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Research Report

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Assessing the Quality of Outpatient Pain Care and Opioid Prescribing in the Military Health System

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About This Report

Acute and chronic pain are common among U.S. military service members. Research indicates that more than half of active-duty service members have had one or more pain diagnoses, and approximately 40 percent of recently deployed infantry soldiers have reported chronic pain lasting at least three months. Given the widespread potential impact of pain on military readiness and ability to deploy, providing high-quality treatment to service members with pain conditions is a strategic priority for the Military Health System (MHS). However, it is unclear whether the MHS is providing pain care that is consistent with evidence-based clinical practice guidelines, including those pertaining to opioid prescribing and treatment for opioid use disorder.

To address this knowledge gap, the Office of the Assistant Secretary of Defense for Health Affairs asked the RAND Corporation to assess the quality and safety of pain care and opioid prescribing in the MHS and to recommend next steps for improvement.

The research reported here was completed in April 2021 and underwent security review with the sponsor and the Defense Office of Prepublication and Security Review before public release.

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Summary

Pain is the leading cause of disability among active-duty service members. In the Army alone, recent data suggest that injuries and related musculoskeletal conditions account for more than 1 million medical encounters and approximately 10 million limited-duty days per year. And when soldiers are unable to deploy, these conditions are the most common reason (U.S. Army Public Health Center, 2018). Given the significant implications for force readiness and service member well-being, the Military Health System (MHS) has made it a strategic priority to provide service members with high-quality treatment for pain conditions. However, there has been no comprehensive assessment to date of the quality and safety of pain care in the MHS, including whether it is consistent with evidence-based clinical practice guidelines (CPGs). To address this knowledge gap and inform potential improvements, the Office of the Assistant Secretary of Defense for Health Affairs asked the RAND Corporation to assess the quality and safety of pain care and opioid prescribing in the MHS.

This report focuses on pain conditions that service members experience at much higher rates than the general U.S. population: acute pain and chronic pain, with back and joint pain being the most common. Acute pain can result from illness or trauma, such as surgery, injury, or overuse. If pain persists longer than the expected healing time or for more than 90 days—due to, for example, reinjury, delayed treatment, or inadequate management—it could become chronic. Chronic pain symptoms among service members are often comorbid with behavioral health (BH) conditions, such as posttraumatic stress disorder, major depressive disorder, and substance use disorders (Caldeiro et al., 2008; Runnals et al., 2013). Given the risk of dependence and the prevalence of opioid treatment for chronic pain, we also examined opioid prescribing practices in the MHS and medication treatment for opioid use disorder (OUD).

Developing Measures to Assess the Quality of Pain Care in the MHS

High-quality pain care is evidence-based and aligns with current CPGs. It also supports improved patient outcomes, such as symptoms, functioning, and satisfaction with care. We used administrative data on active-component service members' health care encounters at military treatment facilities or in private-sector health care settings to characterize service members who received pain treatment between October 2017 and September 2019 and their care utilization patterns. We then applied our measures to assess aspects of the quality of care they received.[1]

To assess the quality of selected outpatient pain care services in the MHS, we developed a series of quality measures—sometimes called quality metrics. In our set of quality measures, we opted to capture a range of outpatient noncancer pain care delivered to active-component service members in direct care settings and by private-sector providers under contract with TRICARE.[2] We grouped the resulting measures into five categories, as shown in Table S.1: (1) acute pain related to dental and ambulatory procedures, (2) acute low back pain, (3) chronic pain, (4) opioid prescribing, and (5) OUD.

Across these categories, we identified only one existing measure that was compatible with our study criteria: medication treatment for OUD. This measure is also currently endorsed by the National Quality Forum (NQF).[3] In developing the remaining measures, we drew on CPGs from the U.S. Department of Veterans Affairs (VA) and U.S. Department of Defense (DoD), among other sources. We also incorporated input from a panel of experts in developing and refining the measures.

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[1] This study was approved by the RAND Institutional Review Board, with concurrence from the Office of Research Protections, Defense Health Agency; the Defense Health Agency and Defense Manpower Data Center also approved all data access and analytic plans.

[2] We focus on outpatient, noncancer pain because inpatient care for pain and care for cancer pain are guided by different recommendations.

[3] NQF is a nonprofit organization committed to improving health care, including the setting of standards for health care measurement.

TABLE S.1

Quality Measures to Assess Pain Care

Measure Topic	Quality Measure	Observed Care
Acute pain related to procedures		
Opioids and dental procedures	Dental procedures for opioid-naïve patients who initially received short-acting opioids and no more than a 1-day supply or no opioids	FY 2019
Opioids and ambulatory procedures	Ambulatory procedures for opioid-naïve patients who initially received short-acting opioids and no more than a 5-day supply or no opioids	FY 2019
Acute low back pain		
NSAIDs/NPT without opioids	Opioid-naïve patients with acute low back pain who received NSAIDs or any NPT within 3 months and no opioids	FY 2019
Stepped care	Opioid-naïve patients with acute low back pain who received nonopioids or any NPT within 3 months and no opioids or opioids only after nonopioids or NPT	FY 2019
No initiation of benzodiazepines	Opioid-naïve patients with acute low back pain not currently taking benzodiazepines who did not initiate benzodiazepines (≥7 days) within 3 months	FY 2019
Chronic pain		
NPT	Patients with chronic pain who received any NPT within 12 months	FYs 2018 and 2019
Nonopioid medication/NPT	Patients with chronic pain who received any nonopioid medication or NPT within 12 months	FYs 2018 and 2019
Opioid prescribing		
Opioids without concurrent benzodiazepines	Patients who received opioids who did not receive concomitant benzodiazepines (≥7 consecutive days) during the 12-month observation period	FY 2019
Lower-risk average daily dosage	Patients who received opioids and whose average daily dosage was <90 MME during the 12-month observation period	FY 2019

Table S.1—Continued

Measure Topic	Quality Measure	Observed Care
No advancement to LOT	Opioid-naïve patients who received opioids who did not advance to LOT during the 12-month observation period	FYs 2018 and 2019
Naloxone in LOT at higher-risk daily dosage	Patients on LOT dispensed a daily dosage of ≥50 MME and dispensed naloxone within 3 months	FY 2019
Follow-up visit in LOT	Patients on LOT with a follow-up evaluation and management visit at least every 90 days	FYs 2018 and 2019
Urine drug testing in LOT	Patients on LOT who received drug testing at least once during the 12-month observation period	FY 2019
Opioid use disorder		
Medication for OUD[a]	Patients with OUD who received medication treatment for OUD during the 12-month observation period	FY 2019

NOTES: Opioid-naïve = no opioids in the previous 90 days. FY = fiscal year. NSAID = nonsteroidal anti-inflammatory drug. MME = morphine milligram equivalent. LOT = long-term opioid therapy.

[a] NQF-endorsed measure.

One potential limitation of this research was variability in the quality, availability, and comprehensiveness of administrative data for assessing the quality of pain care. For example, administrative data might not include all types of treatment that service members received for pain conditions, including some nonpharmacologic treatments (NPTs) with a significant evidence base, such as tai chi and yoga. The data also do not include unstructured documentation from providers (i.e., chart notes). This meant that we were not able to assess patient education, informed consent regarding opioid use, patient refusals of treatment, or contraindications. Finally, it is possible that our defined focus on pain care affected the representativeness of our service member data sample, as our analyses did not include treatment of cancer pain or pain treated in inpatient settings. However, our quality measures nonetheless provide a valuable baseline for performance monitoring as the MHS continues to improve the care and support it provides to service members.

Key Findings

Applying the quality measures listed in Table S.1 to administrative data highlighted several insights into the needs of service members with chronic pain and the quality of care that the MHS provides to this population. Measures reflect care received during FY 2019 or, for some measures for which longer measure eligibility periods were required, care received in FYs 2018 and 2019.

Nearly 80 Percent of Service Members with Acute Low Back Pain Received Treatment Consistent with "Stepped Care"

The MHS encourages stepped care for pain management, whereby noninvasive NPT and nonopioid medications are recommended as first-line treatments and opioid use is reserved for severe pain that has not responded to these lower-risk interventions. We found that 79 percent of service members with a new episode of low back pain received treatment consistent with stepped care, meaning that in the three months following their initial back pain visit, they received NPT or nonopioid medication prior to receiving any opioids. Overall, only 8 percent of service members who received care for acute low back pain were prescribed an opioid during our observation window.

Service Members with Chronic Pain Are a Large Population with Complex Health Care Needs

Our data indicated that nearly 100,000 service members experienced chronic pain in FY 2018, with low back pain being the most the common chronic pain condition. Chronic pain was frequently comorbid with other medical and psychological conditions, with some service members having particularly medically complex needs. These "high utilizers" of care were far more likely to have a BH diagnosis and to receive psychotropic medication

More Than 80 Percent of Service Members with Chronic Pain Received at Least Some NPT, but Few Received Some Particular Types of NPT That Are Recommended

NPT use was high among service members with chronic pain, with physical and occupational therapy being the most common, followed by exercise

and chiropractic care/manipulation. Despite recommendations supporting their use, only 7 percent of service members with chronic pain received acupuncture, 3 percent received psychotherapy (with a pain diagnosis), and 2 percent received biofeedback/hypnotherapy.

Opioid Prescribing Was Largely Consistent with Recommended Guidance

In the vast majority of cases in which opioids were used to treat pain, providers followed prescribing practices that mitigated the risks of opioid misuse or dependence. For example, 93 percent of service members who were dispensed seven or more days of opioids had no concurrent use of benzodiazepines exceeding seven days. Our other findings similarly suggest that the MHS performs well on multiple metrics for assessing the safety and quality of opioid prescribing.

Rates of Naloxone Dispensing for Service Members on Higher-Risk Daily Opioid Dosages Were Low, and Few Service Members with OUD Received Medication Treatment

Naloxone co-prescribing is recommended to reduce the risk of overdose among at-risk patients prescribed opioids for pain. Only 8 percent of service members on LOT regimens who were dispensed opioids at a daily dose of 50 MME or higher were also dispensed naloxone rescue (nasal spray or autoinjector) within three months. This low rate highlights a potentially serious safety and quality concern. Among service members with a diagnosis of OUD in FY 2019 in our study population, only 22 percent received any recommended medication for OUD in that same year. Few received one of the medications with the strongest recommendations for OUD treatment (i.e., 8 percent received buprenorphine; 3 percent received injectable naltrexone).

Direct Care Providers Were More Likely Than Private-Sector Providers to Adhere to Opioid-Prescribing Recommendations After Dental and Ambulatory Procedures

Following dental and ambulatory procedures, the Defense Health Agency (DHA) recommends either not prescribing opioids or prescribing an ini-

tial limited supply of short-acting opioids.[4] Almost half of the dental procedures and more than 80 percent of ambulatory procedures in our data met DHA recommendations, although this varied by procedure, and there was greater adherence among direct care providers than among private-sector providers.

Recommendations and Policy Implications

The observations generated by our analyses supported six recommendations to better align chronic pain care with the needs of service members and in support of force readiness.

Recommendation 1. Select a Set of High-Priority Pain Care Quality Measures to Monitor and Report Routinely

Continually measuring the quality of pain care is essential to determining whether patients receive recommended care and for providing ongoing feedback to providers to improve care. We used a large set of measures to assess pain care, but the MHS might want to select a smaller set to monitor the quality of specific aspects of pain care on an ongoing basis, establish benchmarks, and track the impact of quality-improvement efforts.

Recommendation 2. Increase Delivery of Recommended NPTs for Pain to Support Consistent Implementation of the Stepped-Care Model

By prioritizing NPT and nonopioid medications, with opioids reserved for unresponsive severe pain, the MHS is already promoting a model of stepped care for pain management. However, it should maximize the availability and awareness of NPT, as well as provider and service member awareness of the potential benefits of NPT, and work to address barriers to the use of these treatments.

[4] Note that this recommendation was under review at the time of this writing.

Recommendation 3. Assess the Utilization Patterns of "High-Need" Service Members with Chronic Pain and Implications for Care Delivery

The population of service members with chronic pain is vast and diverse, with subsets with comorbid BH conditions and with other complex medical needs. This latter group, identified as high utilizers, merits further study. Depending on what these analyses reveal, the MHS might want to examine whether there is a need to strengthen its programs targeting medically complex service members to improve care, outcomes, and readiness for this population.

Recommendation 4. Increase Naloxone Dispensing to Service Members with Higher-Risk Opioid Use

However small the share of service members receiving long-term or high-risk opioid treatment, the low rates of naloxone prescribing for this population across the MHS could pose a patient safety risk. There are several approaches that the MHS could consider to build on its existing efforts to increase naloxone dispensing to service members at risk of opioid overdose. However, any solution will need to account for the fact that a large proportion of service members receiving LOT get all or the majority of their care from private-sector providers.

Recommendation 5. Increase Medication Treatment for Service Members with OUD

Service members with OUD are at risk for increased morbidity and mortality. Due to military policies on drug use and substance use disorders, service members diagnosed with OUD are likely to be subsequently separated from the military (Army Regulation 600-85, 2020). However, it is essential that these service members initiate recommended treatment as soon as their condition is diagnosed. The MHS should ensure that these service members are offered medication treatment for OUD and track the rates of receipt of this recommended treatment. Furthermore, transition assistance programs should support separating service members by connecting them with a prescribing provider to ensure continuity of care.

Recommendation 6. Update Opioid Prescribing Guidance for Procedures to Improve Specificity and Appropriateness of Guidance

Current guidelines for prescribing opioids for acute pain (related to procedures or not) tend to broadly suggest an initial maximum days of supply of opioids (Dowell, Haegerich, and Chou, 2016). However, studies have shown that most patients receive more opioid tablets than they ultimately need for post-procedure pain control (Hartford et al., 2019; Hill et al., 2017; Maughan et al., 2016; Wojahn et al., 2018). Creating procedure-specific recommendations for opioid types and quantities or dispensed MMEs could minimize initial over- or underprescribing and help identify areas for quality improvement. These recommendations could be provided to contracted private-sector providers to help standardize prescribing practices across MHS care settings.

Conclusions

The pervasive impact of pain on military readiness and ability to deploy has made the provision of high-quality pain care a strategic priority for the MHS. This report offers the most comprehensive examination to date of the quality and safety of pain care in the MHS and its alignment with evidence-based CPGs. The measures that we developed to assess different aspects of pain care provide a valuable baseline for performance monitoring as the MHS continues to improve the care and support it provides to service members with acute and chronic pain.

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CHAPTER ONE

Introduction

Pain can be defined as "a distressing experience associated with actual or potential tissue damage with sensory, emotional, cognitive, and social components" (Williams and Craig, 2016, p. 2420). Acute and chronic pain conditions are common among U.S. service members. It is estimated that roughly half of active-duty service members have one or more pain diagnoses (Bader et al., 2018; Reif et al., 2018). Military operations in Afghanistan and Iraq alone accounted for more than 50,000 U.S. soldiers wounded in action, with many of these injuries resulting in significant pain (U.S. Department of Defense [DoD], 2021). Pain symptoms are often comorbid with such conditions as posttraumatic stress disorder (PTSD), traumatic brain injury (TBI), and substance use disorders (SUDs) (Blakey et al., 2018; Lew et al., 2009). The pervasive impact of pain on military readiness and ability to deploy have made the provision of high-quality pain care a strategic priority for the Military Health System (MHS) (Defense Health Agency [DHA] Procedural Instruction 6025.04, 2018). Routine, comprehensive assessments of pain care delivered in the MHS are needed to evaluate the quality and safety of that care and to identify opportunities to improve patient outcomes.

To address this need, the Office of the Assistant Secretary of Defense for Health Affairs asked the RAND Corporation to assess the quality and safety of pain care and opioid prescribing in the MHS and to recommend steps for improvement. In response, we conducted analyses of pain care delivered to service members from October 2017 through September 2019 (fiscal years [FYs] 2018–2019). This report describes the methods and findings from those analyses, which used administrative treatment data on care delivered at military treatment facilities (MTFs, i.e., direct care) and through TRICARE-contracted providers (i.e., private-sector care). We describe the demographics of the patient populations served, their service utilization,

and aspects of the quality of care received by active-component service members across five domains: acute pain related to procedures, acute low back pain, chronic pain, opioid-prescribing practices, and medication for opioid use disorder.

In this chapter, we describe the prevalence and complexity of pain conditions among service members, treatment for these conditions in the MHS, and how the safety and quality of pain care are measured.

Epidemiology of Pain in the U.S. Military

Pain conditions represent the leading cause of disability among active-duty service members (Flynn et al., 2017). The physical demands of military duty put service members at risk for injuries that are drivers of acute and chronic pain. A study on the prevalence of pain found that 63 percent of active-duty Army personnel had at least one pain diagnosis, with musculoskeletal conditions being the most common (Reif et al., 2018). Recent data suggest that injuries and related musculoskeletal conditions are the most common reason for soldiers not being ready for deployment and account for more than 1 million medical encounters and approximately 10 million limited-duty days per year (U.S. Army Public Health Center, 2018). In 2018, Bader and colleagues conducted a review of musculoskeletal pain and headache, concluding that risk of pain is greater for active-duty military personnel than for civilians and that risk is heightened for active-duty women, personnel serving in the Army, enlisted personnel, and those who spend more time in motor vehicles (Bader et al., 2018).

Acute Pain in the U.S. Military

Acute pain represents the body's normal, predicted physiological response to surgery, acute illness or trauma—often limited to a 90-day period from onset (Carr and Goudas, 1999). Acute pain may derive from elective or emergency surgery procedures, blunt or penetrating trauma, or physical strain in the context of executing duties. For example, there are more than 35,000 dental visits in the U.S. military each year, many of which involve ambulatory surgical procedures, such as molar extraction (Wiener, Sambamoorthi, and Jurevic, 2014). Acute low back pain is the most common

musculoskeletal pain condition among service members, affecting roughly four out of every 100 service members and equating to a cumulative loss of a year of service; exertional overuse has been estimated to account for more than 80 percent of injuries among nondeployed military personnel (Knox et al., 2011; Knox, Orchowski, and Owens, 2012). In 2015, 23 percent of service members reported being "bothered a lot" in the prior month by back pain; 22 percent by pain in the arms, legs, or joints; and 12 percent by headaches (Meadows et al., 2018). Blast exposure is also a common cause of injuries generating acute pain in combat settings: During the troop surge in Iraq in 2007, there were 83 explosion injuries per 1,000 deployed soldiers in one U.S. Army brigade combat team (Greer et al., 2016, p. 4).

Subacute pain refers to pain that has persisted for at least six weeks but fewer than three months (Dionne et al., 2008). Service members who experience pain may attempt to "tough it out" by continuing service duties that exacerbate injury, increasing the risk that acute pain conditions will become chronic (DoD and U.S. Department of Veterans Affairs [VA], 2010; Rawlins et al., 2020). The topic of subacute pain and risk transition to chronic pain—as a result of either delayed treatment or inadequate management of acute pain—has been given significant attention in recent years, partly in an attempt to reduce progression to chronic pain and reduce reliance on such interventions as prescription opioids (Jungquist et al., 2017; Williamson and Stram, 2019).

Chronic Pain in the U.S. Military

Chronic pain, often defined as non–cancer-related pain lasting at least three months beyond the time of expected normal healing (Nicholas et al., 2019) is also prevalent among service members. A survey of non–treatment-seeking active-duty infantry soldiers returning from deployment found that 44 percent reported chronic pain (Toblin et al., 2014). By comparison, the Centers for Disease Control and Prevention (CDC) estimates the prevalence of chronic pain in the general U.S. adult population to be 20 percent (Dahlhamer et al., 2018).

Specific conditions, such as PTSD and TBI, are associated with the etiology of chronic pain and are higher in prevalence among service members than among civilians (Bosco, Murphy, and Clark, 2013; Nampiaparampil,

2008; Outcalt et al., 2014). For example, upwards of 40 percent of Operation Iraqi Freedom/Operation Enduring Freedom veterans with chronic pain reported PTSD and post-concussive symptoms (Lew et al., 2009). Injury—and polytrauma events in particular—that lead to post-concussive symptoms and TBI were routinely caused by improvised explosive devices and other explosive munitions in those conflicts (Stratton et al., 2014). Similarly, chronic pain symptoms among service members are often comorbid with behavioral health (BH) conditions, such as major depressive disorder and SUDs (Runnals et al., 2013; Caldeiro et al., 2008).

Musculoskeletal pain conditions, particularly back and joint pain, have been consistently identified as the most common diagnostic group of chronic pain disorders among service members (Bader et al., 2018; DoD and VA, 2010). Those that result in chronic pain disproportionately account for disability in the military. For example, 4 percent of soldiers in the Army active component in 2016 accounted for 51 percent of all musculoskeletal-associated profile days (i.e., days of limited or restricted work activity) (U.S. Army Public Health Center, 2017a). Although a significant number of these diagnoses derived from combat injuries that are unique to service members, it is important to note that the majority of service members' medical encounters are for noncombat injuries that resemble pain etiologies in civilian populations.

Providing Effective and Safe Pain Care for Service Members

Pain Care Guidance in the U.S. Military

Over the past decade, the MHS has implemented several policy initiatives to improve pain care for its beneficiaries. In 2010, the Army's Pain Management Task Force was chartered to issue recommendations for a comprehensive pain management strategy. The task force provided 109 recommendations in the final report, emphasizing multimodal and interdisciplinary pain management strategies aligned with four major goals: (1) proving appropriate resources for continued research and progress in pain management, (2) maintaining a patient-centered focus, (3) building an evidence base of best practices for the use of different modalities in pain management, and

(4) designing appropriate pain management educational content (DoD and VA, 2010). One major recommendation was to implement the Veterans Health Administration's Stepped Care Model for Pain Management, which emphasizes using opioids only after less intensive alternatives have been tried (VA, undated).

DoD has since reported annually on the status of its pain-management policies and related efforts. Its FY 2019 report elaborated on existing efforts in the MHS to address pain care management, including the expansion of pain assessment to include the impact of pain and pain treatment on patient functioning; improved access to comprehensive pain management programs; and ongoing pain management research (Office of the Secretary of Defense, 2019). DHA similarly issued a procedural instruction in 2018 to guide the provision of evidence-based pain management—emphasizing nonpharmacologic treatments (NPTs), patient and clinician education, and opioid prescribing guidance (DHA Procedural Instruction 6025.04, 2018). To establish best practices for addressing pain, DHA identified low back pain as an area of opportunity for improving care. It is currently piloting a low back pain care "pathway" (decision support tool) that is aimed at operationally defining high-quality processes for care that can guide providers in assessing and treating patients with low back pain (Office of the Secretary of Defense, 2019).

To operationalize best practices for clinicians who treat active-duty service members and veterans, VA and DoD have jointly released several clinical practice guidelines (CPGs) on pain management, including

- *VA/DoD Clinical Practice Guideline for Opioid Therapy for Chronic Pain* (VA and DoD, 2017a)
- *VA/DoD Clinical Practice Guideline for Diagnosis and Treatment of Low Back Pain* (VA and DoD, 2017c)
- *VA/DoD Clinical Practice Guideline for the Non-Surgical Management of Hip and Knee Osteoarthritis* (VA and DoD, 2014)
- *VA/DoD Clinical Practice Guideline for the Primary Care Management of Headache* (VA and DoD, 2020).

There are also VA/DoD CPGs on related clinical topics, such as management of TBI (VA and DoD, 2016), PTSD (VA and DoD, 2017b), and SUDs

(VA and DoD, 2015). Each CPG provides an overview of the etiology and impact of the condition, a list of clinical recommendations by topical area (e.g., diagnostic approach, self-care, NPT, pharmacologic therapy), and the strength of each recommendation based on the supporting literature. These recommendations, along with the evidence underpinning them, provide essential guidance for practitioners who care for patients with pain and for those who monitor and oversee improvements to the delivery of pain care. Within the scope of our study, CPGs also served as primary inputs for the development and refinement of quality measures for assessing pain care.

CPGs are updated on a routine basis, and new CPGs for specific pain conditions and treatment modalities are constantly under consideration. Due to the complexity and diversity of pain conditions, an all-encompassing CPG for pain care has not been developed; rather, CPGs focus on specific conditions and treatment modalities. Moreover, individual guidelines have the potential for misinterpretation or misapplication, as reflected in several recent reports on the CDC's opioid-prescribing guideline (Adams and Guerra, 2021; Rich, 2020).

Programmatic Efforts to Improve Chronic Pain in the U.S. Military

In addition to routine development of CPGs, DoD has pursued several courses of action to enhance quality of pain care in the MHS—including structural changes and the development of a robust pain research portfolio to inform clinical practices and support technological innovations. With regard to structural changes, this has included the realignment of the Defense and Veterans Center for Integrative Pain Management into a multidisciplinary entity focused on the application of integrative approaches to pain care, as well as the establishment as the seventh DoD Center of Excellence in 2016 (Defense and Veterans Center for Integrative Pain Management, undated a). Furthermore, in 2014, DoD introduced a comprehensive pain-management policy that included the use of patient-centered medical homes and VA's stepped-care model in the context of both primary and specialty care (Office of the Secretary of Defense, 2014, 2017). The MHS has also adopted a biopsychosocial model to examine physical, psychological,

social, and environmental factors in assessing the etiology of pain and planning treatment (Vallerand et al., 2015).

