted from DEERS data (as well as processes used to clean the data) are described in Appendix A.

Service members and dependents can obtain behavioral health care treatment from a variety of sources and provider types. To properly account for the variety of provider locations available to military populations, we obtained information on providers both within and outside the Military Health System (MHS).

We conducted a comprehensive search for MTFs, using three data sources: (1) the underlying database from the Telehealth and Technology Web Resource Locator (TTWRL), a dataset produced by the Defense Centers of Excellence for Psychological Health and Traumatic Brain Injury (DCoE) that uses direct telephone calls to confirm the availability of services at MTFs (Defense and Veterans Brain Injury Center, 2013); (2) the Federal Practitioner 2013 Directory of VA and DoD Health Care Facilities, a listing maintained by a peer-reviewed journal for VA and DoD health care professionals (Federal Practitioner, 2013); and (3) output from the TRICARE MTF Locator website (TRICARE, 2013c). We retained only MTFs that were open and providing services in December 2012. With provider-utilization data from TRICARE (described in Chapter Four) and information on medical services offered at MTFs from TTWRL, we ensured that our final list of 177 MTFs offered behavioral health care on site. Appendix B provides a detailed description of the procedures that we followed to

match and filter data from these different sources. Because some service members are eligible to seek care at VA facilities, we also identified locations for all VA facilities using data from TTWRL.

Service members and dependents can also seek care from community providers, both within and outside the TRICARE network. We used two sources of data on community providers. First, we downloaded geospatial data on health professional shortage areas (HPSAs) from the Health Resources and Services Administration (HRSA). HPSAs designate geographic boundaries for health care markets and use data on population density, local need, and provider availability to indicate whether these market areas have a shortage of providers. HRSA has calculated both behavioral health and primary care HPSAs. In general, mental HPSAs (MHPSAs) have no more than one behavioral health professional for every 6,000 individuals, or no more than one psychiatrist for every 20,000 individuals. Primary care HPSAs have no more than one primary care practitioner (PCP) for every 3,500 individuals. Appendix C provides more detail on how HPSAs are determined.

Information on TRICARE purchased care network providers is difficult to obtain. The MHS does not own these data; rather, they are kept by the regional contractors in charge of maintaining these networks. Regional care contractors often provide searchable databases of network providers for those searching within particular areas but rarely provide summary indexes, lists, or nationwide databases of providers by profession. At the time of our analysis, we were able to obtain lists of behavioral health providers for the TRICARE Regional Office (TRO)-North, and for TRO-West.¹ To ensure that the behavioral health providers on the list actually accepted TRICARE insurance, we called their offices (see Appendix C for details).

¹ We did not distinguish among types of behavioral health providers in our analyses, as we note in the Discussion and Limitations section.

A Working Definition of Remoteness

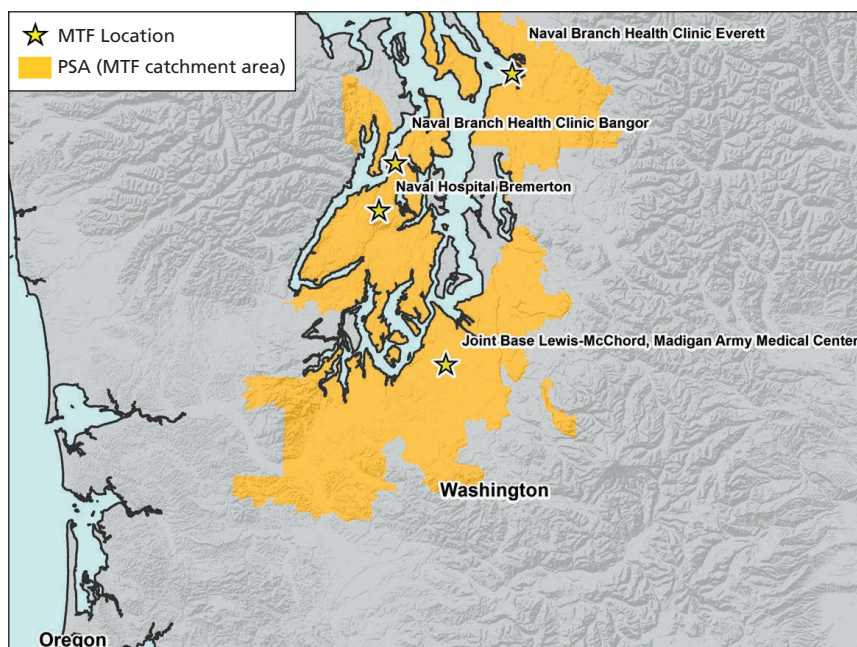
The three military populations that we analyze—active component, NG/R, and dependents—all face different conditions and rules for accessing care at MTFs, VA facilities, and community providers. Our definitions of remoteness therefore differ slightly for each subpopulation. However, all of our definitions have the same underlying assumption that specialty behavioral health care should be no more than a 30-minute drive away. This assumption is based on research showing that even small increases in drive time can have a significant detrimental impact on behavioral health care use (Beardsley et al., 2003; Hardy, Kelly, and Voaklander, 2011; Pfeiffer et al., 2011). We note that we calculate drive times under best-case conditions (no traffic, inclement weather, or other transportation difficulties), and that, in reality, a 30-minute drive can easily become a one-hour (or longer) endeavor.

TRICARE uses a 40-mile “as-the-crow-flies” geographic radius to designate ZIP codes within TRICARE Prime Service Areas (PSAs) around MTFs.² Active component service members (who are automatically enrolled in TRICARE Prime) within this PSA are generally required to seek care at the MTF (or seek special exception). Figure 2.1 illustrates four MTFs around the Puget Sound area in northern Washington, as well as the combined, intersecting PSAs for these four MTFs.

We refer to active component service members who are in a PSA but beyond a 30-minute drive from an MTF as *MTF Remote*. Forty miles in euclidean distance is, of course, quite different from a 30-minute drive time. Using Arc-GIS, we identified ZIP codes whose centroids are within a 30-minute drive time from MTF locations. Figure 2.2 shows these areas in green (against the orange PSAs).³ As

² As a general rule, such an area includes any ZIP codes that touch a 40-mile euclidean distance perimeter—with the addition of geographic exceptions not publicly available. This is why a lone, isolated ZIP code is included in the PSA for Joint Base Lewis-McChord. Exceptions are sometimes made to allow for geographic barriers such as mountain ranges and bodies of water or to include ZIP codes with large numbers of service members.

³ Because inactive NG/R personnel who served in a combat zone and completed active duty service within the past five years may seek care at VA facilities, we also calculated 30-minute driving distance buffers around all VA facilities.

Figure 2.1**Military Treatment Facilities and Combined Prime Service Areas**

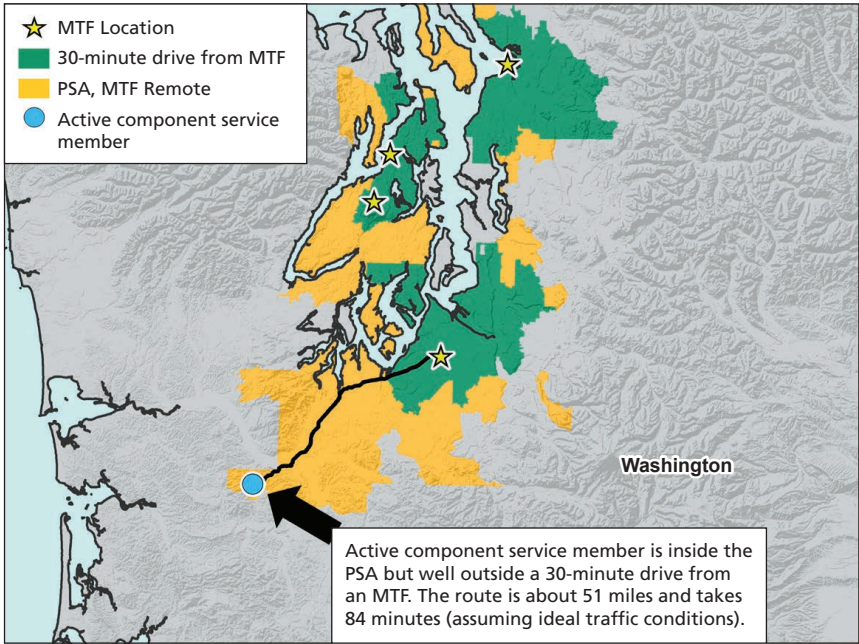
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an example, the blue dot toward the bottom of the figure represents an active component or active duty NG/R individual⁴ who is located within a PSA but outside the 30-minute driving distance buffer. This individual would be required to seek care at the MTF (or seek special exception on a case-by-case basis), despite facing a drive of at least 84 minutes to the nearest MTF.

For all military populations (including active component service members) who live outside PSAs, community providers are the primary source of behavioral health care. In these cases, we use HPSAs (shown in red in Figure 2.3) to indicate locations that have shortages of behavioral health providers. We refer to individuals in these areas as

⁴ *Active duty NG/R* includes both full-time members of the Guard/Reserve (sometimes referred to as active Guard/Reserve) and temporarily mobilized NG/R service members.

Figure 2.2
Military Treatment Facility Remote Status: Prime Service Areas Versus 30-Minute Drive Time



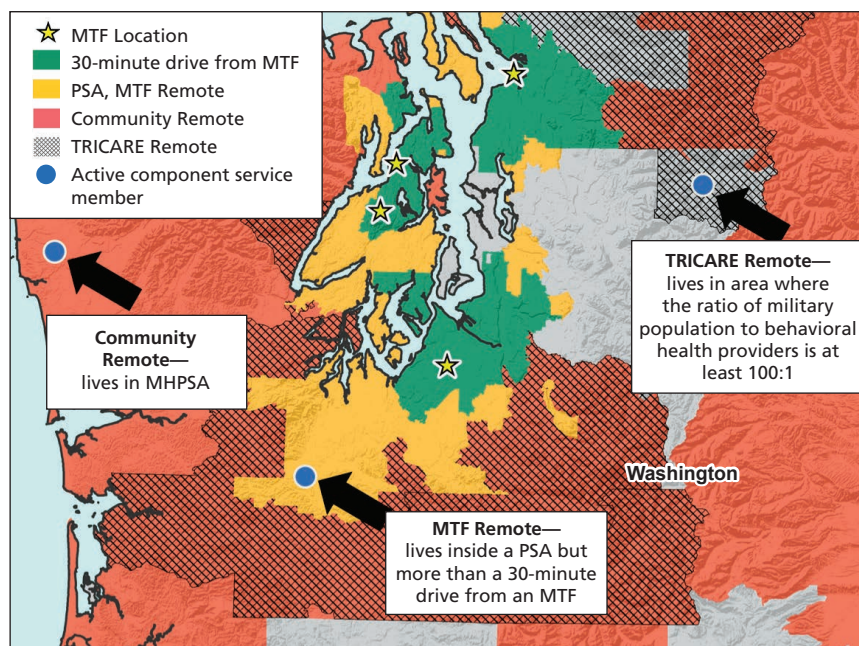
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Community Remote. We have superimposed areas (using crosshatching) in which the ratio of military service members and dependents to TRICARE network behavioral health providers is at least 100:1, which we name *TRICARE Remote* areas.

Collectively, this geospatial information allows for three possible types of remoteness (see Appendix D for additional technical details):

- *MTF Remote.* Living within a PSA but more than a 30-minute drive from the closest MTF. This definition applies only to active component service members and active duty NG/R.
- *Community Remote.* Living in an area outside of a PSA (for active component and active duty NG/R) and in an area that is recognized by HRSA as an MHPSA. For inactive NG/R and dependents, all areas designated as HPSAs (regardless of whether they

Figure 2.3
Three Types of Remoteness



RAND RR578-2.3

are within a PSA) are also defined as *Community Remote* due to MTF access rules and priorities for these populations.

- *TRICARE Remote*. Living in an area that is outside of a PSA and that has a ratio of service members and dependents to behavioral health providers of at least 100:1.⁵

⁵ Due to data constraints, TRICARE Remote is reported for active component service members only. First, TRICARE network provider data were available only for TRO-North and TRO-West regions, so TRICARE Remote inflation factors are regionally biased estimates, and they are likely to be conservative because they do not account for shortages in the TRO-South region. Additionally, TRICARE remoteness applies only to those actively covered by TRICARE (100 percent of active component personnel, but smaller percentages of NG/R and dependents). Insurance coverage data were not available from DMDC for the purposes of our analyses.

Next, we used these definitions of remoteness and the geospatial data described to develop specific remoteness definitions for our three military populations. Active component, NG/R, and dependents have different patterns of TRICARE coverage and therefore face different policies regarding access to care at MTFs and by community providers. We conducted a comprehensive review of the policy options and rules for access to behavioral health care to develop our tailored definitions of remoteness for each subpopulation. The results of this review are in Appendix E. Below, we provide a streamlined description of each definition and the reasoning behind it.

Active component and active duty NG/R are automatically enrolled in TRICARE Prime, so we defined remoteness identically for these two populations. These military service members living within a PSA are expected to seek care at an MTF or to seek special exception from the MTF if they desire care from a community provider. Service members living outside a PSA are enrolled in TRICARE Prime Remote (TPR) and have access to the TRICARE network of purchased care providers. We considered active component and active duty NG/R personnel to be remote if they lived either (1) within a PSA but more than 30 minutes from the closest MTF (MTF Remote) or (2) outside a PSA and within a HPSA (Community Remote).⁶

Inactive NG/R service members could have several coverage options. First, they could be covered by private insurance that is not TRICARE. Second, they could receive TRICARE, mainly enrolled through the Reserve Select program or, if recently deactivated, through the Transitional Assistance Management Program, which provides an additional 180 days of TRICARE coverage. In both cases, they will receive care primarily from community providers. Our primary definition of remoteness for this population is residence within a HPSA (Community Remote). Community Remote status for inactive NG/R service members applies regardless of proximity to MTFs.

Importantly, inactive NG/R service members with a combat deployment within the past five years can also seek care at VA facilities. We therefore also produced remoteness counts that accounted for such

⁶ We also calculated counts of active component service members in TRICARE Remote areas, which we report separately.

qualifying service members, assuming that those within a 30-minute drive of an MTF could seek behavioral health specialty treatment at VA facilities.

Finally, TRICARE coverage for dependents is limited by the status of their sponsor. Dependents are seen only as space is available (Jansen, 2014), so for the purposes of remoteness calculations, we assume that this population receives its behavioral health care from community providers. Dependents may also make additional choices for coverage, such as through a parent's employer. We therefore applied to dependents the same definition for remoteness (Community Remote) as for inactive NG/R service members.⁷

In summary, active component and NG/R personnel living within a PSA may or may not be MTF Remote (depending on their total driving distance from the MTF). Those living outside a PSA, as well as all inactive NG/R and dependents, may or may not be Community Remote (depending on whether their location is within a HPSA).

Data Analysis: Implementing the Remoteness Definition

Cross-Sectional Results

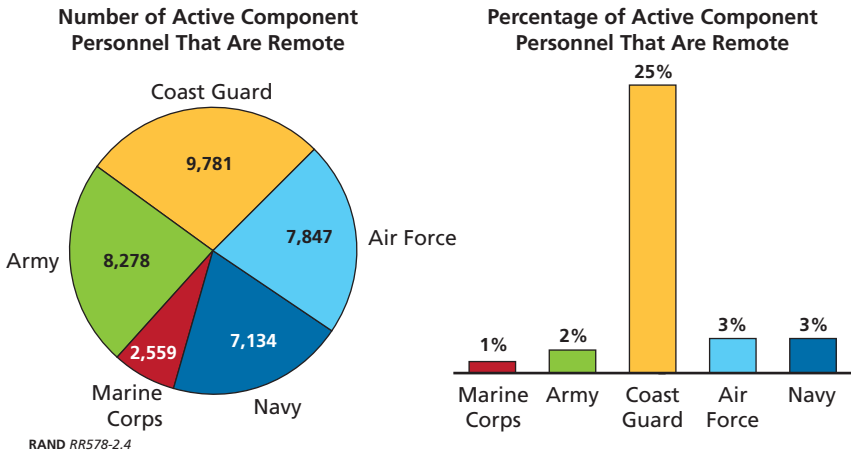
We found that 3 percent of active component service members were remote from behavioral health care, including 21,791 MTF Remote and 13,808 Community Remote residents, or 35,599 remote active component personnel in total. Figure 2.4 shows the number and percentage of active component personnel that are remote for each service branch.

For the Air Force, Army, Marine Corps, and Navy, between 1 and 3 percent of active component service members are remote. Among the Coast Guard, 25 percent are remote because the Coast Guard places many duty stations far from MTFs and in areas that are designated as HPSAs (Community Remote).⁸

⁷ We do not estimate remoteness for military retirees in this report.

⁸ Although the Coast Guard falls under the U.S. Department of Homeland Security rather than DoD, we included it in this analysis because it is one of the five service branches of the

Figure 2.4
Remote Active Component Personnel, by Service Branch



We also calculated the number of additional active component service members who would be considered remote using the TRICARE Remote definition, which added 3,248 to the total.

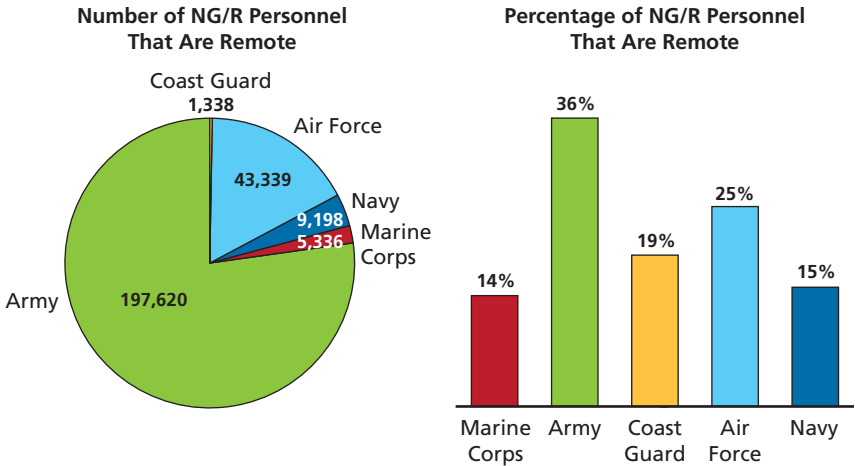
We found that 256,831 NG/R service members (31 percent of the total Reserve and Guard component) were remote from behavioral health care. This includes 55,526 active duty personnel⁹ (29 percent of all active duty NG/R) and 201,305 inactive personnel (32 percent of all inactive NG/R) in 2012. Figure 2.5 presents the number and percentage of NG/R personnel that are remote by service branch.

Across the armed services, active duty and inactive NG/R personnel are roughly equally likely to be remote. Because NG/R service members are more likely to be inactive than active duty at any given time, inactive NG/R contribute more to overall counts of NG/R remoteness.

U.S. military, is covered by TRICARE, and is subject to the same rules of health care access as the other service branches.

⁹ Deployed personnel outside of the United States are not included in our analyses. NG/R personnel on active duty in the United States are analyzed with respect to their duty station.

Figure 2.5
Remote National Guard/Reserve Component Personnel, by Service Branch



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Of the active duty NG/R personnel who are remote, 43 percent are MTF Remote, meaning they are stationed in a PSA but located more than a 30-minute drive from the closest MTF. This percentage for active duty reservists is fairly similar across service branches. However, the MTF Remote category is a small overall contributor (23,609) to total counts of remote NG/R personnel because NG/R service members are more likely to be inactive than active duty at any given time (and only active duty reservists can be MTF Remote). Thus, *most NG/R remoteness results from Community Remote personnel—a mix of inactive and mobilized NG/R personnel located outside of a PSA who must seek health services from their local communities rather than MTFs and who live in HPSAs.*

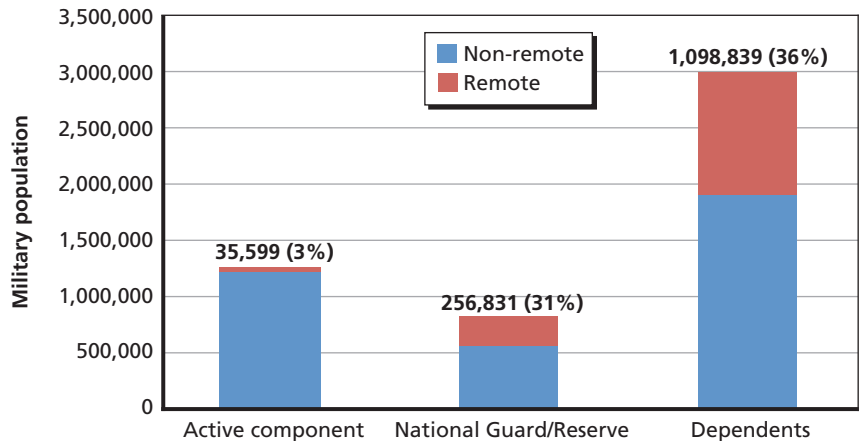
We produced two discount factors for the NG/R component. First, we calculated the decrease in total number of remote NG/R service members if we assumed all personnel within a 30-minute drive of an MTF could receive behavioral health care at that facility; we calculated 71,400 such personnel. Second, we calculated the decrease in number of NG/R service members considered remote if we assumed all inactive NG/R with a combat deployment within the past five years

sought care at a nearby VA facility (within a 30-minute drive). We found this would decrease total remoteness counts by 38,871.

Finally, *we found 1,098,839 dependents—36 percent of the roughly 3 million military dependents in 2012—to be remote from behavioral health care.* Discounting these numbers by assuming all dependents could receive behavioral health care at MTFs within a 30-minute drive would decrease the total count by 492,032. Figure 2.6 summarizes remote and nonremote populations for active component members, NG/R members, and dependents.

Table 2.1 shows types of remoteness by military population, with the final column illustrating totals across all populations (active component, NG/R, and dependents). We also show reductions to the remote population should inactive NG/R populations with combat deployments in the past five years be treated at VA facilities, and should dependents be treated at MTFs.

Figure 2.6
Counts of Remote Military Populations as Percentage of Total



NOTE: Percentages of inactive NG/R personnel who had a visit yielding a behavioral health diagnosis in 2010 after having a behavioral health visit in 2009.

Table 2.1
Summary Counts for Types of Remoteness

Types of Remoteness	Active Component	National Guard/Reserve	Dependents	Total Military Population
MTF Remote only	21,791	23,609	n/a	45,400
Community Remote only	13,808	233,222	1,098,839	1,345,869
Additional TRICARE Remote ^a	+3,248	n/a	n/a	+3,248
Reduction if treated at MTF	n/a	-71,400	-492,032	-563,432
Reduction if treated at VA facility	n/a	-38,871	n/a	-38,871

^a TRICARE provider data available only for TRO-North and TRO-West.