With regard to research, DHA has promoted several mechanisms to advance pain care. This has included more than $100 million allocated annually through congressionally directed medical research programs in such areas as chronic pain management ($15 million in FY 2020), military burn research ($10 million), orthotics and prosthetics ($15 million), orthopedics ($30 million), and spinal cord injury ($40 million). It also includes the Pain Management Collaboratory, a joint initiative of the National Institutes of Health, VA, and DoD that is supporting 11 large-scale clinical trials to shrink the gap between science and practice in pain management (Pain Management Collaboratory Coordinating Center, undated). In the past ten years, the pain care research portfolio—comprising military and military-sponsored researchers—has generated hundreds of peer-reviewed articles on topics ranging from technological developments in wound dressings for field-based care of burns (Engel et al., 2020) to optimization strategies for rehabilitation of patients with chronic pain (Flynn et al., 2017).

Pain Care Guidance Outside the U.S. Military

In parallel with efforts by DoD and VA, other federal agencies have released complementary CPGs, detailed reviews, and reports addressing pain management. Most notable have been the U.S. Department of Health and Human Services (DHHS) *Pain Management Best Practices Inter-Agency Task Force Report* (DHHS, 2019); the CDC *Guideline for Prescribing Opioids for Chronic Pain* (Dowell, Haegerich, and Chou, 2016); and the Agency for Healthcare Research and Quality's (AHRQ's) comparative effectiveness reviews, including *Noninvasive Nonpharmacological Treatment for Chronic Pain: A Systematic Review Update* (Skelly et al., 2020), *Treatments for Acute Pain: A Systematic Review* (AHRQ, 2020), and *Opioid Treatments for Chronic Pain* (Chou et al., 2020). Professional associations, such as the American Osteopathic Association, have also released their own sets of guidelines (Task Force on the Low Back Pain Clinical Practice Guidelines, 2016). Although there are differences between the recommendations in VA/DoD guidelines and those from other federal agencies, key messages and conclusions are generally in agreement (Rosenberg et al., 2018).

Evidence-Based Treatment for Acute and Chronic Pain

A broad literature has sought to define evidence-based treatments for acute and chronic pain, often with nuanced differences that depend on the site and source of pain, as well as the persistence and intensity. For example, AHRQ's *Pain Management Best Practices* report provides an overview of several principles of high-quality, safe pain care that have received wide support (DHHS, 2019). These include conducting a detailed assessment of patient history and symptoms related to the onset of pain, developing a multidisciplinary and multimodal pain management strategy guided by a biopsychosocial model of care, improving patient and caregiver education about pain conditions and treatments, prioritizing NPT and nonopioid pharmacologic treatment whenever feasible, circumscribed use of opioid therapy and employing risk mitigation strategies for those on opioid therapy, and assessing the impact of pain treatment on functional status and quality of life. In terms of care delivery, experts broadly concur on the importance of team-based, interdisciplinary pain care, often following a stepped-care approach in which level and intensity of pain care match the needs of patients. Finally, attention to the needs of special populations that face distinct challenges related to pain and pain care has been recommended, and active-duty service members are explicitly identified as one such population (DHHS, 2019).

Despite these multiple principles of evidence-based treatment, there is limited knowledge about their application within the MHS, although surveys and medical record reviews do provide some indication of the relative frequency of NPT and opioid therapy prescribing. For example, according to DoD's 2015 Health Related Behaviors Survey, one in five service members reported being treated with opioids in the previous year (Meadows et al., 2018), more than twice the percentage who reported using sedatives, stimulants, or anabolic steroids. A 2020 DoD Inspector General report found evidence of opioid overprescribing following a review of patient records documenting care delivered by three MTFs from 2015 to 2017, which was partially attributed to a lack of policies and processes to prevent overprescribing (DoD Office of the Inspector General, 2020). According to a 2019 report to Congress, long-term opioid use has declined significantly among Army personnel in recent years, from 12.3 percent in FY 2007 to 3.9 percent in FY 2018 (Office of the Secretary of Defense, 2019).

With regard to NPT, a large percentage of Health Related Behaviors Survey respondents (48 percent)—across all health conditions in the survey—reported the use of NPT as part of their treatment, such as exercise therapy (18 percent), chiropractic care (11 percent), and acupuncture (5 percent), each of which is recommended for specific types of pain (Meadows et al., 2018). This finding has been corroborated elsewhere. For example, in one analysis examining more than 140,000 Army personnel with chronic pain conditions, researchers found that 83 percent had received an NPT, with the most common being exercise therapy (92 percent of NPT recipients), physical therapy (32 percent), and chiropractic care (24 percent) (Meerwijk et al., 2020). Such interventions as acupuncture (10 percent) and biofeedback (10 percent) were less common. Another study estimated that there were 76,000 NPT encounters per month across the MHS from 2008 to 2013, reflecting a rapid expansion of these services over time (Herman, Sorbero, and Sims-Columbia, 2017). In 2020, DHA issued new guidelines and regulations on the use of acupuncture, meant to promote it as a routine, complementary intervention (DHA, 2020; DHA Procedural Instruction 6025.33, 2020).

There is considerably more evidence on pain care with respect to polytrauma and amputation, for which DoD and VA have developed comprehensive treatment and rehabilitation strategies, including the Polytrauma System of Care pathway (Scholten, 2017) and an integrated disability evaluation system to standardize care delivery processes and streamline assessment for fitness of duty (DHA, undated). For example, a recent analysis of Polytrauma System of Care recipients found that 84 percent of the service members received specialty mental health treatment within one year (Adams et al., 2019). The MHS also has specialized programs that focus on the restoration of function among amputees—for example, gait optimization and enhanced prosthetic use (Brown et al., 2018; Farrokhi et al., 2019; Mahon et al., 2019). The MHS has also designed strategies specifically for managing battlefield trauma, including prolonged field care, to reduce the downstream probability of amputation (Joint Trauma System, 2017). A majority of these efforts address the clinical triad of TBI, PTSD, and chronic pain among those receiving acute inpatient care, whereas this report is focused on outpatient services.

In sum, prior data indicate that both NPT and opioid therapy have been provided to service members with relatively high frequency, and there is also a track record of innovation in the MHS when it comes to addressing health conditions that elevate the risk of chronic pain—such as polytrauma and TBI. However, it is much less clear whether and to what extent providers follow a stepped-care approach follow appropriate dosing, duration, and risk mitigation guidance when prescribing opioids. The measures in this report address these gaps.

Measuring the Quality of Pain Care

Measuring the quality of pain care is essential for determining whether patients receive recommended care and for providing ongoing feedback to providers to improve care. At the systems level, quality measurement enhances accountability; guides future research efforts (McDonald, Chang, and Schultz, 2013); and supports a learning health care system that aligns science, informatics, and incentives for continuous improvement and innovation (Institute of Medicine, 2013). Such organizations as the National Quality Forum (NQF) support these efforts by reviewing and maintaining measures to assess the quality of care delivered by health systems in the United States (NQF, undated).

Quality measures are routinely defined in terms of numerators and denominators, typically generating a score representing the percentage of eligible patients who received recommended care. To measure adherence to CPGs, quality measures can be used to establish the baseline performance of a health system as a first step in goal-setting for future comparisons, as well as to identify areas for quality improvement and benchmark progress over a defined time frame (AHRQ, undated). The MHS has applied a system of ongoing self-assessment and performance review to a wide range of clinical practice areas. A recent MHS Review Group assessed MHS care and issued recommendations that reinforced the system's focus on standardization of care, process improvement, and transparency (DoD, 2014). The MHS aims to internally track several measures related to the quality of pain care (e.g., metrics for safe opioid prescribing), as well as measures of pain care utilization and patient outcomes (e.g., the Defense and Veterans

Pain Rating Scale) (DoD and VA, 2010; Office of the Secretary of Defense, 2019; DoD Office of the Inspector General, 2020). Published evidence of the quality of pain management in the MHS remains limited, however.

Assessing Quality and Classifying Pain in This Report

High-quality pain care is care that optimally promotes patient functioning while mitigating patient risks (Sullivan and Vowles, 2017). Although this report focuses on assessing the quality of pain care, safety is an important consideration in treatment decisions, given the historic role of prescription opioids in precipitating widespread patient morbidity and mortality in the United States (Huang, Keyes, and Li, 2018; M. Jones et al., 2018). Likewise, this definition emphasizes promoting functioning over mitigating pain. Pain mitigation represents a means by which improved functioning may be achieved (Gatchel et al., 2007), but we also recognize that—in many instances—pain may be persistent and that rehabilitation that allows patients to lead productive lives is a more holistic objective (Ballantyne and Sullivan, 2015).

Definitions of pain, and distinguishing characteristics of acute and chronic pain, abound in the literature (Williams and Craig, 2016). The operational definitions we have outlined in this chapter are widely utilized but imperfect. In particular, chronic pain is characterized as pain that persists *past normal healing time* and therefore lacks the warning function of physiological nociception (Treede et al., 2015). However, the duration of this healing interval depends on the etiology of the condition. For minor surgeries or strains, healing time may be brief. In other cases, such as severe burns, recovery may last months. As such, our selection of *more than three months duration from onset of pain* is a subjective benchmark for establishing chronicity (Sherry et al., 2021).

The duration threshold is embedded in 2019's International Classification of Diseases, 11th revision (ICD-11), taxonomy of chronic pain established by the Task Force of the International Association for the Study of Pain (Barke, 2019). A related taxonomy—of injuries for public health monitoring and reporting—has drawn a distinction between overuse injuries that often occur during military training among first-year recruits and those of a more-severe nature that result in hospitalization, defined as the

"injury pyramid" (U.S. Army Public Health Center, 2017c). For example, In 2017, for every 3,212 ambulatory encounters for injuries among soldiers, there were only 17 hospitalizations, and one patient died (U.S. Army Public Health Center, 2017b). Given the proportionally higher prevalence of pain conditions treated in ambulatory settings, this report focuses on a taxonomy of care for outpatient settings.

Figure 1.1 shows the continuum of outpatient, nonemergent, and noncancer pain care—ranging from acute to chronic pain—that is the focus of this study. The figure also highlights the range of potential nonsurgical and noninvasive treatment options that could be used. Consistent with the stepped-care model, treatment options are listed from less intensive to more intensive.

Organization of This Report

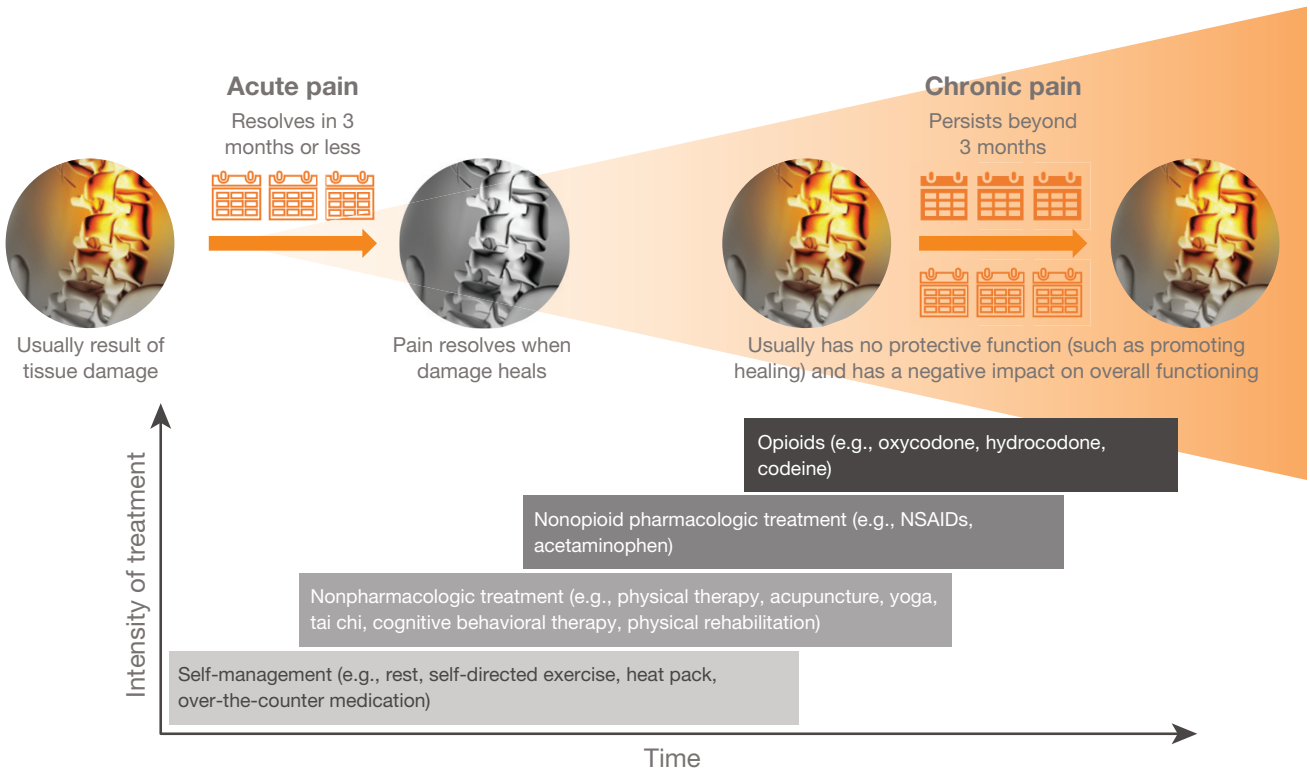
This report describes the care received by active-component service members diagnosed with acute and chronic pain conditions through the MHS between October 2017 and September 2019. Using administrative data, we assessed the quality of the pain care they received using 14 measures across five clinical domains: opioid prescribing for selected dental and acute outpatient procedures, care for acute low back pain, care for chronic pain, opioid prescribing, and medication for opioid use disorder (OUD).

In Chapter Two, we describe how we developed the pain quality measure set. In Chapter Three, we outline data sources and methods used to conduct the analyses. We also describe the eligibility criteria for each of our study populations and steps taken to operationalize and apply the quality measures. In Chapters Four through Eight, we present results from our analyses for each of the five clinical domains. In the final chapter, Chapter Nine, we summarize and interpret key findings, discuss policy implications, and outline recommendations for quality improvement and future research.

Appendix A provides the technical specifications for each of the quality measures, with key definitions for reference in Appendix B. Appendix C contains tables of supplemental analyses focused on service members with chronic pain, and Appendix D presents additional analyses of opioid prescribing. In Appendix E, we present preliminary analyses of the use of the Defense and Veterans Pain Rating Scale by MTF providers for service members with chronic pain.

FIGURE 1.1

Assessing Outpatient Pain Care Across the Pain Continuum



CHAPTER TWO

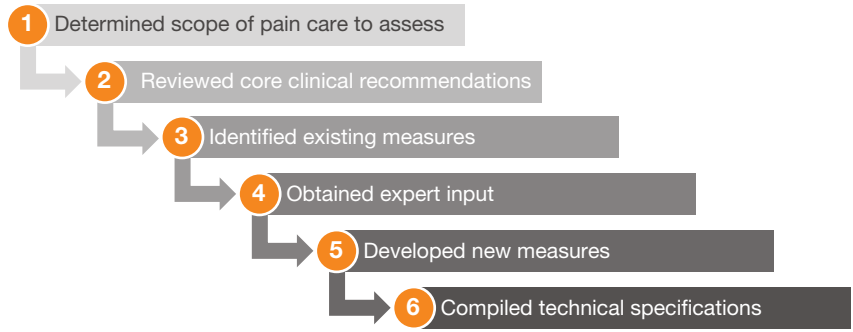
Developing a Pain Care Measure Set

This chapter provides an overview of the systematic process we used to develop quality measures—sometimes called *quality metrics*—to assess outpatient care for pain. When monitoring quality, three dimensions of health care are commonly assessed: structure, process, and outcomes (Donabedian, 1988). The structure of health care includes the physical and organizational characteristics of care settings, such as facilities, equipment, personnel, and operational and financial administrative policies. Assessing aspects of structure reveals whether a health care setting has the capacity to provide evidence-based care. The process of care includes activities related to the provision of care that is evidence-based, including preventive care, diagnosis and treatment of health care problems, rehabilitation, and ongoing management of conditions. Care processes rely on adequate resources and mechanisms to support the delivery of evidence-based patient care. High-quality care supports improved patient outcomes, such as symptoms, functioning, and satisfaction with care. This study focused on measuring the *process* of care. Consistent with a learning health system (Institute of Medicine, 2013), information about a health care system's quality of care can reinforce areas of high quality and help identify areas of lower quality to inform ongoing quality-improvement activities (Office of the Secretary of Defense, 2017).

Development of a Pain Care Measure Set

Figure 2.1 shows the steps in developing the set of pain care measures that we applied in this study. We discuss each step in turn.

FIGURE 2.1
Process for the Development of Pain Care Quality Measures



Determining the Scope of Pain Care to Assess

Pain is the term used to describe a set of complex clinical symptoms and conditions that are treated across multiple clinical settings. Pain and pain conditions can be addressed by a wide range of clinical interventions delivered by providers across clinical disciplines (Hsu et al., 2019; Rubin, 2019a; Skelly et al., 2018; DHHS, 2019). Therefore, we carefully considered the scope of pain care that we aimed to assess in this study. Rather than focus on a single aspect of pain care (e.g., chronic pain, opioid prescribing), we opted to develop a broader set of pain care measures that assessed selected aspects of outpatient care along the continuum of acute and chronic pain. There is significant interest in care for chronic pain and the use of opioids among populations with chronic pain, but acute pain is experienced by a large proportion of service members (Blackman et al., 2016; Quraishi, Jeffery, and Kloc, 2012; Reif et al., 2018) and can contribute to the risk of developing chronic pain, especially if it is not treated appropriately (Feizerfan and Sheh, 2015; McGreevy, Bottros, and Raja, 2011; Voscopoulos and Lema, 2010).

Although OUD was not the focus of this study, the VA/DoD CPG on opioid prescribing includes a recommendation that patients with co-occurring chronic pain and OUD should receive medication treatment for their OUD. Therefore, we considered measures that assessed this aspect of care. Furthermore, opioid prescribing for acute pain is associated with potential short- and long-term risks. We limited our focus to nonemergent

outpatient pain care because of the specialization and complexity of pain management in inpatient and emergency department settings. We also limited our focus by excluding cancer pain; pain care in this context departs from noncancer pain care in its primary clinical objective (Nersesyan and Slavin, 2007). Finally, we decided to assess care for service members rather than for all MHS beneficiaries, and we limited our study population to adults ages 18–64. This age range represents the largest proportion of service members, and pain care for patients over age 65 can vary from that of younger adults because of increased comorbidity and the increased likelihood that this population has access to sources of care outside the MHS (e.g., Medicare).

As we developed our set of pain care quality measures, we focused on aspects of care that could be assessed using administrative encounter data. The MHS maintains data documenting all inpatient and outpatient health care encounters involving TRICARE beneficiaries and paid for by TRICARE, either partially or in full. These data include direct care, which is provided at MTFs, and private-sector care, which is delivered by civilian providers and facilities contracted and paid for by TRICARE. Administrative data include diagnosis codes and information about patient encounters, providers, treatment settings, and prescriptions. A chief strength of these data is the feasibility of routinely assessing care for all patients who receive MHS care. The data do not include unstructured documentation from providers (i.e., chart notes). This limited the types of pain care that we were able to examine. Examples of important aspects of pain care that we could not assess included patient education, informed consent regarding opioid use, referrals, patient refusals of treatment or contraindications, and certain NPTs, such as yoga or mindfulness meditation—which prior studies have indicated are effective in reducing certain types of pain (la Cour and Petersen, 2015; Sherman et al., 2005, 2011).

Reviewing Core Clinical Recommendations

To inform the selection and development of a set of pain care quality measures, we reviewed core documents describing clinical recommendations for optimal pain care. We reviewed relevant CPGs from VA and DoD, along with DoD pain policy documents, to identify clinical recommendations. VA

and DoD produce CPGs to inform care for various conditions. The guidelines are based on a systematic review of clinical and epidemiological evidence, allowing providers to consider various care options in the context of the quality of the evidence and strength of the recommendations for their use. Two CPGs were most relevant to this effort, as they focused on the diagnosis and management of low back pain (acute and chronic) and opioid therapy for chronic pain (VA and DoD, 2017c, 2017a). We reviewed a third CPG addressing nonsurgical management of hip and knee osteoarthritis (OA) and found it relevant to our study (VA and DoD, 2014). However, because that CPG was being updated, we did not consider it a core document because the recommendations might not have reflected current clinical practice. Across all the CPGs, we focused on the strongest evidence-based recommendations for care (i.e., "strong for" or "strong against"). However, we also considered weaker recommendations for inclusion if their risk was low, if they emphasized the stepped-care model, and if they had the potential to minimize the use of opioids. Another core document of our research was the DHA procedural instruction on pain management and opioid safety, which guides the implementation of the MHS stepped-care model while seeking to optimize opioid safety (DHA Procedural Instruction 6025.04, 2018).

We reviewed several additional documents to identify high-priority recommendations for pain care, including annual reports on the implementation of a comprehensive policy on pain care and opioid safety in the MHS, which helped us understand the progress of this high-priority effort (VA and DoD, 2017b). We also reviewed task force reports on best practices for pain management (Institute of Medicine, 2011; DoD and VA, 2010; DHHS, 2019). A common thread across these reports was the multiple biological and psychosocial factors that influence pain, the effect of pain on functioning, and what constitutes effective and appropriate pain care. There was general agreement that there are multiple treatment options and that treatment plans are influenced by both the diagnosis and patient preferences for care. In general, nonpharmacologic and nonopioid pharmacologic options should be considered first-line treatments, and treatment response should be monitored. We noted that the evidence supporting noninvasive NPTs for common pain conditions was often sparse and the strength of this evidence varied. However, in some cases, there was demonstrated improvement in

pain and functioning, and the evidence suggested no increased risk of serious treatment-related harms (Skelly et al., 2020).

We also reviewed several documents addressing the use of opioids for both acute and chronic pain. Often, acute pain can be treated and relieved with nonpharmacologic and nonopioid treatments. However, when pain does not respond to these treatments, opioids may be used. In addition, acute pain, such as that related to outpatient procedures, may be treated with short-term opioids. However, when opioids are used, they should be short-acting and dispensed at the lowest dose and for the shortest duration (Bree Collaborative and Washington State Agency Medical Directors' Group, 2017; Chou, Deyo, et al., 2016; DHA Procedural Instruction 6025.04, 2018; National Academies, 2020). Once pain has become chronic, the challenges to pain management increase, and the choice of treatment options declines if first-line treatments are ineffective. When opioids are used alone or in conjunction with other treatment modalities, the goal remains keeping the opioid dosage low and limiting the duration of treatment (Dowell, Haegerich, and Chou, 2016; VA and DoD, 2017b). We also noted recommendations involving higher-risk opioid use, where opioid use is prolonged, the dosage is high, or when a patient's history suggests that opioid use is riskier (VA and DoD, 2017b; VA Pharmacy Benefits Management Services, 2016). In these cases, mitigation strategies may be used, including dose tapering, random urine drug testing, monitoring mental health status, and prescribing naloxone.

In addition to the clinical guidance and available evidence on various pain treatments, we reviewed published studies that addressed pain management and opioid prescribing. These studies informed our understanding of how researchers have defined acute and chronic pain, relevant patient characteristics and comorbidities, and risk factors for long-term opioid use.

Identifying Existing Measures

We conducted an environmental scan by reviewing databases of quality measures to identify existing measures that addressed pain care or the use of opioids. We searched the NQF's Quality Positioning System for measures related to pain and opioids, as well as the National Committee for Quality Assurance's Healthcare Effectiveness Data and Information Set (HEDIS)

(National Committee for Quality Assurance, 2020; NQF, various dates). This search yielded 69 measures. We also reviewed an NQF environmental scan that cited 207 quality measures related to opioids and OUD that was the focus of a recent technical expert panel on quality measure priorities (NQF, 2019, 2020). These sources yielded 319 unique measures. In reviewing these measures, we applied several criteria to evaluate them for potential inclusion. Consistent with the scope of this project as described earlier, we considered process measures that relied on administrative data only and assessed outpatient, nonemergent care for adults (18–64 years old) who did not have cancer. We further limited our selection to measures that could be used for ongoing quality monitoring without incurring licensing or related fees. For measures that focused on a specific symptom or condition, we prioritized those that addressed conditions with higher prevalence in our study population (e.g., low back pain) over less relevant conditions or symptoms (e.g., dementia, chest pain). We also gave preference to measures that had current NQF endorsement, as these measures have been previously tested, have adequate measure properties (e.g., reliability, validity), and address identified gaps in quality of care. Based on these criteria, none of the measures we reviewed were appropriate for our candidate measure set. Most measures were inappropriate because they required data other than the available administrative data or because they focused on a nonrelevant population.