Longitudinal Results

We obtained the above counts of remote service members and dependents from a December 2012 cross-sectional data extract. Individuals, however, move residence and change duty station over time, so remoteness is not a static or fixed property. Rather, it is a status that any service member or dependent is at risk of experiencing. To describe the dynamic nature of risk for remoteness, we examined five years of DEERS data spanning from 2007 to 2012 and then calculated the percentage of service members who experienced any time in a geographic area remote from behavioral health care.

We found that 27 percent of service members experienced at least some time in a remote area over this five-year span. This includes 10 percent of active component personnel and 50 percent of NG/R personnel. Among service members in remote locations during the five-year period, about half were in a remote area for at least half of the time. These results indicate that the percentage of overall military personnel exposed to remoteness is higher than any point-in-time snapshot would suggest.

Demographics of Remoteness

Among active component service members, we found that higher age, rank, and time in service were associated with a greater chance of living

in a remote area. On average, remote active component personnel were 31 years old and had 11 years in service (compared with 29 years old and 9 years of service for nonremote personnel). Similarly (and likely related), service members in the active component population were more likely to be remote if they were married and more educated. These characteristics more strongly associated with remoteness were not true among NG/R service members. Remote NG/R personnel were much more likely to live in rural counties than active component personnel were (not surprising, as NG/R personnel live in communities spread across the country). Table 2.2 summarizes the demographic characteristics of the active component and NG/R remote populations.

To add context to these quantitative analyses, we consulted with RAND military fellows who have backgrounds in command-level posts involving personnel and manpower planning and management. We sought to learn more about military perspectives on geographic remoteness and to gain service-specific insights about career pathways that involve remote duty stations. These conversations identified several groups of individuals at particular risk for remoteness: those pursuing degrees, recruiters, Reserve Officer Training Corps (ROTC) trainers and educators, NG/R personnel, and families of deployed active component service members who sometimes move in with family members

Table 2.2
Remoteness by Demographic Characteristics

Characteristic	Active Component		National Guard/Reserve	
	Nonremote	Remote	Nonremote	Remote
Average age (years)	28.6	31.0	32.3	31.1
Average time in service (years)	8.6	10.9	11.6	10.8
Junior enlisted/ E1–E4 (%)	45%	26%	42%	46%
Post-secondary education (%)	31%	39%	42%	35%
Never married (%)	37%	29%	44%	44%
In urban counties (%)	73%	70%	84%	49%

while the service member is deployed. In the Air Force, missile officers were also identified as being at risk of deployment in remote duty stations. Students, ROTC, and recruiter positions were identified as often involving a voluntary decision on the part of the service member taking these positions and having a bias toward those with higher performance (or in some cases higher ranks).

Summary

Several patterns emerged from our data analysis. First, we found that roughly 1.3 million individuals (some 300,000 service members and an additional 1 million dependents) were at risk of living in an area remote from behavioral health care at some point during a five-year period. As the biggest service branch, Army service members contributed most heavily to these counts, especially for the NG/R. A disproportionate number of Coast Guard service members also contribute to active component remoteness counts, and a significant percentage of remote active component service members live within a PSA but more than a 30-minute drive from an MTF (MTF Remote), necessitating long drive times to care. Meanwhile, active component service members are more likely to be remote if they are older, higher ranking, more educated, and married; this pattern was not found for NG/R. Finally, and perhaps most important, remoteness is not a static property but a risk that any service member or dependent could encounter over time. Over a five-year span, 10 percent of active component and 50 percent of NG/R service members spent at least some time in a remote area.

Our data analysis has some limitations. We considered all behavioral health practitioners equal for the purposes of this analysis. In actuality, different subpopulations of service members and dependents are likely to require different types of practitioners. For example, child dependents would benefit from child psychiatrists or psychologists, while service members with combat deployments might require a practitioner experienced in evidence-based posttraumatic stress disorder (PTSD) therapy. In other words, in these analyses, we did not consider the mix of providers and were not able to consider the specific behav-

ioral health needs of service members, nor could we account for specific matches between these needs and types of practitioners or types of services available. Also, while our TRICARE Remote areas made use of full-time equivalents (FTEs) for behavioral health practitioners, these were not available for MTFs or for the HPSA data. This means that we did not account for shortages of MTF providers (i.e., insufficient numbers of providers to treat the local military population) in our models. Ideally, raw data on FTEs of behavioral health practitioners (in relation to local demand) would provide a more accurate depiction of need and potential shortages in providers. We also did not have access to data on available appointments (or opening hours) at MTFs or among purchased care providers, which are even more specific markers of the availability of care, given that physically accessing a facility or provider is only the first step to gaining treatment.

Effects of Remoteness on Civilian Behavioral Health Care Use

While little is currently known about access to behavioral health care among remote service members and their families, there is a long history of research on these issues in the civilian population (Marsella, 1998; Eberhardt and Pamuk, 2004; New Freedom Commission on Mental Health, 2004; Smalley et al., 2010), which provides important context. In the civilian literature, remoteness is generally studied as an issue of rural versus urban residence. Researchers have attempted to determine whether people in rural areas are more or less likely to have behavioral health problems and/or use behavioral health services than people in urban areas. In this chapter, we examine this literature. In addition, we report the results of our own original analysis of rural residence and behavioral health care use based on a large nationally representative sample of the U.S. adult civilian population. Drawing on the research literature, we then attempt to draw out lessons that are likely to apply to remote military populations.

Rural and Urban Differences in Use of Behavioral Health Care

Studies of civilian populations clearly show that there is substantial unmet need for behavioral health treatment in the U.S. population, regardless of geography (Kessler et al., 2005; Wang, Berglund, et al., 2005). In any given year, less than half of the individuals with a psychiatric disorder in the United States receive any treatment, and many

who receive treatment do not receive high-quality treatment that meets established clinical practice guidelines (Wang, Lane, et al., 2005). Specialty behavioral health care can be particularly difficult to access due to barriers such as low rates of acceptance of health insurance by psychiatrists (Bishop et al., 2013). Access to behavioral health care from any source is particularly a problem in rural areas (Fortney, 2010). For instance, in a study of nationally representative data from 1996 to 1999, among individuals who rated their mental health as fair or poor, just 24 percent of those in the most rural areas received any behavioral health treatment, compared with 41 percent of those in the most urban areas (Hauenstein et al., 2007). Yet the overall contrast in receipt of any behavioral health care tells only part of the story.

To more thoroughly understand access to behavioral health care, it is also important to examine the clinical settings where care is provided. Behavioral health care is provided in a wide range of settings, including general medical settings (e.g., a general practitioner's office), specialty behavioral health settings (e.g., a psychiatrist's or psychologist's office), and nonmedical settings (e.g., a human services agency). Surprisingly, most U.S. behavioral health care is provided in general medical settings by nonspecialist providers such as general practitioners; less than half of behavioral health visits occur in specialty settings, whether in the health care system or outside it. Several studies indicate that differences in the setting of care and provider type are linked to rural disparities. A 2005 national study found that individuals with psychiatric disorders in rural areas were about half as likely as those in nonrural areas to receive any behavioral health treatment (Wang, Lane, et al., 2005). Yet, among persons receiving treatment, those in rural areas were more likely to receive treatment within the health care system. That is, they were less likely to receive care in the human services sector. In addition, among persons receiving treatment in the health care system, those in rural areas were less likely to receive specialty behavioral health treatment and more likely to receive care from general practitioners (Wang, Lane, et al., 2005).

Several more recent studies have corroborated rural-urban disparities in care and extend our understanding of patterns on specific types of treatment. A study of more than 10,000 individuals self-reporting

a diagnosis of major depression found that while there were no rural-urban differences in the likelihood of receiving at least one behavioral health service, there were significant disparities in particular treatments. Specifically, rural individuals with depression were more likely to receive pharmacological treatment and less likely to receive psychotherapy than those in urban areas (Fortney et al., 2010). Not surprisingly, the number of psychiatrists per capita in a region contributed to this pattern.

A study of health care expenditures confirmed these findings, showing that total expenditures for behavioral health care were lower in rural than urban areas. Nevertheless, in rural areas, a larger proportion of behavioral health expenditures went toward the cost of prescriptions, and a smaller proportion went toward office-based behavioral health visits (Ziller, Anderson, and Coburn, 2010). Similarly, a study of a large population of veterans found that rural veterans are less likely to receive psychotherapy than urban veterans (Cully et al., 2010). The consistent pattern of urban-rural differences in use of behavioral health care across these studies reflects two underlying facts about the health care system. Rural areas are less likely to have specialty behavioral health clinics within reasonable travel distances, so a larger portion of care is provided through general medical clinics. At the same time, general medical clinics tend to provide a narrower range of behavioral health services at a lower level of quality.

Analysis of the National Survey of Drug Use and Health

To better understand the use of behavioral health care, particularly among rural populations, we analyzed data from a national survey of behavioral health and treatment, the National Survey on Drug Use and Health (NSDUH), which is conducted annually by the Substance Abuse and Mental Health Services Administration (SAMHSA) (Substance Abuse and Mental Health Services Administration, 2013). The NSDUH is the country's primary epidemiological surveillance survey for mental health, substance use, and behavioral health treatment. Each year, the NSDUH interviews a large national sample of adolescents and adults in their homes using computer-assisted interview methods.

The sample is representative of each of the 50 states and the District of Columbia, making it appropriate for analyzing national geographic patterns of behavioral health status and care. Each year of the survey includes about 40,000 adults (RTI International, 2012). Appendix F presents more details about the survey and the analysis described below.

The geographic information in the NSDUH datasets allows us to define four categories, ranging from the largest urban areas of the country to the most rural areas. *Large metropolitan areas* are economically and socially integrated regions surrounding dense urban areas and have at least 1 million inhabitants, such as Cleveland, Chicago, and Los Angeles. *Small metropolitan areas* are those areas surrounding smaller urban cores and having between 50,000 and 1,000,000 inhabitants; examples include Midland, Texas, and Asheville, North Carolina. *Micro-politan areas* are small urban centers that, with surrounding areas, have urban populations of between 10,000 and 50,000 inhabitants; examples include London, Kentucky, and Paris, Texas. *Rural areas* are those that are not integrated with any urbanized area; examples include Elbert County, Colorado, and Vilas County, Wisconsin. Of the entire U.S. civilian population, 52 percent live in large metropolitan areas, 32 percent live in small metropolitan areas, 10 percent live in micro-politan areas, and 6 percent live in rural areas.

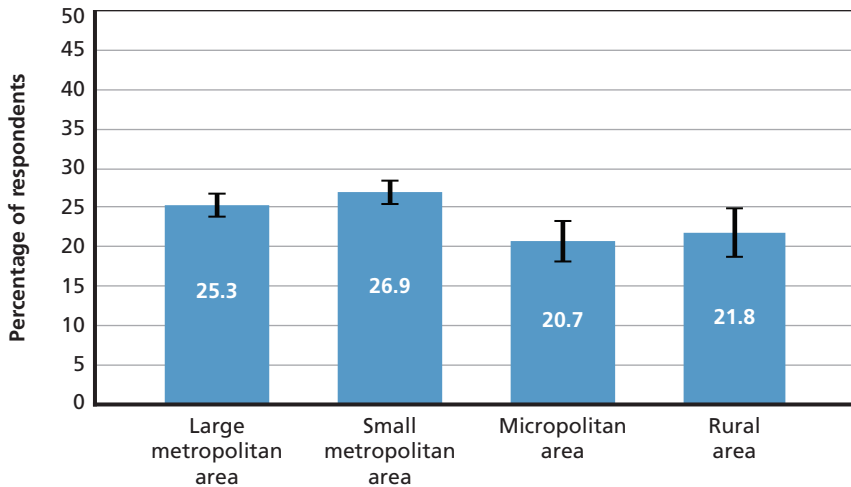
Analysis of Health Care Use in the National Study of Drug Use and Health

We examined whether the patterns found in previous studies based on self-report of diagnosis are consistent with epidemiological data using the NSDUH sample described above. In this analysis, we examined behavioral health care use across the same four-level geographic variables described above. We examined two types of behavioral health care: outpatient behavioral health treatment and use of prescription medication for a behavioral health condition. Outpatient behavioral health treatment includes any visit to a professional for a behavioral health condition and thus primarily captures specialty behavioral health sector treatments, which may or may not include medication. In

contrast, use of prescription medication may occur without a visit to a specialty behavioral health provider if prescribed by a PCP. To adjust for potential differences in need for treatment, we restricted these analyses to respondents who met criteria for having had major depression at some point in their lives. We also adjusted analyses for age and sex.

As can be seen in Figures 3.1 and 3.2, epidemiological data confirm findings of earlier studies. Figure 3.1 shows the percentage of respondents with a lifetime diagnosis of major depression who received outpatient behavioral health treatment during 2013, adjusted for age and sex. The error bars show the 95 percent confidence intervals for each estimate. Use of outpatient treatment is slightly lower in the most rural areas compared with the largest urban areas (21.8 percent versus 25.3 percent, $p = 0.08$), but it is also notably low in micropolitan areas (20.7 percent versus 25.3 percent, $p < 0.01$). Figure 3.2 shows the percentage of respondents with a lifetime diagnosis of major depression who reported use of psychiatric medications in 2013 across the same four groups (with 95 percent confidence interval error bars). As predicted, compared with those in large metropolitan areas, use of psy-

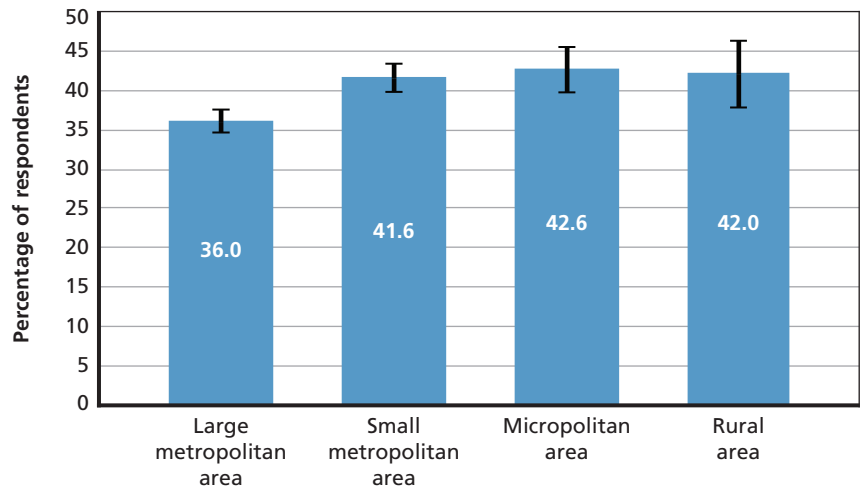
Figure 3.1
Respondents Who Received Outpatient Behavioral Health Treatment, 2013



SOURCE: SAMHSA, 2013.

RAND RR578-3.1

Figure 3.2
Respondents Who Used Prescription Medication for Behavioral Health Conditions, 2013



SOURCE: SAMHSA, 2013.

RAND RR578-3.2

chiatric medications was significantly more common in all three of the other groups, with p -values of 0.01 or lower. Altogether, these two figures show that the pattern of low use of specialty behavioral health care and high use of psychiatric medications is characteristics of both micropolitan and rural areas.

Explanations for Rural-Urban Disparities in Behavioral Health Care

The observed disparities in the use of behavioral health care between rural and urban areas have many causes, some of which may also affect rural and remote service members and their families. The literature on the civilian population addresses issues of accessibility to care, behavioral health provider shortages, social and economic disadvantages, and cultural stigma related to behavioral health treatment (Human and Wasem, 1991). Below, we examine each of these.

Accessibility

Accessing any health care providers is a critical problem in rural areas simply due to travel distances (Schur and Franco, 1999). Research on civilian samples indicates that geographic distance suppresses use of care (McCabe and Macnee, 2002, though see also Nemet and Bailey, 2000; Arcury et al., 2005; Fortney et al., 2005; Hardy, Kelly, and Voaklander, 2011). Rural residents often face other geographic challenges that restrict access, including the absence of well-developed public transportation systems and environmental barriers such as mountain ranges, difficult road conditions, and extreme weather (Beeson et al., 1998; Cook, Hoas, and Joyner, 2001). Transportation difficulties may also affect how long a patient remains in care, given that treatment for psychiatric disorders typically includes multiple visits over a period of months.

Provider Shortages

The availability of behavioral health care services in rural areas is severely limited due to chronic shortages of behavioral health providers (U.S. Department of Health and Human Services, 2003; Gamm, Stone, and Pittman, 2010). One recent survey of rural stakeholders found access to high-quality care to be the top priority (Bolin and Bellamy, 2011). Another analysis found every rural county to have shortages of practicing psychiatrists, psychologists, and social workers (National Advisory Committee on Rural Health, 2002). The federal government designates areas with shortages in behavioral health providers as MHPSAs.

MHPSAs have either of the following:

- a population-to-core-mental-health-professional ratio of at least 6,000:1 and a population-to-psychiatrist ratio of at least 20,000:1
- a population-to-core professional ratio of at least 9,000:1
- a population-to-psychiatrist ratio of at least 30,000:1 (U.S. Department of Health and Human Services, 2013).

Of MHPSAs, 85 percent are in rural areas (Bird and Dempsey, 2001), and 20 percent of counties designated as shortage areas have no

behavioral health services of any kind (Hartley, Bird, and Dempsey, 1999). MHSPAs are based solely on the presence of a provider and do not account for the many psychiatrists who do not accept insurance payments, further restricting access to care (Bishop et al., 2013).

Social and Economic Disadvantages

Residents of U.S. rural areas are more likely to be poor or unemployed than those of urban areas (Ormond, Zuckerman, and Lhila, 2000; Farrigan and Parker, 2012), making expenditures on behavioral health care more difficult to afford. Jobs in rural areas tend to be with smaller employers, many of which do not provide health insurance. As a result, residents of rural areas are more likely than their urban counterparts to be underinsured (Ziller, Coburn, and Yousefian, 2006) or uninsured (Ziller et al., 2008). These barriers compound more general economic and social barriers to obtaining care due to poverty.¹

Stigma and Rural Culture

The lack of acceptance of behavioral health care services is a key barrier to their use in rural America. Although rural America is a place of great diversity that belies facile stereotypes, some aspects of rural culture are perceived as having a negative influence on the willingness of rural residents to seek formal help for behavioral health conditions (Mulder et al., 2000; Slama, 2004). Although relatively little empirical research is available, such potentially negative influences include a life outlook that favors independence and self-reliance (Aisbett et al., 2007; Stotzer, Whealin, and Darden, 2012), norms of self-help (Mohatt et al., 2005), stoicism in the face of life challenges (Nicholson, 2008), a lack of anonymity and privacy that comes with denser social networks (Beggs, Haines, and Hurlbert, 1996; Brown and Herrick, 2002) and that may give rise to gossip networks (Slama, 2004), and a mistrust of newcomers or outsiders (Flax et al., 1979; Weinert and Long, 1987; Sawyer and Gale, 2006). Another potentially negative influence may be a tendency

¹ Remote location among service members and their families is not as likely to be associated with social and economic disadvantage as it is in the general population, especially when controlling for rank or pay grade.

to define health in terms of role performance, such that individuals regard themselves as healthy and without need for care as long as they are able to perform required roles (Weinert and Long, 1987). To the degree that military personnel and their dependents hold these beliefs, they might be unlikely to view themselves as having a problem and reluctant to seek out formal behavioral health services.

The public stigma of mental illness is widely regarded as a primary reason for not seeking formal care (Satcher, 2000; Corrigan, 2004). A growing body of studies has identified fear of stigmatization as a key barrier to seeking behavioral health care in the general population (Kessler et al., 2001), as well as in former and current military personnel (Pietrzak et al., 2010; Iversen et al., 2011). Moreover, the stigma of mental illness is often cited as a particular problem for rural residents (Fox et al., 2001; Rost et al., 2002; Stamm, 2003), although research comparing rural and urban residents is quite sparse, consisting primarily of qualitative studies of small, nonrepresentative samples (Fuller et al., 2000; Aisbett et al., 2007; Boyd et al., 2007; Jesse, Dolbier, and Blanchard, 2008; Pullmann et al., 2010; Murry et al., 2011), with a few larger studies finding higher levels of stigma in rural settings (Rost, Smith, and Taylor, 1993; Jones, Cook, and Wang, 2011). While findings are mixed on whether stigma is a more potent barrier to service utilization for residents of rural areas than for their urban counterparts (Rost, Smith, and Taylor, 1993; Hoyt et al., 1997), there is ample reason to believe that stigma is an important barrier to service use for many populations, and there is no reason to expect it to be any less of a barrier in rural areas.

Summary

There are two major lessons from research on rural and urban differences in use of behavioral health care in the general population. First, studies of civilian populations suggest that disparities in treatment related to remote location are likely to vary across types of care settings and treatments. Although overall differences in treatment (that is, the proportion of the population who receive some treatment) may not be

large between rural and urban areas, there are likely to be differences with respect to the setting of care that have important implications for quality of care. In particular, based on studies of the civilian population, we predict that service members in remote areas are likely to receive lower-quality services than those in urban areas. Specifically, they are less likely to receive care from a specialty behavioral health provider or to receive psychotherapy and more likely to receive pharmacotherapy than service members in nonremote areas.

Second, there are several explanations for rural and urban disparities in behavioral health care in the civilian population that may apply equally to the military. Most importantly, the issues related to the distance that remote service members must travel to access care and the shortage of providers in rural areas are likely to have similar effects on service use in both civilian and military populations. On the other hand, lack of insurance coverage is less likely to be relevant in military populations, where all service members are employed and insured. Issues related to rural culture may affect behavioral health care in the military in general because of overrepresentation of people with rural backgrounds in the armed services (O'Hare and Bishop, 2006). Rural individuals, however, are not necessarily more likely to live in remote areas while in the military.

Effects of Remoteness on Military Behavioral Health Care Use

In Chapter Two, we examined how many individuals relying on the military for health care find themselves in remote locations. In Chapter Three, we explored the effect of remoteness on behavioral health care use in the civilian population and suggested possible explanations for observed patterns. In this chapter, we use administrative data routinely collected by the TRICARE Management Activity (TMA) to address whether being in a remote location affects the amount and type of behavioral health care that service members and their families receive. These data are particularly valuable because they include information on all medical encounters for TRICARE beneficiaries and because they can be linked with contemporaneous data from DEERS, which provides location information on beneficiaries on a month-by-month basis. Using these data, we can compare the likelihood of receiving specific types of behavioral health care for those in remote and nonremote locations, using our previous definitions of remoteness.

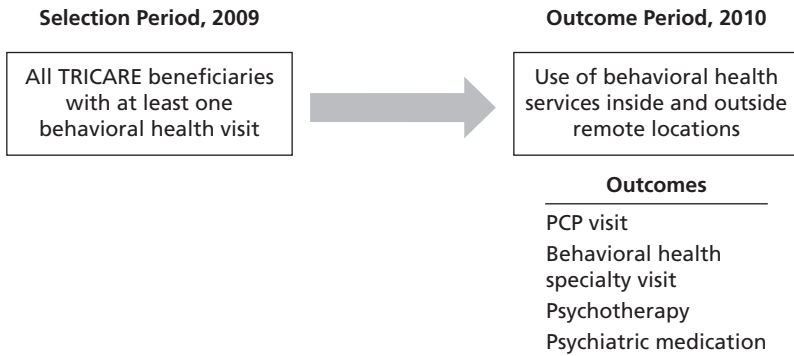
Prospective Analysis of Remoteness and Behavioral Health Care Use

Analyzing geographic differences in health care use should control for underlying differences in the behavioral health care needs of different populations because such differences in need could contribute to differences in use of care. In analyzing the NSDUH, we had access to

epidemiological assessments of behavioral health status for the entire sample and used that information to adjust the comparisons of use of care for differences in need. TMA data, however, have two important limitations that necessitate a different analytic approach. First, there is no universal assessment of behavioral health status in the TMA administrative data. This means that if we simply compare behavioral health care use in remote and nonremote areas, then we cannot separate the effect of remote location from that of underlying differences in need. Second, service members appear in the TMA dataset only when they use a medical service that is covered by TRICARE. This means that we cannot calculate population-based proportions of individuals in each type of area using a particular type of medical service.

For this reason, we designed a prospective analysis of the TMA data that improves our ability to draw conclusions regarding the effect of remoteness on use of behavioral health care. (Appendix G explains this in more detail.) The analysis, diagramed in Figure 4.1, is prospective in the sense that we select a cohort of individuals in one time period, the *selection period*, and then examine their use of behavioral health care in a subsequent time period, the *outcome period*. Thus, we follow the sample forward in time, even though the study was conducted after the outcomes had occurred. To ensure that the cohort was relatively homogeneous with respect to need for behavioral health care, we selected service members into the cohort on the basis that they used behavioral health care during the selection period. We then compared use by this group during the outcome period, the subsequent year, with respect to whether the individual was in a remote or nonremote location at the time. Because psychiatric disorders tend to be chronic and treatment often spans long periods of time, it is reasonable to expect that persons who have a behavioral health visit in one year are also likely to have a visit in the following year. Evidence that members of this cohort in remote areas received fewer or different behavioral health care during the outcome period than those in nonremote areas would suggest an effect of remoteness on behavioral health care.

Figure 4.1
Prospective Design



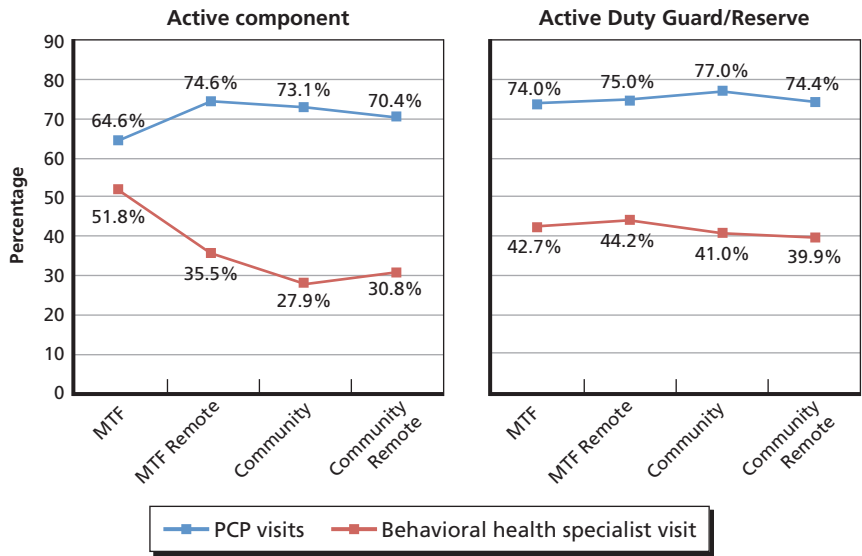
RAND RR578-4.1

Figure 4.2 shows the percentage of the 2009 active component and active duty NG/R members who had at least one behavioral health encounter during 2010, by whether they are inside or outside of the remoteness categories defined in Chapter Two:

- MTF: within a PSA and within a 30-minute drive from an MTF (this corresponds to the green areas in Figure 2.3)
- MTF Remote: within a PSA but more than a 30-minute drive from an MTF (this corresponds to the yellow areas in Figure 2.3)
- Community: outside of a PSA but not within an MHPSA (this corresponds to areas outside the yellow, green, and red areas in Figure 2.3)
- Community Remote: outside of a PSA and within an MHPSA (this corresponds to the red areas in Figure 2.3).¹

¹ The limitations of TRICARE Remote data, as explained in Chapter Two, prevent using that data in this analysis.

Figure 4.2
Prospective Analysis of Primary Care Practitioner and Behavioral Health Specialist Visits for Active Component and Active Duty National Guard/ Reserve



NOTE: Percentages of active component and active duty NG/R personnel who had primary care or specialist visits in 2010 after having a behavioral health visit in 2009.
RAND RR578-4.2

We identified behavioral health encounters by the primary diagnosis recorded at the time, regardless of whether the provider was a behavioral health specialist. The percentage of individuals with PCP, or nonspecialist, visits are shown in blue, and the percentage with specialist visits are in red. Among active component personnel, visits to a PCP increase slightly with remoteness; they are least common in the MTF group (65 percent) and more common in the groups not within a 30-minute drive of an MTF (ranging from 70–75 percent). In contrast, visits to a specialist are most common in the MTF group (52 percent) and are at a much lower level for all three groups that are remote from an MTF (ranging from 28 to 36 percent).

This pattern of health care use suggests problems in access to care for active component service members living in remote areas compared to those

living close to MTFs. A drop of more than 20 percent in the proportion using services, from 52 percent among the MTF to 28 percent in the Community and 31 percent in the Community Remote, is a striking disparity. The fact that behavioral health specialty care visits are equally low among all three remote groups, relative to those living close to an MTF, suggests that the barriers to care may be widely shared across all remote active component service members regardless of degree of remoteness. Finally, the fact that behavioral health visits with primary care providers are *more* common for the groups among whom specialty care is *less* common is consistent with *substitution*. That is, this pattern is consistent with the possibility that some service members in remote areas receive behavioral health care from primary care providers because behavioral health specialty providers are not available. The magnitude of decrease in use of specialty care (from between 16 and 24 percent relative to the MTF group) is larger than that of the increase in use of primary care providers (from between 5 and 10 percent relative to the MTF group). This means that even if service members are substituting primary care for specialty behavioral health care, it does not come close to fully compensating for the reduction in specialty care associated with remoteness.

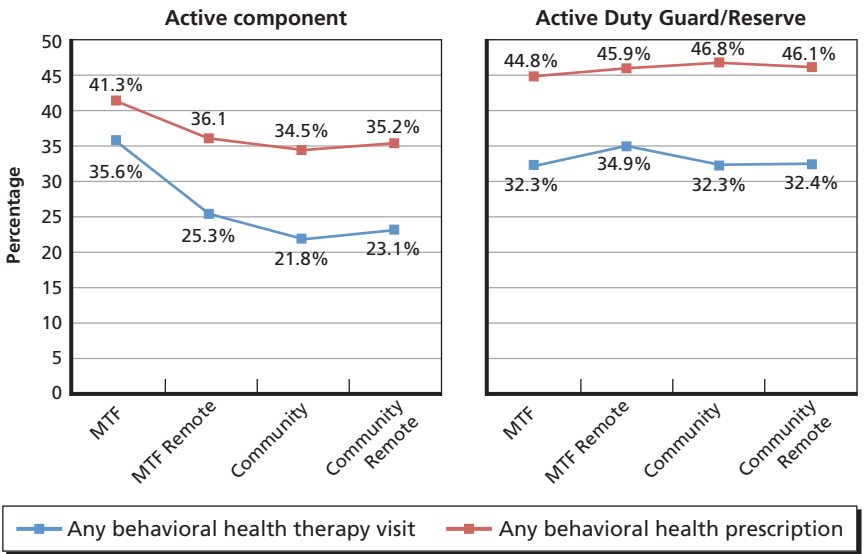
The pattern for active duty NG/R personnel, shown on the right side of Figure 4.2, is somewhat different. In this group, neither the PCP visits nor the specialist visits are related to remote locations. The percentage with a PCP visit in this group is quite high and ranges only slightly across the remoteness categories from a low of 74 percent among the MTF group and the Community Remote group to a high of 77 percent in the Community group. Similarly, the proportion with visits to behavioral health specialists varies within a narrow range, as shown in Figure 4.2, from 40 percent among the Community Remote group to 44 percent among the MTF Remote group. Why remoteness is unrelated to use of behavioral health care for active duty NG/R personnel is unclear. One reason may be that this population depends less on the MHS for medical care because it is more likely to have other health insurance coverage through an employer, spouse, or parent.

Use of specific types of behavioral health care across remoteness categories is shown in Figure 4.3 for both active component and active

duty NG/R personnel. The TMA data allow us to compare the difference between visits for psychotherapy and prescriptions for psychiatric medications (details on these definitions are presented in Appendix G). The left side of Figure 4.3 shows the results for active component service members, and both types of visits decrease among all remote service members relative to the MTF group. The decrease is relatively small in magnitude for prescription medications. There is a gap of only 7 percentage points between the MTF group (41 percent) and the group with the lowest utilization, the Community group (34 percent). The drop-off in use is sharper for psychotherapy visits, where the gap relative to the MTF group ranges from 11 to 14 percent across the remote groups.

Among active duty NG/R personnel, there is no apparent relationship between remoteness and either type of behavioral health ser-

Figure 4.3
Prospective Analysis of Behavioral Health Therapy and Prescriptions for Active Component and Active Duty National Guard/Reserve

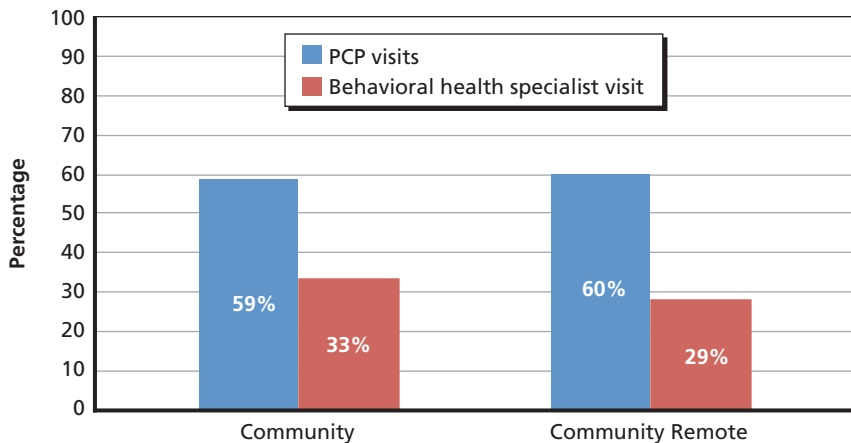


NOTE: Percentages of active component and active duty NG/R personnel who had primary care or specialist visits in 2010 after having a behavioral health visit in 2009.

vice. The proportion with a psychotherapy visit ranges between 32 and 35 percent across groups while that with a prescription for a psychiatric medication ranges between 45 and 47 percent. Moreover, in both cases, the group with the highest proportion receiving a service is not the MTF group.

Figures 4.4 and 4.5 show results from the analysis for inactive NG/R service members. For this group, we measured remoteness from community providers, reflecting the fact that inactive NG/R service members do not have access to care through MTFs and rely on community providers outside the MHS. Remoteness for this group is defined entirely by its proximity to community providers. The results show small differences in use of behavioral health care that are consistent with the patterns found in other groups. There is no remoteness-related disparity for PCP visits and a 4 percent disparity for specialist visits. Similarly, there is a mere 2 percent gap related to remoteness in prescriptions for psychiatric medications and a 4 percent gap in use of psychotherapy.

Figure 4.4
Prospective Analysis Results of Primary Care Practitioner and Behavioral Health Specialist Visits for Inactive National Guard/Reserve

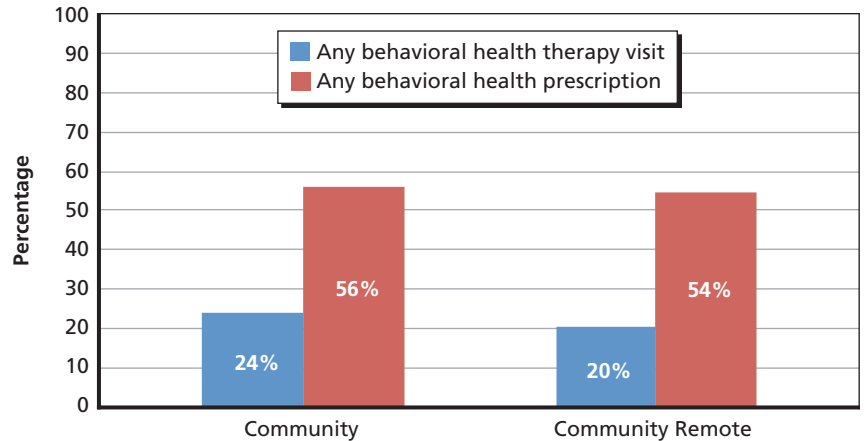


SOURCE: TMA, 2013.

NOTE: Percentages of inactive NG/R personnel who had a visit yielding a behavioral health diagnosis in 2010 after having a behavioral health visit in 2009.

RAND RR578-4.4

Figure 4.5
Prospective Analysis Results of Behavioral Health Therapy and Prescriptions
for Inactive National Guard/Reserve



SOURCE: TMA, 2013.
NOTE: Percentages of inactive NG/R personnel who had a visit yielding a behavioral health diagnosis in 2010 after having a behavioral health visit in 2009.
RAND RR578-4.5

Summary

This analysis provides the best evidence available that remoteness from care hinders use of behavioral health care services. The most striking findings relate to disparities in use among the active component service members, which resemble disparities in the civilian population. In particular, we found that *remote populations make fewer visits to specialty behavioral health providers and fewer visits for psychotherapy*. As in the civilian population, differences with respect to use of nonspecialist care and use of psychiatric medications are smaller. Compared with service members living on or near MTFs, those in Community Remote areas were about 6 percentage points (41 percent versus 35 percent) more likely to receive a psychiatric medication and about 13 percentage points (35.6 percent versus 23.1 percent) less likely to have a visit for psychotherapy. There is some evidence that members of this group are substituting PCP care for specialist care; visits to PCPs increase with remoteness, while use of specialist behavioral health care decreases.

This finding suggests substitution, but further research is needed to confirm directly that this is occurring. More importantly, the increase in visits to PCPs is much smaller in magnitude than the decrease in visits to behavioral health specialists, indicating that disparities in care exist despite any potential substitution.

In contrast, among active duty or inactive NG/R personnel, we found no evidence of an effect of remoteness on receipt of behavioral health care. The reasons for this are not clear, although one likely explanation is the fact that, unlike the active component, members of the NG/R have multiple options for medical care. NG/R service members have employment outside the military and thus are likely to have employer-based insurance coverage for behavioral health services. As they tend to be older than active component service members, they are also more likely to be married and thus to have access to health insurance through a spouse. It is therefore likely that members of the NG/R who receive behavioral health care through TRICARE are a more select group of individuals who have actively sought care and may be more likely to remain in care despite the barriers they face accessing care in remote areas. Because this group is older and more likely to be married than the active component group, it also may have more family support that increases ability to access behavioral health care, despite remoteness.

Although the analysis presented here provides robust evidence about remoteness and TRICARE behavioral health care, there are some limitations to it. First, the evidence lacks measures of behavioral health status and preferences for behavioral health care. This means that we cannot be certain that the differences we observe are due to unmeasured differences in need for care and not to these other factors that also affect use of services and may be related to remote location. The prospective design of the analysis considerably reduces but does not entirely remove this possibility. Given the large magnitude of some of the disparities identified among the active component service members, it is unlikely that differences in need or preferences entirely explain our findings. Our findings were also confirmed by a supplementary analysis in which we compared health care use between service members who remained in nonremote areas with that of service members who moved from nonremote areas to remote areas. That sub-

group analysis confirmed the disparities in behavioral health treatment presented above for the entire sample.

Second, the data include information only on encounters that occur within the MHS or that are paid by TRICARE health insurance plans for service members receiving care outside it. We do not have information on care received by service members paid out-of-pocket or by other non-TRICARE health insurance plans. This restriction of the data is appropriate given our primary concern with the TRICARE system, but the conclusions should not be understood to apply to all sources of care that service members, particularly those in the NG/R, may receive.

Third, it is possible that some of the variation across remoteness categories is due to demographic differences in the populations that were reported in Chapter Two. The two differences that would be of concern are age and marital status; service members in remote areas are slightly older and more likely to be married than those in nonremote areas. Because both of these factors could predispose those in remote areas to higher use of behavioral health services (through greater access to health insurance via a spouse and greater family network support for seeking behavioral health care), statistical adjustment for these factors would result in larger apparent disparities in care related to remoteness. The unadjusted results are presented here in the interest of locating patterns of difference rather than potential explanations for those differences.

Fourth, we have not been able to address variations in the quality of care received by service members in different locations. Future analyses of the TMA data could address this important issue.

This analysis has demonstrated the value of the TMA data for analyzing geographic disparities in behavioral health care use. There is enormous potential for extending these analyses in future studies, particularly if the utilization data can be linked with the DEERS data to create representative samples of service members. Using these data, future analyses could inform planning by focusing on specific demographic subgroups, matching comparisons on individual characteristics to produce more accurate estimates of the effects of remoteness, and tracking individuals over time to examine episodes of care rather than

single visits. For instance, future studies could use the TMA data to analyze the impact of changing location on the continuity of behavioral health care. Our analysis suggests that service members moving to a remote location are at risk of breaking off behavioral health treatment, but we were not able to address this question in sufficient detail to draw firm conclusions. Through analyses that directly examine continuity of care in relationship to changes in location, future studies could help identify the types of moves that are problematic for continuity of care and suggest policy actions that could ameliorate remoteness-related disparities.

Barriers and Gaps in Policy and Practice

The previous chapter focused on the effects of remoteness on service member and dependent access to high-quality behavioral health care. In this chapter, we attempt to identify remoteness-related barriers to receiving quality behavioral health care that are rooted in organizational policies and practices aimed at providing services. To do this, we (1) conducted telephone interviews with key experts and (2) reviewed the policy literature. In the sections that follow, we describe the process of identifying and interviewing key experts as well as the findings of those interviews. We then present our policy research methods and results.

Interviews with Key Experts

In consultation with our DCoE project officer and staff, we identified experts to interview. Our approach was to identify stakeholders with a broad range of expertise and knowledge of barriers to providing behavioral health care in rural communities as well as an awareness of possible gaps in policy and practice (Westfall, Mold, and Fagnan, 2007). Our goal was to speak with individuals with practical knowledge about providing or improving care for remote populations and overcoming the practical barriers they face. At the outset, we identified organizations from which we hoped to obtain input. We then asked our DCoE project officer to help make introductions, where possible, or we made introductions ourselves. We identified some subsequent stakeholders through snowball sampling.

These experts and stakeholders included

- leadership staff of organizations charged with providing telemental health (TMH) services to military personnel and their families
- leadership staff responsible for DoD efforts to train military and civilian behavioral health professionals to provide high-quality, culturally sensitive, evidence-based behavioral health services to military personnel and their families
- leadership staff involved in DoD efforts to develop telehealth and technology solutions to improve the behavioral health and well-being of current and former military personnel and their families
- leadership staff involved in implementing the VA policy of offering training for rural health care providers and administrators to provide veterans residing in rural areas with access to quality health care
- senior leadership involved in military recruitment
- academic experts who specialize in issues pertaining to the provision of rural health care, in general, and behavioral health care, in particular.

We conducted telephone interviews with seven individuals affiliated with the following organizations:

- Center for Deployment Psychology (CDP)
- National Center for Telehealth and Technology (T2)
- Warrior Resiliency Program of the Southern Regional Medical Command
- Rural Health Professions Institute of the Veterans Health Administration (VHA) Office of Rural Health (ORH)
- Office of Rural and Community Health & Community Partnerships (ORCHCP) at East Tennessee State University

For each interview, we developed open-ended, broadly worded questions that would stimulate uninterrupted stakeholder responses on topics of interest. Our goal was to allow these experts to guide us to the most important issues they face in their work, as well as their impressions of the most pressing issues facing rural and remote populations.

Center for Deployment Psychology

The mission of the CDP is to train military and civilian behavioral health professionals to provide culturally sensitive, evidence-based health care to military personnel, veterans, and their families. CDP trainings take various forms, including week-long programs, individual workshops, and seminars. Trainers travel to MTFs, universities, and other community sites to provide trainings, and health professionals fly to CDP headquarters for training.

Topics for our interview with the CDP representative included how the CDP characterizes its core mission, how the CDP views military culture, what the CDP approach is to providing culturally appropriate care, and whether the CDP directly addresses issues concerning rural and remote behavioral health care. We sought to determine how the CDP provides training in culturally sensitive care and to ascertain whether it addresses issues of rural culture.

The CDP emphasizes the following topics in its training on military culture and sensitivity:

- basic military terminology and military ranks
- importance of teamwork and other values
- the nature of deployment
- behavioral health issues faced by military personnel and their families (e.g., suicidality, depression, substance use, traumatic brain injury [TBI], sleep difficulties, and relationship and family issues).

The CDP also places special emphasis on evidence-based treatment of PTSD. For example, it offers two- and three-day workshops that include training in prolonged exposure therapy and cognitive processing therapy for PTSD.

The CDP does not provide training on rural culture or the special behavioral health issues faced by residents of rural or remote service members and their families. Nonetheless, it does actively attempt to engage and train providers who serve rural areas.

In discussing areas of greatest need, the CDP representative mentioned two specific topics: getting service members (and/or family

members) in for initial intake appointments and ensuring that care seekers continue beyond the initial appointment.

The CDP representative delineated several future development objectives, including

- integrating additional case material as vignettes into training courses
- developing additional online training modules
- making greater use of technology in training (e.g., greater use of televideo)
- expanding training to include emphasis on differences between active component and NG/R components (e.g., differences with regard to experiences and stressors).

National Center for Telehealth and Technology

For our interviews with representatives of T2, we sought to understand technological and other barriers to meeting the behavioral health needs of military personnel and their families via telehealth and technology. Topics included issues and challenges facing T2 across the range of its possible applications and the strengths and weaknesses of telehealth and mobile technology for closing the gap in access to high-quality behavioral health care in rural and remote areas.