Our selection of candidate measures did not include those that focused on treatment for SUD in general. However, given that a subset of patients with pain who are treated with prescription opioids might subsequently develop OUD, we considered existing measures that assessed outpatient care for that disorder. A recent RAND study found that among a population 1,801 service members who received a new diagnosis of OUD, 17 percent received medication treatment for OUD (Hepner et al., 2021). We identified three quality measures for OUD treatment. One measure was excluded because it required self-reported data from patients. The other two measures addressed OUD pharmacotherapy and its continuity of treatment. We excluded the measure addressing the continuity (i.e., at least six months) of OUD pharmacotherapy because service members diagnosed with OUD are often separated from the military following this diagnosis and might not receive care from the MHS for an adequate period to allow observa-

tion. However, we retained for consideration a measure assessing the treatment of OUD with pharmacotherapy because it was an NQF-endorsed measure, and it is a first-year measure in the HEDIS 2020 measure set (National Committee for Quality Assurance, 2018).

We also consulted with selected DoD and VA subject-matter experts to determine which pain care measures are monitored as part of ongoing quality improvement efforts, as well as measures under development and high-priority needs for new measures.

Developing New Measures

Given the lack of appropriate existing quality measures, we developed a set of new pain care measures based on the recommendations in VA/DoD CPGs, along with other core documents described earlier. We sought to include measures that assessed both acute care and chronic pain management, as well as measures related to opioid prescribing. As an initial step, we identified processes of care that would be most important to assess—focusing chiefly on aspects of care that were associated with strong recommendations in the CPGs. For each measure, we developed conceptual definitions, including the patients eligible for the care (denominator) and the recommended process of care (numerator). We ultimately developed 17 preliminary new measures. They included two measures addressing acute pain care, four measures related to the treatment of a new episode of low back pain (acute pain or acute exacerbation of chronic pain), four addressing chronic pain care, and seven related to opioid prescribing.

To support our measure development, we conducted a brief environmental scan of the academic literature, searching for recent articles that quantified and applied quality metrics to the evaluation of pain care. This was intended to provide broad guidance for developing our measures, including conceptual definitions, numerators, and denominators.

Obtaining Expert Input

Subsequently, a team of five RAND researchers outside our project team reviewed our preliminary set of measures. The researchers had extensive expertise in quality measurement, pain care, opioid prescribing, OUD, and BH and physical health care. The group included a neuropathic doctor, a

primary care physician, and three psychiatrists. We asked these experts to review our measure statements, along with the numerator and denominator of each measure. It should be noted that we asked the subject-matter experts to review "measure concepts"—that is, the measures did not include full technical specifications, such as ICD codes and procedure codes.

To identify the highest-priority measures, the experts evaluated the measures for their validity and importance. A measure was considered valid if there was adequate scientific evidence or professional consensus supporting a link between the quality of care specified by the measure and the accrual of health benefits to patients. A measure was considered important if it assessed a clinically significant component of pain care. The experts were asked to provide a validity and importance rating for each candidate measure, along with written comments. The study team reviewed this input to refine the candidate measure set.

Compiling Technical Specifications

At the end this process, we identified a final set of 14 pain care quality measures (Table 2.1). These measures addressed the domains of acute pain related to procedures, acute low back pain, chronic pain, opioid prescribing, and medication treatment of OUD. We developed technical specifications for each measure's application using administrative data (see Appendixes A and B), including detailed specifications for the measure numerator and denominator and diagnosis and procedure codes. We also defined all concepts related to each measure's implementation (e.g., opioid-naïve patient, new episode of care, long-term opioid therapy [LOT]).

TABLE 2.1
Quality Measures to Assess Pain Care

Measure Topic	Quality Measure
Acute pain related to procedures	
Opioids and dental procedures	Dental procedures for opioid-naïve patients who initially received short-acting opioids and no more than a 1-day supply or no opioids
Opioids and ambulatory procedures	Ambulatory procedures for opioid-naïve patients who initially received short-acting opioids and no more than a 5-day supply or no opioids

Table 2.1—Continued

Measure Topic	Quality Measure
Acute low back pain	
NSAIDs/NPT without opioids	Opioid-naïve patients with acute low back pain who received NSAIDs or any NPT within 3 months and no opioids
Stepped care	Opioid-naïve patients with acute low back pain who received nonopioids or any NPT within 3 months and no opioids or opioids only after nonopioids or NPT
No initiation of benzodiazepines	Opioid-naïve patients with acute low back pain not currently taking benzodiazepines who did not initiate benzodiazepines (≥7 days) within 3 months
Chronic pain	
NPT	Patients with chronic pain who received any NPT within 12 months
Nonopioid medication/NPT	Patients with chronic pain who received any nonopioid medication or NPT within 12 months
Opioid prescribing	
Opioids without concurrent benzodiazepines	Patients who received opioids who did not receive concomitant benzodiazepines (≥7 consecutive days) during the 12-month observation period
Lower-risk average daily dosage	Patients who received opioids and whose average daily dosage was <90 MME during the 12-month observation period
No advancement to LOT	Opioid-naïve patients who received opioids who did not advance to LOT during the 12-month observation period
Naloxone in LOT at higher-risk daily dosage	Patients on LOT dispensed a daily dosage of ≥50 MME and dispensed naloxone within 3 months
Follow-up visit in LOT	Patients on LOT with a follow-up evaluation and management visit at least every 90 days
Urine drug testing in LOT	Patients on LOT who received drug testing at least once during the 12-month observation period
Opioid use disorder	
Medication for OUD[a]	Patients with OUD who received medication treatment for OUD during the 12-month observation period

[a] NQF-endorsed measure.

CHAPTER THREE

Analytic Methods

This chapter describes the methods used to conduct the analyses presented in this report. Here, we detail the data sources used and how we prepared them for analysis. We describe how we defined the relevant populations studied, selected the analytic methods we used to characterize these populations, and examined the quality measure findings. This study was approved by the RAND Institutional Review Board, with concurrence from DHA's Office of Research Protections; DHA and the Defense Manpower Data Center also approved all data access and analytic plans.

Data Sources

We developed a linked data set to assess care provided through the MHS to active-component service members between October 2016 and September 2019 (FYs 2017–2019). The data used in the analyses presented in this report came from a variety of sources (Table 3.1). These data files included records on all inpatient and outpatient health care encounters among TRICARE beneficiaries paid for by TRICARE. The records included both direct care, provided at MTFs, and private-sector care, delivered by civilian providers and facilities contracted and paid for by TRICARE. We used the data files to select eligible service members, describe their demographic and service characteristics, and operationalize measures of pain care quality.

In preparing the data files, we de-duplicated and linked all records to the service member receiving the care.[1] We processed the direct inpatient and

[1] PDTS files (dispensed medication for direct and private-sector care) included only the scrambled Social Security numbers of the plan sponsors. It was expected that the majority of the sponsors were the active-component members.

TABLE 3.1
Content of Administrative Data Files Used in Analyses

Content	Data Files
Outpatient services delivered at MTFs (direct care)	Comprehensive Ambulatory/Professional Encounter Record (CAPER)
Inpatient services delivered at MTFs (direct care)	Standard Inpatient Data Record (SIDR)
Direct care dental encounters	Direct Care Dental Encounter Data (DED)
Provider services delivered outside of MTFs (private-sector care)	TRICARE Encounter Data–Noninstitutional (TED-NI)
Facility services delivered outside of MTFs (private-sector care)	TRICARE Encounter Data–Institutional (TED-I)
Active-duty dental claims (private-sector care)	Active Duty Dental Program (ADDP)
Dispensed medication	Pharmacy Data Transaction Service (PDTS)
Laboratory and radiology orders	Clinical data repository laboratory-radiology ancillary
TRICARE eligibility and enrollment	VM6 beneficiary-level files
Service separation	Active-duty transaction file
Deployment history (September 2001–September 2019)	Contingency Tracking System–Deployments

outpatient stay records (SIDR and CAPER files), as well as the private-sector provider and facility records (TED-NI and TED-I files), to ensure that all encounters (i.e., outpatient visits, inpatient stays) were counted accurately. The detailed steps in this process, including variable names and codes, are documented elsewhere (Hepner et al., 2016).

Identifying Service Members with Target Pain Conditions

In the analyses presented in this report, we aimed to describe outpatient pain care across a variety of pain-related procedures and conditions. We began by drawing a broad population of potentially eligible service members based on administrative data documenting care delivered by the MHS.

We included active-component service members who had at least one of an extensive set of diagnosis codes potentially related to acute or chronic pain conditions, were dispensed opioids, or received one of a selected list of dental or ambulatory procedures in FYs 2017–2019. The pool included active-component service members who were not located overseas. We excluded National Guard/reserve service members, military retirees, and family members. From this broader population of service members, we applied eligibility criteria to identify the denominators for the quality measures and the populations for related descriptive analyses.

Table 3.2 shows the eligibility and observation periods for measures in each of the five domains. *Eligibility period* refers to the time during which a procedure or service member could meet the criteria for the measure denominator. The *observation period* was the overall time window of care that the measure assessed and in which care was observed. In Table 3.2, the number in parentheses indicates the time during which the care process had to occur to pass the measure. Our goal was to use the most recent data available at the time of these analyses (FY 2019). However, some domains of care (e.g., chronic pain) required a longer eligibility period to meet the denominator criteria. To accommodate an observation period as long as one year, some assessments reflect care in FYs 2018–2019. Thus, the length of the observation period varied depending on the quality measure. We applied eligibility criteria so that administrative data for MHS care for service members would be available for the entire observation period. This meant that, in each case that we applied a measure, we excluded service members from the measure denominator who met any of the following criteria:

- *age:* less than 18 years or more than 64 years old at the start of the observation period
- *separated or deployed:* separation from service or deployment during the observation period
- *cancer:* diagnosis of cancer (excluding nonmelanoma skin cancer) during the observation period
- *lapse in TRICARE enrollment:* any lapse during a quality measure observation period of three months or less, or a lapse of more than one month during a quality measure observation period of 12 months.

The details of the technical specifications that we used to apply the quality measures can be found in Appendixes A and B.

Identifying Dental and Ambulatory Procedures

We applied two quality measures that assessed the treatment of acute pain related to dental and ambulatory procedures received by service members who were opioid-naïve (i.e., did not receive opioids in the prior 90 days, including no opioids dispensed more than 90 days prior in which the days of supply overlapped with the 90-day opioid-naïve window). For these two measures, the procedure rather than the service member was the unit of measurement. Specifically, these measures assess the proportion of procedures (at the encounter level) for which recommended care was delivered afterward. In contrast, measures in other domains focused on the proportion of service members who received recommended care.

Eligible Procedures

Rather than include all dental and ambulatory procedures performed, we focused on procedures that were commonly performed and uncomplicated enough to be performed in an ambulatory setting. Additionally, we targeted procedures with consensus recommendations regarding procedure-specific opioid prescribing and ambulatory procedures that were the subject of published studies of post-procedure opioid prescribing. Our selection of dental procedures was guided by the recommendations of a recent multidisciplinary consensus panel on the maximum number of dispensed 5-mg oxycodone tablets for post-procedure pain treatment for 14 common dental procedures. We selected the dental procedures addressed by the consensus panel because they are performed routinely and with minimal variation (Farooqi et al., 2020). We used a similar process to identify ambulatory procedures for our ambulatory procedure measure. Because a large number of procedures *could* be performed, we focused on a smaller set. We selected procedures for which there were published procedure-specific, consensus panel recommendations for opioid prescribing (Overton et al., 2018) and those that were cited in the literature as the focus of studies examining post-procedure opioid prescribing. We further limited our analysis to ambulatory procedures that were likely to be frequently performed on our service member population.

Measure Observation Period

Procedures that occurred in the first 363 days of FY 2019 were eligible for inclusion in the measure denominators. Because these measures targeted the initial opioid dispensed for procedure-related pain and excluded refills, the observation period extended from the day of the procedure through two days afterward (Table 3.2). Therefore, results for these measures reflect care received in FY 2019.

Identifying Service Members with a New Episode of Acute Low Back Pain

We applied three quality measures to assess treatment for a new episode of acute low back pain in the three months following the initial visit. We defined a new episode of low back pain as beginning with a visit for low back pain at a time when a service member had received no care for low back pain in the prior 12 months. We also limited our denominator to those who were opioid-naïve at the initial visit (i.e., no opioids in the prior 90 days).

Eligible Diagnoses

Service members were eligible if a visit during the eligibility period included a diagnosis code for low back pain or related conditions (e.g., sciatica). The diagnosis code could have been in the primary or nonprimary position. We did not limit the code to any particular position to accommodate variations in coding practices and encounters in which multiple conditions were addressed. We excluded service members with any "red-flag" diagnoses (e.g., cauda equina syndrome) in the 90 days before or after the initial visit; these are diagnoses that might indicate a need for further evaluation and alternative therapies. (See Appendixes A and B for more details.)

Measure Observation Period

To allow a three-month observation period following the initiation of a new treatment episode, service members were eligible for inclusion in our study if the initial visit for low back pain occurred in the first nine months of FY 2019 (see Table 3.2). These measures reflect care in FY 2019.

TABLE 3.2

Quality Measure Eligibility and Observation Periods

Quality Measure	FY 2018 Oct–Dec	FY 2018 Jan–Mar	FY 2018 Apr–Jun	FY 2018 Jul–Sep	FY 2019 Oct–Dec	FY 2019 Jan–Mar	FY 2019 Apr–Jun	FY 2019 Jul–Sep
Acute pain related to procedures								
Opioids and dental procedures					Eligibility period			
Opioids and ambulatory procedures					Observation period (3 days)			
Acute low back pain								
NSAIDs/NPT without opioids					Eligibility period			
Stepped care								
No initiation of benzodiazepines					Observation period (3 months)			
Chronic pain								
NPT	Eligibility period							
Nonopioid medication/NPT	Observation period (12 months)							
Opioid prescribing								
Opioids without concurrent benzodiazepines					Eligibility period			
Lower-risk average daily dosage					Observation period (12 months)			
No advancement to LOT	Eligibility period							
	Observation period (12 months)							
Naloxone in LOT at higher-risk daily dosage					Eligibility period			
					Observation period (3 months)			
Follow-up visit in LOT	Eligibility period							
		Observation period (3-month intervals)						
Urine drug testing in LOT					Eligibility period			
					Observation period (12 months)			
Opioid use disorder								
Medication for OUD					Eligibility period			
					Observation period (12 months)			

NOTE: The number in parentheses is the period during which the recommended care needed to occur after procedure/patient eligibility criteria were met.

Identifying Service Members with Chronic Pain

Identifying patients with chronic pain using administrative data can be challenging. Although there are specific ICD-10 diagnosis codes that explicitly describe pain as "chronic," many patients with pain lasting more than three months might not be assigned a diagnosis code explicitly mentioning "chronic" pain. Instead, they might receive a pain diagnosis for which the diagnosis code does not indicate chronicity (e.g., low back pain). Efforts have been made to identify the diagnosis codes that identify acute versus chronic pain, although, at present, there is no consensus on sets of codes for this purpose (Mayhew et al., 2019; Owen-Smith et al., 2019; Reif et al., 2018).

Eligible Diagnoses

Because our chronic pain quality measures focused on the use of NPT and nonopioid medications, we were guided by a recent systematic review by AHRQ. This review found strong evidence of reduced pain and improved functioning for at least one month after NPT for six conditions (Skelly et al., 2020). Our definition of chronic pain included five of the six conditions described in the AHRQ review: chronic low back pain, chronic neck pain, knee OA, hip OA, and fibromyalgia. We selected the four musculoskeletal conditions for this reason and because they are common among service members (Reif et al., 2018). We excluded chronic tension headache because of its complex diagnostic overlap with other headache subtypes and concerns regarding the accuracy with which these diagnoses are captured in administrative diagnostic data (Celentano, Stewart, and Linet, 1990; Marcus, 1992), particularly for military populations in which traumatic brain injury and posttraumatic headache are prevalent (D. McGeary et al., 2020).

To be included as a patient with chronic pain, service members needed to meet criteria for at least one of the five chronic pain conditions. Each condition was defined by a "cluster" of ICD-10 codes, and we considered any outpatient visit associated with a diagnosis code (in any position) within that cluster to include care related to that pain condition. As noted earlier, some pain diagnoses indicate chronicity with a single diagnosis, while others need to be observed more than once to detect the presence of chronic pain. Thus, identifying service members with chronic pain required a two-prong strategy. First, we considered knee OA, hip OA, and fibromyalgia to

be chronic by definition based on their epidemiology and pathophysiology: When one of these conditions was a diagnosis code recorded for a visit, it served as evidence of chronic pain. For these three conditions, we considered the first eligible diagnosis-related visit (i.e., a visit with a knee OA, hip OA, or fibromyalgia diagnosis code in any position) in FY 2018 to establish the presence of chronic pain. That first visit was designated the "index visit" and started the 12-month period during which we observed care.

Second, for low back pain and neck pain, we required two visits with a low back pain or neck pain diagnosis code in any position and separated in time by three to 12 months to establish the presence of chronic pain. Other researchers have adopted the requirement of two visits for the same-cluster diagnosis three to 12 months apart to establish "chronicity" when examining chronic pain (Owen-Smith et al., 2019; Reif et al., 2018). The earliest visit in FY 2018 for low back pain or neck pain that was preceded in the prior three to 12 months by a same-cluster diagnosis was designated the "index visit." When service members met the eligibility criteria for more than one chronic condition, the observation period started with the earliest visit in FY 2018 that established chronicity.

Measure Observation Period

Service members needed to meet chronic pain criteria in FY 2018 to be eligible for inclusion in our study. We chose this year because of the potentially long lag time for some cases to qualify pain as "chronic." Therefore, depending on the timing of the initial visit for chronic pain, the 12-month observation period could span FYs 2018–2019 (see Table 3.2). The index visit—the first visit in 2018 at which a chronic pain diagnosis was established—was the point that initiated the 12-month period in which we observed care for the purpose of assessing quality.

Opioid Prescribing

Six measures assess aspects of opioid prescribing: avoidance of concurrent opioids and benzodiazepines, avoidance of high daily opioid dosage, avoidance of LOT, use of naloxone in LOT with higher-risk opioid dosages, and follow-up and drug screening for those on LOT. In contrast to the prior measures that focused on selected procedures or condition diagnoses, these

measures assess opioid prescribing unrelated to underlying pain conditions; service members were potentially eligible for inclusion in our study if they received opioids. Because of the variable focus of the opioid prescribing measures and the manner in which they were applied, the eligibility and observation periods varied by measure (see Table 3.2). For example, some measures assessed care in FY 2019, while others included care provided in FY 2018 and FY 2019.

Medication Treatment of Opioid Use Disorder

SUD treatment was not a focus of this study. However, given the increased mortality related to OUD and the significance of opioids as part of pain management—particularly for chronic pain—we included a measure for medication treatment of OUD (Hser et al., 2017; Shah, Hayes, and Martin, 2017). We identified service members with an OUD diagnosis from our broader population based on ICD-10 codes potentially related to acute or chronic pain conditions, receipt of opioids, or receipt of one of the dental or ambulatory procedures. Therefore, the OUD population identified here might not represent all active-component service members with OUD diagnoses in FY 2019. We identified service members with OUD in FY 2019 and observed their care during the same year (see Table 3.2).

Analyses

In this section, we describe how we used the administrative data to describe the quality of outpatient pain care delivered to service members by the MHS.

Service Member Characteristics and Care Utilization

Although the primary goal of this report is to describe the quality of aspects of outpatient pain care delivered to service members, we also aimed to clarify the characteristics and utilization patterns of the service members who receive care for pain. Our 14 quality measures assessed care across a variety of clinical situations, so the eligible population across these measures varied. Thus, we identified five populations of service members targeted by our measures: those who received a dental or ambulatory procedure, had

a new episode of acute low back pain, had chronic pain, were dispensed opioids, or had an OUD diagnosis. Using administrative data, we describe the demographic characteristics (i.e., sex, age, race/ethnicity, and marital status), service characteristics (i.e., branch of service, rank/pay grade, and deployment history), and source of care (i.e., direct care or private-sector care) for these populations. We also describe aspects of service members' comorbid conditions and health care utilization during the observation period for the associated quality measures (e.g., three months for low back pain, 12 months for chronic pain). These descriptive statistics are presented in subsequent chapters of this report where we present our quality measure results.

Assessing Quality of Pain Care

For each quality measure, we calculated a percentage score such that a higher score indicates better performance. To do this, we calculated the numerator (i.e., the number of individuals in the denominator receiving the recommended care or the number of procedures in the denominator that included the recommended care) and denominator (i.e., number of individuals or procedures eligible for the recommended care). Each measure score is a percentage equal to the value resulting from the measure numerator being divided by the measure denominator. Inclusion in measure denominators was dependent on meeting all inclusion criteria (see Appendix A). In Chapters Four through Eight, we present supplementary analyses of the care delivered that contributed to measure performance, along with analyses of variations in the receipt of recommended care (e.g., direct versus private-sector care, number of chronic pain conditions).

Summary

In this chapter, we described the methods underpinning the analyses presented in this report. As an initial step, we developed a linked data set to assess care provided through the MHS to active-component service members between October 2016 and September 2019 (FYs 2017–2019). We then identified our population of eligible service members in the data set, which included service members who received one or more diagnostic codes related

to acute or chronic pain conditions, were dispensed opioids, or received one of a selected list of dental or ambulatory procedures. We applied our quality measures to assess care for these service members in FYs 2018–2019. Finally, we conducted a two-part analysis. First, we descriptively characterized service members and utilization patterns among those who met the inclusion criteria for the quality measures. Second, we calculated the quality of pain care that the service members received as percentage scores in which higher percentages indicated better performance. Numerators were those individuals or procedures that met the criteria for recommended care, while denominators were the number of individuals or procedures eligible for recommended care.

CHAPTER FOUR

Acute Pain Related to Procedures

This chapter focuses on the early part of the pain continuum—specifically, acute pain related to outpatient procedures. Acute pain related to procedures is primarily a result of the procedure itself, and the pain is treated with the expectation that it will resolve with healing. This chapter describes findings related to two quality measures that assess the use of opioids for acute pain related to dental and ambulatory procedures, respectively. Dental procedures included a range of commonly performed outpatient procedures, such as tooth extractions, oral surgical procedures, periodontal and implant procedures, and surgical endodontic procedures. Ambulatory procedures included arthroscopic shoulder and knee procedures, laparoscopic cholecystectomy, carpal tunnel release, hernia repair, laparoscopic appendectomy, breast excision, and thyroidectomy. The box below highlights selected key findings presented in this chapter.

The goal of acute pain treatment is rapid pain relief while minimizing opioid use and its associated risks. Current guidelines for prescribing opioids for acute pain (related to procedures or not) suggest that three or fewer days of medication are often sufficient, and only rarely should more than seven days of medication be needed (Dowell, Haegerich, and Chou, 2016).

Key Findings
Prescribing for Selected Dental and Ambulatory Procedures, FY 2019

- Fewer dental procedures than ambulatory procedures met the measure target for initial opioid prescribing.
- Compliance with recommended opioid prescribing varied by procedure type and by direct care or private-sector provider.

However, because the duration and severity of procedure-related acute pain varies, it has been suggested that future guidelines for opioid prescribing for surgical indications should be procedure-specific and directed at procedures most commonly performed (National Academies, 2019). Collaboratives in Minnesota and Michigan have begun to provide statewide recommendations for procedure-specific prescribing that specify a maximum quantity of opioids to treat pain following commonly performed procedures (Hansen et al., 2020).

Characteristics of Service Members Receiving Dental or Ambulatory Procedures

In this section, we describe selected demographic and service characteristics of service members who received at least one eligible dental or ambulatory procedure. From the list of eligible procedures addressed by the two measures (see Appendix A), we identified 111,125 dental procedures and 11,804 ambulatory procedures that were performed on service members in FY 2019. Because service members might have received more than one procedure or more than one type of procedure, the number of service members is slightly lower than the number of procedures. Table 4.1 shows the demographic and service characteristics of the 105,585 service members who received one or more dental procedures and the 11,551 service members who received one or more ambulatory procedures. Service members who received an ambulatory procedure tended to be older and were more likely to be married than those receiving dental procedures. Of all active-component service members enlisted as of September 2019, 35 percent were Army personnel, 24 percent were Navy, 24 percent were Air Force, 14 percent were Marine Corps, and 3 percent were Coast Guard (Defense Manpower Data Center, 2019).

Acute Pain Measure: Dental Procedures

In this section, we present our findings related to the first of the two quality measures discussed in this chapter, along with additional analyses exploring

TABLE 4.1

Demographic and Service Characteristics of Service Members Who Received at Least One Procedure, by Procedure Type, FY 2019

Characteristic	Received a Dental Procedure % (*n* = 105,585)	Received an Ambulatory Procedure % (*n* = 11,551)
Gender		
Female	18.2	16.0
Male	81.8	84.0
Age		
18–24	67.7	23.9
25–34	22.2	37.3
35–44	7.6	29.5
45–64	2.6	9.3
Race/ethnicity		
American Indian/Alaskan Native	0.8	1.0
Asian/Pacific Islander	6.9	4.1
Black, non-Hispanic	20.4	15.9
White, non-Hispanic	49.5	60.9
Hispanic	19.2	15.0
Multiracial/multiethnic	1.9	2.1
Unknown	1.3	0.9
Marital status		
Married	37.8	67.6
Never married	58.8	24.8
Divorced, separated, widowed	3.3	7.6
Unknown	0.1	NR
Service branch		
Army	40.1	36.4
Navy	19.6	17.5
Air Force	18.8	29.7
Marine Corps	20.0	12.0
Coast Guard	1.5	4.4

Table 4.1—Continued

Characteristic	Received a Dental Procedure % (*n* = 105,585)	Received an Ambulatory Procedure % (*n* = 11,551)
Paygrade/rank		
C-1, E-1–E-4	74.4	28.7
E-5–E-9	18.7	50.5
O-1–O-3	4.1	8.3
O-4–O-8, warrant officer	2.9	12.5
Deployment experience		
Deployed in the past year	1.8	2.7

NOTES: A single service member may have had multiple procedures. Data are based on the date of the first procedure. NR = not reportable because *n* was less than 10.

characteristics of care related to dental procedures. This measure focuses on the use of opioids for acute pain related to common dental surgical procedures, including tooth extractions, oral surgical procedures, periodontal and implant procedures, and surgical endodontic procedures (Table 4.2). The measure assesses the percentage of procedures for which service members did not receive opioids or initially received a one-day supply or less of a short-acting opioid. The measure assesses the initial prescription and excludes any subsequent opioid refills.

Our quality measure reflects the DHA procedural instruction that was current at the time of this report regarding the maximum days of supply of initial opioids provided for dental procedure pain. The measure targets the medication initially dispensed on the day of the procedure or—if not then—within two days after the procedure, and it does not include any refills that may have followed the initial dispensing.[1] It should be noted that

[1] We excluded procedures if the service member was not opioid-naïve at the time of the procedure. We recognize that some service members may pick up opioids prescribed for procedure pain in the days prior to the procedure. We excluded procedures with opioid dispensing in the one to seven days prior to the procedure because we could not distinguish between early pick-up of opioids and pre-procedure pain treatment. The exclusions for opioids dispensed in the week prior were few and represented 2.2 percent of opioid-related exclusions.

TABLE 4.2
Quality Measure Assessing Initial Treatment of Acute Pain Related to Dental Procedures

Measure Topic	Measure Statement	Numerator	Denominator
Opioids and dental procedures	Dental procedure-related pain treated initially with short-acting opioids limited to 1-day supply or less	Within 2 days of procedure, received short-acting opioids limited to 1-day supply or less or received no opioids	Selected outpatient dental procedures on opioid-naïve patients

the DHA recommendation for opioid prescribing for dental procedure pain was under review at the time of our analyses and might have undergone changes by the time of this report's publication. Therefore, our results and recommendations regarding opioid prescribing related to dental procedure pain should be interpreted within that context and with the understanding that the underlying analyses could still inform future policy decisions.

Measure Rationale and Overview

Opioids are often prescribed for pain related to dental procedures, and the rate of prescribing often varies by such factors as geographic region and the specific procedure performed (Obadan-Udoh et al., 2019). One study indicated that opioid prescribing among dentists in the United States in 2016 was 37 times greater than among dentists in England (Suda et al., 2019). Additionally, a study of patients following outpatient dental surgery indicated that they received an average of 28 opioid pills and had an average of 15 unused pills (54 percent) left over at the time of follow-up (Maughan et al., 2016). Risks associated with unused opioids include potential improper disposal, misuse, and drug diversion. Guidelines for opioid prescribing after dental procedures vary in terms of the maximum number of supplied days recommended. Although the American Dental Association has no specific guideline of its own, it does acknowledge several guidelines that address opioid prescribing for acute pain and recommends that dentists consider nonsteroidal anti-inflammatory drugs (NSAIDs) as the first-line therapy for acute pain management (American Dental Association, 2018). A DHA procedural instruction recommends first-line treatment with NSAIDs as well, noting that if opioids are prescribed, the initial prescription should

be limited to no more than a one-day supply of a short-acting opioid (DHA Procedural Instruction 6025.04, 2018). A guideline developed by a collaborative in Washington state also suggests NSAIDs as first-line treatment or co-treatment following a dental procedure and recommends no more than a two-day supply of opioids for adolescents and young adults (Bree Collaborative and Washington State Agency Medical Directors' Group, 2017). The CDC guideline recommends no more than a seven-day supply for acute pain but does not specifically reference dental procedures (Dowell, Haegerich, and Chou, 2016). Both the VA/DoD and CDC CPGs addressing opioids for chronic pain strongly recommend against the use of long-acting opioids when initiating treatment for acute pain (VA and DoD, 2017b).

A recent multidisciplinary consensus panel published consensus guidelines on the recommended maximum number of dispensed 5-mg oxycodone tablets for post-procedure pain treatment for 14 common dental procedures. The procedures addressed by the consensus panel were selected because they are performed routinely and with minimal variation. For some procedures, opioids were not recommended, and, for others, the consensus panel provided procedure-specific ranges of the number of tablets (maximum 20) (Farooqi et al., 2020). Because of the variation in the types of dental procedures that could be performed, we limited our measure to the same procedures that were the focus of the consensus panel (Farooqi et al., 2020).

Measure Results

We identified 111,125 dental procedures in FY 2019 that met our inclusion criteria for this measure. In approximately half of dental procedures (47 percent), dispensed opioids aligned with recommended care; specifically, in these procedures, the service member did not receive opioids or received an initial prescription of short-acting opioids with no more than a one-day supply (Table 4.3). For 27.8 percent of the procedures, neither NSAIDs nor opioids were dispensed, and, for 11.5 percent of procedures, only NSAIDs were dispensed. For all procedures for which opioids were dispensed, the opioids were short-acting. Therefore, procedures that did not meet recommended care on this measure were the result of an opioid supply that exceeded one day. Of procedures that were associated with dispensed opi-

TABLE 4.3
Measure Scores for Initial Treatment for Dental Procedure Pain, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Initial treatment after dental procedure with short-acting opioids limited to 1-day supply or less or no opioids	52,257	111,125	47.0

oids that exceeded one day, the supply was two days for 41.5 percent, three days for 28.3 percent, four to five days for 20.5 percent, and more than five days for 9.7 percent. The median days of supply of short-acting opioids dispensed for all procedures was two days.

As noted earlier, the dental procedures included in this measure were drawn from a list of procedures considered by a consensus panel that made recommendations based on the type of procedure performed (Farooqi et al., 2020). Table 4.4 shows the quality measure results by dental procedure type and source of care (i.e., direct care or private-sector care), ordered by frequency of the type of dental procedure. The most commonly performed procedures were extractions (i.e., extractions of impacted teeth, routine tooth extractions, and surgical extractions), representing 83 percent of dental procedures. Receipt of recommended care varied widely by type of dental procedure (38–95 percent). Notably, the most common procedure, extractions of impacted teeth, was associated with the lowest performance (with recommended care received in 38 percent of cases).

Among extractions of impacted teeth for which service members did not receive recommended care—that is, cases in which they received more than one day of a short-acting opioid—41.5 percent received a two-day supply, 28.3 percent received a three-day supply, 20.5 percent received a four- to five-day supply, and 9.7 percent received a supply of six days or more. The number of days supplied for these extractions tended to be lower for procedures performed by direct care providers than private-sector providers. For example, 5.9 percent of direct care extractions had a five-day opioid supply versus 19.2 percent of extractions performed by a private-sector provider.

Most procedures (85 percent) were delivered by a direct care provider. The overall measure score was higher (indicating better performance) for

TABLE 4.4

Measure Scores for Dental Procedure Pain Treatment, by Procedure and Source of Care, 2019

	Measure Scores (%)		
Procedure Type	Overall (*n* = 111,125)	Direct Care (*n* = 94,053)	Private-Sector Care (*n* = 17,072)
All procedures (*n* = 111,125)	47.0	49.4	34.0
Extractions of impacted teeth (*n* = 61,512)	37.9	40.3	27.5
Surgical extractions (*n* = 15,430)	42.8	45.0	31.9
Routine tooth extractions (*n* = 14,622)	65.1	65.3	57.6
Implant surgery (*n* = 4,496)	58.1	57.8	59.6
Gingivectomy (*n* = 3,278)	95.1	95.2	92.1
Osseous procedures (*n* = 2,558)	60.8	58.5	69.9
Soft tissue grafting procedures (*n* = 2,274)	57.3	55.0	66.9
Periodontal bone grafting and regeneration procedures (*n* = 2,199)	56.2	54.9	63.6
Bone grafting procedures (*n* = 1,971)	53.3	53.2	54.0
Flap procedures (*n* = 1,244)	75.7	75.3	92.6
Periradicular surgery (*n* = 666)	65.0	65.7	63.1
Soft tissue procedures (*n* = 523)	73.4	73.6	71.4
Alveoloplasty (*n* = 343)	58.6	58.6	NR
Tooth resection/root amputation (*n* <10)	NR	NR	NR

NOTES: Service members were opioid-naïve at the time of the procedure. NR = not reportable because *n* was less than 10.

procedures performed by a direct care provider compared with those performed by a private-sector provider (49 percent and 34 percent, respectively). Focusing on the three most common procedures (extractions), direct care outperformed private-sector care for each type of extraction.

The DHA policy specified a single recommendation for the maximum days of opioid supply across all procedures (DHA Procedural Instruction 6025.04, 2018). Although several guidelines refer to days of opioid supply, alternative approaches to assessing dispensed opioids include the total

number of tablets of a specified opioid and the total morphine milligram equivalent (MME) of the dispensed tablets. Therefore, in addition to computing quality measure results based on days of opioid supply, we conducted analyses to assess both the number of opioid tablets dispensed and the total dispensed MME for all selected procedures and by procedure type. These analyses were based on the procedure-specific recommendations of the consensus panel for the maximum total number of 5-mg oxycodone tablets (Farooqi et al., 2020). We note that the consensus panel results were published in 2020, and our data reflect care provided in FY 2019. However, these more-recent recommendations—and MHS performance—could inform new DHA policy guidance.

We first examine how prescribing aligned with the recommendations of the consensus panel in terms of recommended quantities of opioid tablets by procedure (Table 4.5). Procedure types in the table are collapsed based on the maximum number of tablets recommended, but routine tooth extractions are shown separately due to their high frequency. In addition, Table 4.5 shows the proportion of dental procedures for which the number of opioid tablets dispensed was within the recommended range for procedures overall and by source of care (i.e., direct versus private-sector care). As noted, the consensus panel recommendations were for 5-mg tablets of oxycodone (Farooqi et al., 2020). We computed the percentage of procedures for which the tablet recommendation was met based on the number of tablets dispensed regardless of whether the opioid was oxycodone and regardless of tablet dosage. Therefore, these data solely reflect the quantity of opioid tablets dispensed, similar to the DHA recommendation based on days of opioids supplied.

Overall, the number of opioid tablets dispensed was within the recommended limits for 71 percent of procedures (Table 4.5). Yet, there was wide variability by procedure, ranging from 55 percent (routine extractions) to 77 percent (surgical extractions, alveoloplasty, and bone grafting procedures). We also examined prescribing by source of care (i.e., direct versus private-sector care). Across all procedures, direct care providers were more likely to prescribe opioids within the recommended maximum number of tables when compared with private-sector providers (76 percent versus 48 percent). Some procedure-specific results show marked differences between direct and private-sector care—as large as a 26-percentage-point

TABLE 4.5

Comparison of Consensus Panel Recommendations for Number of Opioid Tablets Dispensed After Dental Procedures, by Procedure and Source of Care, FY 2019

Procedure Type	Number of Opioid Tablets Recommended by Consensus Panel	Dental Procedures with Number of Tablets in the Range of Consensus Panel Recommendation (%)		
		Overall (*n* = 111,125)	Direct Care (*n* = 94,053)	Private-Sector Care (*n* = 17,072)
All procedures (*n* = 111,125)		71.3	75.5	48.2
Extractions of impacted teeth (*n* = 61,512)	0–15	73.4	80.3	44.1
Surgical extractions, alveoloplasty, or bone grafting procedures (*n* = 17,744)	0–12	76.7	81.9	48.5
Routine tooth extractions (*n* = 14,622)	0	55.0	55.1	51.2
Soft tissue procedures, gingivectomy, flap procedures, osseous procedures, or tooth resection/root amputation (*n* = 7,612)	0	75.8	76.4	69.5
Soft tissue grafting procedures or implant surgery (*n* = 6,770)	0–10	73.2	73.7	70.4
Periodontal bone grafting and regeneration procedures (*n* = 2,199)	0–6	57.3	56.1	63.9
Periradicular surgery (*n* = 666)	0–4	63.4	63.9	62.0

SOURCE: Consensus panel opioid dosage recommendations from Farooqi et al., 2020.

NOTES: Service members were opioid-naïve at the time of the procedure. In the case of more than one procedure performed, procedures were assigned to the cell of highest recommended tablet range. Procedure types are collapsed based on the maximum number of tablets recommended, but routine tooth extractions are shown separately due to their high frequency.

difference—but for other procedures, results were similar across provider types. These results suggest that the quantity of opioid tables dispensed varied by procedure and, in half to three-quarters of cases, fell within the recommendation of the consensus panel. Assuming that a typical one-day supply of tablets equates to four or six tablets (when directed to be taken

every four to six hours), the recommendations of the consensus panel for those procedures with a maximum quantity range greater than zero generally *exceeded* the DHA recommendation of a one-day supply (Farooqi et al., 2020). These results suggest that the DHA recommendation of a maximum opioid supply of one day or less might be too conservative for some types of dental procedures.

Examining the number of tablets dispensed does not take into consideration the dosage of the opioid tablets or the strength of the opioid dispensed relative to morphine. Therefore, in Table 4.6 we present the percentage of procedures for which the total MME of opioids dispensed fell within the range of dispensed MME recommended by the consensus panel (based on 5-mg oxycodone tablets) (Farooqi et al., 2020). Procedure types are collapsed in the same way as the groupings in Table 4.5. (See Appendix B for the MME conversion factors used.)

Overall, opioid dispensing was within recommended MME limits for 78 percent of procedures (Table 4.6). Similar to our findings on tablets dispensed, there was wide variability by procedure, ranging from 55 percent (routine extractions) to 83 percent (extractions of impacted teeth). Across all procedures, those performed by direct care providers were more likely to fall within the recommended maximum MME when compared with procedures performed by private-sector providers (80 percent versus 68 percent, respectively). Some procedure-specific results show marked differences between direct and private-sector care—as large as a 22 percentage-point difference. Although the patterns were quite similar for our analyses of tablets dispensed and dispensed MME, performance was slightly better in our examination of MME dispensed. This suggests that some providers—particularly private-sector providers—prescribe more tablets of lower-strength opioids (e.g., codeine) and do not necessarily exceed the dispensed MME recommended by the consensus panel.

A study of Medicaid claims from 2000–2010 assessed the median MME of dispensed opioids for extractions of impacted teeth (Baker et al., 2016). For patients dispensed an opioid in that study, the dispensed MME ranged from 120 to 150 in the seven days following the extraction. In our data, the dispensed MME ranged from 60 to 100 for extractions of impacted teeth. This comparison suggests that the MHS outperforms Medicaid, but it should be noted that the Medicaid data are older, and prescribing practices might have

TABLE 4.6

Comparison of Consensus Panel Recommendations for Total Dispensed MME of Opioids After Dental Procedures, by Procedure and Source of Care, FY 2019

		Dental Procedures with Dispensed MME in the Range of Consensus Panel Recommendation (%)		
Procedure Type	Dispensed MME Based on Consensus Panel Recommendation	Overall (*n* = 111,125)	Direct Care (*n* = 94,053)	Private-Sector Care (*n* = 17,072)
All procedures (*n* = 111,125)		77.8	79.5	68.2
Extractions of impacted teeth (*n* = 61,512)	0–112.5	82.5	85.8	68.7
Surgical extractions, alveoloplasty, or bone grafting procedures (*n* = 17,744)	0–90	81.5	84.8	63.1
Routine tooth extractions (*n* = 14,622)	0	55.0	55.1	51.2
Soft tissue procedures, gingivectomy, flap procedures, osseous procedures, or tooth resection/root amputation (*n* = 7,612)	0	75.8	76.4	69.5
Soft tissue grafting procedures or implant surgery (*n* = 6,770)	0–75	82.0	82.0	81.5
Periodontal bone grafting and regeneration procedures (*n* = 2,199)	0–45	63.8	63.7	64.5
Periradicular surgery (*n* = 666)	0–30	65.8	66.9	62.6

SOURCE: Consensus panel recommendations on dispensed MME are from Farooqi et al., 2020, and based on 5-mg oxycodone tablets.

NOTES: Service members were opioid-naïve at the time of the procedure. In the case of more than one procedure performed, procedures were assigned to the cell of highest recommended tablet range. Procedure types are collapsed based on the computed MME from the maximum number of tablets recommended, but routine tooth extractions are shown separately due to their high frequency.

changed in recent years. Furthermore, the Medicaid study included seven days of prescribing, which could have included refills, whereas our analyses focused on the initial prescription, limited to two days after the procedure. Finally, the Medicaid population might have differed significantly from our military population.

In summary, the quantity of opioids dispensed for dental procedure pain varied by procedure and source of care (i.e., direct versus private-sector care). A recent consensus panel's recommendations for opioid dispensing varied depending on the type of dental procedure performed, including some procedures for which no opioids were recommended (Farooqi et al., 2020). Our analyses suggest that opioid dispensing recommendations that are procedure-specific and based on total number of tablets of a specific opioid type or total MME might be preferable to a recommendation that applies across all procedures and is based solely on number of days of supply.

Acute Pain Measure: Ambulatory Procedures

In this section, we present findings related to the second of the two quality measures discussed in this chapter, along with additional analyses exploring medication treatment related to ambulatory procedures. The quality measure assessed the percentage of selected procedures for which the service member did not receive opioids or received a five-day supply or less of a short-acting opioid (Table 4.7). The measure focuses on the initial treatment of acute pain related to selected ambulatory procedures, including arthroscopic shoulder and knee procedures, laparoscopic cholecystectomy, carpal tunnel release, hernia repair, laparoscopic appendectomy, breast excision, and thyroidectomy (see Appendix A).

Measure Rationale and Overview

Like dental procedures, ambulatory procedures may generate acute, procedure-related pain and present the same challenges of balancing the need to provide adequate pain relief with the judicious use of opioids. There is also evidence that a large proportion of opioids prescribed after ambulatory procedures go unused. In one study, the median proportion of dispensed opioids used by patients after laparoscopic cholecystectomy or open

TABLE 4.7
Quality Measure Assessing Initial Treatment of Acute Pain Related to Ambulatory Procedures

Measure Topic	Measure Statement	Numerator	Denominator
Opioids and ambulatory procedures	Ambulatory procedure-related pain treated initially with short-acting opioids limited to 5-day supply or less	Within 2 days of procedure, received short-acting opioids limited to 5-day supply or less, or received no opioids	Ambulatory procedures on opioid-naïve patients

hernia repair was 27 percent (Hartford et al., 2019). In another study of the same procedures and partial mastectomy, the proportion was 28 percent (Hill et al., 2017). Another study indicated that 88 percent of patients who had undergone knee arthroscopy had unused opioid medication at the time of follow-up (Wojahn et al., 2018). Other researchers compared the rate of opioid prescribing for four low-risk surgical procedures in the United States, Canada, and Sweden and found a sevenfold higher rate in the United States and Canada compared with Sweden; the mean dose of prescribed opioids for most of the procedures was the highest in the United States (Ladha et al., 2019). A description of a multimodal quality improvement effort targeted at reducing opioid use noted that, for the procedures studied, adequate post-procedure pain control was possible using fewer opioids in the intervention group compared with the control group (Hartford et al., 2019). As with recommendations for opioid use after dental procedures, CPGs for treating acute pain associated with outpatient procedures vary. A DHA procedural instruction recommends no more than an initial five-day supply of short-acting opioids for outpatient procedures (DHA Procedural Instruction 6025.04, 2018). As noted earlier, the CDC recommends no more than a seven-day supply for acute pain of all types, not necessarily related to a procedure (Dowell, Haegerich, and Chou, 2016).

Our measure assessing acute pain care following outpatient procedures reflects the current DHA procedural instruction recommending a short-acting opioid initially and no more than a five-day supply (DHA Procedural Instruction 6025.04, 2018). Both the VA/DoD and CDC CPGs for opioids used for chronic pain strongly recommend against the use of long-acting opioids when initiating treatment for acute pain (Dowell, Haegerich,

and Chou, 2016; VA and DoD, 2017b). Because of the large range of procedures that could be performed, we focused on a subset for which there were published procedure-specific consensus panel recommendations for opioid prescribing or that were cited in the literature as the focus of studies of post-procedure opioid prescribing. We also limited our analyses to procedures likely to be frequently performed on service members. To minimize the inclusion of complicated procedures that might require more-intensive post-procedural pain management strategies, we further limited the procedures to those that were performed on an ambulatory basis with same-day discharge. The measure assesses medication initially dispensed within two days following the procedure and does not include any refills that may have followed the initial dispensing.[2]

Measure Results

We identified 11,804 ambulatory procedures in FY 2019 that met our inclusion criteria for this measure. In approximately four out of five ambulatory procedures (82 percent), prescribing aligned with recommended care. Specifically, for these procedures, the service member did not receive an opioid within the two days following the procedure or the initial opioid medication dispensed was a short-acting opioid with no more than a five-day supply (Table 4.8). Nearly a third of procedures (32.2 percent) did not have NSAIDs or opioids dispensed, and less than 2 percent (1.9 percent) had only NSAIDs dispensed. We note that these results reflect pharmacy data for medications dispensed and do not reflect any NSAIDs or acetaminophen that may have been purchased over the counter in retail pharmacies or that the service member already had at home. Service members were prescribed a long-acting opioid following only 0.3 percent of procedures. Of procedures associated with a supply of opioids that exceeded five days, the dispensed supply was six days for 15.1 percent, seven days for 52.1 percent, eight to ten days for 19 percent, 11–29 days for 4 percent, and 30 days for

[2] Similar to the dental procedures, we excluded ambulatory procedures if the service member was not opioid-naïve at the time of the procedure. For dispensed opioids in the week prior to the procedure, we were unable to distinguish between early pick-up of opioids and pre-procedure pain treatment. The exclusions for opioids dispensed in the week prior were few and represented 3 percent of all opioid-related exclusions.

TABLE 4.8
Measure Scores for Initial Treatment for Ambulatory Procedure Pain, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Initial treatment after ambulatory procedure with short-acting opioids limited to 5-day supply or less or no opioids	9,653	11,804	81.8

9.9 percent. The median supply of opioids was three days for all procedures and four days among procedures for which opioids were dispensed.

Next, we examine receipt of recommended care by type of ambulatory procedure and whether the procedure was delivered by a direct care or private-sector provider (Table 4.9). Among our selected procedures, the most common were arthroscopic knee procedures and hernia repairs, representing nearly three-quarters of procedures (74 percent). Procedure-specific performance on the measure was 79 percent or higher for all procedures except rotator cuff repair (69 percent). Approximately half of the procedures (56 percent) were performed by a direct care provider. Except for laparoscopic cholecystectomy, appendectomy, and mastectomy, procedures performed by a direct care provider had higher scores than those performed by a private-sector provider. Notably, direct care providers were more likely to deliver recommended care for the two most frequent types of procedures.

Similar to the additional analyses we conducted on opioid prescribing for dental procedures, we conducted exploratory analyses examining the total number of tablets of opioids supplied and the total MME of the dispensed tablets for a subset of ten ambulatory procedures. We focused on these ten procedures because they were included in a recent consensus panel's recommendations for post-procedure opioid prescribing (Overton et al., 2018). Restricting our analyses to these ten procedures reduced the number of eligible procedures to 7,593 (64 percent of procedures included in our quality measure). Table 4.10 shows the recommendations of the consensus panel regarding numbers of dispensed opioid tablets (5 mg of oxycodone) for each procedure (Overton et al., 2018), as well as the proportion of ambulatory procedures in FY 2019 that met those recommendations overall and by source of care (i.e., direct versus private-sector care). If one assumes a typical one-day supply of tablets to equate to four or six tablets

TABLE 4.9
Measure Scores for Ambulatory Procedure Pain Treatment, by Procedure and Source of Care, FY 2019

	Measure Score (%)		
Ambulatory Procedure Type	Overall (*n* = 11,804)	Direct Care (*n* = 6,639)	Private-Sector Care (*n* = 5,165)
All procedures (*n* = 11,804)	81.8	83.5	79.6
Knee (arthroscopic procedures) (*n* = 6,158)	78.8	81.2	75.5
Hernia repair (inguinal--unilateral or umbilical, open or laparoscopic) (*n* = 2,528)	85.6	86.8	82.8
Appendectomy (laparoscopic) (*n* = 842)	90.0	86.3	90.8
Shoulder (rotator cuff repair, arthroscopic) (*n* = 728)	69.1	74.3	63.7
Cholecystectomy (laparoscopic) (*n* = 680)	89.9	87.9	92.1
Wrist (carpal tunnel release, open or endoscopic) (*n* = 648)	87.0	91.1	83.2
Thyroidectomy (partial/total) (*n* = 112)	91.1	92.1	89.8
Breast (partial/simple mastectomy) (*n* = 108)	91.7	91.4	92.0

NOTE: Service members were opioid-naïve at the time of the procedure.

(when directed to be taken every four to six hours), the recommendations of the consensus panel were generally lower than the DHA recommendation of a five-day supply. We computed the percentage of procedures for which the tablet recommendation was met based only on the number of tablets dispensed, regardless of whether the opioid was oxycodone and regardless of tablet dosage. Therefore, as with the results from our exploratory analyses of dental procedures, these data solely reflect the quantity of opioid tablets dispensed.