T2 operates as a DCoE core unit and is part of the MHS. The T2 mission is to lead the development of telehealth and technology solutions for psychological health and TBI among veterans, military personnel, and their families. It seeks to identify and treat the adverse effects of TBI and behavioral health conditions and to identify ways to use telehealth to bridge the access gap and ensure timely and cost-effective availability of evidence-based care to all personnel.

The T2 representative noted several policy barriers to TMH use. These included the following:

- telehealth services only being offered between an approved originating behavioral health service site, where an authorized TRI-CARE provider normally offers services, and an approved distant

site, where the provider of services is located (i.e., client residences are not approved as originating sites)

- costly or irrelevant equipment requirements, such as minimum bandwidth, video resolution, monitor size, nonanamorphic video picture display, and conference room with camera pan, tilt, and zoom capacity
- requirements that TMH services include both video and audio components, with telephone-only services not being reimbursable
- requirements that telehealth equipment have security provisions (e.g., encryption) that are compliant with the Health Insurance Portability and Accountability Act (HIPAA), making, for example, Skype unacceptable (though some other commercially available platforms are HIPAA-compliant)

The T2 representative noted that DoD lags behind VA in using telehealth technology. VA reported 1.3 million uses of telehealth technology in Fiscal Year 2012, while DoD reported roughly 60,000 uses despite 9.7 million beneficiaries.

The T2 representative emphasized the following three contributors to low rates of use:

- lack of clear equipment standards to ensure interoperability across sites and services
- lack of a strategic plan for implementing telehealth approaches
- stove-piping, or isolating data, within the services.

The T2 representative is optimistic about the long-term prospects for telehealth delivery of behavioral health care. Regarding the limitations of telehealth technology as a means of increasing behavioral health care access, the interview identified two key points.

First, telehealth technology is constantly changing, and some institutions are slower than others to adapt to changes. System-compatibility issues have historically posed problems for interacting with individuals across organizations. The continual demand to catch up to the latest technology creates ongoing challenges, but T2 expects that these issues will become easier to resolve over time.

Second, technological solutions, in themselves, are unlikely to remove barriers to quality behavioral health care. Patients will still need behavioral health professionals to provide the clinical services via the telehealth technological tools. In other words, technologically sophisticated equipment can serve as a tool to reduce barriers to care but cannot entirely offset provider shortages.

Warrior Resiliency Program

For our interviews with representatives of the Warrior Resiliency Program of the Southern Regional Medical Command, we sought to learn about the challenges and issues faced in providing telehealth clinical services as part of a medical command, given that telehealth is one way to treat remote populations.

The Warrior Resiliency Program provides telehealth services to Army MTFs within the Southern Regional Medical Command., and the program has approximately 20 such full-time and part-time providers. Some of these MTFs are in rural areas, but typically telehealth services are provided to MTFs in nonrural areas that have too few staff to meet local demand. The program also provides specialty care to MTFs that would otherwise be unavailable (e.g., child psychology). Nonetheless, the experiences of the Warrior Resiliency Program provide insights into challenges and issues in providing telehealth-facilitated behavioral health care to rural military personnel and their families.

Program staff discussed the various difficulties they have navigated, including infrastructure limitations, technical issues, and regulatory challenges. Specific issues include

- telehealth equipment incompatibility across sites
- the need to prioritize the treatment of military personnel over dependents (an issue not specific to telehealth)
- difficulties with equipment operation
- difficulties obtaining licenses to provide services across multiple states
- provider coverage issues; with providers typically asked to allocate a set number of hours aside per week to provide telehealth clinical

services, efficiency and productivity can be compromised if hours are not filled or cancellations occur.

Program staff noted several strengths of the telehealth program, including

- high level of acceptance and client satisfaction
- acceptable use for routine assessment and psychotherapy with relatively stable clients, especially when there are no good alternatives
- TMH increases capacity quickly to meet a temporary surge in demand, such as occurs when a large unit returns from deployment
- telehealth facilitates continuity of behavioral health care, and can accommodate client changes in temporary-duty assignment or deployment status.

At the same time, program staff noted several limitations of telehealth, including the following:

- Psychological testing is less efficient and effective.
- Telemental health may not work as well for certain clients, or may even be contraindicated for clients with emotional volatility, psychosis, and high risk of suicide.
- Routine client “homework” assignments can be more difficult to monitor and review, though the unit has experimented with solutions such as sending in assignments via encrypted email attachments and using a high-speed scanner.
- High fixed costs of telehealth equipment and systems can raise cost effectiveness issues.

East Tennessee State University Office of Rural and Community Health & Community Partnerships and Veterans Health Administration Office of Rural Health

For our interviews with representatives of the East Tennessee State University ORCHPC and the VHA ORH, we sought to learn about the unique needs of rural residents and the health care professionals who serve them. The mission of the ORCHPC is to recruit and train

students interested in providing health services to rural America, and its objectives are to promote development of the knowledge, skills, and professional identity needed to practice health care in rural communities. The mission of the ORH is to improve access to quality health care for veterans residing in rural areas by developing relevant policies and practices.

Because ORCHPC and ORH representatives covered the same content and generally agreed with each other, we do not identify the specific source of comments in summarizing them.

ORCHPC and ORH representatives noted the importance to the military of health care personnel who hail from rural and remote geographic areas, explaining that such personnel would be more likely to understand the unique cultural context and barriers to care in rural environments. Service members from rural and remote areas constitute a disproportionate share of the armed forces, and many service members and veterans return to their rural communities upon leaving the military.

The representatives also noted that rural and remote residents often face difficulties accessing health care because of scarcity; simply too few health providers exist to meet demand. Additional barriers that may impede access to health care in rural and remote areas included

- geographic remoteness that may require long travel times to health care facilities
- rural communities that are generally poorer than their urban and suburban counterparts
- stigma concerning mental illness, addiction, and their treatment that may be more pronounced in residents of rural areas.

In discussing the role of stigma in impeding access to health care, the ORCHPC and ORH representatives mentioned two sources, specifically

- cultural values, such as a strong sense of self-reliance, that can be at odds with seeking help

- the size and interconnectedness of rural communities that can serve to amplify the possible impact of stigma.

Finally, our interviewees noted that many trained health care providers, even those originally from rural communities, find daunting the prospect of practicing their professions in rural communities. The ORCHPC and ORH representatives believe that insufficient emphasis is placed on policies to increase the number of health care practitioners in rural areas, and more attention should be given to developing innovative solutions to bridge the health care resource gap between rural and nonrural communities.

Summary of Findings from Expert Interviews

There is widespread awareness of barriers to behavioral health access faced by residents of rural and remote areas. Barriers to care include too few specialty care providers in rural areas and geographic remoteness necessitating long travel times. Some of our interviewees also expressed the traditional, if poorly researched, belief that cultural barriers may suppress care-seeking.

Various stakeholders are taking different approaches to addressing access issues. Rural health programs affiliated with academic institutions in rural areas are training students and professionals in the skills needed to provide care in rural areas. The CDP is devoting time and resources to training civilian and military health care providers in rural areas in evidence-based treatments for commonly faced health problems, including PTSD and TBI. T2 is at the forefront of efforts to reduce access problems in rural and remote areas by developing telehealth solutions. Finally, the Warrior Resiliency Program is providing frontline telehealth services to military personnel and, to a lesser extent, their dependents. As a result, it is learning important lessons needed for any effort to scale up reliance on telehealth technology to compensate for the lack of behavioral health providers in rural and remote areas.

Policy Review

Our initial exploratory efforts suggested a dearth of formal policies concentrated on rural or remote populations and a lack of specific metrics or guidelines for access to care, especially outside MTF catchment areas. To systematically examine existing health care policies concerning access to behavioral health care for rural and remote military personnel and their families, we conducted a cross-agency document search using online archives. In our review, we sought to identify any policies related to access to behavioral health care for active component and NG/R service members, as well as their dependents and beneficiaries. We were particularly interested in any policies specific to this issue that highlighted rural or remote populations. We conducted our search in late April 2013 and covered online federal document databases. We used the search terms *rural* or *remote* or *access to care* AND *health* or *mental health* or *behavioral health* or *substance abuse*. Each search term identified between 1,000 and 3,000 documents.

As an initial screen, we adopted a lenient definition for determining document relevance. Specifically, a document was considered pertinent if it contained (a) any policy information, (b) a call for examination or attention to the topic, or (c) a plan for action related to relevant issues. Focusing on the most recently published 100 documents, we identified 48 that met any of these criteria. However, a closer examination of these documents revealed that only two contained actual policy information, with the remainder consisting solely of calls for action or plans for action. We found no relevant documents containing explicit policies regarding access to behavioral health care for military personnel or their dependents residing in rural or remote areas.

A 2008 document, “Military Health System’s Guide to Access Success”—which was produced in collaboration with the Health Care Access Professionals of TMA and Army, Navy, Air Force, and Coast Guard Medicine—included a section on “Management of Mental Health Access.” This section states that the management of mental health access can be found in the document IAW Health Affairs Policy 07-022. After a supplemental search, we discovered the IAW Health Affairs Policy 07-022 and learned of its 2011 substitution, the 2011

TRICARE Policy for Access to Care (Woodson, 2011). The 2011 document proved to be the most relevant with respect to policy, but was quite limited in scope.

The *TRICARE Policy for Access to Care* describes when an MTF commander may require a beneficiary to enroll in his or her MTF. Specifically, the document states that “MTF Commanders can require TRICARE Prime beneficiaries to enroll with the MTF if the beneficiary is within a 30-minute drive time” (p. 6). The guidelines also state that MTF Commanders may approve and enroll beneficiaries who will travel fewer than 100 miles to the MTF. The *TRICARE Policy for Access to Care* states that TRICARE Regional Office directors may approve waivers for beneficiaries wishing to enroll in TRICARE Prime who reside more than 100 miles from an MTF.

Most relevant documents mentioned the need for increased attention to the health care necessities of rural and remote populations or the need for effective interventions to address people living in these areas. A 2007 document, *An Achievable Vision: Report of the Department of Defense Task Force on Mental Health* (Task Force on Mental Health, 2007), describes a “geographic variation in the provision of psychological health services” for service members. A 2010 DCoE briefing at the Military Health System Conference, “Providing Mental Health Care When and Where Patients Need It,” references the challenge of providing behavioral health care to rural areas and highlights the value of telehealth services in meeting these needs (DCoE, 2010). The restated need for an analysis of behavioral health care access for rural and remote populations was frequently observed in 2011 and 2012 documents. Interest in this topic increased around August 2012, when President Barack Obama signed an executive order directing the Departments of Veterans Affairs, Defense, and Health and Human Services, in coordination with other federal agencies, to ensure that veterans, service members, and their families have the behavioral health care and support they need.

Most references to rural and remote behavioral health appeared to consist of statements on the need for analysis or declarations of vague future efforts. On occasion, we found mention of specific actions to remedy or analyze the issue. For example, in 2008, the Assistant Secretary of

Defense for Health Affairs, reporting before the House Subcommittee on Military Personnel Armed Services, discussed collaboration with the United States Public Health Service (USPHS). The Assistant Secretary reported USPHS efforts to send 200 behavioral health providers of all disciplines to locations “in short supply across the country—complicated by hard-to-serve areas, such as remote rural locations.” The Assistant Secretary also noted that the military branches would place the USPHS providers in locations with the greatest need, but did not describe how they would determine need.

Finally, a 2010 report to the committee mentioned a plan for conceiving a tool for evaluation. The Assistant Secretary reported that the Department’s “future plans include the development of an analytical model that determines where TRICARE Standard beneficiaries live in rural areas and where health care has been provided in that area in the past.” The model would identify whether there is potential scarcity of health care providers in a specific area. Then, “the TROs and their [Managed Care Support Contractors] partners can then follow-up in those targeted areas to see if there are opportunities to recruit additional TRICARE-authorized providers.”

The absence of policies for providing access to behavioral health care for military personnel and their families raises questions about what is actually being done to provide access to high-quality care for specific behavioral health needs. This state of affairs is underscored by the fact that even the *TRICARE Policy for Access to Care* provides mere guidelines for action while also allowing considerable leeway for commanders in the field to make decisions. Moreover, there exists no monitoring system to examine current practices. It is critical to develop more elaborate guidelines and best practices for providing behavioral health care for military personnel and dependents living in rural areas. In concert with a system for monitoring actual practices, articulated guidelines for providing access to quality behavioral health care would help direct future efforts to improve quality.

Summary

Expert stakeholders are keenly aware of the challenges to providing access to high-quality behavioral health care to military personnel and their dependents living in rural and remote areas. Experts highlight a range of issues, including MTFs that may be overwhelmed after redeployment and a lack of available resources to provide behavioral health care to dependents. The notable absence of formal policies regarding care to such populations also highlights the importance of devising an overall strategy for ensuring that persons living in traditionally underserved areas receive behavioral health care comparable to that received by their counterparts residing in more populated areas.

Our investigation has found both that large numbers of service members and their families are remote from behavioral health care and that remoteness from care adversely affects use of such care. A search of available policy documents revealed that most discussion of rural access to behavioral health care simply calls for greater attention to the topic. *At present, there are only minimal recommendations for providing access, consisting of guidelines regarding travel distance to health facilities. No evidence exists that access guidelines are followed or that other standards for what might constitute access to high-quality care are met.*

The *TRICARE Policy for Access to Care* offers the only significant guidelines for providing access to care for residents of rural and remote areas, and it provides only rudimentary recommendations for travel distance. No mechanisms are in place to monitor whether the guidelines are implemented or why guidelines are not followed. Some formal monitoring system, in conjunction with an articulated set of best practice guidelines, would provide a means of assessing whether guidelines are being met. Improving access to quality care is a continuous process. A set of benchmarks for what constitutes high-quality care will pave the way for continuous improvement over time.

Clinical and System Approaches for Improving Access for Remote Populations

At least two promising strategies exist to help address access and availability barriers to behavioral health care use for military personnel and their families in rural areas. Each strategy may also increase the acceptability of using behavioral health care. The first is establishing better links between behavioral health care and primary care. The second is harnessing and strengthening telehealth technologies to better meet the behavioral health needs of residents of rural and remote areas.

In this chapter, we first discuss integrating behavioral health treatment into primary care. We then describe the evidence base supporting the use of telehealth technologies to increase access to behavioral health care for service members and their families.

Integration of Behavioral Health Treatment into Primary Care

A substantial share of U.S. behavioral health care is delivered by primary care providers (Gray, Brody, and Hart, 2000; Kessler and Stafford, 2008; Regier, Goldberg, and Tauge, 1978; Wang et al., 2006). An estimated 40–60 percent of patients with behavioral health conditions are treated in primary care rather than specialty behavioral health care settings (Kessler and Stafford, 2008; Wang et al., 2005; Wang et al., 2006). Given the scarcity of specialty care providers in rural and remote areas, this broad characterization of primary care is likely to be

even truer of primary care in rural America. As a result, improving the treatment of behavioral health conditions in primary care is likely to constitute a critical pathway to bringing quality behavioral health care to residents of rural and remote areas.

Although effective treatments exist for many behavioral health conditions, a 2006 Institute of Medicine report, *Improving the Quality of Health Care for Mental and Substance-Use Conditions*, concluded that the behavioral health care system fails to reach or adequately treat millions of Americans with behavioral health problems (Institute of Medicine, 2006). The report attributes the shortcomings of the health care system to deficiencies and inconsistencies in care quality, and contends that a redesign of the health care system is required to achieve high-quality behavioral health care.

Coordinated models of health care—those that connect behavioral and physical health—have attracted considerable attention for their potential to improve health care quality (Collins et al., 2010). Mental and physical disorders have historically been viewed as distinct entities, but much research indicates that this distinction is misleading and counterproductive (Eisenberg, 1986; Davis et al., 2013). Although various definitions of coordinated care, and the closely related concept of integrated care, have been developed for treating mental disorders in primary care (Butler et al., 2008), they have in common the premise that superior outcomes will be achieved by care that is coordinated rather than disorganized, collaborative rather than exclusive, and integrated rather than separate. Care coordination can be arrayed along a continuum, ranging from (1) models that prescribe referral to (2) behavioral health professionals working in parallel with primary care providers to (3) care providers collaborating to develop a single integrated plan of care with input from providers of various disciplines. DoD has been working to implement one such coordinated care model—the patient-centered medical home—since 2009 (TRICARE, 2011).

In practice, collaborative care models typically incorporate the principles of both stepped care (Bower and Gilbody, 2005) and measurement-based care (Harding et al., 2011). Stepped care is essentially a model for allocating care resources. It holds that limited resources can be best managed by a treatment regime that begins therapy with the

least intensive intervention that is likely to be effective, then increasing treatment intensity as needed. For example, in the context of primary care, the treatment of mild and uncomplicated depression might first begin with one set of interventions (e.g., physical exercise or psychoeducation), whereas a more severe depressive episode might warrant an additional intervention (e.g., psychotherapy and pharmacotherapy) (Seekles et al., 2009). In the first instance, additional, more intensive steps might be taken for individuals who do not respond fully. Thus, the stepped care model is self-correcting, using data for regimen modification.

The core tenet of measurement-based care is that high-quality care requires precise monitoring and measurement of how a given intervention influences specific patient outcomes (Harding et al., 2011; Yeung et al., 2012). In other words, measurement-based care relies on regular assessment of key clinical outcomes using well-validated measures. Such outcome data are used to attain the best possible treatment outcomes through personalized evidence-based care. Although measurement-based care is common in other areas of medicine, it is not widely practiced in behavioral health care (Harding et al., 2011).

Thus, collaborative care models are designed to improve routine screening and diagnosis of behavioral illness, to increase the use of evidence-based treatment protocols, and to foster patient goal-setting and self-management. A core component of most collaborative care approaches is the use of nonphysician staff who maintain regular contact with patients to ensure continuity of care. Care coordinator activities include assessing patient needs and goals, sharing information, engaging patients in the treatment process, ensuring that patients attend appointments, and maintaining proactive contact with patients to assess treatment barriers and monitor health outcomes.

Reviews of the literature on collaborative care models generally provide evidence that care delivered through these models can improve behavioral health outcomes in civilian populations relative to usual treatment (Woltmann et al., 2012). The strongest evidence pertains to the treatment of depression in primary care (Thota et al., 2012), although recent investigations have begun to demonstrate the value of collaborative models for the treatment of anxiety disorders (Craske et al., 2011; Roy-Byrne et al., 2005). Additional research is needed to

examine the success of integrated approaches in addressing other disorders, including substance use.

Based on the initial success of collaborative care models for treating depression in civilians, VA and DoD have developed collaborative care programs for depression (Felker et al., 2006; VA, 2008). In the case of the DoD effort, first called Re-Engineering Systems of Primary Care for PTSD and Depression in the Military (RESPECT-Mil), the collaborative care model seeks to treat either major depression or PTSD in primary care settings. RESPECT-Mil was modeled after a successful civilian-sector collaborative care program for depression (Oxman, Dietrich, and Schulberg, 2005). An initial experimental evaluation by VA found no differences in PTSD outcomes between RESPECT-Mil and usual treatment (Schnurr et al., 2013), but this research stopped short of suggesting that collaborative care models for treating PTSD are ineffective, noting that such treatment for civilian PTSD appears promising (Zatzick et al., 2004) and that treatment for PTSD poses special challenges. The patient-centered medical home model of collaborative care has now been mandated across the services in the DoD (Defense Health Agency, 2014).

Within the context of collaborative care, evidence-based cognitive behavioral therapy that follows manuals prescribing specific intervention procedures could be provided for active component and NG/R personnel identified in primary care settings who meet criteria for behavioral disorders for which collaborative care models have proven effective. The use of trained, regularly supervised nonprofessionals to provide evidence-based interventions based on detailed therapy manuals would multiply the available force of trained behavioral health professionals. This could extend substantially the reach of available behavioral health professionals in rural or remote areas. Moreover, clinical supervision could be handled remotely by teleconference with behavioral health professionals located in urban settings. Given that little research has been done on collaborative care models outside the civilian sector, additional research on active component and NG/R populations is needed.

As one example of the potential effectiveness of integrating evidence-based psychotherapy into primary care settings, we cite

a recently completed, multisite evaluation of collaborative care for anxiety disorders funded by the National Institute of Mental Health (NIMH), called Coordinated Anxiety Learning and Management (CALM). This included a course of 10–12 sessions of cognitive behavioral therapy to persons with any of four anxiety disorders, using a computer-assisted program developed by the project. Care specialists were recruited to provide the intervention. Although some care specialists had previous psychotherapy training, none had previous training in cognitive behavioral therapy. Many were drawn from allied professions such as social work.

Care specialists received relatively minimal training. They read essential information on anxiety disorders in the *Diagnostic and Statistical Manual of Mental Disorders, Version 4*, and on cognitive-behavioral therapy (CBT) principles. Then they participated in six didactic half-day to full-day workshops covering general CBT principles, CBT principles as found in CALM, and how CBT was customized for the four anxiety disorders covered by CALM. Care specialists also received two hours of training on anxiolytic medications and the medication algorithm used for CALM (Sullivan et al., 2007).

The care specialists monitored medication adherence, provided counseling regarding sleep hygiene and avoiding alcohol and caffeine, and relayed feedback to primary care providers about medication from the supervising psychiatrist. They were provided with weekly group supervision, including in medication management, by trained behavioral health providers (Sullivan et al., 2007; Craske et al., 2011).

As noted, the CALM intervention was more effective than usual care for treating anxiety disorders in primary care (Craske et al., 2011). The CALM intervention is one of various models for linking primary care with evidence-based psychotherapy; others can be found elsewhere (e.g., Unützer et al., 2002; National Health Service, 2013).

In summary, civilian-sector research has demonstrated that behavioral health treatment can be integrated successfully into primary care settings. Although relatively little research has examined integration of behavioral health care in military settings, the use of integrated treatment to address the shortage of quality behavioral health care in rural and remote areas appears promising and worthy of additional research.

Telemental Health as a Potential Partial Solution

TMH is the provision of behavioral health care services from a distance using technology, and it is also known as telepsychology, telepsychiatry, and telebehavioral health. TMH has grown in popularity in recent decades as one strategy for improving access to behavioral health care for individuals in rural and remote areas (National Research Council, 2005). TMH is different from other web-based or “e-mental health” resources intended to improve behavioral health in that it involves real-time, synchronous interaction with a clinician.

TMH has the potential to address many barriers to care faced by patients and providers in rural settings. Providing TMH services in local clinics or patient homes may reduce the need for patient travel to urban centers for care and may minimize the stigma associated with care. It could also protect client privacy in small communities, relieve the professional isolation of rural providers by facilitating communication with colleagues at other facilities, and improve access to evidence-based care for behavioral health conditions.