Across all procedures, nearly half (46 percent) were associated with opioid prescribing that was within the consensus panel recommendations (Table 4.10). Aside from partial mastectomy with sentinel lymph node biopsy, which accounted for fewer than ten procedures in our data set, the percentage of procedures within the consensus panel recommendation was highest for open umbilical hernia repair (63 percent), partial mastectomy

TABLE 4.10

Comparison of Expert Panel Recommendations for Number of Opioid Tablets Dispensed After Ambulatory Procedures, by Procedure and Source of Care, FY 2019

Ambulatory Procedure	Number of Opioid Tablets Recommended by Consensus Panel	Ambulatory Procedures with Number of Tablets in the Range of Consensus Panel Recommendation (%)		
		Overall (*n* = 7,593)	Direct Care (*n* = 4,664)	Private-Sector Care (*n* = 2,929)
All procedures (*n* = 7,593)		45.8	54.1	32.5
Meniscectomy, partial, arthroscopic (*n* = 2,701)	0–10	40.4	49.5	30.2
ACL/PCL repair, arthroscopic[a] (*n* = 943)	0–20	50.2	54.1	39.5
Inguinal hernia repair, unilateral, open (*n* = 886)	0–10	39.1	45.8	22.6
Umbilical hernia repair, open (*n* = 791)	0–15	62.5	66.7	43.0
Rotator cuff repair, arthroscopic (*n* = 728)	0–20	39.3	47.3	31.0
Inguinal hernia repair, unilateral, laparoscopic (*n* = 718)	0–15	57.9	67.2	41.2
Cholecystectomy, laparoscopic (*n* = 671)	0–10	41.3	50.6	30.7
Thyroidectomy, partial or total (*n* = 112)	0–15	57.1	65.1	46.9
Mastectomy, partial, without sentinel lymph node biopsy (*n* = 41)	0–10	58.5	76.9	50.0
Mastectomy, partial, with sentinel lymph node biopsy (*n* <10)	0–15	NR	NR	NR

SOURCE: Consensus panel recommendations on number of opioid tablets from Overton et al., 2018.

NOTES: Service members were opioid-naïve at the time of the procedure. ACL = anterior cruciate ligament; PCL = posterior cruciate ligament. NR = not reportable because *n* was less than 10.

[a] Includes ACL/PCL repair with partial meniscectomy.

without sentinel lymph node biopsy (59 percent), laparoscopic inguinal hernia repair (58 percent), and thyroidectomy (57 percent). Overall and for nine of the ten individual procedures assessed, procedures performed by direct care providers met consensus panel recommendations more often than those performed by private-sector providers.

As with dental procedures, we also computed the total MME of opioids dispensed for the subset of ten procedures. Table 4.11 shows the percentage of procedures for which the MME of opioids dispensed fell within the range of dispensed MME suggested by the consensus panel. For this comparison, we computed the maximum recommended dispensed MME for each category from the maximum recommended number of 5-mg oxycodone tablets suggested by the panel (Overton et al., 2018). Overall, 49 percent of procedures were associated with a dispensed MME that was within the panel's recommended maximum. Performance was less than 50 percent for rotator cuff repair, meniscectomy, and open inguinal hernia repair. As with the number of tablets dispensed, the proportion of procedures associated with a dispensed MME within the range of the panel recommendations was higher for procedures performed by direct care providers (57 percent) than for those performed by private-sector providers (37 percent). Tables 4.10 and 4.11 suggest that even when number of tablets, dosage, and type of opioid are taken into consideration, prescribed opioids tended to exceed the consensus panel recommendations.

Overall, the quantity of opioids dispensed by the MHS for the ambulatory procedures we studied varied by procedure type. A comparison with findings from studies of commercial claims data suggests that the MHS has mixed performance on opioid prescribing for ambulatory procedures. Fujii and colleagues examined the dispensed MME for selected surgical procedures performed at an academic facility in 2016–2017 (Fujii et al., 2018). MHS data show that median dispensed MME was *lower* than or equal to the median values found by Fujii et al. for some procedures (rotator cuff repair: 225 versus 450; open umbilical hernia repair: 75 versus 80; laparoscopic cholecystectomy: 90 versus 90; open inguinal hernia repair: 100 versus 120) but *higher* for others (laparoscopic appendectomy: 100 versus 96; carpal tunnel release: 75 versus 50) (Fujii et al., 2018). In another study, Ladha and colleagues analyzed commercial insurer data for opioids dispensed in 2013–2015 for four low-risk procedures. The median dispensed

TABLE 4.11

Comparison of Expert Panel Recommendations for Total Dispensed MME of Opioids After Ambulatory Procedures, by Procedure and Source of Care, FY 2019

Ambulatory Procedure	Range of Dispensed MME Based on Consensus Panel Recommendation	Ambulatory Procedures with Dispensed MME in the Range of Consensus Panel Recommendation (%)		
		Overall (*n* = 7,593)	Direct Care (*n* = 4,664)	Private-Sector Care (*n* = 2,929)
All procedures (*n* = 7,593)		49.0	56.5	37.0
Meniscectomy, partial, arthroscopic (*n* = 2,701)	0–75	41.1	49.5	31.6
ACL/PCL repair, arthroscopic[a] (*n* = 943)	0–150	53.8	56.0	47.7
Inguinal hernia repair, unilateral, open (*n* = 886)	0–75	44.0	51.0	26.8
Umbilical hernia repair, open (*n* = 791)	0–112.5	66.2	69.6	50.7
Rotator cuff repair, arthroscopic (*n* = 728)	0–150	40.8	47.6	33.8
Inguinal hernia repair, unilateral, laparoscopic (*n* = 718)	0–112.5	63.8	71.1	50.6
Cholecystectomy, laparoscopic (*n* = 671)	0–75	49.5	57.8	39.9
Thyroidectomy, partial or total (*n* = 112)	0–112.5	63.4	68.3	57.1
Mastectomy, partial, without sentinel lymph node biopsy (*n* = 41)	0–75	65.9	84.6	57.1
Mastectomy, partial, with sentinel lymph node biopsy (*n* <10)	0–112.5	NR	NR	NR

SOURCE: Consensus panel recommendations on dispensed MME from Overton et al., 2018, and based on 5-mg oxycodone tablets.

NOTE: Service members were opioid-naïve at the time of the procedure. NR = not reportable because *n* was less than 10.

[a] Includes ACL/PCL repair with partial meniscectomy.

MME for procedures in our MHS data compared favorably with Ladha et al.'s findings (meniscectomy: 225 versus 300; breast excision: 150 versus 150; laparoscopic cholecystectomy: 112.5 versus 200: laparoscopic appendectomy: 112.5 versus 200) (Ladha et al., 2019). However, a small proportion of the procedures in those studies were inpatient procedures and might have included more-complicated cases. Although these two studies provide some context, direct comparisons are likely not warranted. In both of the studies cited, the data were older than our data and therefore do not necessarily reflect recent prescribing practices.

Summary

In this chapter, we examined initial opioid prescribing following common dental and ambulatory procedures. We focused on procedures that were most likely to be performed on service members in an ambulatory setting and had been the subject of studies addressing appropriate opioid prescribing. We applied quality measures reflecting DHA guidelines for initial prescribing that, at the time of our analyses, recommend no more than a one-day supply of short-acting opioids for dental procedures and no more than a five-day supply for ambulatory procedures (DHA Procedural Instruction 6025.04, 2018). Key findings from our analyses are as follows:

- **Long-acting opioids were rarely used for MHS dental and ambulatory procedures:** When opioids were prescribed, opioids for dental procedures were always short-acting, and those for ambulatory procedures were short-acting nearly all the time (99.5 percent).
- **There was variation in quality measure scores for dental and ambulatory procedures:** Performance on the quality measures was 47 percent for dental procedures and 82 percent for ambulatory procedures. For both measures, performance varied by the type of procedure performed.
- **The policy recommendation for dental procedure opioid prescribing might be low for some procedures:** Supplementary analyses comparing the dispensed number of tablets and MME of opioids with procedure-specific recommendations from a recent consensus panel

suggest that prescribing for *dental* procedures was in line with the panel's recommendations, which, for some procedures, included quantities *more* than a one-day supply (Farooqi et al., 2020).

- **The policy recommendation for ambulatory procedure opioid prescribing might be high for some procedures:** Supplementary analyses comparing the dispensed number of tablets and MME of opioids for a subset of *ambulatory* procedures with procedure-specific recommendations from a consensus panel suggested the opposite. Prescribing for ambulatory procedures aligned with the panel's recommendations less often than for dental procedures. For the procedures we studied, the panel recommended less than the five-day supply of opioids recommended by the current DHA instruction (Overton et al., 2018).
- **Current MHS recommendations for opioid prescribing might benefit from increased specificity:** For both dental and ambulatory procedures, current DHA recommendations for maximum initial opioids are based on the days of supply (rather than a quantity that is specific to the type and dosage of opioid or dispensed MME), and this recommendation is generalized to all procedures (rather than being procedure-specific). It would be difficult to identify cases of over- or underprescribing using a quality measure that assessed only this uniform guidance.

CHAPTER FIVE

Acute Low Back Pain

In this chapter, we apply three quality measures to assess care for a new episode of acute low back pain. On the continuum of pain, acute pain is generally pain lasting less than three months, often related to an injury, and expected to resolve with healing. Acute low back pain includes pain that is new to the patient or that represents an acute exacerbation of what might otherwise be chronic low back pain. We begin with a description of characteristics and utilization patterns for service members with a new episode of low back pain, followed by the findings associated with each quality measure. The box below highlights key findings from this chapter.

Characteristics and Utilization Among Service Members with Acute Low Back Pain

Demographic and Service Characteristics

In this section, we describe selected demographic and service characteristics of service members with a new episode of low back pain. During the first nine months of FY 2019, we identified 91,451 service members with a new episode of acute low back pain. Table 5.1 shows the demographic and service characteristics for these service members. This population of service members was predominantly male, 18–35 years old, white, and married. The distribution of service members with a new episode of low back pain was similar to the composition of the force as of September 2019 (Army: 35 percent, Navy: 24 percent, Air Force: 24 percent, Marine Corps: 14 percent, and Coast Guard: 3 percent) (Defense Manpower Data Center, 2019), with the Army and Navy having slightly higher rates of low back pain relative to their representation among the services. Few service members with low back pain

Key Findings
Care for a New Episode of Acute Low Back Pain, FY 2019

- More than 90,000 service members had a new episode of low back pain in the first nine months of FY 2019.
- More than half of service members with acute low back pain had only one health care encounter for their pain.
- Most service members with acute low back pain were treated with NPT, such as physical/occupational therapy, or NSAIDs.
- Few were treated with opioids, and half of those who received opioids did so only after a trial of nonopioid medication or NPT.

TABLE 5.1
Demographic and Service Characteristics of Service Members with a New Episode of Acute Low Back Pain, FY 2019

Characteristic	% (*n* = 91,451)
Gender	
Female	19.8
Male	80.2
Age	
18–24	32.5
25–34	39.4
35–44	23.2
45–64	4.9
Race/ethnicity	
American Indian/Alaskan Native	1.0
Asian/Pacific Islander	5.8
Black, non-Hispanic	18.6
White, non-Hispanic	55.0
Hispanic	16.7
Multiracial/multiethnic	2.2
Unknown	NR

Table 5.1—Continued

Characteristic	% (*n* = 91,451)
Marital status	
Married	62.6
Never married	30.7
Divorced, separated, widowed	6.7
Unknown	<0.1
Service branch	
Army	38.7
Navy	17.5
Air Force	28.8
Marine Corps	13.1
Coast Guard	1.9
Paygrade/rank	
C-1, E1–E4	37.4
E-5–E-9	45.5
O-1–O-3	7.9
O-4–O-8, warrant officer	9.1
Deployment experience	
Deployed in the past year	2.3
Source of care[a]	
All direct care	53.7
More than 50% from direct care	39.0
More than 50% from private-sector care	5.0
All private-sector care	1.5

NOTES: Data based on the date of the initial visit for low back pain. NR = not reportable because *n* was less than 10.

[a] Based on all inpatient and outpatient care (excluding pharmacy data) during the 3-month observation period.

had deployed in the previous month. When examining where these service members received their care in the three months after initiating their new episode of low back pain, we found that more than half received care only from direct care providers.

Comorbidity and Utilization

In this section, we describe comorbidities and health care utilization in the three months after initiating a new treatment episode for low back pain. About 16 percent of service members in our data set had any BH diagnosis, and about 10 percent had been diagnosed with a sleep disorder or its symptoms (Table 5.2). About 15 percent of service members received any psychotropic medication during the three months after initiating a new treatment episode for low back pain. The most common psychotropic medication received was antidepressant medication (8 percent). We did not determine whether psychotropic medications were prescribed for BH or pain-related

TABLE 5.2
Comorbidity and Psychotropic Medication in the Three-Month Observation Period of Service Members with a New Episode of Low Back Pain, FY 2019

Comorbidity/Psychotropic Medication	% (*n* = 91,451)
Any BH diagnosis[a]	16.4
Adjustment disorder	6.2
Anxiety disorder	4.4
Depression (major depressive disorder, dysthymia)	3.0
PTSD	2.1
Alcohol use disorder	1.6
Drug use disorder	0.3
Sleep disorder/symptoms	9.5
Any psychotropic medications[b]	14.5
Antidepressants	8.3
Hypnotics/sedatives/anxiolytics	5.9
Benzodiazepines[c]	2.7
Antipsychotics	0.4

[a] Any ICD-10 F-code, excluding sleep disorders.

[b] Includes antidepressants, antipsychotics, hypnotics/sedatives/anxiolytics, stimulants, mood stabilizers/anticonvulsants, guanfacine, and clonidine.

[c] Included in the category of hypnotics/sedatives/anxiolytics.

conditions. We note that several of the categories of psychotropic medications we considered (e.g., antidepressants, anxiolytics, anticonvulsants) could be used for either indication.

Most service members had seen a primary care provider (86 percent), and 18 percent had a visit with a BH specialty provider (Table 5.3). Of the service members with a new episode of acute low back pain, about half (54 percent) had just one visit for low back pain (the initial visit) during the three-month observation period.

About 16 percent of service members with a new episode of acute low back pain had a visit in a BH specialty setting in the three months after initiating their treatment episode (Table 5.4). The median number of BH specialty care visits, among those who had at least one visit, was three. About 18 percent were seen in an emergency department, and less than 2 percent had an inpatient stay.

TABLE 5.3
Providers and Clinic Visits in the Three-Month Observation Period of Service Members with a New Episode of Low Back Pain, FY 2019

Providers/Clinic Visits	% (*n* = 91,451)
Provider types seen	
Primary care	85.9
BH	18.1
Neurology	3.7
Orthopedics	4.6
Physical medicine/rehabilitation	2.6
Rheumatology[a]	0.2
Pain management clinic[a]	1.5
Number of visits for acute low back pain	
1 visit	53.9
2 or more visits	46.1

[a] Direct care only.

TABLE 5.4
Health Care Utilization in the Three-Month Observation Period of Service Members with a New Episode of Low Back Pain, FY 2019

Health Care Setting	Had at Least One Encounter (%)	For Those with at Least One Encounter	
		Mean (SD)	Median
Outpatient	100.0	5.7 (5.1)	4
Primary care clinic	85.4	2.7 (2.0)	2
BH specialty clinic	15.6	4.8 (5.8)	3
Non-BH specialty clinic	63.5	3.7 (3.4)	3
Emergency department	18.3	1.3 (0.7)	1
Inpatient	2.0	1.1 (0.3)	1

NOTE: SD = standard deviation.

Acute Low Back Pain Measure: NSAIDs and NPTs

In this section, we present our findings related to the first of the three quality measures assessing care for a new episode of low back pain. This measure assesses the use of oral NSAIDs or any NPT as a first-line treatment, rather than opioids, in the first three months of the new episode among opioid-naïve service members (Table 5.5). NPT included physical/occupational therapy or exercise, chiropractic care/manipulation, psychotherapy associated with a pain diagnosis, acupuncture, biofeedback/hypnotherapy, stress management/relaxation, and health assessment/intervention associated with a pain diagnosis.

TABLE 5.5
Quality Measure Assessing Treatment a New Episode of Acute Low Back Pain with NSAIDs or NPT

Measure Topic	Measure Statement	Numerator	Denominator
NSAIDs/NPT	Patients with new episode of acute low back pain who received NSAIDs or NPT and did not receive opioids	Received NSAIDs or any NPT, and did not receive opioids, in the 3 months after the initial visit for new low back pain	Opioid-naïve patients with a new episode of acute low back pain

Measure Rationale and Overview

The VA/DoD CPG for the management of acute low back pain strongly recommends NPT or NSAIDs as first-line treatment (VA and DoD, 2017c). The American College of Physicians also supports the use of noninvasive treatments for acute low back pain (Qaseem et al., 2017). One study of opioid-naïve patients with new neck, shoulder, low back, or knee pain demonstrated an association between early physical therapy and subsequent reduced intensity of later opioid use (Sun et al., 2018). Our approach to NPT was based on the findings from a recent systematic review by AHRQ of noninvasive NPT for chronic pain and the evidence for persistent improvement in pain and function after NPT (Skelly et al., 2020).[1] The AHRQ review identified evidence-based NPTs for chronic pain, including psychological interventions, physical therapy, exercise, chiropractic care/manipulation, manual therapies, acupuncture, hypnosis/biofeedback, stress reduction, and multidisciplinary rehabilitation. Although the review distinguished evidence-based treatments by type of *chronic* pain, we did not make a distinction between acute low back pain and chronic pain in terms of types of acceptable NPTs because the choices for both are essentially the same.

To take into account patient preference, variations in NPT availability, and potential comorbidity that might affect NPT choices, we made our definition broad to cover all therapies in the categories cited in the AHRQ review that were coded in our MHS administrative data. A limitation for our study was that some recommended NPTs (e.g., mindfulness training, cognitive behavioral therapy, yoga, tai chi) were not captured in the MHS data. Furthermore, we required only a single encounter to satisfy the NPT requirement. A single encounter does not necessarily equate to a patient's receiving an adequate course of an NPT. However, requiring only one encounter allowed for variations in the number of visits resulting from patient preference, clinical judgment, and cases in which a therapy visit segued to directed self-management. A recent study found that Army

[1] The systematic review excluded chronic low back pain with radiculopathy or myelopathy. For our definition of acute low back pain, we included patients with low back pain and radiculopathy or myelopathy due to the frequency of its presentation in acute low back pain, as well as the fact that first-line therapies are the same with or without these conditions.

personnel with chronic pain who had at least one NPT encounter had a significantly lower risk of adverse long-term outcomes after transitioning to VA care, including a lower risk of developing a SUD and attempting suicide (Meerwijk et al., 2020). We defined some forms of NPT by a single Current Procedural Terminology (CPT) code (e.g., acupuncture, physical therapy), while others required additional information indicating that pain was addressed at the encounter (e.g., psychotherapy with a coded pain-related diagnosis). See Appendix B for a complete list of codes and related NPT definitions.

Results for oral NSAIDs might underrepresent actual use if service members purchased these products over the counter, in which case they would not appear in our pharmacy data. Pharmacy data also do not account for service members who were prescribed NSAIDs but did not take them due to contraindications or patient preference.

Measure Results

Seventy percent of service members with a new episode of acute low back pain received recommended care; specifically, they were treated with oral NSAIDs or NPT and did not receive opioids in the subsequent three months (Table 5.6).

Among service members who received recommended care, 31 percent received oral NSAIDs, 40 percent received NPT, and 28 percent received both NSAIDs and NPT (Table 5.7).

Table 5.8 shows the types of care received for those whose care did not meet the quality measure recommendations. The most common reason for not receiving the recommended care was a lack of recommended treatment with any NSAIDs or NPT (and with no use of opioids): 72 percent. As noted,

TABLE 5.6

Measure Score for Acute Low Back Pain Treated with NSAIDs or NPT and Without Opioids, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Received NSAIDs or NPT within 3 months and did not receive opioids	64,061	91,451	70.0

NOTE: Service members were opioid-naïve at the time of the initial visit.

TABLE 5.7
Receipt of Recommended Care for New Episode of Acute Low Back Pain, FY 2019

Recommended Care	% (*n* = 64,061)
NSAIDs (without opioids)	31.4
NPT (without opioids)	40.2
NSAIDs and NPT (without opioids)	28.4

TABLE 5.8
No Receipt of Recommended Care for New Episode of Acute Low Back Pain, FY 2019

Care Inconsistent with the Quality Measure	% (*n* = 27,390)
NSAIDs with opioids	10.0
NPT with opioids	3.2
NSAIDs and NPT with opioids	11.4
Opioids only	3.0
Neither NSAIDs nor NPT and no opioids	72.3

"no care" could include care that was declined by the patient or care not captured in the administrative data (e.g., certain NPTs, over-the-counter medications). Our findings therefore suggest that *at least* 70 percent of service members with new low back pain received either oral NSAIDs or NPT without opioids, and actual receipt might have been higher.

Table 5.9 shows the percentage of service members with acute low back pain who received NPT in the three months after their initial visit. Approximately half of these service members (52 percent) received at least one visit for an NPT. The most common NPT received was physical/occupational therapy (47 percent), followed by guided or supervised exercise (36 percent) and chiropractic care/manipulation (24 percent). Other NPTs were provided infrequently, rates of less than 2 percent of service members in our data.

We note that psychotherapy associated with a pain diagnosis, which could capture cognitive behavioral therapy for pain, was received by less than 1 percent of service members. In supplemental analyses, we exam-

TABLE 5.9
NPT Received During New Episode of Acute Low Back Pain, FY 2019

NPT	% (*n* = 91,451)
Any NPT	52.4
Physical/occupational therapy[a]	46.8
Exercise	35.5
Chiropractic care/manipulation[b]	24.4
Acupuncture	1.7
Health assessment/intervention associated with pain diagnosis	0.4
Psychotherapy associated with pain diagnosis	0.3
Biofeedback/hypnotherapy	0.2

NOTES: NPT categories are not mutually exclusive. Our definition of NPT included stress management/relaxation, but no service member with acute low back pain in our measure denominator received this form of NPT, so it is not included in the table.

[a] Excluding codes specific to exercise.

[b] Some manipulation was provided in a physical therapy setting.

ined the proportion of service members who were eligible for inclusion in our data set for this measure who received *any* psychotherapy in the three months after initiating their new episode of low back pain and found that 12.9 percent did so.

The proportion of service members who actually received NPT might be higher because many recommended NPTs (e.g., yoga, tai chi, mindfulness) are not captured in these data.

Among those service members who received physical/occupational therapy or exercise during the new episode of acute low back pain, the mean number of visits was 2.7 for physical/occupational therapy (median two visits) and 2.6 for exercise (median one visit) (Table 5.10). Those who received chiropractic care/manipulation averaged 2.3 visits, with a median of 2.

It is difficult to compare our results with those of other published studies because study populations and definitions of treatments vary. However, in general, MHS treatment for new low back pain compared favorably with the

TABLE 5.10

Frequency and Number of Visits for NPT Received During New Episode of Acute Low Back Pain, FY 2019

NPT	Had at Least One Visit % (*n* = 47,963)	For Those with at Least One Visit	
		Mean (SD)	Median
Any NPT	52.4	3.1 (3.1)	2
Physical/occupational therapy[a]	46.8	2.7 (2.6)	2
Exercise	35.5	2.6 (3.1)	1
Chiropractic care/manipulation[b]	24.4	2.3 (1.9)	2
Acupuncture	1.7	1.8 (1.5)	1
Health assessment/intervention associated with pain diagnosis	0.4	1.4 (1.0)	1
Psychotherapy associated with pain diagnosis	0.3	2.0 (2.0)	1
Biofeedback/hypnotherapy	0.2	2.2 (1.6)	1

NOTE: NPT categories are not mutually exclusive. SD = standard deviation.

[a] Excluding codes specific to exercise.

[b] Some manipulation was provided in a PT setting.

findings from other study results. In one study of demobilized Army veterans diagnosed with low back pain (not necessarily a new episode), 35 percent were treated with NPT in the subsequent 12 months, compared with 50 percent of service members over three months in our study (Vanneman et al., 2018). Kim and colleagues (2019) analyzed commercial claims from patients with newly diagnosed low back pain or lower extremity pain (99 percent of whom did not undergo surgery). In the subsequent 12 months, rates of physical therapy were 14 percent (no surgery) and 41 percent (had surgery). Rates of chiropractic care were 12 percent (no surgery) and 9 percent (had surgery) (Kim et al., 2019). These rates were lower than those in our low back pain cohort, which had a shorter observation period.

Comparing Service Members with One Versus Two Visits for Low Back Pain

As noted earlier, more than half of service members (54 percent) who initiated a new episode of treatment for low back pain had only a single low back pain visit (i.e., the initial visit). Therefore, we conducted supplementary analyses to identify differences in care between service members with only one visit and those with two or more visits. Service members with two or more visits were more likely to receive recommended care involving NSAIDs or NPT, without opioids: 83 percent versus 59 percent for those with only one visit. Among those who received recommended care, service members with two or more visits were much less likely to receive NSAIDs as their sole modality of care (13 percent versus 54 percent) and more likely to receive NPT alone or jointly with NSAIDs (82 percent versus 46 percent). Among those who received care for acute low back pain that was inconsistent with recommended care, the combined use of NSAIDs, NPT, and opioids was much more common among those with two or more visits (31 percent versus 5 percent). Other contrasts were less pronounced.

Acute Low Back Pain Measure: Stepped Care

In this section, we present our findings related to the second of the three quality measures for a new episode of low back pain. The prior measure assessed receipt of care strongly recommended in the VA/DoD CPG (i.e., oral NSAIDs or NPT in the absence of opioids) in the first three months of a new episode of low back pain. The goal of this second measure is to assess whether treatment delivered for the new episode of low back pain (including nonopioid medication) was consistent with the stepped-care model (Office of the Secretary of Defense, 2019). This model guides providers in trying low-intensity interventions first, followed by increasingly advanced therapies and specialty consultation if the patient does not improve. One example of a treatment approach consistent with the stepped-care model is using opioids only after a low-intensity intervention, such as nonopioid medications or NPT, has failed to promote improvement.

Similar to the prior measure, this measure assesses whether the patient received a lower-intensity recommended treatment (i.e., nonopioid medica-

tion or NPT). Our definition of nonopioids includes NSAIDs (as recommended in the prior measure) but also short-term treatment with nonbenzodiazepine muscle relaxants. The evidence for the effectiveness of muscle relaxants is not as strong as for NSAIDs, but muscle relaxants are included as a treatment option for acute low back pain in the VA/DOD CPG (VA and DoD, 2017c). This measure also allows for the use of opioids if this use follows a trial of nonopioid medication or NPT (Table 5.11). Thus, this measure complements and extends the prior measure.

Measure Rationale and Overview

The VA/DoD CPG for the management of acute low back pain recommends NPT, NSAIDs, or a short-term course of nonbenzodiazepine muscle relaxants (VA and DoD, 2017c). The American College of Physicians also supports the use of noninvasive treatments or nonopioids, NSAIDs, or muscle relaxants for acute low back pain (Qaseem et al., 2017). The stepped-care model is encouraged by MHS and supports the use of noninvasive NPTs and nonopioid medications as first-line approaches to the management of acute pain (DHA Procedural Instruction 6025.04, 2018). Our definition of nonopioid medication for acute low back pain included oral NSAIDs and short-term treatment (14 days or less) with nonbenzodiazepine muscle relaxants consistent with these guidelines.

Measure Results

Seventy-nine percent of service members with a new episode of acute low back pain received initial treatment that appeared consistent with the

TABLE 5.11
Quality Measure Assessing Stepped Care for New Episode of Acute Low Back Pain

Measure Topic	Measure Statement	Numerator	Denominator
Stepped care	Patients with new episode of low back pain who received nonopioids or NPT prior to any opioids	Received nonopioid medication or NPT prior to any opioids within 3 months of the initial visit for low back pain	Opioid-naïve patients with a new episode of low back pain

stepped-care model (Table 5.12). Whereas the prior measure focused only on service members who received a recommended lower-intensity treatment (i.e., NSAIDs or NPT) in the first three months after initiating a new episode of low back pain, this measure allows service members to receive opioids if a lower-intensity recommended treatment (i.e., nonopioid medication or NPT) was delivered previously. An additional 9 percent of service members received recommended care based on this measure compared with the prior measure.

Table 5.13 shows the type of care received by service members who received care that was consistent with the stepped-care model. Receipt of recommended care most often meant receipt of nonopioids or NPT without any opioids. Just 6 percent of service members with recommended care received opioids after a trial of nonopioid medication or NPT.

For those who did not receive recommended care, the most common reason was that the service member did not receive nonopioid medication or NPT (Table 5.14). It is possible that treatments were offered but refused or that the treatment plan involved "watchful waiting," home treatment (e.g., self-applied heat or ice), or another NPT not coded in the administrative

TABLE 5.12

Measure Score for Stepped Care for New Episode of Acute Low Back Pain, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Received nonopioid medication or NPT within 3 months and no opioids or opioids only after NPT or nonopioid medication	71,744	91,451	78.5

NOTE: Service members were opioid-naïve at the time of the initial visit.

TABLE 5.13

Receipt of Recommended Care Related to Stepped-Care Measure for Acute Low Back Pain, FY 2019

Recommended Care	% (*n* = 71,744)
Nonopioid medication or NPT and no opioids	93.8
Opioids, but only after trial of nonopioid medication or NPT	6.2

TABLE 5.14

No Receipt of Recommended Care Related to Stepped-Care Measure for Acute Low Back Pain, FY 2019

Care Inconsistent with Quality Measure	% (*n* = 19,707)
Opioids and no nonopioid medication or NPT	2.6
Opioids *before* nonopioid medication or NPT	13.5
No opioids, no nonopioid medication, and no NPT	83.9

data. Only about 3 percent received opioids in the absence of any treatment with nonopioids or NPT.

For all service members eligible for inclusion in our analyses of this measure (i.e., opioid-naïve service members initiating a new episode of low back pain), we also examined the medications received during the three months after the initial visit—both recommended nonopioid medication and opioids, regardless of timing related to other medication treatment or NPT. NSAIDs were dispensed to 48 percent of these service members, muscle relaxants were dispensed to 33 percent, and just 8 percent were treated with opioids (Table 5.15); less than 1 percent of dispensed opioids were long-acting. Of those who received opioids, 34 percent were dispensed opioids on the day of the initial visit or within the first week, 19.6 percent in the second to fourth week, 23.4 percent in the second month, and 23 percent in the third month. Overall, the average supply of opioids dispensed was 7.7 days (standard deviation 10.9) with a median of four days. It is possible

TABLE 5.15

Medication Received During New Episode of Acute Low Back, FY 2019

Medication	% (*n* = 91,451)
NSAIDs or nonbenzodiazepine muscle relaxants	55.6
NSAIDs	48.3
Nonbenzodiazepine muscle relaxants	33.4
Opioids	8.3

that some proportion of these opioid treatments were related to procedures or sources of pain other than the acute low back pain.

Our analyses indicated that opioids were dispensed to 8 percent of service members with a new episode of low back pain, with a median supply of four days. Mikosz and colleagues (2020) analyzed 2017 commercial and Medicaid claims data for opioid prescribing stratified by medical indication. In their analyses, the median supply of opioids for acute low back pain was seven days for private insurance and five days for Medicaid (Mikosz et al., 2020), compared with our median of four days. Their population differed from ours in its demographic composition, and their analyses reflect data from 2017 and prescribing trends that might have changed since then. However, given these caveats, MHS results compared favorably with those from commercial and Medicaid data.

Comparing Service Members with One Versus Two Visits for Low Back Pain

Compared with service members who had only one visit over the observation period, those with two or more visits were more likely to receive recommended stepped care: 91 percent versus 68 percent. Among those who received recommended care, those with one visit looked similar to those with two or more visits with respect to the types of care they received. Among service members who did not receive recommended stepped care, those with two or more visits were much more likely to receive opioids before nonopioid medication or NPT (33 percent versus 9 percent). In contrast, those with only one visit were less likely to have received recommended care, meaning that they did not receive opioids, nonopioid medications, or NPT (89 percent versus 64 percent), at least according to the administrative data.

Acute Low Back Pain Measure: No Initiation of Benzodiazepines

In this section, we present our findings related to the third of three quality measures assessing care for a new episode of low back pain. This measure focuses on the initiation of benzodiazepines during a new episode of acute low back pain in the three months after the initial visit (Table 5.16).

TABLE 5.16
Quality Measure Assessing for No Initiation of Benzodiazepines for New Episode of Acute Low Back Pain

Measure Topic	Measure Statement	Numerator	Denominator
No initiation of benzodiazepines	Patients with new episode of low back pain did not initiate benzodiazepines	No initiation of benzodiazepines within 3 months of the initial visit for the new episode	Opioid-naïve patients with a new episode of low back pain and not currently taking benzodiazepines

Measure Rationale and Overview

The VA/DoD CPG for the management of acute low back pain strongly recommends against the use of benzodiazepines for treatment of low back pain (VA and DoD, 2017c). Benzodiazepines have inherent risks, including central nervous system effects and the potential for misuse and development of dependence. There is no high-quality evidence supporting their use for the treatment of acute low back pain (Brötz et al., 2010; Chou, Deyo, et al., 2016; Guina and Merrill, 2018). This measure focuses on patients with a new episode of low back pain who were not taking benzodiazepines at the time of their initial visit.

Measure Results

Nearly 99 percent of service members with a new episode of acute low back pain did not receive a benzodiazepine within three months following initiation of the new treatment episode (Table 5.17). These results indicate no performance gap for this measure.

TABLE 5.17
Measure Score for No Initiation of Benzodiazepines for New Episode of Acute Low Back Pain, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
No initiation of benzodiazepines within 3 months	89,994	90,967	98.9

NOTE: Service members were opioid-naïve at the time of the initial visit.

A recent study of commercial claims data on opioid and benzodiazepine use in opioid-naïve patients with newly diagnosed low back and lower extremity pain showed a reduction in opioid dispensing over time (2008–2015), but dispensed benzodiazepines remained steady at 11 percent (Azad et al., 2020). The observation period for that study was 12 months, compared with three months for our study, and the population was older, so it is difficult to make comparisons. However, the 1-percent use of benzodiazepines in our analyses suggests that MHS efforts to minimize the use of these medications has been successful in the context of treating new episodes of low back pain.

Summary

In this chapter, we examined aspects of the quality of care for acute low back pain, focusing on a three-month period following the first visit for a new episode of pain, which constitutes the treatment window over which acute low back pain typically resolves. Our key findings were as follows:

- **There is a high prevalence of acute low back pain among service members:** More than 90,000 service members experienced a new episode of low back pain in the first nine months of FY 2019.
- **There was high utilization of NSAIDs and NPT for care:** Seventy percent of service members with acute low back pain received NSAIDs or NPT within the first three months of their initial visit and did not receive opioids. Among those who did not receive recommended care (30 percent), a large majority (72 percent) did not receive NPT, NSAIDs, or opioids, suggesting either an absence of intervention, a provider recommendation for care that was not received (e.g., due to patient preference), or care that was received but could not be observed in the administrative data (e.g., over-the-counter medications). In approximately half of these cases, service members had just one visit for low back pain and thus might represent cases of lower severity.
- **Service members received care consistent with the stepped-care model:** Stepped care for acute low back pain included NPT or non-opioid medication without opioids, or, if opioids were dispensed, it was

only after a trial of NPT or nonopioid medication. Care for acute low back pain was consistent with stepped care 79 percent of the time. Most often, care involved nonopioid pharmacotherapy or NPT without opioids. Overall, only 8 percent of those receiving care for acute low back pain were prescribed an opioid during the three-month observation window. Of those service members who did not receive stepped care (21 percent), 84 percent had no documented receipt of NPT or nonopioid medications, and they were often service members with just one visit for low back pain. Among those with two or more visits, receipt of opioids before a trial of nonopioid medication or NPT was more common.

- **Initiation of benzodiazepines was rare:** There was strong compliance with VA/DoD guidelines insofar as 99 percent of service members with acute low back pain did not initiate a benzodiazepine within the three months following the initiation of a new treatment episode.

CHAPTER SIX

Chronic Pain

In this chapter, we present the results of two quality measures assessing the use of NPT and nonopioid medication for chronic pain. As noted earlier, we define chronic pain as pain that has persisted for more than three months and could have a negative impact on overall health and functioning. Because of the ongoing nature of chronic pain, the service members in our data set could have been at any stage in their chronic pain care—that is, they may have been receiving initial care for chronic pain or subsequent care at a later stage in their pain episode. Additionally, as noted in Chapter Three, service members in our data set could meet the criteria for one chronic pain condition or multiple conditions causing chronic pain. The box below highlights key findings from this chapter.

Key Findings
Care for Chronic Pain, FYs 2018–2019

- Nearly 100,000 service members experienced chronic pain in FY 2018, according to MHS administrative data.
- Service members with chronic pain and the highest levels of health care utilization (top quartile) might have complex health care needs requiring focused management.
- Most service members with chronic pain received NPT or nonopioid medication. One-third of service members with chronic pain were prescribed opioids during the observation period.
- Service members with more than one chronic pain condition had more comorbidities, had higher rates of health care utilization, and were more likely to receive opioids than those with one chronic pain condition.

Characteristics and Utilization Among Service Members with Chronic Pain

In this section, we describe the demographic and service characteristics of service members with chronic pain. We also describe aspects of care during the 12-month observation period, including comorbidities, psychotropic medications, provider types seen, whether the service member was seen in a pain specialty clinic, opioid use, and health care utilization.

We identified 97, 987 service members who met the criteria for chronic pain in FY 2018. Most service members (82.1 percent) met the criteria for only one chronic pain condition (i.e., their qualifying chronic pain diagnoses came from a single diagnostic cluster). A sizable minority (17.9 percent) met the criteria for two or more conditions: 16.7 percent met the criteria for two chronic pain conditions, and 1.2 percent met the criteria for three or more conditions.

By far the most common chronic pain condition among the five we examined was chronic low back pain, followed by chronic neck pain, and knee OA (Table 6.1). Less than 2 percent of service members with chronic pain had a diagnosis of hip OA or fibromyalgia in FY 2018. As noted earlier, the index visit was the first visit in FY 2018 that met the criteria for chronic pain and initiated the 12-month observation period during which we assessed quality of care. For 80 percent of service members with chronic pain, the index visit was a visit for chronic low back pain, followed by 12 percent with neck pain and 6 percent with knee OA (see Appendix C). We did

TABLE 6.1
Service Members with Chronic Pain, by Pain Condition, FY 2018

Chronic Pain Condition	Met Criteria for Chronic Pain Condition (%)
Chronic low back pain	83.7
Chronic neck pain	24.6
Knee OA	8.0
Hip OA	1.6
Fibromyalgia	1.2

NOTE: A service member may have met criteria for more than one chronic pain condition.

not require a minimum period without any pain-related diagnoses prior to the index visit for chronic pain; therefore, our data did not capture the beginnings of chronic pain episodes for all service members. As a result, the analyses that follow reflect care for service members at different stages in their chronic pain trajectories and treatment.

Demographic and Service Characteristics

The demographic and service characteristics of service members with chronic pain are shown in Table 6.2. Service members with chronic pain were mostly male and 25–44 years old. More than half were white, and almost three-quarters were married. The distribution of service members with chronic pain was somewhat different from the composition of active-

TABLE 6.2
Demographic and Service Characteristics of Service Members with Chronic Pain, FY 2018

Characteristic	% (*n* = 97,987)
Gender	
Female	22.3
Male	77.7
Age	
18–24	17.1
25–34	38.3
35–44	35.8
45–64	8.8
Race/ethnicity	
American Indian/Alaskan Native	1.0
Asian/Pacific Islander	5.7
Black, non-Hispanic	20.0
White, non-Hispanic	55.8
Hispanic	14.9
Multiracial/multiethnic	2.2
Unknown	0.4

Table 6.2—Continued

Characteristic	% (*n* = 97,987)
Marital status	
Married	72.8
Never married	18.4
Divorced, separated, widowed	8.7
Unknown	NR
Service branch	
Army	43.2
Navy	14.6
Air Force	31.7
Marine Corps	8.8
Coast Guard	1.8
Paygrade/rank	
C-1, E-1–E-4	22.8
E-5–E-9	55.3
O-1–O-3	8.1
O-4–O-8, warrant officer	13.8
Deployment experience	
Deployed in FY 2017	1.1
Met criteria for chronic pain in FY 2017	40.2
Source of care[a]	
All direct care	36.9
More than 50% from direct care	54.1
More than 50% from private-sector care	7.6
All private-sector care	1.4

NOTE: Data based on the index visit. NR = not reportable because *n* was less than 10.

[a] Source of inpatient and outpatient care (excluding pharmacy data) during the 12-month observation period.

duty service members by service branch as of September 2019 (Defense Manpower Data Center, 2019) (Army: 43 percent of the chronic pain population but 35 percent of all active-duty service; Navy: 15 percent versus

24 percent; Air Force: 32 percent versus 24 percent; Marine Corps: 9 percent versus 14 percent; Coast Guard: 2 percent versus 3 percent). These findings suggest that the Army and Air Force are overrepresented in our chronic pain population relative to the overall military population. Only about 1 percent of service members with chronic pain had deployed in the previous year. About 40 percent met the criteria for chronic pain in the prior year and, therefore, already had encounters in FY 2017 associated with at least one of the five chronic pain conditions. Most service members with chronic pain received all or most of their care during the observation period from direct care providers (37 percent entirely from direct care; 54 percent mostly from direct care).

Comorbidity and Utilization

Similar to our analyses for service members with acute low back pain, we examined comorbid diagnoses, receipt of psychotropic medications, and health care utilization in the 12-month observation period following the index visit. Patients with chronic pain often have comorbid BH conditions (Higgins et al., 2014; C. McGeary et al., 2016). Thirty-seven percent of service members with chronic pain had a BH diagnosis during the observation year (Table 6.3). The most common of these diagnoses were adjustment disorder, anxiety disorders, and depression. Twenty-nine percent of those with chronic pain had a sleep disorder. During the observation year, 41 percent of service members took some type of psychotropic medication; antidepressants and sedative-hypnotics/anxiolytics were most common.

As noted earlier, 17.9 percent of service members with chronic pain met the criteria for more than one of the five eligible pain conditions, which could be an indicator of increased medical complexity. Our analyses, shown in Table 6.3, supported this hypothesis. Among service members with more than one pain condition, BH diagnoses were more prevalent (46 percent versus 35 percent for those with one pain condition) as were sleep disorders (40 percent versus 27 percent). Use of antidepressants and hypnotics/sedatives/anxiolytics was also higher among those with two chronic pain conditions (antidepressants: 34 percent versus 23 percent; hypnotics/sedatives/anxiolytics: 28 percent versus 20 percent), as was use of any psychotropic medication (52 percent versus 39 percent).

TABLE 6.3

Comorbidity and Psychotropic Medications During the 12-Month Observation Period of Service Members with Chronic Pain, by Number of Conditions, FYs 2018–2019

Comorbidity/Psychotropic Medication	Total % (*n* = 97,987)	One Chronic Pain Condition % (*n* = 80,466)	Two or More Chronic Pain Conditions % (*n* = 17,521)
Any BH diagnosis[a]	37.1	35.2	45.8
Adjustment disorder	16.3	15.3	20.7
Anxiety disorder	14.1	12.7	20.4
Depression (major depressive disorder, dysthymia)	9.5	8.6	13.5
PTSD	7.4	6.3	12.8
Alcohol use disorder	3.1	3.1	3.0
Drug use disorder	1.0	0.9	1.3
Sleep disorder/symptoms	29.0	26.6	40.1
Any psychotropic medications[b]	41.1	38.8	52.1
Antidepressants	24.6	22.5	34.4
Hypnotics/sedatives/anxiolytics	21.0	19.5	27.9
Benzodiazepines[c]	10.5	9.7	14.0
Antipsychotics	1.5	1.3	2.4

[a] Includes any ICD-10 F-code and excludes sleep disorders.

[b] Includes antidepressants, antipsychotics, hypnotics/sedatives/anxiolytics, stimulants, mood stabilizers/anticonvulsants, guanfacine, and clonidine.

[c] Included in the category of sedative/hypnotic/anxiolytic.

In the prior chapter, we examined care for service members in the *three months* after initiating a treatment episode for low back pain. In contrast, this chapter focuses on care received in the *12 months* after a visit that met the criteria for chronic pain. Thus, we examined selected BH comorbidities and psychotropic medications in the first three months after the index visit for chronic pain to facilitate comparisons between these two groups. Our findings suggest that service members with chronic pain present more complex needs than those beginning a new episode of low back pain. In this

three-month period, service members with chronic pain were more likely than those with acute low back pain to have a BH diagnosis (20.9 percent versus 16.4 percent), to have a sleep disorder or symptoms of a sleep disorder (13.6 percent versus 9.5 percent), to be taking psychotropic medication (23.9 percent versus 14.5 percent), and to be seen in a pain management clinic (10.2 percent versus 1.5 percent).

Service members who met the criteria for two or more chronic pain conditions were also more likely to receive specialty care and to be seen in a pain management clinic than services members with only one chronic pain condition (25 percent versus 15 percent; Table 6.4). We conducted supplemental analyses to examine differences among service members with chronic pain (see Appendix C).

Patterns of Opioid Prescribing

One-third of service members with chronic pain were dispensed opioids during the 12-month observation period, although few were taking opioids at the time of the index visit (Table 6.5). Less than 2 percent of service

TABLE 6.4
Providers and Pain Clinic Visits During the 12-Month Observation Period of Service Members with Chronic Pain by Number of Conditions, FYs 2018–2019

Providers/Clinic	Total % (*n* = 97,987)	One Chronic Pain Condition % (*n* = 80,466)	Two or More Chronic Pain Conditions % (*n* = 17,521)
Provider types seen			
Primary care	96.2	96.1	97.0
BH	42.8	41.2	50.3
Neurology	20.4	18.3	30.1
Orthopedics	21.7	20.2	28.7
Physical medicine/rehabilitation	15.2	14.0	21.0
Rheumatology[a]	1.3	0.9	2.8
Pain management clinic[a]	16.7	14.9	24.6

[a] Direct care only.

TABLE 6.5

Characteristics of Dispensed Opioids During the 12-Month Observation Period of Service Members with Chronic Pain, by Number of Conditions, FYs 2018–2019

Characteristic	Total % (*n* = 97,987)	One Chronic Pain Condition % (*n* = 80,466)	Two or More Chronic Pain Conditions % (*n* = 17,521)
Any opioids during 12-month observation period	33.3	32.1	39.0
On opioids at index visit	2.6	2.3	4.1
On LOT at index visit	0.7	0.6	1.5
On opioids at index visit and advanced to LOT	0.2	0.1	0.3
On opioids only after index visit	31.1	30.1	35.3
On opioids only after index visit and advanced to LOT	0.6	0.5	1.0
Average daily MME ≥30	17.7	17.0	21.0
Average daily MME ≥50	7.4	7.0	9.1
Average daily MME ≥90	1.2	0.9	2.0
Dispensed ≥15 consecutive days with daily MME ≥30	3.7	3.2	5.7
Dispensed ≥15 consecutive days with daily MME ≥50	1.4	1.1	2.5
Dispensed ≥15 consecutive days with daily MME ≥90	0.4	0.3	0.9

NOTE: The average daily MME was computed as the daily MME dose summed across all opioid days, divided by the total number of opioid days. "Gap" days (days with no opioid supply) were not included.

members with chronic pain were on LOT at the time of the index visit or advanced to LOT during the 12-month observation period. Service members with two or more chronic pain conditions were more likely to have received opioids, be on LOT at the index visit or advance to LOT during the observation period, and to receive 15 or more consecutive days of opioids at higher MME daily dosages.

We also examined health care utilization during the 12-month observation period after the index visit for any diagnosis (Table 6.6). More than one-third of service members with chronic pain (36 percent) had at least one BH specialty care encounter, and a similar proportion had been seen in an emergency department.

Characteristics of High Utilizers with Chronic Pain

We examined selected characteristics of service members with chronic pain who were high utilizers of care—that is, those whose health care utilization was in the top quartile among service members with chronic pain (Table 6.7). Seventy percent of high utilizers had a BH diagnosis, and 70 percent received psychotropic medication during the 12-month observation period. These shares were 25 percent and 31 percent, respectively, among non–high utilizers. Less than one-third of high utilizers (30 percent) were seen in a pain management clinic. The median number of outpatient encounters for high utilizers was 42, compared with 14 for non–high utilizers. High utilizers had a median of six BH specialty visits and 21 non-BH specialty visits, compared with medians of zero and five, respectively, for non–high utilizers. Because we did not require a minimum period without any pain-related diagnoses prior to the index visit for chronic pain, we did not observe the beginnings of chronic pain episodes for all service members. The non–high-utilizer group could therefore include service members who

TABLE 6.6
Health Care Utilization During the 12-Month Observation Period of Service Members with Chronic Pain, FYs 2018–2019

	Had at Least One Encounter	For Those with at Least One Encounter	
Health Care Encounters	% (*n* = 97,987)	Mean (SD)	Median
Outpatient	100.0	23.4 (19.5)	18
Primary care	95.7	8.3 (6.1)	7
BH specialty care	36.2	10.9 (14.9)	5
Non-BH specialty care	93.6	11.8 (11.7)	8
Emergency department	36.9	1.9 (1.7)	1
Inpatient	7.8	1.2 (0.6)	1

TABLE 6.7

Characteristics of High Utilizers Among Service Members with Chronic Pain During the 12-Month Observation Period, FYs 2018–2019

Characteristic	High Utilizers (*n* = 25,903)	Non–High Utilizers (*n* = 72,084)
Percentage with any BH diagnosis[a]	70.0	25.3
Percentage with any psychotropic medications[b]	70.1	30.8
Percentage seen in pain management clinic[c]	29.9	11.9
Median outpatient encounters by care setting		
Any outpatient care	42	14
Primary care	12	5
BH specialty care	6	0
Non-BH specialty care	21	5
Emergency department	1	0

[a] Includes any ICD-10 F-code and excludes sleep disorders.

[b] Includes antidepressants, antipsychotics, hypnotics/sedatives/ anxiolytics, stimulants, mood stabilizers/anticonvulsants, guanfacine, and clonidine.