Most service members have the technology and proficiency to use TMH services. Three in four active component and NG/R personnel regularly use a personal computer, while one-half had a personal smart phone, and nearly all (>85 percent) judged themselves to be competent users of technology (Bush et al., 2012). Not only do current service members possess the ease with technology needed to use TMH (Bush et al., 2012), more than four in five are willing to use a technology-based device to receive or augment behavioral health care (Wilson et al., 2008). In fact, one in three indicate that they would not be willing to see a behavioral health provider for a face-to-face session but would be willing to use a technology-based behavioral health service (Wilson et al., 2008).

Our review of the literature suggests that TMH holds promise as a means of meeting the behavioral health care needs of service members and their families living in rural and remote areas (see Appendix H). In general, remotely delivered behavioral health care yields health outcomes similar to those associated with traditional face-to-face care. Whereas most of the existing research has studied the effectiveness of

TMH in the civilian sector, the VHA has been a leader in conducting clinical trials to evaluate the effectiveness for service members of behavioral health care and assessment provided by TMH. One in five empirical papers of videoconferencing psychotherapy use veteran samples (Backhaus et al., 2012). Although much remains to be learned, particularly with respect to the effectiveness of TMH with active duty personnel, there is good reason to believe that TMH can be used to improve access to quality behavioral health care for service members and their families living in rural and remote areas.

Issues Affecting Access to Telemental Health

Despite the potential role that TMH might play in solving the behavioral health workforce shortage problem in rural and remote areas, the practical application of TMH health still faces significant barriers. Below we describe some of the obstacles to widespread implementation of telehealth.

As is widely known, there is a broadband gap in America (Kuttner, 2012). Specifically, in comparison to urban communities, fewer rural and remote communities have access to high-speed Internet connectivity (Neville, 2013). For some rural and remote areas, dial-up connectivity remains the only option available because low population density and fixed infrastructure costs increase the cost per customer. About 9.8 million rural residents are without access to Internet services that meet the current Federal Communications Commission (FCC) working definition of basic broadband (Kuttner, 2012; FCC, 2010).

Similarly, even in rural and remote areas with adequate network infrastructure, the cost of audio-visual telehealth equipment can be a barrier because health care providers are reluctant to invest in technology without clear evidence of a benefit (Moffatt and Eley, 2011; Tracy et al., 2008). Significant questions remain concerning the cost-effectiveness of TMH. Although some reviews have concluded that TMH is cost-effective (Monnier, Knapp, and Frueh, 2003), other studies point to uncertain benefits and the likelihood that cost-effectiveness may depend on specific circumstances (Modai et al., 2006). A recent large-

scale VHA study of TMH collaborative care for depression in rural primary care settings determined that the intervention, while effective, was not cost-effective. In fact, costs exceeded those for other collaborative primary care interventions for depression (Pyne et al., 2010). Given the paucity of rigorous studies on TMH cost-effectiveness, and telehealth cost-effectiveness more generally (Whitten et al., 2002; Bergmo, 2010), additional research would be required before pursuing this option further.

Coverage and reimbursement once posed a major barrier to use of telehealth, although this is less of an issue for military patients and may be changing. Currently, Medicare reimbursement for telehealth is limited to patients in a HPSA or in a nonmetropolitan county (National Telehealth Policy Resource Center, 2013). The *originating site* must be a medical facility and cannot be a patient residence (National Telehealth Policy Resource Center, 2013). Telehealth reimbursement is not affected by where services are delivered (the *distant site*). The trend is for Medicare to reimburse telehealth services that simulate standard, face-to-face provider-patient interactions. Private insurers have not adopted a standard for coverage and reimbursement.

TRICARE policy mandates certain standards of care for reimbursement of telehealth services, and these stipulations can act as barriers to TMH services. Providers of TMH services must have video technology equipment that meets or exceeds American Telemedicine Association standards. (Telephone-only interventions are not approved for coverage or reimbursement.) These equipment requirements include a minimum bandwidth of 384 kilobits per second (H.263), 256 kilobits per second (H.264), or their technical equivalent; a monitor with a minimum net display of 16 inches along the diagonal; nonanamorphic video picture display; and a minimum video resolution of one Common Intermediate Format or one Source Input Format. Originating sites must have cameras with pan, tilt, and zoom capabilities that can be controlled remotely from the distant site. A staff person must also be present at the originating site to operate equipment and present the patient to the provider at the distant site. Finally, all Internet protocol sessions must be encrypted unless they are conducted entirely on a protected network or on a virtual private network connection (TRI-

CARE, 2002). Some of these technological requirements, such as the nonanamorphic video picture display, may be outdated or obsolete. Other requirements, including the need for cameras with remotely operable pan, tilt, and zoom capabilities, have an unproven connection to treatment outcomes. To the extent that these requirements constitute barriers to the wider use of TMH, they might warrant reconsideration.

Finally, as discussed in a 2012 Institute of Medicine workshop and elsewhere (Institute of Medicine, 2012), licensing issues constitute significant legal barriers to widespread adoption of telehealth. Most states require health care professionals to be licensed to practice. For telehealth providers at distant sites who offer services to patients in originating sites in different states, the law may require that the provider also be licensed to practice in the originating state. These arguably antiquated laws can pose operational and administrative obstacles to TMH providers. Bill H.R. 6719, introduced in the 112th Congress but not passed, would have changed licensing requirements to allow health care providers to practice across states.

Recommendations

We offer several suggestions for improving access to behavioral health care among geographically remote service members and dependents.

Require contractors to share information about providers with DoD. Our research indicated that DoD currently does not systematically or regularly monitor drive times to MTFs or community providers for service members or dependents. In contrast, VA maintains an interactive data portal that allows VA employees to obtain up-to-date counts of veterans in the VA system within a 30-minute drive of VA facilities (Economic and Social Research Institute [ESRI], 2013). VA medical planners can also use the portal to experimentally place hypothetical new facilities on the map and view the resulting impact on access to care among the veteran population.

Any attempt at geographic monitoring by DoD would need up-to-date information on TRICARE network providers. Such information is held by contractors who maintain regional care networks and is not readily available to DoD authorities. This information is available in limited, isolated slices on websites searchable by TRICARE beneficiaries, and in some cases on mobile applications with geographic information system functionality (WSJ, 2014). Provider locations, however, are not available as a database or summary report for ongoing monitoring or analysis. To facilitate ongoing monitoring and evaluation of access to care in the MHS, contractors in charge of developing and maintaining regional purchased care networks should be required to share their databases of providers with DoD. This regularly updated information on purchased care providers should be incorporated into an interactive data portal.

Establish the computing infrastructure and data visualization capabilities for an interactive data portal to monitor access to care in the MHS. At its most basic level, such a system would maintain counts of remote personnel and provide visual displays of the drive times to behavioral health (or other) providers that service members and dependents face. It could thus help monitor progress toward benchmarks of access to care. This portal and the supporting data infrastructure will require, at a minimum, the following streams of data:

- current residential locations of service members and dependents (available in DEERS from DMDC)
- metadata from DEERS to determine TRICARE coverage and eligibility for services
- locations of MTFs providing behavioral health care
- locations of VA facilities providing behavioral health care
- locations of purchased care providers offering behavioral health care
- current information on road networks in the United States (available from ESRI).

This data portal should be accessible by MHS employees, DoD officials in charge of assessing the performance of the MHS and adherence to access-to-care guidelines, and even perhaps (in a more limited form) to military service members who might be deciding where to reside. The primary purpose of this interactive data portal would be to allow for constant monitoring of the ever-changing locations of service members and dependents in relation to behavioral health care available to them.

Moreover, this data portal would allow DoD to take a comprehensive count of the number of service members and dependents within an acceptable driving distance of behavioral health (or other) services, and to set reasonable benchmarks for improvement toward better access to care. It would also allow users to examine areas (or subpopulations) in greatest need and to design interventions specifically to address the needs of these subgroups or regions. With such information, not only can DoD set periodic benchmarks for improvement, but it can also

monitor progress toward these benchmarks and ensure that responsible entities are accountable, receiving rewards, sanctions, or additional guidance for improving access to care.

Set a DoD standard of 30-minute maximum drive times to behavioral health specialty care for service members and dependents.¹ Based on the guidelines and information sources used in our analysis, we estimate that 97 percent of active component personnel, 69 percent of NG/R personnel, and 64 percent of dependents are already within a 30-minute drive of specialty behavioral health care. Given the essential contributions of active component service members to military readiness and national defense, *we recommend that the MHS work quickly on closing the gap for active component service members, as a target near 100 percent access to behavioral-health specialty care within the United States is within reach.*

Set goals of concerted progress toward increasing access for NG/R service members and military dependents in the MHS. Notably, a larger percentage of NG/R service members and dependents are treated outside MTFs, so increasing access for these military subpopulations will require a mixture of (1) treating more of these individuals at existing MTFs, (2) ensuring better access to community providers, (3) expanding telehealth capabilities in more remote locations, and (4) improving access to behavioral health services at primary care sites.

As mentioned in Chapter Two, this basic locational information is just a start. That is, hypothetical geospatial accessibility provides a best-case scenario that assumes those needing care are able to procure transportation to the provider location, are able to get time off work or other duties to see the provider, and can get an appointment in a timely manner. This naïve, uncomplicated geospatial model also assumes that the individual seeking treatment is able to see a specialist with the correct training and effective treatment modalities for his or her specific needs. In essence, a naïve geospatial model of access to care as outlined

¹ Some service members have duty stations in very remote areas where it is not feasible to establish clinics or recruit local behavioral health professionals. Such service members should be ensured telehealth connection to providers should they need them (or provision of adequate behavioral health services at primary care sites).

above ignores (or at least provides no information on) the important contributions of effective *processes* and *outcomes* in establishing and ensuring quality care.

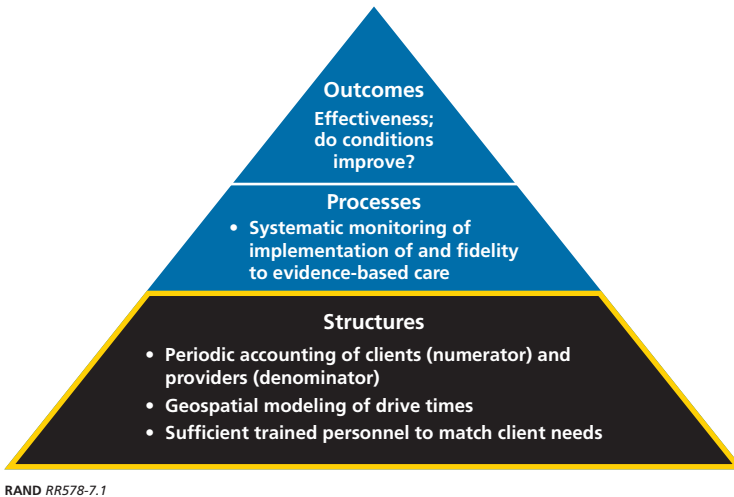
Ensure that an interactive data portal can provide information on needs and quality. To address some of the aforementioned gaps in establishing and monitoring quality behavioral health care, we recommend that the interactive data portal be built to include additional data streams that provide information on processes and outcomes as they become available. Such data streams would include

- types (e.g., psychiatrist, clinical social worker) of behavioral health providers available at MTFs and community-provider locations
- training and specialty of providers (e.g., child therapy, fellowship in addiction psychiatry, mastery of specific evidence-based procedures)
- tallies of providers at MTFs and community locations
- availability of specific evidence-based procedures at MTFs and community-provider locations (e.g., exposure therapy for PTSD)
- needs of client population—existing pattern diagnoses, projections of unmet need based on epidemiologic studies such as the Millennium Cohort Study, and projections of future need based on changing patterns of combat exposure or other factors
- as data accumulates, information on the availability of *effective* care—that is, procedures (and practitioners or facilities) that are successful at managing and reducing symptoms
- availability of local telehealth connections to providers (and the training and specialty of these providers).

Thus, while initial efforts at developing a monitoring system would focus on identifying whether the right basic structures are in place to provide adequate access for service members and dependents (the base of the pyramid in Figure 7.1), further efforts would ensure that the appropriate processes and outcomes were also being achieved.²

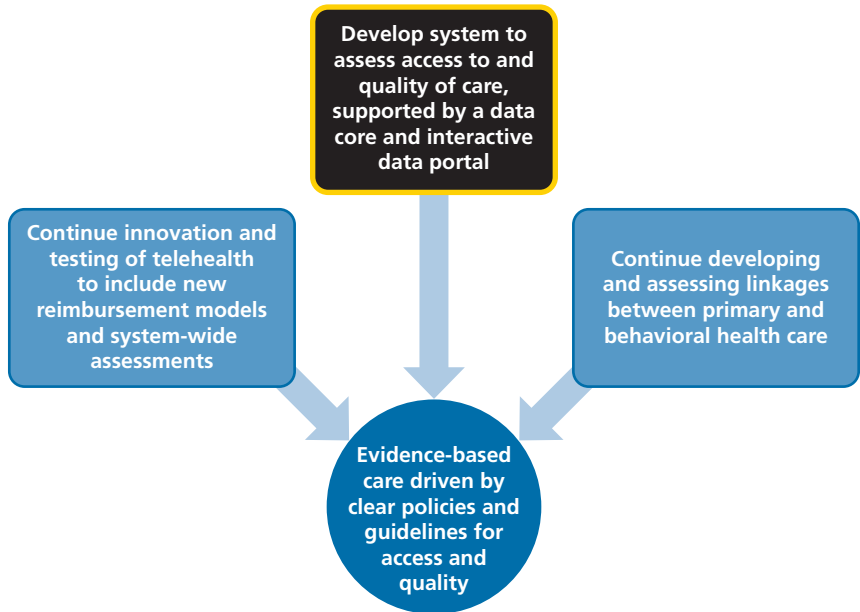
² See Appendix I for a detailed explication of the Structures, Processes, and Outcomes theoretical model.

Figure 7.1
Monitoring Structures, Processes, and Outcomes



Of course, the development of a system to monitor access to and quality of behavioral health care is only part of a larger endeavor to build the appropriate capabilities to ensure that service members and dependents receive the behavioral health care they need. In our exploration of existing programs (Chapter Five) and literature review (Chapter Six), we found that telehealth capabilities and models of care that integrate primary care and specialty behavioral health care are two particularly promising avenues for improving access to care for remote populations. We also found the need for more outcome-oriented and system-level research on TMH for military personnel. Furthermore, we found that many current policies for telehealth in the MHS either reduce provider incentives or do not provide enough incentives to make telehealth capabilities more accessible. *Thus, we recommend that the development of a comprehensive monitoring system be part of a larger effort to develop, test, and assess alternative methods of delivery for behavioral health care in remote settings* (see Figure 7.2). Together, these components will work toward an evidence-driven MHS that provides accessible, quality care for all service members and dependents (Institute of Medicine, 2006).

Figure 7.2
Monitoring System as Part of Holistic Approach to Improving Access to Behavioral Health Care



RAND RR578-7.2

In sum, our core recommendation for DoD is to create an ongoing infrastructure for systematically monitoring and improving the quality of behavioral health care for service members and their families with a framework of structures, processes, and outcomes across MTFs and purchased care networks. Within this infrastructure, we recommend DoD do the following:

1. **Establish clear policies for enhancing remote service member and dependent access to behavioral health care by**
 - a. setting an official standard of a maximum 30-minute drive to behavioral health specialty care
 - b. working quickly on closing the gap for active component service members, as a target near 100 percent access to

behavioral health specialty care within the United States is within reach

- c. setting goals for increasing access for NG/R service members and military dependents.
- 2. **Monitor implementation of these policies by**
 - a. establishing the computing infrastructure and data visualization capabilities to support an interactive data portal to monitor access to care for service members and dependents
 - b. making this monitoring system part of a larger effort to develop, test, and assess alternative methods of delivery for behavioral health care in remote settings
 - c. supporting this monitoring effort by requiring regional managed-care contractors to share their provider database with DoD and to regularly update this database and provide all required data fields, to the best of their ability, which will make monitoring access to care outside of MTFs feasible.
- 3. **Take steps to improve remote behavioral health care by**
 - a. continuing to innovate and collect systemwide evidence on the effectiveness of TMH and collaborative care treatment in military populations
 - b. removing outdated technical and regulatory barriers to TMH and collaborative care approaches to behavioral health within the MHS
 - c. feeding the collected evidence back into monitoring systems so that it can systematically improve both access to and quality of care.

Implementing these recommendations will require immediate and sustained action in DoD policies, infrastructure, and practices. Policy should reflect clear standards of access to care and the necessity of monitoring and making progress toward these standards. In the meantime, the requirements of a monitoring system must be carefully outlined so that this system can be constructed and maintained once it is mandated by policy. Finally, innovation in strategies to improve access to care in remote areas must continue, along with the removal of barriers to TMH and collaborative care.

Notably, the tailoring of specific strategies for improving access will be aided by a monitoring system that can provide regional, state, and local information on populations in need. For example, areas with VA facilities and large numbers of remote NG/R service members could be assisted by greater VA outreach and service provision. Areas with very few facilities may require MTF providers to physically rotate through community clinics on certain days of the week or month, while other areas with basic telehealth capabilities could be assisted through better telehealth networking between PCPs and specialty behavioral health providers.

Defense Enrollment Eligibility Reporting System Personnel Data

DEERS is an administrative database maintained by DMDC. It contains information for each uniformed service member (active component, retired, or reserve component), U.S.-sponsored foreign military personnel, DoD personnel, uniformed service civilians, other personnel as directed by DoD (including the patient population serviced through the Military Health Services System), and their eligible family members. DEERS registration is required for TRICARE eligibility and enrollment.

We used the 2010 and 2012 DEERS Point in Time Extract (PITE) files, which are monthly snapshots of the active DEERS database. We used these files to generate population estimates at the ZIP code level (DRVD_LOC_PR_ZIP_CD) for the following four population groups:

- active component
- active duty NG/R
- inactive NG/R
- dependents.

Table A.1 displays population estimates by group, and Tables A.2, A.3, A.4, and A.5 show the definitions for the associated DEERS codes.

Table A.2 shows the DEERS codes for the Person Association Reason Code (PNA_RSN_CD), which represents the underlying basis of an association of one person to another person. For example, a person is a child of another person.

Table A.1
Population Estimates by Group

Population	Person Association Reason Code	Member Category Code	Person Association Type Code	Person Association End Reason Code
Active component	BD	A		
Active duty NG/R	BD	G, S		
Inactive NG/R	BD	N, V		
Dependents	AA, AB, AF		D	U

NOTE: The definitions for these DEERS codes can be found in Tables A.2, A.3, A.4, and A.5.

Table A.2
Person Association Reason Code (PNA_RSN_CD)

Code	Definition
AA	Spouse
AB	Child
AC	Foster child
AD	Parent
AE	Parent-in-law
AF	Stepchild
AH	Stepparent
AI	In loco parentis
AX	Emergency contact
BB	Ward
BC	Former spouse (not assignable after RAPIDS 6.3)
BD	Self (i.e., the person and the other person are the same person). Transaction only; not stored.
BE	Joint marriage spouse
BF	Other health insurance subscriber
BG	Pre-adoptive child

Table A.2—Continued

Code	Definition
CA	Member of household headed by sponsor's former spouse (child, stepchild, or ward only)
ZZ	Unknown

Table A.3 shows the DEERS codes for the Member Category Code (MBR_CAT_CD), which represents how DEERS views the sponsor based on his or her entitlements. (This attribute is similar to Personnel Category Code.)

**Table A.3
Member Category Code (MBR_CAT_CD)**

Code	Definition
1	Transitional compensation beneficiaries (formerly abused dependents)
A	Active duty
B	Presidential appointee
C	DoD civil service employee, except presidential employee
D	Disabled American veteran
E	DoD contract employee
F	Former member (reserve service, discharged from the Ready Reserve or Standby Reserve following notification of retirement eligibility)
G	National Guard member (mobilized or on active duty for 31 days or more)
H	Medal of Honor recipient
I	Other government agency employee, except presidential appointee
J	Academy student (does not include Officer Candidate School or Merchant Marine Academy)
K	Non-Appropriated Fund DoD employee
L	Lighthouse service
M	Nongovernment agency personnel

Table A.3—Continued

Code	Definition
N	National Guard member (not on active duty or on active duty for 30 days or less)
O	Other government contract employee
P	Transitional Assistance Management Program member
Q	Reserve retiree not yet eligible for retired pay ("gray-area retiree")
R	Retired military member eligible for retired pay
S	Reserve member (mobilized or on active duty for 31 days or more)
T	Foreign military member
U	Foreign national employee (DoD or non-DoD employee)
V	Reserve member (not on active duty or on active duty for 30 days or less)
W	DoD beneficiary (a person who receives benefits from the DoD based on prior association, condition, or authorization; for example, a former spouse)
Z	Unknown

Table A.4 shows the DEERS codes for the Person Association Type Code (PNA_TYP_CD), which represents a specific kind of person association.

Table A.5 shows the DEERS codes for the Person Association End Reason Code (PNA_ERSN_CD), which represents the reason that an association between a person and another person ended or is expected to end.

Table A.4
Person Association Type Code (PNA_TYP_CD)

Code	Definition
D	Dependent. The person represented by the Secondary DMDC Identifier is a dependent of the person represented by the Primary DMDC Identifier.
N	Nondependent (e.g., emergency contact person)

Table A.5
Person Association End Reason Code (PNA_ERSN_CD)

Code	Definition
B	Dependent was adopted by sponsor (stepchild or ward)
D	Dependent died (all person associations)
E	Terminate a dependent automatically
F	Dependent was invalidly enrolled (all person associations)
G	Dependent with an association with the sponsor was adopted by a person other than the sponsor and is no longer associated with the sponsor
H	Dependent married (child, stepchild, or ward)
J	Dependent became a sponsor (child, stepchild, or ward)
N	Dependent was terminated due to age (child, stepchild, or ward)
O	Dependent is no longer supported by sponsor (parent, parent-in-law, or ward)
Q	Date is certain
R	Date is an estimate
S	Separation from non-dependency association
T	Divorce (spouse, parent-in-law, stepchild, or joint marriage)
U	No date can be predicted

Driving Distance to Military Treatment and Veterans Affairs Facilities

The list of MTFs included in the study was originally gathered from the TTWRL database of medical providers (Defense and Veterans Brain Injury Center, 2013) and from the TRICARE MTF Locator website (TRICARE, 2013c). Our list of MTFs and types of care available at MTFs was compiled through extensive website searches and direct phone calls to MTFs. This list included 193 medical providers, which covered all types of facilities available in the armed services. We matched our list to those indexed in the Federal Practitioner 2013 Directory of VA and DoD Health Care Facilities (Federal Practitioner, 2013), a list maintained by a peer-reviewed journal for VA and DoD health care professionals. This registry lists service and contact information on various types of military medical facilities throughout the United States. All facilities in the registry were on our list; however, the registry did not include branch clinics. We then cross-checked any unmatched facilities with information found on the TRICARE MTF Locator website. Duplicate entries, closed facilities, and those where additional information could be found were eliminated from our list.