[c] Direct care only.

were earlier in the course of their chronic pain episode and had received less chronic pain care. Over time, it is possible that utilization increased among a subgroup of non–high utilizers.

In this section, we described the demographic and service characteristics of service members with chronic pain. We examined BH comorbidity and the use of psychotropic medications and opioids during the 12-month observation period. In addition, we described health care utilization and compared service members who were high utilizers of health care (top quartile) with those who were not. In the next section, we present results for two quality measures that assessed receipt of recommended care for chronic pain.

Chronic Pain Measure: Nonpharmacologic Treatment

This measure focuses on the treatment of chronic pain, and we used it to assess the use of NPT in the 12 months after the index visit (Table 6.8).

Measure Rationale and Overview

VA/DoD CPGs for the management of low back pain, knee and hip OA, and opioid therapy for chronic pain all strongly recommend NPT as a preferred first-line option for the treatment of chronic pain, as well as an important component of a multidisciplinary approach to pain management (VA and DoD, 2017c, 2014, 2017a). Many forms of NPT have been shown to result in reduced pain and improved functioning post-treatment (Skelly et al., 2018, 2020). This measure assesses the receipt of at least one visit for NPT, as documented in administrative data. Thus, this measure does not capture NPTs that could not be observed in administrative data, that service members paid for out of pocket, or that service members might have refused.

Measure Results

More than 80 percent of those with chronic pain received NPT during the 12-month observation period (Table 6.9).

We explored the NPTs that service members with chronic pain received during the 12-month observation period (Table 6.10). The most common were physical/occupational therapy (75 percent), exercise (55 percent), and chiropractic care/manipulation (47 percent). Only 3 percent received psychotherapy coded with a pain diagnosis. Notably, nearly 30 percent (29.7 percent) of chronic pain patients received psychotherapy that was not

TABLE 6.8
Quality Measure Assessing NPT for Chronic Pain

Measure Topic	Measure Statement	Numerator	Denominator
NPT	Patients with chronic pain who received any NPT	Received any NPT in the 12 months following the index visit	Patients with chronic pain

TABLE 6.9

Measure Score for NPT for Chronic Pain, FYs 2018–2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Received NPT during the 12-month observation period	79,157	97,987	80.8

TABLE 6.10

Types of NPT Received by Service Members with Chronic Pain, by Number of Pain Conditions, FYs 2018–2019

NPT	Total % (*n* = 97,987)	One Chronic Pain Condition % (*n* = 80,466)	Two or More Chronic Pain Conditions % (*n* = 17,521)
Any NPT	80.8	77.7	94.7
Physical/occupational therapy[a]	75.1	72.7	86.1
Exercise	54.7	53.5	60.6
Chiropractic care/manipulation[b]	47.0	41.0	74.4
Acupuncture	7.0	5.8	12.5
Psychotherapy associated with pain diagnosis	3.1	2.4	6.1
Health assessment/ intervention associated with pain diagnosis	2.7	2.3	4.4
Biofeedback/hypnotherapy	1.5	1.2	2.9

NOTES: NPT categories are not mutually exclusive. Our definition of NPT included stress management/relaxation, but only one service member with chronic pain in our measure denominator received this form of NPT, so it is not included in table results.

[a] Excluding codes specific to exercise.

[b] Some manipulation was provided in a physical therapy setting.

coded with a pain diagnosis. This psychotherapy could have been focused on chronic pain (and not coded as such) or on a comorbid BH condition. Seventy-eight percent of service members who met the criteria for just one chronic pain condition received NPT, and 95 percent of those with two or more chronic pain conditions did so. Those with two or more conditions

also were more likely to have chiropractic care/manipulation and acupuncture than those with one condition.

The average number of NPT visits during the observation period for those who received any NPT was 8.1, with a median of five visits (Table 6.11). The median number of NPT visits for those with just one chronic pain condition was four, compared with nine for those with two or more pain conditions.

We found a higher use of NPT for chronic pain among service members than other studies have found for other populations. One study of veterans who had recently separated from the military and had been diagnosed with low back pain found that only 35 percent received at least one NPT modality within 12 months, compared with 81 percent in our chronic pain cohort (Vanneman et al., 2018). Two other recent studies examined receipt of physical therapy only. In one study, 31 percent of veterans with chronic pain who initiated LOT received physical therapy in a six-month observation period (Gaither et al., 2014). In another study of veterans with chronic musculo-

TABLE 6.11
NPT Visits for Service Members with Chronic Pain, FYs 2018–2019

NPT	Had at Least One NPT Visit (%)	For Those with at Least One NPT Visit	
		Mean (SD)	Median
Any NPT	80.8	8.1 (9.0)	5
Physical/occupational therapy[a]	75.1	6.5 (7.4)	4
Exercise	54.7	4.9 (7.3)	2
Chiropractic care/manipulation[b]	47.0	5.2 (5.3)	3
Acupuncture	7.0	3.0 (3.8)	2
Psychotherapy associated with pain diagnosis	3.1	3.5 (4.4)	2
Health assessment/intervention associated with pain diagnosis	2.7	2.6 (3.2)	1
Biofeedback/hypnotherapy	1.5	3.2 (3.6)	2

NOTES: NPT categories are not mutually exclusive. SD = standard deviation.

[a] Excluding codes specific to exercise.

[b] Some manipulation was provided in a physical therapy setting.

skeletal pain in the context of a primary care quality improvement effort, 16 percent received physical therapy in a 12-month period in the treatment-as-usual group compared with 48 percent in the intervention group (Dobscha et al., 2009). These percentages are lower than what we found in our data for service members with chronic pain.

Chronic Pain Measure: Nonopioid Medication or Nonpharmacologic Treatment

The second measure we applied to assess chronic pain care considers expanded treatments for chronic pain and the use of either NPT or nonopioid medication in the 12 months after the index visit (Table 6.12).

Measure Rationale and Overview

Nonopioid medications and NPT are strongly recommended as first-line options for the treatment of chronic pain in the VA/DoD CPG for the management of low back pain, the VA/DoD CPG for nonsurgical management of knee and hip OA, and the VA/DoD CPG for the management of opioid therapy for chronic pain (VA and DoD, 2017c, 2014, 2017a). A recent study demonstrated opioids' lack of effectiveness relative to nonopioid medications in improving pain and function for patients with chronic back pain and hip and knee OA. It also found fewer adverse effects associated with nonopioid medication treatment (Krebs et al., 2018). These first-line options can also be important tools to minimize opioid use when opioids are prescribed. As mentioned earlier, a recent review of the evidence for NPT to treat chronic

TABLE 6.12
Quality Measure Assessing Nonopioid Medication or NPT for Chronic Pain

Measure Topic	Measure Statement	Numerator	Denominator
Nonopioid medication/ NPT	Patients with chronic pain who received nonopioid medication or NPT	Received NPT or nonopioid medication in the 12 months following the index visit	Patients with chronic pain

pain showed that some interventions improved function and pain for at least one month (Skelly et al., 2018, 2020). A similar review examined evidence for the effectiveness of nonopioid medications to treat chronic pain (McDonagh et al., 2020). We used that report as the basis for our identification of evidence-based nonopioid medications to treat the five conditions in our chronic pain definition. Thus, measure performance is based on the use of the specific recommended nonopioid medications for each pain condition (Table 6.13). For service members who met the criteria for more than one chronic pain condition (17.9 percent), acceptable nonopioid medication included any evidence-based medication for any qualifying chronic pain condition during the eligibility year and was, therefore, not limited to the condition of the index visit. Because we identified patients at an unknown time during their chronic pain care trajectory, we were unable to evaluate the order of receipt of NPT or nonopioid medication treatments relative to opioids. Therefore, our measure does not assess whether the treatment the patient received was consistent with stepped care. Acceptable NPTs were the same for this measure as for the previous measure.

TABLE 6.13
Recommended Nonopioid Medications, by Pain Condition

Condition	Medication
Chronic low back pain	NSAIDs, oral Duloxetine
Chronic neck pain	NSAIDs, oral
Knee OA	NSAIDs, oral NSAIDs, topical Duloxetine
Hip OA	NSAIDs, oral NSAIDs, topical Duloxetine
Fibromyalgia	Any SNRI Gabapentin Pregabalin

NOTE: SNRI = serotonin and norepinephrine reuptake inhibitor.

Measure Results

Most patients with chronic pain (93 percent) received either appropriate nonopioid medication or NPT during the observation period (Table 6.14). Performance was high even with the limitation that some acceptable treatments could not be observed in the administrative data, such as medications bought over the counter, some types of NPT (e.g., yoga), and treatments that were offered but refused.

Table 6.15 shows the frequencies of acceptable nonopioid treatment and NPT by chronic pain condition at the index visit. For the four conditions for which NSAIDs are recommended, most service members (65–74 percent) were dispensed oral NSAIDs. Topical NSAIDs were infrequently dispensed to those with OA (13–18 percent). Duloxetine was dispensed to only 5 percent of service members with chronic low back pain, 5 percent of those with hip OA, and 3 percent of those with knee OA. Half of service members with fibromyalgia at the index visit were dispensed some kind of SNRI, including duloxetine, which was the most common of these medications. Gabapentin and pregabalin were dispensed to 34 percent and 19 percent of service members with fibromyalgia, respectively. Most service members across all pain conditions (65–84 percent) received at least one visit for NPT.

Table 6.16 shows the combinations of NPT and nonopioid treatments received by those with chronic pain overall and by number of pain conditions. Seventy percent of those with two or more pain conditions received both nonopioid medication and NPT, compared with 54 percent of those with one condition. Across all pain conditions, fewer than 13 percent of service members were dispensed nonopioid medications without also receiving NPT. Those with more than one chronic pain condition were less likely to have received nonopioid medication without NPT (4 percent versus 14 percent for those with one condition, respectively).

TABLE 6.14

Measure Score for Nonopioid Medication or Nonpharmacologic Treatment for Chronic Pain, FYs 2018–2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Received nonopioid medication or NPT during the 12-month observation period	91,364	97,987	93.2

TABLE 6.15

Nonopioid Medication and NPT for Chronic Pain, by Condition, FYs 2018–2019

Nonopioid Medication/NPT	Total % (*n* = 97,987)	Chronic Low Back Pain % (*n* = 78,092)	Chronic Neck Pain % (*n* = 11,983)	Knee OA % (*n* = 6,282)	Hip OA % (*n* = 1,078)	Fibromyalgia % (*n* = 552)
Nonopioid medication						
NSAID, oral	68.5	68.7	65.1	72.6	73.9	—
NSAID, topical	12.4	—	—	17.7	13.3	—
Duloxetine	5.3	5.1	—	2.8	4.6	42.4
Any SNRI	7.3	—	—	—	—	49.6
Gabapentin	12.1	—	—	—	—	33.9
Pregabalin	1.6	—	—	—	—	19.0
NPT	80.8	81.7	84.4	64.7	72.5	72.6

TABLE 6.16
Nonopioid Medication and NPT for Chronic Pain, by Number of Conditions, FYs 2018–2019

Treatment	Total % (*n* = 97,987)	One Chronic Pain Condition % (*n* = 80,466)	Two or More Chronic Pain Conditions % (*n* = 17,521)
Nonopioid medication or NPT (quality measure)	93.2	92.1	98.6
NPT and no nonopioid medication	23.6	23.3	24.9
Nonopioid medication and no NPT	12.5	14.3	3.8
Both nonopioid medication and NPT	57.2	54.4	69.8

Use of nonopioid medication to treat service members with chronic pain compared favorably with findings from studies of other populations. In a study of veterans on LOT who were followed for six months, 46 percent were taking concurrent nonopioid medication, compared with 67 percent of service members in our study (Gaither et al., 2014). In another study of veterans with chronic musculoskeletal pain participating in a quality improvement effort over 12 months, use of NSAIDs was 39 percent in the care-as-usual group and 62 percent in the intervention group (Dobscha et al., 2009). This was comparable to the 69 percent and 65 percent of service members in our study with chronic low back pain and chronic neck pain, respectively.

Summary

In this chapter, we described aspects of care for service members with chronic pain and at least one of five conditions (defined by clusters of ICD-10 diagnosis codes): chronic low back pain, chronic neck pain, knee OA, hip OA, and fibromyalgia. We observed care in the 12 months following the first visit in the eligibility period for any of the chronic conditions. We described the demographic and service characteristics of this population, as well as the comorbid conditions, health care utilization, and characteristics of dispensed opioids over the 12-month observation period. We

also assessed MHS performance on two quality measures that assessed use of nonopioids and NPT. Our key findings were as follows:

- **There is a high prevalence of chronic low back pain among service members:** We identified nearly 100,000 service members with chronic pain in FY 2018; 84 percent of them had chronic low back pain, and 25 percent had chronic neck pain. Eighteen percent of those with chronic pain had two or more chronic conditions.
- **We found a high prevalence of comorbid BH conditions and sleep disorder symptoms:** Thirty-seven percent of service members with chronic pain had a BH diagnosis during the 12-month observation period. Among those with two or more chronic conditions, the prevalence was 46 percent. More than one-third (36 percent) were dispensed psychotropic medication. Sleep disorder symptoms were diagnosed in 29 percent of those with chronic pain and 40 percent of those with two or more conditions.
- **Riskier opioid prescribing was infrequent, but it was more common for those with two or more conditions:** One-third of service members with chronic pain were dispensed opioids during the 12-month observation period. Among those with two or more pain conditions, 9 percent had an average daily MME of 50 or more, and 3 percent received 15 or more consecutive days of opioids at a daily MME of 50 or more. Among those with two or more pain conditions, 3 percent were on LOT or advanced to LOT.
- **BH conditions were common among high utilizers with chronic pain:** High utilizers, defined the top quartile of health care utilization among service members with chronic pain, had a median number of 42 outpatient encounters, compared with 14 for non–high utilizers. High utilizers had a median of six BH specialty visits and 21 non-BH specialty visits (versus zero and five, respectively, for non–high utilizers). Yet less than one-third of high utilizers (30 percent) were seen in pain management clinics. High utilizers were much more likely to have a BH condition (70 percent) and to use psychotropic medication (70 percent) than non–high utilizers (25 percent and 31 percent, respectively).
- **Use of NPT was high:** Eighty-one percent of service members with chronic pain and 95 percent of those with two or more conditions had

at least one NPT visit. The most common NPTs received were physical/occupational therapy (75 percent), exercise (55 percent), and chiropractic care/manipulation (47 percent). Treatment with acupuncture was less frequent (7 percent). The median number of visits for any type of NPT during the 12-month observation period was five.

- **We also found high rates of use of either nonopioid medication or NPT:** Ninety-three percent of service members with chronic pain and 99 percent of those with two or more conditions received treatment with nonopioid medication or NPT. Among those with chronic low back pain, neck pain, knee or hip OA, 65–74 percent were dispensed oral NSAIDs. Half of service members with fibromyalgia were dispensed an SNRI.

CHAPTER SEVEN

Opioid Prescribing

In this chapter, we present the results of a set of six measures assessing opioid prescribing. The measures focus on prescribing patterns that minimize opioid risk and that allow providers to monitor the safety of individuals on LOT. The measures assess for opioid prescribing without concurrent benzodiazepines, opioids with lower-risk daily dosages, opioid treatment that does not progress to LOT, use of naloxone in LOT with higher-risk dosages, and follow-up and drug screening of those on LOT. Unlike in prior chapters, we do not focus on any specific population but, rather, on aspects of opioid prescribing and management across all service members who were dispensed opioids. The box below presents highlights from this chapter.

Opioid treatment for pain among active-duty service members declined substantially beginning in 2011 to an even larger degree than among the civilian population (Kazanis et al., 2018). It is uncertain what specific factors might have caused these shifts in opioid prescribing (Kazanis et al., 2018), but they coincided with numerous concerted policy efforts at the national and state levels to minimize opioid use, as well as interventions

Key Findings
Opioid Prescribing, FYs 2018–2019

- Prescribing practices that mitigated opioid risks were common in the MHS, including no concurrent dispensing of benzodiazepines, average lower-risk dosages of opioids, and infrequent progression to LOT.
- Service members on LOT were monitored through follow-up visits and urine drug testing most of the time, but there is room for improvement.
- Use of naloxone for higher-risk opioid dosages was low among service members on LOT.

by individual health systems to improve pain management and opioid prescribing safety (e.g., clinical decision support systems) (Anderson et al., 2015; Cardarelli et al., 2017; Dowell, Haegerich, and Chou, 2016; Office of the Secretary of Defense, 2019). For example, DHA established opioid prescribing guidelines and prescription drug monitoring programs to support ongoing training and feedback to providers on their prescribing practices (Potter et al., 2014).

Characteristics of Service Members Who Were Dispensed Opioids in FY 2019

As noted in Chapter Three, we assessed opioid prescribing in FY 2019 and, in some cases, FYs 2018–2019. Table 7.1 presents the demographic and service characteristics of service members who did not have a cancer diagnosis and were dispensed opioids in FY 2019. Of those service members who received opioids in FY 2019, 2.5 percent received an average daily dosage of 90 or more MME, and 0.7 percent met the criteria for LOT (i.e., 90 or more days of opioids with maximum of 31-day gaps). Service members on LOT were more likely to be male, white, and older than those who were not on LOT. More than two-thirds (69 percent) of those on LOT met the criteria for chronic pain in the prior year (FY 2018), and 78 percent did so in FY 2019. A higher proportion of those on LOT (29 percent) received the majority or all their care from private-sector providers; among service members with a high average daily MME and the overall population of service members dispensed opioids, this share was 11 percent and 9 percent, respectively.

A high percentage of service members on LOT had a BH diagnosis (66 percent), received psychotropic medication (81 percent), and had a sleep disorder or related symptoms (47 percent) in FY 2019 (Table 7.2). Although 78 percent of those on LOT met the criteria for chronic pain, just under a quarter (22 percent) were seen in a pain management clinic (direct care only). This finding must be taken in the context that 29 percent of those on LOT received all or most of their care in the private sector.

TABLE 7.1

Demographic and Service Characteristics of Service Members Who Were Dispensed Opioids, by Average Daily MME ≥90 and LOT, FY 2019

Characteristic	Dispensed an Opioid % (*n* = 183,606)	Average Daily MME ≥90 % (*n* = 4,597)	On LOT % (*n* = 1,355)
Gender			
Female	20.3	17.3	13.9
Male	79.7	82.7	86.1
Age			
18–24	41.8	31.9	5.8
25–34	34.8	39.2	32.0
35–44	19.5	24.2	50.6
45–64	3.9	4.8	11.7
Race/ethnicity			
American Indian/Alaskan Native	1.0	1.4	2.0
Asian/Pacific Islander	5.4	4.1	4.0
Black, non-Hispanic	18.4	17.3	10.0
White, non-Hispanic	55.0	59.2	68.7
Hispanic	17.0	15.0	12.1
Multiracial/multiethnic	2.1	2.2	3.0
Unknown	1.1	0.7	NR
Marital status			
Married	56.1	62.6	82.5
Never married	38.1	31.2	7.7
Divorced, separated, widowed	5.7	6.2	9.8
Unknown	< 0.1	—	—
Service branch			
Army	41.8	38.7	42.8
Navy	20.1	20.3	20.8
Air Force	23.0	24.1	22.8
Marine Corps	12.8	13.9	10.1
Coast Guard	2.4	3.0	3.5

Table 7.1—Continued

Characteristic	Dispensed an Opioid % (*n* = 183,606)	Average Daily MME ≥90 % (*n* = 4,597)	On LOT % (*n* = 1,355)
Paygrade/rank			
C-1, E-1–E-4	47.1	36.9	11.8
E-5–E-9	39.4	46.4	70.2
O-1–O-3	6.9	7.9	5.5
O-4–O-8, warrant officer	6.6	8.8	12.5
Deployment experience			
Deployed in FY 2018	4.6	5.8	3.7
Met criteria for chronic pain in FY 2018	12.4	15.6	69.4
Met criteria for chronic pain in FY 2019	18.2	22.4	78.4
Source of care[a]			
All direct care	50.2	45.0	9.1
More than 50% from direct care	41.1	44.4	62.4
More than 50% from private-sector care	6.2	7.9	25.1
All private-sector care	2.5	2.7	3.4

NOTE: NR = not reportable because *n* was less than 10.

[a] Source of inpatient and outpatient care (excluding pharmacy data) in FY 2019.

Opioid Prescribing Measure: Opioids Without Concurrent Benzodiazepines

The first measure in this set assessed the percentage of service members who were dispensed opioids without concurrent days of benzodiazepine treatment in FY 2019 (Table 7.3). We defined concurrent opioid and benzodiazepine treatment as at least seven days of consecutive overlap, thereby allowing the measure to be satisfied in cases of short-term benzodiazepine use, which may be associated with acute events or procedures (Gaither et al., 2014). The threshold of seven consecutive days of concomitant use has been used previously (Hwang et al., 2016).

TABLE 7.2

Comorbidity, Psychotropic Medication, and Pain Management Clinic Use Among Service Members Who Were Dispensed Opioids, FY 2019

Comorbidity/Psychotropic Medication/Pain Clinic in FY 2019	Dispensed an Opioid % (*n* = 183,606)	Average Daily MME ≥90 % (*n* = 4,597)	On LOT % (*n* = 1,355)
Any BH diagnosis[a]	25.8	27.5	66.1
Sleep disorder/symptoms	15.9	19.6	47.0
Any psychotropic medication[b]	32.3	35.3	81.0
Pain management clinic[c]	4.3	4.9	22.1

[a] Includes any ICD-10 F-code and excludes sleep disorders.

[b] Includes antidepressants, antipsychotics, hypnotics/sedatives/anxiolytics, stimulants, mood stabilizers/anticonvulsants, guanfacine, and clonidine.

[c] Direct care only.

TABLE 7.3

Quality Measure Assessing Opioids Without Concurrent Benzodiazepines

Measure Topic	Measure Statement	Numerator	Denominator
Opioids without concurrent benzodiazepines	Patients who received opioids who did not receive concurrent benzodiazepines	No benzodiazepine overlap with opioids of ≥7 consecutive days	Patients who received ≥7 days of supply of opioids

Measure Rationale and Overview

Concurrent use of opioids and benzodiazepines has been associated with an increased risk of overdose and death (Park et al., 2015; Sun et al., 2017). Despite these potential harms, this practice has been observed in a number of settings. In an analysis of Oregon Medicaid prescription data from 2014, for example, Abraham and colleagues found that more than one-third (37 percent) of prescriptions filled within 12 months of a pain diagnosis involved opioid and benzodiazepine overlap of seven or more days (Abraham et al., 2020). Since then, concurrent opioid and benzodiazepine prescribing has been increasingly discouraged. In 2016, the U.S. Food and Drug Administration (FDA) issued the strongest black-box warning regarding

the concurrent use of opioids and benzodiazepines, pointing to the risk of central nervous system depression, serious side effects, or death (Abraham et al., 2020; FDA, 2017). The VA/DoD and the CDC CPGs for opioid therapy for chronic pain strongly recommend against the concurrent use of benzodiazepines and opioids (Dowell, Haegerich, and Chou, 2016; VA and DoD, 2017b).

Measure Results

More than 90 percent of service members with at least a seven-day supply of dispensed opioids had no concurrent use of benzodiazepines for seven consecutive days or longer (Table 7.4). Of those who received recommended care, 91 percent were dispensed no benzodiazepines at all during the 12-month observation period, 4.9 percent were dispensed benzodiazepines at some point during the observation period but had no days of concurrent opioid use, and 4.1 percent were dispensed benzodiazepines and opioids concurrently but for no more than six consecutive days.

Nearly 7 percent of service members did not receive recommended care on this measure—that is, they received at least seven consecutive concurrent days of benzodiazepines and opioids. Of these service members, 29.5 percent had seven to 13 consecutive concurrent days, 13.9 percent had 14–29 days, more than half (53.8 percent) had 30 days, and 2.8 percent had an overlap of more than 30 days. For those with any concurrent days (including fewer than seven concurrent days), the median days of supply of benzodiazepines during the observation year was ten. Because our data did not include provider identifiers, we were not able to determine whether both opioids and benzodiazepines were prescribed by the same provider. However, 86.9 percent of those with an overlap of at least seven consecutive days had opioids and benzodiazepines dispensed on the same day.

TABLE 7.4
Measure Score for Opioids Without Concurrent Benzodiazepines, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Opioids without concurrent benzodiazepines	41,183	44,244	93.1

The rate of concurrent days of opioids and benzodiazepines in our active-component population was low relative to estimates from other populations. An analysis of 2014 prescription dispensing data from Medicare, Medicaid, and commercial plans revealed that 9.6 percent of all opioid recipients were prescribed concurrent benzodiazepines for at least seven consecutive days (Hwang et al., 2016). We acknowledge several limitations in comparing these estimates. As noted earlier, changes in opioid prescribing practices in recent years make it difficult to compare our results with those from studies that relied on older data. Also, the measure denominators differed: Our measure denominator required seven or more days of opioids, whereas the referenced study included individuals who were dispensed opioids for any period of time.

Opioid Prescribing Measure: Lower-Risk Average Daily Dosage

In this section, we present results for the second measure in the opioid prescribing set, which assessed opioid dispensing at lower-risk dosages. Specifically, we assessed whether the average daily dosage of dispensed opioids during the 12-month observation period was less than 90 MME (Table 7.5). We computed the average daily MME as the daily MME dose summed across all opioid days, divided by the total number of opioid days. "Gap" days (days with no opioid supply) were not included.