Finally, we removed three facilities that were not contained within a non-TPR buffer. We checked the information in the registry and MTF locator and concluded that the services provided were very limited. Additionally, we added one facility that had a non-TPR buffer but was not in our original list. The process of cleaning resulted in a list of 177 MTFs.

Services Provided at the Military Treatment Facility

The TTWRL data provide summary information on the types of services provided at each MTF. We used these categorizations to split our selection of MTFs based on the amount of provided services. The types of services are divided into the categories presented in Figure B.1.

We identified *higher-capacity* MTFs based on those with at least one service listed in the categories Behavioral Health, Mental Health, or Social Services. To test this distinction, we then looked at patterns of use for our population near a higher-capacity MTF versus the others. While there was some indication of minor differences in use, the pattern was not strong or consistent.

There are several possible explanations for this. First, there is likely error in the data collected on provided services. There are likely services that are missing in the data, particularly less formal behavioral health services provided by a PCP or by nonmedical care. Second, those at the lower-capacity MTFs may access care outside of the MTF, either through a telehealth connection to another MTF or in the community. Finally, our criteria for selecting higher-capacity MTFs might not be

Figure B.1
MTF Service Categories

Audiology	Behavioral Health ^a
Emergency Services	Endocrinology
Gastroenterology/Dietary	Hyperbaric Medicine
Imaging-Radiology	Lab
Medical Boards	Mental Health (Psychiatry/Psychology) ^a
Neurology	Neuro-Psychology
Occupational Therapy	Optometry/Vision Therapy
Ophthalmology	Orthopedics
Otolaryngology (Ear, Nose, and Throat)	Pain Management
Pharmacy	Physical Medicine and Rehabilitation
Physical Therapy	Podiatry
Sleep Disorder Services	Social Services ^a
Speech Language Pathology	Substance Abuse Treatment

^aHigher-capacity MTFs.

ideal for identifying different levels of care. However, we did attempt a few different specifications with little change in the results.

In the end, we decided to use the full selection of MTFs to run the analysis, rather than using any delineations of capacity. In future work, it may be useful to build a more robust measure of capacity and test the impact on use and access. However, this is probably best done for a fairly narrow set of conditions for which it would be more straightforward to identify resources used for treatment.

30-Minute Driving Distances from Military Treatment Facilities

We created 30-minute driving distance buffers around MTF ZIP codes using the ESRI U.S. street feature dataset and the Network Analyst Service Area Tool. Using street information, the Network Analyst Service Area Tool calculates the area within a 30-minute drive from a given point. Street information includes detailed geometric line data and routing attributes for almost every public street in the United States. Information includes, but is not limited to, speed limit, route signage, elevation, and road quality for each street.

The tool specifications used to create custom MTF 30-minute driving buffers are presented in Table B.1.

There are some potential limitations to using the network spatial analyst tool. The calculations are estimates and do not take into account traffic patterns, which likely means the buffers overestimate driving ranges. This tool also is not as effective in rural areas with limited road access. In particular, MTFs in Alaska and rural California and those close to water had to be recalculated individually. Also, the tool could not locate some locations in Alaska, primarily due to the large areas those ZIP codes typically cover. For these, we used a larger searching distance to load them into the Network Analyst Service Area Tool.

Table B.1
Tool Specifications Used for Military Treatment Facility Driving Buffers

Tool	Specification
Polygon type	Generalized
Overlap type	Disks
Impedance	Time (minutes)
Default break	30 minutes away from MTF
Restrictions	Nonroutable and one-way segments
U-turns at junctions	Allowed
Preference for high-quality roads	On
Exclude restricted portions	On

Access to Veterans Affairs Facilities

Inactive NG/R personnel who have had a combat deployment in the past five years will have access to VA facilities.¹ To account for this, we identified the remote population that would be eligible for access. To determine whether someone was deployed, we identified hostile-fire pay from the DMDC Active Pay file and combat zone tax exemption from the DMDC Reserve Pay file.

We identified the locations of VA facilities using TTWRL data, and we cleaned the data for duplicates and ran some spot checks against online directories. We identified ZIP code centroids within a 30-minute drive of VA facilities using a process similar to that described in Chapter Two for generating driving buffers for MTFs. Those remote service members with a combat deployment and within a 30-minute drive are considered to have access to a VA facility, and thus could be considered nonremote.

¹ VA facility locations were determined by TTWRL VA data (Defense and Veterans Brain Injury Center, 2013).

TRICARE Prime Remote Status

TPR areas are geographically remote from MTFs (generally ZIP code areas more than 40 miles from an MTF) and indicate ZIP code areas for which TRICARE Prime enrollees are eligible for coverage by TPR.² This applies to active component and active duty NG/R service members and their dependents.

The monthly Service Area file is used as a reference file to process various medical claims. It is a ZIP code–level file with a series of indicators for health programs that are available and eligible for specific areas. These programs include the US Family Health Plan (USFHP), Senior Prime, PSA, Remote Active Duty Dental, Federal Employee Health Benefit Program, and, most importantly for our analysis, TPR.

Areas that are not TPR are similar in nature to PSAs, but the two designations are not identical. Both are used to identify populations that are geographically distant from MTFs. TPR eligibility is determined for a population that is already Prime eligible—notably, active component and active duty NG/R service members. They become eligible for TPR status if they are geographically distant from MTFs, and are thus freed up to seek care directly from the community.

² The data source for this analysis was the May 2013 Service Area file (TMA, 2013).

Community Provider Shortage Areas

Health Professional Shortage Areas

HPSAs are defined for geographic areas and high-need populations.¹ Population HPSAs focus on subpopulations within a geographic area such as low income, homeless, elderly, or Medicaid eligible. Geographic HPSAs are estimated for the entire population within an area. However, a geographic area can be considered high need for services depending on population characteristics, which will impact the HPSA designation. We limit this analysis to geographic areas because the military population is less likely to be in a high-need population.

The basic method for identifying a HPSA is calculating the total providers servicing a given population. For behavioral health providers, a geographic area is generally considered a HPSA if it meets one of the criteria for ratios of population to providers presented in Table C.1.

For geographic areas with a high need for behavioral health services—those with high poverty, large child or elderly populations, or high prevalence of alcohol or substance abuse—the criteria presented in Table C.2 are less stringent.

For primary care providers, a geographic area is generally considered an HPSA if the ratio of population to PCP is at least 3,500:1 (HRSA, 2013b). PCPs are defined as all doctors of medicine (M.D.) and doctors of osteopathy (D.O.) providing direct patient care with a specialty of general or family practice, general internal medicine, pedi-

¹ The data sources for this analysis were HPSA shapefiles downloaded from the HRSA Data Warehouse (HRSA, 2013a).

Table C.1
Health Professional Shortage Area Ratio Criteria

Criteria	Core ^a Ratio	Psychiatrist Ratio
1	4,500:1	20,000:1
2	9,000:1	any
3	any	30,000:1

SOURCE: HRSA, 2013b.

^a Core behavioral health providers are composed of psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage and family therapists.

Table C.2
High-Need Area Ratio Criteria

Criteria	Core ^a Ratio	Psychiatrist Ratio
1	4,500:1	15,000:1
2	6,000:1	any
3	any	20,000:1

SOURCE: HRSA, 2013b.

^a Core behavioral health providers are composed of psychiatrists, clinical psychologists, clinical social workers, psychiatric nurse specialists, and marriage and family therapists.

atrics, or obstetrics and gynecology. In geographic areas of high need for primary care—high poverty, high infant mortality, or high birth rates—this ratio decreases to 3,000:1.

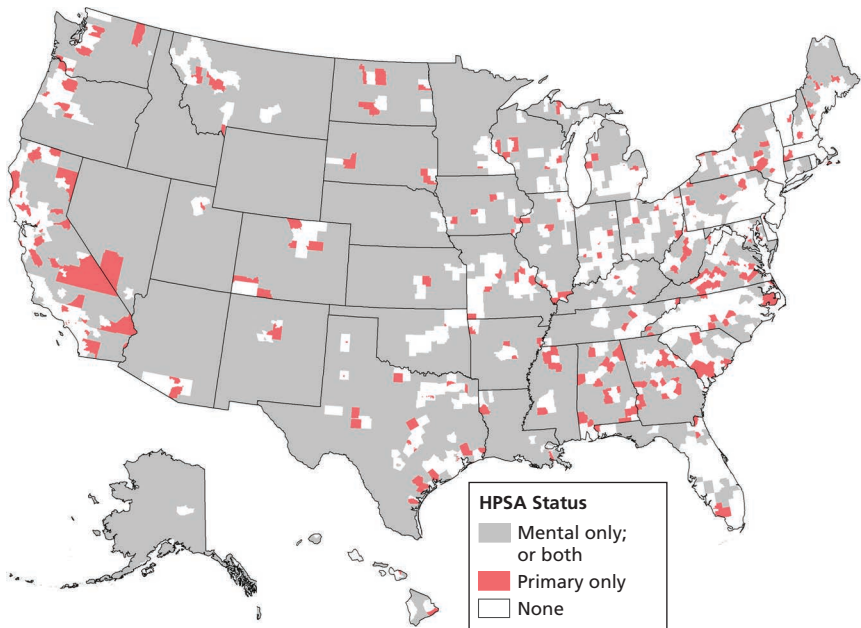
For our analysis, we use the union of these geographic behavioral health HPSAs and geographic primary care HPSAs, which includes areas that have shortages of only behavioral health professionals, only primary care, or both. We include these primary-only HPSAs because many of the enrollees require a referral or prior authorization to seek specialty behavioral health care. Additionally, primary care providers can often provide important behavioral health services. As such, a shortage of primary care could contribute to access issues for our population.

As shown in Figure C.1, much of the U.S. land area is covered by MHPSAs (gray area), with lighter coverage around densely populated areas. The addition of primary-only areas (red area) does not have much impact on the coverage.

TRICARE Provider Shortage Areas

HPSA designations focus on total or high-need populations, such as homeless, low-income, or Medicaid-eligible populations.² As such, they

Figure C.1
Primary Care and Mental Health Professional Shortage Areas



SOURCE: HRSA, 2013a.

RAND RR578-C.1

² The data sources for this analysis were TRO-North (Health Net Federal Services, 2013) and TRO-West (TriWest Healthcare Alliance, 2013) provider lists and the Dartmouth Atlas hospital referral region shapefile (Dartmouth Atlas of Health Care, 2013).

may miss military-specific provider shortages that are not correlated with overall or high-need provider shortages.

To explore this, we generated military-specific population-to-provider ratios within a hospital referral region (HRR). HRRs are aggregations of ZIP codes generated by the Dartmouth Atlas to represent a contiguous region of health services delivery. There are 306 HRRs in the United States, each containing at least one major hospital. We selected this geographic designation because the regions are designed to define a self-contained health care market and they are based on ZIP codes, as are all of our data.

Provider data were obtained for the purchase care networks for the TRICARE North and West regions (note that we are missing TRICARE South data for these estimates). We first cleaned and formatted the provider data to produce counts of behavioral health provider FTEs by ZIP code. This required eliminating duplicate provider listings, and, in cases in which providers were listed in multiple locations with different ZIP codes, allocating FTEs by ZIP code accordingly.³ ZIP code-level FTE estimates were then aggregated to HRRs.

Using our estimates of the total community population, we estimated the count of population to FTE provider within an HRR. We considered an area to have a potential shortage if the ratio of community population to behavioral health specialist providers was greater than 100.⁴ Many of these areas overlap with HPSAs, but there are several additional markets that were highlighted, particularly those in urban areas with large military populations.

³ For example, if a provider was listed in ZIP code 90401 and 90402, each ZIP code would receive 0.5 FTE for that provider.

⁴ This lower ratio (compared with ratios used in HPSAs) was used because these community providers see other patients besides service members and dependents, and thus providers' FTEs are not available exclusively to military populations. And, even if one were to assume that these providers exclusively treated TRICARE patients, epidemiological estimates for point prevalence of PTSD and depression after combat deployments approach one in five (or 20 out of 100) service members (Tanielian et al., 2008)—already a very high case load for a single provider.

Data Validation: TRICARE Cold Calls

To validate the quality of the TRICARE provider data, we extracted a sample of providers and implemented a series of phone calls to the providers to determine whether they accepted TRICARE. Because our analysis focuses on remote populations, we focused our efforts on providers that serve this population.

Using our ZIP code file (see Appendix D), we initially identified a set of ZIP codes that contain 25 or more service members and that are also considered rural or very rural (that is, their rural-urban commuting area codes were 3 or more). We then geocoded the providers in the TRICARE North provider file, using the listed address. We selected providers within a 30-minute drive of our remote ZIP codes using a process similar to that described in Appendix B for generating driving buffers for MTFs. This resulted in a sample of 98 unique providers, potentially serving 3,749 TRICARE enrollees in remote areas.

Over the course of about two weeks in August 2013, a team of two researchers attempted to contact each of the 98 providers up to two times to inquire about the acceptance of TRICARE insurance. Each researcher followed a detailed protocol and coding scheme for conducting the calls to providers (see Table C.3). At the beginning of the call, the researcher introduced herself and stated the name of the affiliate organization. Following the introduction, the researcher asked the respondent—generally a receptionist or billing department clerk—if the provider was accepting new TRICARE patients. If new patients were accepted, the respondent was asked whether billing was processed directly with TRICARE/Healthnet or whether the patient was responsible for submitting claims to TRICARE. If the provider was not currently accepting new TRICARE patients, the researcher asked whether other insurance plans were accepted. In addition, non-TRICARE providers were asked about primary barriers to accepting TRICARE insurance.

The researchers were able to speak with 78 of the 98 (80 percent) unique providers. Of these 78, 73 (94 percent) accepted TRICARE insurance. Only two providers were not accepting new patients, and three did not accept TRICARE. An additional two providers no longer

Table C.3
Provider Calls Protocol

Step	Script	Code
1	Good morning/afternoon, I'm Karen/Dionne from the RAND Corporation, a nonprofit research organization. We're calling to see if [doctor name] accepts TRICARE to document the availability of mental health care for service members and their families in rural and remote areas. Is (doctor name – column K) currently accepting new TRICARE patients? [IF YES, ANSWER 2 ONLY, SKIP 3 AND 4; IF NO, GO TO 3 AND 4]	0-no 1-yes
2	(If yes to #1): To the best of your knowledge, does (doctor name – column K) bill TRICARE/Healthnet directly or is the patient billed and responsible for submitting claims personally to TRICARE? Great, thank you for your time. I will make sure to document this in our records. [END CALL, LEAVE 3 AND 4 BLANK]	1-bills directly 2-patient submits claim 3-other (write in comment) 8-DK 9-N/A
3	(If no to #1): Is that because (you) (he/she) does not accept ANY insurance?	0-no 1-yes 3-other (write in comment) 8-DK 9-N/A
4	(If Provider does not accept TRICARE): To the best of your knowledge, what are the main barriers to accepting TRICARE insurance? Great, thank you for your time. I will make sure to document this in our records. [END CALL]	Write in comment

provided behavioral health services. We were unable to reach 20 providers because they either did not respond to voice messages or could not be reached at the available phone numbers. The results of our phone conversations with facilities led us to conclude that the quality of the data was high enough to proceed with creating the shortage area estimates.

ZIP Code File for Geospatial Analysis

To generate our primary analysis file, we combined the data described in the first three appendixes: DEERS population counts, MTFs and driving buffers, VA driving buffers, TPR layer, HPSA layer, and TRICARE provider shortage layer. To do this, we started with a ZIP code polygon layer file obtained from ESRI.

Using ESRI ArcMap, we generated a geographic centroid of each ZIP code and then combined this with the TPR, driving buffer, and provider shortage layers. We generated flags based on whether the centroid was contained within the layer. For example, consider the demonstration ZIP codes presented in Table D.1. Both ZIP codes 1 and 2 are near an MTF, and neither ZIP code centroid is contained within the TPR layer. However, ZIP code 1 centroid is contained within the 30-minute driving buffer, so it is considered to have greater access to the MTF. The ZIP code 3 centroid is contained within the TPR layer, but none of the others. The ZIP code 4 centroid is contained within the TPR layer, the HPSA layer, and an HRR polygon that is considered a TRICARE provider shortage area.

Table D.1
Example Geographic Centroid

ZIP Code	TPR_flag	30min_flag	HPSA_flag	TPS_flag
1	0	1	0	0
2	0	0	0	0
3	1	0	0	0
4	1	0	1	1

These data were then exported from ArcMap as a ZIP code–level data file, which was combined with the ZIP code–level DEERS population counts to association population counts with these flags. Using this file, we went through three main steps checking and cleaning the data:

1. Generate a crosswalk for valid ZIP codes in the DEERS file that are unmatched with the flag file.
2. For those service members or dependents in the DEERS file that have invalid ZIP codes, search for valid ones.
3. Identify and correct errors with layers.

Providing Flags for Valid, Unmatched ZIP Codes

To determine whether an unmatched DEERS ZIP code is valid, we merged the ZIP code–level file with the 2012Q4 ZIPLIST5 Geocode file generated by CD Light, LLC. This is a database of every active ZIP code in the United States and includes the latitude and longitude of the ZIP code centroid, state, and type (standard, post office box, unique building, or military). We considered any ZIP code found in this file to be valid.

Most of the valid, unmatched ZIP codes were post office boxes or assigned to a unique building or business rather than a geographic area. To generate a match, we mapped the coordinates found on the ZIPLIST5 file in ArcMap and merged with our ZIP code polygon file. Any unmatched ZIP codes mapped within the boundaries of an existing ZIP code received the same flag values.

Substituting Valid for Invalid ZIP Codes

Any ZIP code that did not match with the ZIPLIST5 was considered invalid. These mostly consisted of missing codes and null values such as 99999 and 00000. With the assumption that many of these were due to a data error or temporary change of status, we looked back up to six months in the DEERS files for a valid ZIP code for the same person. This valid ZIP code was substituted.

An additional category of unmatched ZIP codes were APO/FPO or other ZIP codes outside the boundaries of the United States. To account for demand for services that might occur within the year of analysis, we decided to similarly look back up to six months in the DEERS files to find a valid ZIP code within the United States.

Checking Driving Distance Buffer and TRICARE Prime Remote Layers

To test the driving distance buffers, we flagged approximately 1,000 ZIP code centroids that were considered non-TPR (i.e., close to an MTF) but were not flagged as being within a 30-minute driving distance. To help clean these codes, we additionally built a 60-minute driving distance buffer and a 45-mile buffer around all the MTFs. For most of these flagged cases, we also ran a visual inspection on the centroid and buffers.

This process led to some tweaks of the driving buffers, in particular in Alaska and California, as noted in Appendix B. After tweaking, approximately 83 percent of these cases were considered to be somewhere between a 30- and 60-minute drive, but still non-TPR. An additional 8 percent were considered to be outside a 60-minute drive, but still non-TPR. Five percent of the ZIP codes were considered to be within a 30-minute drive, and were hand-corrected. A final 3 percent of cases were considered to be beyond a 60-minute drive and also more than 45 miles outside of the MTF. These ZIP codes were corrected to be considered TPR.

TRICARE Plans

TRICARE Plans

As of November 2013, TRICARE serves approximately 9.6 million beneficiaries through different health plan options that vary by policy features such as eligibility requirements, annual fees, and deductibles. In this appendix, we provide general summaries of TRICARE’s health plans (Table E.1), the enrollment numbers by plan option (Table E.2), and a side-by-side comparison of selected common plans (Table E.3).

Table E.1
TRICARE Plan Descriptions

TRICARE Health Plan	Description
TRICARE For Life	TRICARE For Life offers secondary coverage to TRICARE beneficiaries who have both Medicare Part A and B.
TRICARE Prime	A managed care option offering the most affordable and comprehensive coverage.
TRICARE Prime Overseas	A managed care option offering the most affordable and comprehensive coverage to active duty families living overseas.
TRICARE Prime Remote	A managed care option offering the most affordable and comprehensive coverage to active duty families in remote U.S. locations.
TRICARE Reserve Select	A premium-based health plan that qualified National Guard and Reserve members may purchase.
TRICARE Retired Reserve	A premium-based health plan that qualified retired Reserve members and survivors may purchase.

Table E.1—Continued

TRICARE Health Plan	Description
TRICARE Standard and Extra	A fee-for-service plan available to all non-active duty beneficiaries.
TRICARE Young Adult	A premium-based, worldwide health plan that qualified adult children of eligible sponsors may purchase.
US Family Health Plan	A TRICARE Prime option available through networks of community-based, not-for-profit health care systems in six areas of the United States.

SOURCE: TRICARE, 2013a.

Table E.2
TRICARE Beneficiary Numbers, 2012

Total Beneficiaries	Plan/Subplans	Additional Population Information
5,200,000	TRICARE Prime <i>Includes:</i> TRICARE Prime TRICARE Prime Remote TRICARE Prime Overseas	Active duty service members – 1,450,000 Active duty family members – 1,700,000 Active duty NG/R members - 200,000 Active duty NG/R family members – 184,000 Retired service members – 610,000 Retired family members – 995,000 Survivors – 45,000
2,000,000	TRICARE Standard and Extra	
2,000,000	TRICARE For Life	TRICARE For Life only – 1.8 million TRICARE For Life + TRICARE Plus – 156,000 TRICARE For Life + US Family Health Plan – 39,000
276,000	TRICARE Reserve Select	
132,000	US Family Health Plan	
33,000	TRICARE Young Adult	Prime Option – 20,000 Standard Option – 13,000
3,900	TRICARE Retired Reserve	

SOURCE: TRICARE Media Center, updated November 4, 2013.

Table E.3
TRICARE Health Plan Comparison

	TRICARE Prime	TRICARE Prime Remote	TRICARE Standard and Extra	TRICARE Reserve Select	TRICARE Retired Reserve	US Family Health Plan
Main features	<ul style="list-style-type: none"> • Enrollment required. • Most care received from primary care manager (PCM). • Time and distance access standards. • Fewer out-of-pocket costs. • No claims to file (in most cases). 	<ul style="list-style-type: none"> • Enrollment required. • May or may not have an assigned primary care manager (PCM). • Time and distance access standards. • Fewer out-of-pocket costs. • No claims to file (in most cases). 	<ul style="list-style-type: none"> • Enrollment not required. • Care from any TRICARE-authorized provider, network or nonnetwork. • Referrals not required, but some care may require prior authorization. • Beneficiaries may have to pay for services up front and file claims for reimbursement. 	<ul style="list-style-type: none"> • Must qualify. • Care from any TRICARE-authorized provider, network or nonnetwork. • No referrals required, but some care may require prior authorization. • Costs vary depending on type of provider seen; fewer out-of-pocket costs from TRICARE network providers. • May have to pay for services and submit claims for reimbursement. 	<ul style="list-style-type: none"> • Must qualify. • Care from any TRICARE-authorized provider, network or nonnetwork. • No referrals required, but some care may require prior authorization. • Costs vary depending on type of provider seen; fewer out-of-pocket costs from TRICARE network providers. • May have to pay for services and submit claims for reimbursement. 	<ul style="list-style-type: none"> • Enhanced benefits and services, including discounts for eyeglasses, hearing aids, and dental care in some areas. • Receive most care from an assigned PCP from the plan's network who will provide referrals for specialty care. • Minimal out-of-pocket costs. • No claims to file (in most cases).

Table E.3—Continued

	TRICARE Prime	TRICARE Prime Remote	TRICARE Standard and Extra	TRICARE Reserve Select	TRICARE Retired Reserve	US Family Health Plan
Receiving care	<ul style="list-style-type: none"> • Most care from assigned PCM. • Military or network provider. • Refers to specialists for care PCM cannot provide. 	<ul style="list-style-type: none"> • Can get care from assigned PCM. • Network provider, if available. • If not, any TRICARE-authorized provider can be PCM. 	<ul style="list-style-type: none"> • Get care from any TRICARE-authorized provider, network or nonnetwork. • Referrals not required. • Some services may require prior authorization. 	<ul style="list-style-type: none"> • Get care from any TRICARE-authorized provider, network or nonnetwork. • Referrals not required. • Some services may require prior authorization. 	<ul style="list-style-type: none"> • Get care from any TRICARE-authorized provider, network or nonnetwork. • Referrals not required. • Some services may require prior authorization. 	<ul style="list-style-type: none"> • All care from designated US Family Health Plan provider. • No access care from Medicare providers, military hospitals, and clinics, or TRICARE-authorized providers.
Enrollment	<p>No enrollment fee for active duty families.</p> <p><i>Retirees, their families:</i></p> <ul style="list-style-type: none"> • Individual: \$273.84 per year • Family: \$547.68 per year 	<ul style="list-style-type: none"> • Enrollment required. • No enrollment fee. 	Enrollment is not required.	<ul style="list-style-type: none"> • Monthly premiums: • Member Only: \$51.62 per month • Member and Family: \$195.81 per month 	<ul style="list-style-type: none"> • Monthly premiums: • Member Only: \$390.99 per month • Member and Family: \$956.65 per month 	<ul style="list-style-type: none"> • Enrollment is required and includes a one-year commitment to receive care from the plan. • There is no enrollment fee for active duty families. <p><i>Retirees, their families:</i></p> <ul style="list-style-type: none"> • Individual: \$273.84 per year • Family: \$547.68 per year

Table E.3—Continued

	TRICARE Prime	TRICARE Prime Remote	TRICARE Standard and Extra	TRICARE Reserve Select	TRICARE Retired Reserve	US Family Health Plan
Claims	Provider will file claims (in most cases).	Provider will file claims (in most cases).	If received care from a nonnetwork provider, beneficiary may be required to submit health care claims.	If received care from a nonnetwork provider, beneficiary may be required to submit health care claims.	If received care from a nonnetwork provider, beneficiary may be required to submit health care claims.	There are no claim forms.
Annual deductible	<p>No annual deductible unless using the point-of-service option.</p> <p><i>Point-of-service option:</i></p> <ul style="list-style-type: none"> • \$300/Individual • \$600/Family <p><i>Note: Active duty service members cannot use the point-of-service option.</i></p>	<p>No annual deductible unless using the point-of-service option.</p> <p><i>Point-of-service option:</i></p> <ul style="list-style-type: none"> • \$300/Individual • \$600/Family <p><i>Note: Active duty service members cannot use the point-of-service option.</i></p>	<p>Active duty family members (sponsor rank E-4 and below):</p> <ul style="list-style-type: none"> • \$50/Individual • \$100/Family <p>Active duty family members (sponsor rank E-5 and above):</p> <ul style="list-style-type: none"> • \$150/Individual • \$300/Family <p>All others:</p> <ul style="list-style-type: none"> • \$150/Individual • \$300/Family 	<p>Active duty family members (sponsor rank E-4 and below):</p> <ul style="list-style-type: none"> • \$50/Individual • \$100/Family <p>Active duty family members (sponsor rank E-5 and above):</p> <ul style="list-style-type: none"> • \$150/Individual • \$300/Family <p>All others:</p> <ul style="list-style-type: none"> • \$150/Individual • \$300/Family 	<ul style="list-style-type: none"> • \$300/Individual • \$600/Family 	There is no annual deductible.

Table E.3—Continued

	TRICARE Prime	TRICARE Prime Remote	TRICARE Standard and Extra	TRICARE Reserve Select	TRICARE Retired Reserve	US Family Health Plan
Cost of outpatient visit	<p><i>Network Provider</i></p> <ul style="list-style-type: none"> Active duty service members: \$0 Active duty family members: \$0 All others: \$12 per visit <p><i>Nonnetwork Provider</i> With PCM referral: Same as network provider costs.</p> <p>Without PCM referral: Point-of-service fees apply.</p> <p><i>Note: Active duty service members may not use the point-of-service option.</i></p>	<p><i>Network Provider or Nonnetwork Provider</i></p> <p>\$0</p>	<p><i>Network Provider</i></p> <p>20% of negotiated fee after the annual deductible is met.</p> <p><i>Nonnetwork Provider</i></p> <ul style="list-style-type: none"> Active duty family members: 20% of allowable charges after the annual deductible is met. All others: 25% allowable charges after the annual deductible is met. 	<p><i>Network Provider</i></p> <p>15% of the negotiated rate after the annual deductible is met.</p> <p><i>Nonnetwork Provider</i></p> <p>20% of the TRICARE allowable charge after the annual deductible is met.</p>	<p><i>Network Provider</i></p> <p>20% of the negotiated rate after the annual deductible is met.</p> <p><i>Nonnetwork Provider</i></p> <p>25% of the TRICARE allowable charge after the annual deductible is met.</p>	<ul style="list-style-type: none"> Active duty family members: \$0 All others: \$12 per visit

Table E.3—Continued

	TRICARE Prime	TRICARE Prime Remote	TRICARE Standard and Extra	TRICARE Reserve Select	TRICARE Retired Reserve	US Family Health Plan
Catastrophic cap	Active duty families: \$1,000 per family, per fiscal year National Guard and Reserve families: \$1,000 per family, per fiscal year Retired: \$3,000 per family, per fiscal year	\$1,000 per family, per fiscal year	Active duty families: \$1,000 per family, per fiscal year National Guard and Reserve families: \$1,000 per family, per fiscal year Retired: \$3,000 per family, per fiscal year	\$1,000 per family, per fiscal year	\$3,000 per family, per fiscal year	Active duty families: \$1,000 per family, per fiscal year National Guard and Reserve families: \$1,000 per family, per fiscal year Retired: \$3,000 per family, per fiscal year
Availability	Prime Service Areas located in the United States.	In designated remote U.S. locations, usually more than 50 miles or one-hour drive time from a military hospital or clinic.	United States	Worldwide	Worldwide	Designated ZIP codes in six areas of the United States

SOURCE: TRICARE, 2013b (values reflect FY14 and were last updated November 2013).

National Study of Drug Use and Health Utilization Analyses

NSDUH is the nation's primary behavioral health, substance use, and treatment surveillance study. Conducted by SAMHSA, the study is based on nationally representative samples of adults, ages 18 and over, and adolescents, ages 12–17. Each year, the study conducts face-to-face, computer-assisted, in-home interviews with about 40,000 adults and 20,000 adolescents. The sample is representative of the civilian population living in households and noninstitutional group living quarters (e.g., homeless shelters, dormitories, and rooming houses) for all 50 states and the District of Columbia and for the nation as a whole. Sensitive items are assessed using Audio Computer-Assisted Self-Interviewing methods, where respondents use a laptop computer to confidentially answer questions that are read to them through headphones. Analyses for the current study were conducted in a sample pooled from four consecutive years of the NSDUH, 2009–2012. These data created a total sample of 227,310 respondents, 154,328 of whom were adults and 72,982 of whom were adolescents.

Urban-Rural Definition

The public access NSDUH dataset includes two three-level geographic variables, one based on the U.S. Department of Agriculture's Rural-Urban Continuum Codes (RUCCs), and the other based on the U.S. Bureau of the Census's core-based statistical areas (CBSAs). The

RUCC-based variable distinguishes between large and small urban areas and nonurban areas. Large urban areas have a densely populated center with 1,000,000 or more inhabitants, and they include the surrounding economically integrated areas (RUCC = 1). Small urban areas are similar except that the center has between 50,000 and 1,000,000 inhabitants (RUCC = 2 or 3). All other areas are defined as nonurban (RUCC = 4 through 9). The CBSA definition is closely related but it employs a lower threshold of population size to define small urban areas. Specifically, areas are categorized as large CBSAs if the core area has 1,000,000 or more inhabitants, small CBSAs if the core area has between 10,000 and 1,000,000 inhabitants, and non-CBSA otherwise.

We combined information from these two variables to create a four-level urbanicity variable as outlined in Table F.1.

Table F.1
Four-Level Urbanicity Variable

Level	Criteria Met
Large metropolitan area	Meets criteria for both large urban area and large CBSA. Due to overlap, this group is equivalent to the large CBSA group. Examples: New York, Chicago.
Small metropolitan area	Meets criteria for a large or small urban area and small CBSA. This group includes residents of metropolitan areas with as few as 50,000 inhabitants. Examples: Midland, Texas; Asheville, North Carolina.
Small micropolitan area	Meets criteria for nonurban area and small CBSA. This group falls outside of a metropolitan area but inside of a CBSA and corresponds to the technical definition of micropolitan developed by the U.S. Office of Management and Budget. Examples: London, Kentucky; Moscow, Idaho.
Rural area	Nonurban area AND non-CBSA. Examples: Elbert County, Colorado; Vilas County, Wisconsin.

Behavioral Health Service Use

Respondents were asked about their use of behavioral health services in the past year. Two types of visits were examined as outcomes: outpatient behavioral health visits and use of a prescription medication for a behavioral health problem.

Outpatient Behavioral Health Visits. Outpatient behavioral health visits include any visit to a physician or other professional for behavioral health treatment. The visit may have occurred in a hospital-based or freestanding clinic or been provided by a psychiatrist, psychologist, or counselor. Use of outpatient behavioral health care was coded as a binary outcome, where 1 = at least one visit and 0 = no visits.

Prescription Medication. Respondents were asked whether they had taken any prescribed medication to treat a mental or emotional problem in the past year. Use of prescription medication for a behavioral health problem was coded as a binary outcome, where 1 = used a prescription medication for a behavioral health problem in the past 12 months and 0 = did not use a prescription medication for a behavioral health problem in the past 12 months.

Statistical Analysis

We present the adjusted prevalence of each outcome across the four levels of urbanicity as estimated as the predicted marginals from a logistic regression model. For each outcome, differences in prevalence between large metropolitan areas and the other three categories of urbanicity were tested using the SUDAAN software package to adjust standard errors for the sample design. Adjustments were made for age and sex. Analysis of behavioral health service outcomes were analyzed using only those members of the corresponding sample who met criteria for major depression at some point in their lives.

TRICARE Claims Data

This appendix describes in greater detail the data analysis reported in Chapter Four. Data were acquired from TMA through the M2 Data Mart, a system for distributing administrative data on the MHS to researchers and other users. The data are drawn from multiple sources to provide a comprehensive record of medical encounters and pharmacy transactions that are provided either directly by the military or indirectly through a community provider to a beneficiary of one of the TRICARE insurance programs. The encounter records include codes for diagnosis, provider type, and procedure, while the pharmacy records include information on drug type. All of the records include dates and a common unique person identifier, which allows linkage to eligibility information contained in a DEERS file prepared by TMA for this purpose. The DEERS file includes one observation per person per month indicating the person's eligibility, demographic characteristics, and ZIP code.

The goal of the analysis was to estimate the impact of living in a remote location on the use of behavioral health care, which includes visits to a nonspecialist provider for a behavioral health problem, visits to behavioral health specialist providers, and receipt of prescription psychopharmacological drugs, such as antidepressants. The analysis focused specifically on TRICARE beneficiaries, including members of the active component, as well as active duty and inactive members of the NG/R who were covered by TRICARE. We selected a cohort of these individuals who received at least one behavioral health service during 2009. We then compared this group across categories of

remoteness with respect to their use of behavioral health services in 2010. A difference in use during 2010 between those in remote versus nonremote areas is evidence that being in a remote area has an impact on use of behavioral health care. Below, we describe the data sources, the definitions of key variables, and the data analysis in more detail. The results are discussed in the main body of the report.

Description of Data

Descriptive statistics and rates of exposure were developed using the DEERS PITE files (see Appendix A for a description). We generated descriptive statistics using the December 2012 file. For comparability with the timeframe of the utilization analysis, we also looked at the December 2008 file, but determined that there were no noticeable differences. For estimates of exposure to remoteness, we used DEERS data limited to service members with at least 12 months of data from January 2008 to December 2012.

To generate utilization patterns, we used 2009–2010 TRICARE claims data derived from the M2 data system, with the following files:

- TRICARE-DEERS
- Standard Inpatient Data Record Direct Care
- Standard Ambulatory Data Record Direct Care
- TRICARE Encounter Data—Institutional Purchased Care
- TRICARE Encounter Data—Noninstitutional Purchased Care
- Pharmacy Data Transaction Service

The TRICARE-DEERS file was derived in part from the DEERS PITE file, but customized for the administration of TRICARE. The TRICARE-DEERS data provided demographic information for TRICARE enrollees, such as health plan enrollment, service, component, ZIP code of current residence, and relationship to beneficiary. The other files contained TRICARE insurance claims data, indicating clinical and payment information about use of health services by individual enrollees. We merged these files together to link demographic

data from DEERS with claims data from different settings, such as inpatient and outpatient care and direct and purchased care, to develop measures of use.

Psychiatric Diagnoses

To define the population, we looked at those with one or more outpatient visits or inpatient stays with a behavioral health primary diagnosis. These diagnoses were defined using the U.S. Department of Health and Human Services Agency for Healthcare Research and Quality's Clinical Classifications Software (CCS) for ICD-9-CM diagnosis codes. The single-level CCS aggregates procedures into 285 mutually exclusive categories. To construct our groups, we started with the 15 CCS categories listed in Table G.1. Four of these groups were not considered for our analysis, but the rest were further grouped into three general groups: psychiatric, substance abuse, and other mental health.

Our overall group of *any behavioral health condition* consisted of anyone with a visit or admission with a primary diagnosis that fell into one of these three groups. Additionally, we looked at a couple of subpopulations of interest—those with PTSD (ICD-9 code = 309.81) and those with major depression (ICD-9 code = 296.20–296.36).

As a sensitivity analysis for defining diagnoses, we also looked at any secondary diagnoses. In general, the selected population was not much larger, and patterns of health care use were not noticeably different. The one possible exception was for substance-related disorders, which was more likely to be coded in a secondary diagnosis.

Provider Specialty

We report visits based on the provider specialty—visits to a behavioral health specialist or to a PCP. To identify the provider specialty, we have two different coding schemes for direct care and purchase care. Tables G.2 (direct care) and G.3 (purchase care) list the codes that we selected for behavioral health specialists and PCPs.

Table G.1
15 Clinical Classifications Software Categories

CCS	Condition	Psychiatric	Substance	Other
650	Adjustment disorders	x		
651	Anxiety disorders	x		
652	Attention deficit, conduct, and disruptive behavior disorders	x		
653	Delirium, dementia, and amnestic and other cognitive disorders			
654	Developmental disorders			
655	Disorders usually diagnosed in infancy, childhood, or adolescence			
656	Impulse control disorders, not elsewhere classified (NEC)			
657	Mood disorders	x		
658	Personality disorders	x		
659	Schizophrenia and other psychotic disorders	x		
660	Alcohol-related disorders		x	
661	Substance-related disorders		x	
662	Suicide and intentional self-inflicted injury			x
663	Screening and history of mental health and substance abuse codes			x
670	Miscellaneous mental disorders			x

Table G.2
Direct Care Provider Specialty Codes Used to Identify Visit Type

Provider Specialty Code	Description
Behavioral Health Specialist	
070	Psychiatrist
071	Child Psychiatrist
072	Psychoanalyst
073	Psychiatric Resident/Intern With License
074	Alcohol Abuse Counselor
075	Drug Abuse Counselor
076	Physicians/Psychiatry and Neurology/Addictive/Psychiatry
077	Psychiatric Resident/Intern Without License
505	Psychiatry Consultant
611	Psychiatric Nurse Practitioner
702	Clinical Psychologist
703	Psychology Social Worker
714	Social Work Case Manager
953	Psychiatry
954	Psychology
958	Social Work
Primary Care Practitioner (PCP)	
000	General Medical Officer
001	Family Practice Physician
002	Contract Physician (Not on Consultant List)
003	Family Practice Physician Resident/Intern With License
007	Family Practice Physician Resident/Intern Without License
008	Internal Med Physician/Clinical Cardiac Electrophysiology
010	Internal Medicine Resident/Intern Without License

Table G.2—Continued

Provider Specialty Code	Description
011	Internist
028	Internal Medicine Resident/Intern With License
923	Family Practice/Primary Care
925	General Medicine
932	Internal Medicine

Table G.3
Purchase Care Provider Specialty Codes Used to Identify Visit Type

Provider Specialty Code	Description
Behavioral Health Specialist	
26	Psychiatry
62	Clinical Psychologist (Billing Independently)
85	Certified Clinical Social Worker
91	Clinical Psychiatric Nurse Specialist
93	Mental Health Counselor
94	Certified Marriage and Family Therapist
Primary Care Practitioner (PCP)	
01	General Practice
08	Family Practice
11	Internal Medicine

Psychotherapy

We additionally report visits based on procedure codes used for psychotherapy. Table G.4 shows the Current Procedural Terminology (CPT) codes that were used. We determined a visit was for therapy if one or more of these codes appeared anywhere in the claim.

Table G.4
Current Procedural Terminology Codes Used to Identify Psychotherapy

CPT Code	Description
90804	Individual outpatient psychotherapy 20–30 min
90805	Individual outpatient psychotherapy 20–30 min with E&M (evaluation and management) services
90806	Individual outpatient psychotherapy 45–50 min
90807	Individual outpatient psychotherapy 45–50 min with E&M services
90808	Individual outpatient psychotherapy 75–80 min
90809	Individual outpatient psychotherapy 75–80 min with E&M services
90810	Interactive outpatient psychotherapy 20–30 min
90811	Interactive outpatient psychotherapy 20–30 min with E&M services
90812	Interactive outpatient psychotherapy 45–50 min
90813	Interactive outpatient psychotherapy 45–50 min with E&M services
90814	Interactive outpatient psychotherapy 75–80 min
90815	Interactive outpatient psychotherapy 75–80 min with E&M services
90816	Individual inpatient psychotherapy 20–30 min
90817	Individual inpatient psychotherapy 20–30 min with E&M services
90818	Individual inpatient psychotherapy 45–50 min
90819	Individual inpatient psychotherapy 45–50 min with E&M services
90821	Individual inpatient psychotherapy 75–80 min
90822	Individual inpatient psychotherapy 75–80 min with E&M services
90823	Interactive inpatient psychotherapy 20–30 min
90824	Interactive inpatient psychotherapy 20–30 min with E&M services
90826	Interactive inpatient psychotherapy 45–50 min
90827	Interactive inpatient psychotherapy 45–50 min with E&M services
90828	Interactive inpatient psychotherapy 75–80 min
90829	Interactive inpatient psychotherapy 75–80 min with E&M services

Psychiatric Medication

The final dimension of utilization described psychiatric medication. To identify direct care medication utilization, we used the Pharmacy Data Transaction Service file, which contains American Hospital Formulary Service’s Therapeutic Class codes. To identify psychiatric medication, we used the codes presented in Table G.5.

Purchase care medication is found in the TRICARE Encounter Data—Noninstitutional file, which uses a different classification system. To identify psychiatric medication, we also used the codes presented in Table G.6.

Table G.5
Therapeutic Class Codes Used to Identify Psychiatric Medication

Code	Description
281600	Psychotherapeutic Agents
281604	Antidepressants
281608	Antipsychotic Agents
281612	Psychotherapeutic Agents; Miscellaneous
282000	Anorexigenics; Respiratory, Cerebral Stimulant
282004	Amphetamines
282092	Anorexigenic Agents and Respiratory and Cerebral Stimulants; Miscellaneous
282400	Anxiolytics, Sedatives and Hypnotics
282404	Barbiturates
282408	Benzodiazepines
282492	Anxiolytics, Sedatives, and Hypnotics; Miscellaneous
282800	Antimanic Agents

Table G.6
Psychiatric Medication Class Codes Used to Identify
Psychiatric Medication

Code	Description
69	Psychother, Antidepressants
70	Psychother, Tranq/Antipsychotics
71	Stimulant, Amphetamine Type
72	Stimulant, Nonamphetamine
73	ASH, Barbiturates
74	ASH, Benzodiazepines
75	Anxiolytic/Sedative/Hypnotic NEC
76	Antimanic Agents, NEC

Analysis Sample

The prospective analysis described in Chapter Four was conducted on a subsample of TMA records. Individuals were included in the sample if they had 12 months of DEERS records during 2009 *and* at least one encounter during 2009 with a primary diagnosis of a psychiatric condition recorded in TMA. Remoteness categories and service use outcomes were defined according to DEERS and TMA encounter data from 2010, using the information described above. The sample sizes for the analyses of each component are presented in Table G.7.

Table G.7
Sample Sizes for Prospective Analyses of Behavioral Health Care Use

Component	MTF	MTF Remote	Community	Community Remote
Active component	151,865	3,050	4,686	2,382
Active duty NG/R	7,977	2,575	6,095	3,381
Inactive NG/R	N/A	N/A	8,939	5,172

SOURCE: TMA, 2013.

Review of the Effectiveness of Telemental Health

To evaluate the potential value of TMH, we conducted a literature review to determine whether high-quality, efficacious behavioral health assessment and treatment can be delivered remotely using technology. We summarized research on the acceptability and effectiveness of TMH in military populations and drew on the civilian literature to fill gaps where research with military populations has not yet been published.

Methods

We first conducted a search of articles describing TMH in military and veteran samples, using ProQuest Military Collection, PsycINFO, PubMed, and WorldCat databases. We also searched the bibliographies of relevant articles. Our search strategy used terms that were specific to TMH (*telehealth, telemental health, telepsychiatry, telepsychology*) combined with search terms to target military populations (*military, service member, veteran*), and rural and remote areas (*rural, remote*). This strategy identified 556 titles and abstracts, and from there, we decided to review the full text of 131 articles, subsequently excluding articles if they did not focus on assessing or treating behavioral health conditions through technology. A total of 84 articles met these inclusion criteria.

Telemental Health with Military Service Members Is Feasible, but Information About Its Effectiveness Is Limited

Although our review prioritized *studies of TMH with military samples*, research in this area is limited. The articles we identified *were process-oriented and lacked outcome data*. Only two studies using active component samples included comparison groups by which to evaluate the effectiveness of TMH relative to in-person care.

Several reports have been published on a unique collaboration between Womack Army Medical Center at Fort Bragg, and the Salem (Virginia) Veterans Affairs Medical Center (Nieves et al., 2009; Detweiler et al., 2011; Detweiler et al., 2012). A telepsychiatry service links the two sites and allows Fort Bragg soldiers to access specialized psychiatric care from Salem providers via videoconference. *Evidence from the program documented the feasibility and acceptability of providing TMH psychological assessments to soldiers* (Nieves et al., 2009). A retrospective medical review found reduced wait times for care and that most TMH patients (55 percent) had improved functional status as measured by the Global Assessment of Functioning (Detweiler et al., 2011; Detweiler et al., 2012). Nonetheless, this research lacked a comparison group. The reports also offered no indication of patient or provider satisfaction or long-term outcomes (Detweiler et al., 2011; Detweiler et al., 2012; Nieves et al., 2009).

In a large study of post-deployment behavioral health screening, soldiers were asked prior to the screening interview whether they preferred to meet with their provider face-to-face or by videoconference. Most soldiers indicated that they would prefer meeting directly with their provider (Jones et al., 2012). After completing the screening interview by videoconference, soldiers continued to prefer meeting their provider face-to-face, but this preference was attenuated after their personal experience with TMH. The same study found that behavioral health screening was 16 percent more expensive when completed by videoconference rather than in person, which it attributed to the increased administrative and technical support associated with TMH not offset by cost savings associated with providers having fewer ser-

vice members on temporary duty assignments. The study noted that sending providers to remote locations where many military have been placed on temporary duty assignments may only be cost-efficient in the unusual and military-specific situation in which a redeployed brigade of soldiers requires screening services simultaneously.

Although soldiers prefer in-person care when all else is equal, TMH might be a preferred treatment modality if it offered the patient a direct benefit, such as time savings or improved access to care (Jones et al., 2012). These benefits may be most fully realized in isolated communities where care might not be otherwise available. Army Reserve companies based in American Samoa are among the most remote MHS beneficiaries. While a VA community-based outpatient clinic (CBOC) provides basic care, MHS beneficiaries must travel 2,500 miles to Hawaii for specialty care. To provide TMH services in American Samoa, T2 deployed a relocatable telehealth center to the island in 2010. In response to a satisfaction survey, 28 patients indicated success using the technology independently and successfully. *The patients believed TMH service improved their access to care and reported high satisfaction with the service and the quality of care* (Mishkind et al., 2012). That is, when the alternative face-to-face treatment involved considerable time and expense, TMH was a well-accepted route to care.

In one of two studies that have compared outcomes of military behavioral health patients seen by teleconference and those seen in-person, a psychiatrist capitalized on a natural experiment in his own caseload (Grady and Melcer, 2005). This provider saw rural patients in two clinics. At the first site, he conducted weekly, in-person behavioral health consultations. At the second site, he saw patients by videoconference while remaining at the hub MTF. Patients were not randomly assigned to site and presented naturally to the facility in their community. In a one-year period, *patients who received TMH services were more likely to be compliant with care (94 percent) than patients seen in person (89 percent), and also showed greater improvement in functioning*. Given the absence of random assignment and differences in compliance and other dissimilarities between the sites, it is unclear whether the modest advantage demonstrated in the TMH group was due to the modality of care or to other factors. The same author, in examining costs in

the National Navy Medical Center system (Grady, 2002), found that *TMH services for remote service members were associated with cost savings relative to circuit-riding providers and were also cost-efficient relative to patient referral to a local health maintenance organization network provider or patient travel to the hub site.*

To our knowledge, only one randomized controlled trial comparing TMH services with a face-to-face modality has been conducted with active component service members (Gros, Yoder, et al., 2011). This trial is still ongoing with a plan to randomly assign 200 service members with PTSD to receive exposure-based therapy either in person or through home-based TMH (Gros, Yoder, et al., 2011). Given the uniqueness of this trial, the authors released preliminary results on the first 31 participants (Strachan et al., 2012). Across the two treatment modalities, attrition rates were similar and PTSD symptoms decreased significantly in both groups (Strachan et al., 2012). *Preliminary analyses revealed no significant differences in the outcomes of patients treated in person compared to those treated by in-home TMH* (Strachan et al., 2012).

In sum, despite considerable effort by DoD to implement TMH technologies to serve active component service members (e.g., Bush et al., 2011; Hill et al., 2004; Reger et al., 2013; Rizzo et al., 2011), to date, there has been little empirical investigation of these efforts. Although the dispersion of military service members makes this population an appropriate target for TMH, it is not yet clear whether TMH approaches to behavioral health care delivery would yield similar outcomes for active component personnel as evidence-based care delivered in a more traditional face-to-face modality. Moreover, all published reports examined single sites or disorder-specific programs. At this time, *it is unclear how the availability of TMH within the MHS affects overall population health.*

Where the literature remains underdeveloped, it is often helpful to turn to related research with a population as similar as possible to the population of interest. Fortunately, VHA has been a leader in TMH research, and *there exists a methodologically rigorous body of work on TMH in VA. Although veterans who seek services from VA may differ from the complete sample of all former service members, this research nonetheless provides a useful indicator of possible acceptability, feasibility, and effectiveness of TMH among active component service members.*

Research on Telemental Health with Veterans Shows Similar Positive Outcomes for Care Relative to Face-to-Face Care

VHA serves veterans residing in rural areas through a network of CBOCs. In addition to clinic staff, these facilities also have videoconference connections with a parent VA medical center. This combination of clinics and technology linked to a parent VA has allowed the system to deliver more than 500,000 TMH services and more than 112,000 encounters annually (Godleski, Darkins, and Peters, 2012). *Among VA patients who receive TMH services, hospital admissions decrease* (Godleski, Darkins, and Peters, 2012), *and use of behavioral health and substance abuse treatment services increases* (Possemato et al., 2013; Shore et al., 2012).

Cost Analyses of Telemental Health for Veterans Are Rare

Although cost savings are commonly cited as one possible advantage of TMH, we found only three cost analyses of TMH with veteran populations. In a comparison of the costs associated with a psychiatrist-administered diagnostic assessment conducted either in-person at a rural CBOC or via videoconference to the same CBOC, each videoconference assessment was found to save an estimated \$229¹ (Shore, Brooks, et al., 2007). In a study of TMH services for depressed veterans, Ruskin et al. (2004) reported that telepsychiatry sessions were more expensive than sessions in which the patient traveled to see the psychiatrist but less costly than sessions in which the psychiatrist traveled to an outlying clinic to provide in-person treatment. In a more specialized cost assessment, Smith et al. (2011) found that, relative to usual care outcomes, a telephone-based smoking cessation program for veterans incurred costs of \$11,408 for each additional patient who quit. *We recommend a continued focus on formal cost analyses of TMH services relative to in-person provision of care (across diagnostic conditions) to provide decisionmakers with the information needed to make well-informed choices about care delivery.*

¹ Noninflation adjusted from 2005 dollars.

VA Is a Leader in Clinical Evaluations of TMH

VHA has been a leader in conducting clinical trials to evaluate the effectiveness of behavioral health care and assessment provided by TMH. One in five empirical papers of videoconferencing psychotherapy uses veteran samples (Backhaus et al., 2012). In addition to pilot studies on the feasibility and acceptability of behavioral health care delivered from a distance, VA researchers have conducted high-quality randomized control trials. *There is promising evidence that behavioral health care, including pharmacological, can be delivered effectively by TMH.*

Some PTSD Interventions Are Effectively Delivered by TMH

The “VA/DoD Clinical Practice Guideline for the Management of PTSD” strongly recommends that patients with a PTSD diagnosis be offered an evidence-based, trauma-focused psychotherapy intervention such as exposure-based treatment, cognitive restructuring therapies, or stress inoculation training (VA/DoD, 2010). *Cognitive restructuring treatments for PTSD can be effectively delivered by TMH, but evidence for prolonged exposure with veterans delivered by TMH is mixed.*

Prolonged exposure is a validated treatment for PTSD that includes repeated exposure to feared (but safe) trauma-related thoughts, feelings, and situations (Foa, Hembree, and Rothbaum, 2007). One nonrandomized trial compared the outcomes of veterans who completed prolonged exposure treatment either in person ($n = 62$) or at their local CBOC via a telehealth connection to the clinician ($n = 27$) (Gros, Yoder, et al., 2011; see also Tuerk et al., 2010). Although symptoms of PTSD decreased in both groups, veterans who received in-person treatment improved more than those receiving TMH services (Gros, Yoder, et al., 2011). Given the lack of random assignment, however, it is not clear whether the lower response in the TMH group is due to a weakness of the modality or other group differences.

In a randomized trial with a mixed sample of veterans and active component service members, an exposure-based treatment led to similar PTSD symptom reductions in both the TMH and in-person groups (Strachan, Gros, and Ruggerio, 2012). Finally, at the VA San Diego Health Care System, a large randomized control trial comparing outcomes of prolonged exposure when delivered in person and when deliv-

ered by TMH delivery is currently ongoing (Thorp et al., 2012). Results from this trial and others (Gros, Strachan, et al., 2011) should help clarify whether prolonged exposure by TMH is an appropriate strategy for improving veterans' access to this evidence-based treatment for PTSD.

TMH-delivered *cognitive restructuring treatments for veterans with PTSD* have also been studied (Frueh, Monnier, Yim, et al., 2007; Morland, Pierce, and Wong, 2004; Morland et al., 2009; Morland et al., 2011). Randomized control trials *show no differences between in-person and TMH treatment in PTSD symptom improvement, veteran satisfaction with the treatment, and therapist fidelity to the treatment guidelines* (Frueh, Monnier, Grubaugh, et al., 2007; Frueh, Monnier, Yim, Grubaugh, et al., 2007; Morland et al., 2011; Morland, Pierce, and Wong, 2004). Two additional well-designed trials are currently underway and are expected to offer further information about the appropriate use of TMH to deliver cognitive restructuring interventions for veterans with PTSD (Morland et al., 2009; Thorp et al., 2012).

There Is Support for TMH Medication Management for Major Depressive Disorder, but Evaluations of Behavioral Interventions Are Limited

Two trials of TMH medication management for major depressive disorder have demonstrated positive outcomes. In the first study, seven pairs of matched CBOCs were randomized either to treat patients with depression as usual or to implement a TMH stepped-care model of depression treatment (Fortney et al., 2006; Fortney et al., 2007). In the stepped care approach, on-site PCPs delivered the care but were supported by off-site psychiatrists, depression nurse care managers, and pharmacists who consulted with the PCP or patient by telephone, by videoconference, or within the electronic health record. Relative to patients in usual care clinics, patients with depression who received care in the TMH stepped-care clinics were more likely to be medication-adherent at 6 months and 12 months, and by 12 months were more likely to have remitted (Fortney et al., 2007). The effect size associated with the stepped care approach was similar to those found for collaborative care models implemented in person (Badamgarav et al., 2003). In a randomized control trial that compared in-person with

remotely delivered intensive medication management for depression, veterans who received the treatment via teleconference had similar improvements in their depression scores and depression symptoms as patients who received face-to-face care (Ruskin et al., 2004). *In sum, medication management for veterans with depression can be provided successfully via TMH.*

The “VA/DoD Clinical Practice Guideline for Management of Major Depressive Disorder” recommends medication management or behavioral treatments for depression such as CBT, interpersonal therapy, and behavioral activation (VA/DoD, 2009). There are limited trials of psychotherapy for veterans with depression delivered by TMH. Mohr and his colleagues reported that, among veterans, CBT delivered by telephone did not improve depression outcomes relative to treatment as usual (Mohr et al., 2011), even though telephone-administered CBT for depression had been shown to be effective for civilians (Mohr et al., 2008). The authors speculated that veterans with major depression may be less responsive than civilians to treatment due to high rates of medical and psychiatric comorbidity.

Zanjani, Bush, and Oslin (2010) are currently conducting a four-year randomized control trial to compare the effectiveness of behavioral activation for veterans with major depression delivered by in-home videoconferencing with that delivered by traditional in-person treatment, but results are not yet available. The study will add to work by Mohr and colleagues (2008) and provide insight into the potential utility of TMH for veterans with major depression. *Clearly, there continues to be a need to evaluate the effectiveness of evidence-based behavioral treatments for major depressive disorder delivered via TMH.*

Suicide risk assessment and management is a particular concern for patients with major depressive disorder. VHA currently conducts videoconference suicide assessments both at health care facilities and by videophone (Godleski et al., 2008). Gros, Veronee, and colleagues (2011) provide a case study of conducting an in-home TMH suicide assessment of an Operation Enduring Freedom veteran with severe suicidal ideation; the case study also includes successful safety planning and transport to an inpatient VA hospital. Although providers must be aware of state licensing laws, involuntary commitment regulations, and possible

liability concerns (see Godleski et al., 2008, for guidance), use of video platforms to conduct high-stakes assessment such as involuntary commitment hearings has been upheld by the U.S. legal system as appropriate (*United States v. Baker*, 1995). Partially in response to the legal precedent, the American Psychiatric Association approved videoconferencing for involuntary commitment hearings (which are often triggered by patient suicidality; American Psychiatric Association, 1998).

Feasibility Trials of TMH for Other Conditions Suggest Promise

Most other clinical trials in TMH modalities for veterans have focused on substance use disorders. This literature is less developed than the work in PTSD and major depression, and most reports are limited to feasibility trials. Researchers have shown that tobacco cessation and alcohol interventions delivered by home telehealth systems (i.e., small landline-connected units that monitor veteran symptoms and provide education), telephone visits with care coordinators, and web-based counseling are acceptable to veterans and viewed favorably (Battaglia et al., 2013; Dedert et al., 2010; Santa Ana et al., 2013; Simpson et al., 2005). *In a randomized control trial of step-down care for alcohol- or cocaine-dependent veterans and civilians leaving an intensive outpatient program, patients who received weekly monitoring and supportive counseling by telephone had equal or greater rates of abstinence across a two-year follow-up period relative to patients who received more intensive in-person group therapy* (McKay et al., 2005).

Finally, in a home telehealth trial for behavioral health patients who were high users of health care resources, installing a home monitoring device monitored by a nurse practitioner substantially reduced hospitalizations and emergency room visits (Godleski et al., 2012). However, given that patients were selected on the basis of high-resource use, the extent to which these pre-post findings reflect a treatment effect or mere regression to the mean is unknown.

Summary of VA TMH Research

Clinical trials with veteran samples have provided valuable information about the relative effectiveness of TMH services compared with the same care provided in a traditional face-to-face format. *Although it*

is not universally true, many behavioral health services for veterans provide good results when delivered from a distance by technology. Evidence-based treatments that are supported for use with veterans through TMH include cognitive-restructuring therapies for PTSD, medication management for major depressive disorder, and follow-up care for substance-dependent veterans leaving an intensive outpatient program. *Although trials to evaluate prolonged exposure for PTSD have been mixed, results from the most methodologically rigorous trial showed positive outcomes for TMH care that were similar to those for face-to-face care.* Importantly, according to trials included in this review, it appears that veterans are both amenable to receiving TMH care and are satisfied with the TMH care they receive.

Civilian Trials Echo Veterans Affairs Studies: Telemental Health Is Acceptable to Patients and Often Effective

Several reviews of the accumulated empirical evidence concerning TMH have been published in the last decade (Hailey, Roine, and Ohinmaa, 2008; Hyler, Gangure, and Batchelder, 2005; Osenbach et al., 2013; Richardson et al., 2009). Research on TMH in civilians largely mirrors the results reviewed for active component service members and veterans. *Behavioral health patients are typically willing to engage in TMH services, are generally comfortable with the technology, and appreciate the associated benefits of TMH care such as reduced travel and wait times* (Richardson et al., 2009). *Patient satisfaction with TMH services is almost always high* and similar to the satisfaction levels reported by patients receiving face-to-face care (Richardson et al., 2009). Although most studies find that the therapeutic alliance between patient and clinician did not differ across TMH and in-person modalities, there have been exceptions (Backhaus et al., 2012).

Civilian TMH outcome evaluations suffer from many of the same methodological shortcomings found in the military-specific research (Richardson et al., 2009). Sample sizes are often insufficient to conduct noninferiority analyses. Treatment groups often contain individuals with a mix of diagnoses, and the treatments that are delivered are often

poorly described and difficult to replicate (Richardson et al., 2009). A systematic review of TMH outcome studies, conducted in 2008, found that only one-half of all published randomized control trials in TMH were of high or good quality (Hailey, Roine, and Ohinmaa, 2008). Nonetheless, the quality of TMH appears to have improved gradually as researchers have made progress from descriptive to acceptability and feasibility studies to outcome research. Prominent researchers in the field have begun to advocate for a standardized TMH evaluation model (Kramer et al., 2012), and several high-quality randomized control trials examining outcomes for TMH and in-person treatment of psychological health conditions are currently underway and highly anticipated (National Institutes of Research, 2014).

In general, for civilian samples, the clinical outcomes of controlled trials of TMH relative to in-person care have been comparable to one another and typically positive (Haily, Roine, and Ohinmaa, 2008; Richardson et al., 2009). Although some trials used mixed-treatment strategies (O'Reilly et al., 2007), others have provided specific support for distinct treatments, such as CBT for panic disorder (Bouchard et al., 2004) and trauma-focused CBT for PTSD (Germain et al., 2009) delivered by TMH. A meta-analysis of telehealth-delivered psychotherapy and in-person treatment for depression failed to show any systematic difference between the two modes of service delivery (Osenbach et al., 2013).

Given near universal access to telephone service, telephone-based interventions may be particularly appealing as a strategy for providing services to hard-to-reach service members. *For civilian samples, systematic reviews of telephone-delivered behavioral health services, such as CBT, have shown moderate to large reductions in behavioral health symptoms following telephone-based treatment* (Bee et al., 2008; Herbst et al., 2012; Mohr et al., 2008). A 2013 expert panel jointly sponsored by the Agency for Healthcare Research and Quality and NIMH concluded that standardized psychotherapies delivered by telephone were well-validated (Mohr et al., 2013). In view of the evidence that telephone-only psychotherapy can be effective, reevaluation of the current policy against financial reimbursement for telephone-based interventions may be warranted. Reimbursement for telephone-only psychotherapy may be a pragmatic strategy for overcoming various access barriers in rural

areas. At the very least, careful consideration of the advantages and disadvantages of telephone-only psychotherapy (i.e., psychotherapy conducted without the aid of a visual component) would appear justified.

We note that a significant limitation of the civilian literature on TMH is that all research has been conducted program by program. To our knowledge, there have been no evaluations to understand how introduction of TMH into a clinical health system as a whole affects availability of care, costs, or population health.

Telemental Health Literature Review Summary

Studies of TMH with active component populations are limited in number and do not examine the full range of behavioral health conditions and treatment options. Studies also vary considerably in methodological quality. With the proviso that the evidence base is lacking for military populations, TMH appears to show promise as a strategy for increasing access to quality behavioral health care for military personnel and dependents in rural and remote areas. The VHA has made progress in implementing and evaluating TMH services within the health care system. Randomized controlled trials with veteran samples have provided support for TMH delivery of cognitive processing therapy for PTSD, medication management for major depression, and relapse prevention step-down care for substance dependence. Although the full range of evidence-based psychotherapeutic and medication management approaches to behavioral health conditions has not been evaluated to determine their suitability for TMH modalities, a growing body of work evaluating TMH approaches with civilian populations can help fill some of the remaining gaps. *In sum, early evidence suggests that care delivered remotely can produce similar outcomes to traditional face-to-face care. In the future, these technologies may reduce rural-urban disparities in access to evidence-based care and ensure that service members residing in remote areas receive the high-quality care that they deserve.*

Structures, Processes, and Outcomes Framework

A basic tenet of any quality medical care system is that it takes account of structures, processes, and outcomes (Donabedian, 2005). *Structural factors*, or those that affect the context in which health care is delivered, are relatively stable characteristics of care providers in a given setting (e.g., locations of providers), as well as the tools and resources available to these providers (Mark, Salyer, and Geddes, 1997). Evaluation of the health care structure can involve macro and micro features of the care system. For example, macro features may include the size or qualifications of the workforce or the way in which health care is financed. In contrast, micro characteristics of interest include such factors as hours of availability, availability of telemedicine equipment, and so on (National Committee for Quality Assurance, 2011).

The *process of care* refers to the “set of activities that go on within and between practitioner and patient” (Mark, Salyer and Geddes, 1997). Key issues concerning the process of care are the extent to which evidence-based practices are offered and the degree to which implementation of these practices is in accord with how practices were carried out in the underlying evidence base.

Finally, *outcomes of care*, as defined by Donabedian, refers to “changes in individuals attributable to the care they received” (Donabedian, 2005). Although Donabedian (2005) conceived of the structure-process-outcome model as linear with structures of care influencing health care processes that, in turn, influence health care outcomes, other hybrid models have been posited in which both structure and processes can directly affect health care outcomes (Kunkel, Rosenqvist,

and Westerling, 2007). In any event, the structure-process-outcome model provides a framework for understanding how to improve overall care quality. Knowledge regarding both the structure and processes of care is needed to document care quality. Quite simply, it is not possible to know whether the right structures (that is, facilities and providers) exist without taking systematic account of the locations of potential patients (that is, service members and dependents) and their ability to physically reach these structures.

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ith many service members now returning to the United States from the recent conflicts in Iraq and Afghanistan, concern over adequate access to behavioral health care (treatment for mental, behavioral, or addictive disorders) has risen. Yet data remain very sparse regarding how many service members (and their dependents) reside in locations remote from behavioral health providers, as well as the resulting effect on their access to and utilization of care. Little is also known about the effectiveness of existing policies and other efforts to improve access to services among this population. To help fill these gaps, a team of RAND researchers conducted a geospatial analysis using TRICARE and other data, finding that roughly 300,000 military service members and 1 million dependents are geographically distant from behavioral health care, and an analysis of claims data indicated that remoteness is associated with lower use of specialty behavioral health care. A review of existing policies and programs discovered guidelines for access to care, but no systematic monitoring of adherence to those guidelines, limiting their value. RAND researchers recommend implementing a geospatial data portal and monitoring system to track access to care in the military population and mark progress toward improvements in access to care. In addition, the RAND team highlighted two promising pathways for improving access to care among remote military populations: telehealth and collaborative care that integrates primary care with specialty behavioral care.



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