Measure Rationale and Overview

There is evidence that higher dosages of opioids are associated with an increased risk of opioid-related harms, including both nonfatal and fatal overdose. A case-cohort study of U.S. veterans found that overdose death was positively associated with the maximum prescribed daily dose of opioid medication (Bohnert et al., 2011). Higher doses also do not necessarily improve pain symptoms. A recent study found small improvements in self-reported pain among patients who had escalating dosages but no statistically significant differences in numeric ratings of usual level of pain or functional disability measures between patients with stable versus escalating dosages (Naliboff et al., 2011).

TABLE 7.5
Quality Measure Assessing Lower-Risk Average Daily Dosage of Dispensed Opioids

Measure Topic	Measure Statement	Numerator	Denominator
Lower-risk average daily dosage	Patients who received opioids with an average daily dosage <90 MME	Average daily dosage for all opioids is <90 MME in the 12-month observation period	Patients who received opioids

Although the threshold for defining a high daily dosage varies, evidence suggests that patients prescribed daily dosages more than 100 MME are at several times greater risk of overdose (Bohnert et al., 2016; Dasgupta et al., 2016; Turner and Liang, 2015; Zedler et al., 2014). Maintaining a daily dosage below 100 MME is therefore considered a means to significantly reduce overdose deaths with negative effects for proportionately few patients (Bohnert et al., 2016). Both the VA/DoD and CDC GPGs strongly recommend against daily dosages above 90 MME and acknowledge the increased risk and need for monitoring associated with daily dosages of 50 MME (Dowell, Haegerich, and Chou, 2016; VA and DoD, 2017b).

Measure Results

The average daily MME for dispensed opioids was less than 90 MME for 98 percent of service members who received any opioids in FY 2019 (Table 7.6). We also computed this measure based on an average daily dosage of less than 50 MME, and the measure score was 80.5 percent.

Among the 4,577 service members who did not receive recommended care (i.e., who received an average daily MME of 90 or higher), the average dosage was 90 MME for about a third (33.9 percent), 91–100 MME for

TABLE 7.6
Measure Score for Lower-Risk Average Daily Dosage of Opioids, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Average daily dosage of opioids is < 90 MME	177,251	181,828	97.5

29.8 percent, 101–150 MME for 34.1 percent, and more than 150 MME for 2.2 percent. In addition to the quality measure for average daily MME, we assessed variations in opioid dispensing episodes, as well as number of days that the daily dosage exceeded 90 MME (see Appendix D).

Because average daily MME might not identify all cases of risky prescribing, we also examined the percentage of service members who were dispensed opioids and received 15 or more *consecutive* days of opioids, along with the daily MME of those opioids. Our results indicated that 10.8 percent of those who were dispensed opioids received 15 or more consecutive days, and 8.6 percent received 30 or more consecutive days. Among those who received 15 or more consecutive days of opioids (n = 19,585), 3 percent received a daily dosage of 50 MME or more, and 1 percent received 90 MME or more. When we looked at the service members who received recommended care according to our quality measure (average daily MME below 90), we found that 0.2 percent of those cases had 15 or more consecutive days with a daily MME of 50 or higher, and 0.1 percent had 15 or more consecutive days with a daily MME of 90 or higher (a total of 235 individuals).

In a study of inappropriate prescribing using 2014 Oregon Medicaid claims data, Abraham and colleagues found that 23 percent of opioid prescriptions filled within 12 months of a pain diagnosis had a daily dosage of 100 MME or more (Abraham et al., 2020). In our study, 3.7 percent of opioid prescribing events had a daily dosage of 90 MME or higher. However, Abraham and colleagues used older data (i.e., 2014 versus FY 2019 in our study) and required a link to a pain diagnosis, which may have selected for patients with more-severe pain. In contrast, our analysis included all opioids dispensed regardless of the presence of a pain diagnosis. Additionally, the Medicaid population may have significantly differed from our study population of active-component service members.

Opioid Prescribing Measure: No Advancement to LOT

The third measure in the opioid prescribing measure set focused on opioid-naïve service members who received opioids and the proportion that did not receive LOT during the 12-month observation period (Table 7.7). There is

TABLE 7.7
Quality Measure Assessing for No Advancement to LOT After Initiation of Opioids

Measure Topic	Measure Statement	Numerator	Denominator
No advancement to LOT	Opioid-naïve patients who initiated opioids and did not advance to LOT	Did not advance to LOT during the 12-month observation period	Opioid-naïve patients who were dispensed opioids

general consensus that LOT is not desirable, but definitions of LOT vary. A recent systematic review of studies using LOT as an outcome and identifying predictors of LOT extracted 41 unique definitions of LOT, demonstrating the lack of a gold-standard definition. Most definitions specify cumulative duration of opioid use (i.e., days of supply) as a criterion but do not always account for consistency of use (e.g., maximal gaps between a supply's end date and the next dispensing date) (Karmali et al., 2020). We defined LOT for our measures as at least 90 days of opioids with no more than a 31-day gap between medication fills. This definition accounts for cumulative use within a defined time frame and has been used in other studies of chronic pain and opioid use in military populations (Edlund et al., 2010; Gaither et al., 2014; Nelson et al., 2018).

Measure Rationale and Overview

LOT carries multiple risks, including an increased risk of nonmedical use of prescription opioids, SUD, overdose, suicide behaviors, and all-cause mortality (Barry et al., 2018; Dunn et al., 2010; Krashin, Murinova, and Sullivan, 2016; Ray et al., 2016). Therefore, the VA/DoD CPG for opioid therapy for chronic pain strongly discourages the initiation of LOT for chronic pain. If opioids are used after failed trials of other therapies, the CPG recommends only a short duration of use (VA and DoD, 2017b). Risk factors for advancing to LOT include a higher number of opioid fills, a higher number of days of supply, higher daily dosage (particularly during the initiation month), and initiating opioids with a long-acting formulation or tramadol (Deyo et al., 2017; Shah, Hayes, and Martin, 2017).

Measure Results

Less than 1 percent of opioid-naïve service members who were dispensed opioids advanced to LOT in the subsequent 12 months (Table 7.8). We computed variations on this measure for those who were not opioid-naïve and for those who were dispensed a minimum initial seven- or 14-day supply, and we found similar performance results: Among those who were not opioid-naïve, 99.2 percent did not advance to LOT. Specifically, 98.4 percent of those with a minimum seven-day supply and 97.3 percent of those with a minimum 14-day supply did not advance to LOT.

Prior research has found that characteristics of initial opioid prescribing episodes can influence the likelihood of advancing to LOT. In Table 7.9, we show the characteristics of the first opioids dispensed and all opioids dispensed to opioid-naïve service members during our observation period. Looking at the first opioids dispensed, we found that service members who advanced to LOT were more likely to have been dispensed a long-acting opioid and a larger supply (in days) than those who did not advance to LOT. However, daily MME was not higher among those who advanced to LOT compared with those who did not. We observed similar patterns when examining the relationship between advancing to LOT and characteristics of all dispensed opioids. In addition, concurrent opioid-benzodiazepine prescribing was more common among service members who advanced to LOT (14 percent) than among those who did not (2 percent).

In a published analysis of pharmacy data from the first quarter of 2010, Fulton-Kehoe and colleagues found that, among new opioid users, 2–3 percent from Kaiser Permanente Washington and 5 percent from Washington Medicaid transitioned to chronic opioid use, defined as 60 or more days of

TABLE 7.8
Measure Score for No Advancement to LOT After Dispensed Opioids, FYs 2018–2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Opioid-naïve who were dispensed opioids and did not advance to LOT during the 12-month observation period	198,763	199,648	99.6

NOTE: Service members were opioid-naïve at the time of first dispensed opioids.

TABLE 7.9

Characteristics of Opioids Dispensed to Opioid-Naïve Service Members, by Advancement to LOT, FYs 2018–2019

Characteristics	Total % (*n* = 199,648)	No Advancement to LOT % (*n* = 198,763)	Advanced to LOT % (*n* = 885)
First dispensed opioids			
Did not include a long-acting opioid	99.8	99.8	98.3
Days supplied			
1–2	32.9	33.0	11.3
3–5	47.5	47.6	27.5
6–14	11.8	11.7	20.2
15–29	1.6	1.6	11.5
≥ 30	6.2	6.1	29.5
Daily MME			
≤ 20	33.0	32.9	51.6
20.1–50.0	50.8	50.9	35.5
≥ 50.1	15.5	15.5	11.0
All dispensed opioids			
Did not include a long-acting opioid	99.1	99.1	84.4
Average daily MME < 50	79.3	79.2	89.5
Average daily MME < 90	97.0	97.0	97.6
No concurrent benzodiazepines ≥ 7 consecutive days	98.3	98.3	86.3

NOTES: The average daily MME was computed as the daily MME dose summed across all opioid days, divided by the total number of opioid days. "Gap" days (days with no opioid supply) were not included.

supply in the following quarter (Fulton-Kehoe et al., 2020). Another study of progression to LOT in 2012–2013 revealed that 5 percent of opioid-naïve patients progressed to LOT, which was defined as at least six opioid fills in 12 months (Deyo et al., 2017). We identified even lower rates of progression to LOT but must be cautious in directly comparing our findings to prior

studies, given differences in our definition of LOT, observation periods, and the age of the data used in these studies.

Opioid Prescribing Measure: Naloxone in LOT with Higher-Risk Daily Dosage

The fourth measure in this set assesses the dispensing of naloxone within three months for those on LOT with a higher-risk daily dosage of opioids (Table 7.10). We focused on service members who had been taking opioids for at least 90 days (i.e., met criteria for LOT) and were dispensed a daily dosage of more than 50 MME in FY 2019. We excluded from the denominator service members who had received naloxone in the prior two years and therefore would not need to have it dispensed again. To satisfy the measure, naloxone could have been dispensed at any time within three months of the first dispense date of opioids with a daily dosage of 50 MME or higher during the eligibility period. Although co-prescribing of naloxone with the higher-risk dosage of opioids is a goal for safety reasons, we defined a more lenient time window of 90 days after opioid dispensing for naloxone to accommodate for potential administrative or other delays.

Measure Rationale and Overview

The VA Opioid Overdose Education and Naloxone Distribution Program focuses on education and distribution of naloxone to reduce the number of opioid-related overdose deaths. It identifies risk factors for overdose that, if present, would warrant naloxone co-prescribing; among these is an opioid

TABLE 7.10
Quality Measure Assessing Dispensing of Naloxone in LOT with Higher-Risk Opioid Daily Dosage

Measure Topic	Measure Statement	Numerator	Denominator
Naloxone in LOT with higher-risk daily dosage	Patients on LOT who receive naloxone within 3 months of receiving a daily opioid dosage ≥ 50 MME	Dispensed naloxone within 3 months	Patients on LOT who were dispensed opioids with a daily dosage ≥50 MME

daily dosage of 50 MME or higher (VA Pharmacy Benefits Management Services, 2016). The CDC CPG on opioids for the treatment of chronic pain makes a similar recommendation, as does DHHS (Dowell, Haegerich, and Chou, 2016; DHHS, 2018). A recent multidisciplinary consensus panel that reviewed the CDC CPG for opioid prescribing cited the underutilization of naloxone as one of the challenges to implementing the recommendations (Kroenke et al., 2019). In addition, in 2015, DHHS identified expanded prescribing and distribution of naloxone as one of three priority areas in its effort to combat opioid abuse (DHHS, 2015).

Measure Results

Only 8 percent of service members on LOT who were dispensed opioids at a daily dosage of 50 MME or higher were dispensed naloxone within three months (Table 7.11). A total of 347 service members met the criteria for inclusion in the measure denominator after the exclusion of 85 service members (20 percent of 432) who had received naloxone in the prior two years. These results do not account for naloxone that may have been obtained outside the MHS, such as through community distribution programs.

Research in other settings has found similarly low rates of naloxone co-prescribing for patients in LOT. Stein and colleagues analyzed Medicare, Medicaid, and commercial pharmacy data from 2017–2018 to examine naloxone co-prescribing for patients beginning a new episode of LOT at any dosage. They found that 2.3 percent of all LOT episodes included dispensed naloxone during the episode or in the seven days prior to the start of the episode. The rate for co-prescribing in commercial plans was 2 percent (Stein et al., 2021). Jones and colleagues analyzed 2017 Medicare Part D data and found that 0.7 percent of opioid dispensing events with a daily dosage of

TABLE 7.11

Measure Score for Dispensing Naloxone in LOT with Higher-Risk Daily Dosage of 50 MME or More, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
For those on LOT, naloxone dispensed within 3 months of receiving opioids at a daily dosage ≥ 50 MME	28	347	8.1

50 MME or higher were associated with naloxone dispensing within seven days (C. Jones et al., 2019). In another study using 2018 retail pharmacy Medicare Part D data, naloxone was dispensed with only 1.5 percent of opioids fills with daily dosage 50 MME or higher (Guy et al., 2019). We also examined naloxone co-prescribing across all opioid dispensing events in FY 2019 with a daily dosage of 50 MME or higher—not only for service members on LOT—and found the rate to be 2 percent. Although all these studies used different criteria, making comparisons difficult, these results and our own findings suggest that there is room for improvement in naloxone co-prescribing with opioids.

Opioid Prescribing Measure: Follow-Up Visit in LOT

In this section, we present results for the fifth measure in this set. This measure examines whether service members on LOT received follow-up E&M visits at least every 90 days (Table 7.12). A service member on LOT could be eligible for up to seven follow-up visits, depending on the duration of LOT. Recommended care for these measures required no gaps over the entire LOT follow-up period.

Measure Rationale and Overview

As noted earlier, LOT confers a significant risk of overdose. Regular follow-up visits with patients on LOT provide an opportunity for providers to evaluate continued treatment efficacy, to reevaluate the dosage, and assess for side effects, BH issues, and risk of overdose and suicidality. Both the

TABLE 7.12
Quality Measure Assessing Follow-Up Visit for Those on LOT Within 90 Days

Measure Topic	Measure Statement	Numerator	Denominator
Follow-up visit in LOT	Patients on LOT with a follow-up visit at least every 90 days	Follow-up E&M visit at least every 90 days while on LOT	Patients on LOT who continue on LOT for at least 90 days

VA/DoD and CDC CPGs recommend evaluating the benefits of continued opioid therapy and the risk of opioid-related adverse events at least every three months (Dowell, Haegerich, and Chou, 2016; VA and DoD, 2017b).

Measure Results

More than three-quarters (79 percent) of service members on LOT in our data received a follow-up E&M visit with a frequency of at least every 90 days (Table 7.13).

As might be expected, measure performance declined as the number of eligible follow-up days increased: Among those with the shortest duration of LOT, 88 percent satisfied the measure, compared with 57 percent of those with the longest duration (Table 7.14).

For those 410 service members who did not receive recommended care (i.e., who missed one or more timely visits), 19.0 percent had no follow-up visits. When we looked at the number of follow-up periods with visit

TABLE 7.13
Measure Score for Follow-Up Visit for Those on LOT Within 90 Days, FYs 2018–2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Patients on LOT with follow-up visit at least every 90 days	1,574	1,984	79.3

TABLE 7.14
Timely Follow-Up for LOT, by Duration of LOT, FYs 2018–2019

Days of LOT Requiring Follow-Up Visit	Received All Follow-Up Visits (*n* = 1,574)	
	n	%
90–179	669	87.8
180–269	362	84.2
270–359	199	75.7
360–549	207	71.4
540–719	137	57.4

gaps (no visit or only a visit more than 90 days later), we found that most (65.6 percent) had just one gap, 18.8 percent had two gaps, and 15.6 percent had more than two gaps.

Opioid Prescribing Measure: Urine Drug Testing in LOT

The last measure in this set focused on patients who were on LOT during the observation period (FY 2019) and assessed whether at least one urine drug screen was administered during the same year (Table 7.15).

Measure Rationale and Overview

Urine drug testing for patients on LOT can be useful for monitoring adherence to therapy and for detecting the presence of other illicit or non-prescribed controlled substances that could point to a need for increased surveillance or changes to the current opioid treatment. A test can also verify the presence of the prescribed opioid medication at levels that are consistent with the prescribed dose and frequency to detect potentially aberrant behavior, such as diversion. The CDC CPG for opioid therapy for chronic pain recommends urine drug testing at least annually (Dowell, Haegerich, and Chou, 2016).

Measure Results

Seventy percent of service members who met the definition of LOT (i.e., 90 or more days of opioids with no gaps greater than 31 days) in FY 2019 had at least one urine drug test during that time (Table 7.16). We examined the

TABLE 7.15
Quality Measure Assessing Urine Drug Screen for Those on LOT

Measure Topic	Measure Statement	Numerator	Denominator
Urine drug testing in LOT	Patients on LOT who received urine drug testing	Received urine drug testing at least once during the 12-month observation period	Patients on LOT

TABLE 7.16
Measure Score for Urine Drug Test for Those on LOT, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
At least annual urine drug test for those on LOT	289	416	69.5

frequency of urine tests during FY 2019 and found that 18.0 percent of those on LOT had one test, 17.1 percent had two tests, 24.8 percent had three to five tests, and 9.6 percent had six or more tests.

The rate of urine drug testing in the MHS is comparable to other published rates. Wong and colleagues implemented a quality improvement program in a suburban, university-affiliated internal medicine resident clinic in 2015–2017 that targeted care for chronic pain and opioid management. A goal of that program was to maximize annual drug screening for those on LOT (defined as more than 90 days of opioids). Annual drug screening rates were 53 percent pre-intervention and 81 percent post-intervention (Wong et al., 2019). In 2014, the VA Office of Inspector General assessed the care and monitoring of veterans taking outpatient opioids in FY 2012. It found that, among veterans on LOT (defined as more than 90 days of opioids), 41 percent had an annual urine drug test (VA Office of the Inspector General, 2014). The 70-percent of testing for those on LOT in the MHS suggests that there is an opportunity for further improvement in performance.

Summary

In this chapter, we presented the results of a set of six quality measures assessing aspects of opioid prescribing and the management of service members on LOT. The prescribing measures focused on avoiding aspects of risky opioid prescribing, such as the concurrent use of opioids and benzodiazepines, and opioids dispensed at higher-risk average daily dosages (90 MME or higher). Another measure assessed the proportion of opioid-naïve service members who received opioids and did not progress to LOT (i.e., 90 or more days of opioids with gaps of less than 31 days) in the subsequent 12 months. Three other measures focused on safety and monitoring

of those on LOT: timely dispensing of naloxone for those on LOT who are dispensed a daily dosage 50 MME or more, monitoring the progress and risk status of service members on LOT through regular follow-up visits, and annual urine drug testing. Our key findings are as follows:

- **A large proportion of service members on LOT received all or mostly private-sector care and had BH diagnoses:** Of service members receiving opioids in FY 2019, 2.5 percent received an average daily dosage of 90 MME or more, and 0.7 percent met criteria for LOT. Of those on LOT, 29 percent received the majority or all their care from private-sector providers compared with service members with an average daily MME of 90 or higher (11 percent) and all service members who were dispensed opioids (9 percent). A high percentage of service members on LOT had a BH diagnosis (66 percent), received psychotropic medication (81 percent), had a sleep disorder or related symptoms (47 percent), and met criteria for chronic pain (78 percent). Just under a quarter (22 percent) were seen in a pain management clinic (direct care only).
- **Concurrent use of opioids and benzodiazepines was rare:** Ninety-three percent of service members who were dispensed at least seven days of opioids had no concurrent use of benzodiazepines that exceeded seven consecutive days. Of the 7 percent with concurrent use, 29.5 percent had seven to 13 consecutive concurrent days, 13.9 percent had 14–29 days, 53.8 percent had 30 days, and 2.8 percent had an overlap of more than 30 days. Because our data did not include provider identifiers, we were not able to identify same-provider prescribing. However, it is noteworthy that 86.9 percent of those with an overlap of at least seven consecutive days had opioids and benzodiazepines dispensed on the same day.
- **When opioids were dispensed, it was typically at a lower-risk average daily dosage:** Ninety-eight percent of service members who were dispensed opioids received an average daily dosage of less than 90 MME, and, for 81 percent, the average was less than 50 MME. Among all service members who received 15 or more consecutive days of opioids, the total daily MME was 50 or more for 3 percent and 90 or more for 1 percent.

- **It was rare for opioid-naïve service members to advance to LOT:** Less than 1 percent of opioid-naïve service members who were dispensed opioids progressed to LOT within 12 months. Service members who advanced to LOT were more likely to have been dispensed a long-acting opioid and a larger supply of days. However, the daily MME dispensed was not higher among those who advanced to LOT compared with those who did not. These findings persisted when we examined advancement to LOT and the characteristics of all dispensed opioids. In addition, concurrent opioid-benzodiazepine prescribing was more common among those who advanced to LOT (4 percent) than among those who did not (2 percent).
- **Few service members on LOT were dispensed naloxone with higher-risk daily opioid dosages:** Of the service members on LOT who were dispensed opioids at a daily dosage of 50 MME or higher, only 8 percent were dispensed naloxone within three months. Although it is possible that some service members acquired naloxone through sources other than the MHS, the low performance on this measure suggests an area for quality improvement.
- **Most service members on LOT received regular follow-up visits:** The VA/DoD CPG for opioid therapy for chronic pain suggests that patients on opioids should be regularly assessed for their risk of adverse events at least every three months (VA and DoD, 2017b). Our quality measure assessed whether service members on LOT had an E&M visit at least every three months, and 79 percent received this recommended care. Not surprisingly, measure scores were lower as time on LOT increased. Of the service members who did not receive all recommended visits, 19 percent received no follow-up visits at all. Although performance was good in the MHS, there is room for further improvement.
- **Most service members on LOT received annual urine drug testing:** Seventy percent of service members on LOT in FY 2019 received at least one urine drug test that same year. A quarter of those who received testing had three to five tests, and 10 percent had six or more tests. However, 30 percent of those on LOT did not receive testing, highlighting a potential area for quality improvement.

CHAPTER EIGHT

Medication for Opioid Use Disorder

Although treatment of OUD was not the focus of this study, we note the risk of OUD among patients who receive opioid medication. A diagnosis of OUD is associated with increased mortality, and management of OUD is a significant part of pain management, particularly for chronic pain (Hser et al., 2017; Shah, Hayes, and Martin, 2017). Therefore, we included medication treatment of OUD in this pain care measure set. A recent AHRQ report examined existing models of care for OUD treatment with medication in primary care settings and found that a core component of success was a coordinated effort to address all issues related to OUD, including psychological, medical, and primary care needs (Chou, Korthuis, et al., 2016). Therefore, medication for OUD is just one of the treatment modalities that may be used to address the complex treatment needs of patients with this condition. The box below highlights key findings presented in this chapter.

We identified service members with an OUD diagnosis from our base population with ICD-10 codes for conditions related to pain, receipt of dispensed opioids, or receipt of any of the dental or ambulatory procedures in our study. Therefore, the sample did not include all active-component service members with OUD diagnoses in FY 2019. We also note that these

Key Findings
Medication for Opioid Use Disorder

- Less than a quarter of service members diagnosed with OUD in our data received medication for that condition.
- Few received OUD medications that are strongly recommended (i.e., buprenorphine, injectable naltrexone).

analyses focused on a population of service members who received an OUD diagnosis from the MHS, which is also a subset of service members who have OUD; it is possible that some service members with OUD had not have been detected and diagnosed by an MHS provider.

Characteristics of Service Members with Opioid Use Disorder

We identified 554 service members with a diagnosis of OUD in FY 2019. Most of these service members were male (90 percent), about three-quarters (74 percent) were under 35 years old, and more than two thirds (70 percent) were white (Table 8.1). More than one-third (35 percent) met the criteria in FY 2018 for at least one of the five chronic pain conditions addressed in this report. Eighty-one percent received all or most of their care from MTFs.

TABLE 8.1
Demographic and Service Characteristics of Service Members with OUD, FY 2019

Characteristic	% (*n* = 554)
Gender	
Female	9.9
Male	90.1
Age	
18–24	31.4
25–34	43.0
35–44	22.6
45–64	3.1
Race/ethnicity	
American Indian/Alaskan Native	NR
Asian/Pacific Islander	2.2
Black, non-Hispanic	12.8
White, non-Hispanic	69.9
Hispanic	12.1

Table 8.1—Continued

Characteristic	% (*n* = 554)
Multiracial/multiethnic	NR
Unknown	NR
Marital status	
Married	60.8
Never married	32.7
Divorced, separated, widowed	6.5
Service branch	
Army	58.3
Navy	16.2
Air Force	17.3
Marine Corps	6.3
Coast Guard	NR
Paygrade/rank	
C-1, E-1–E-4	48.0
E-5–E-9	44.9
O-1–O-3	3.2
O-4–O-8, warrant officer	3.8
Deployment experience	
Deployed in FY 2018	6.7
Met criteria for chronic pain in FY 2018	34.5
Source of care[a]	
All direct care	17.9
More than 50% from direct care	63.0
More than 50% from private-sector care	17.0
All private-sector care	2.2

NOTE: NR = not reportable because n was less than 10.

[a] Source of inpatient and outpatient care (excluding pharmacy data) in FY 2019.

Opioid Use Disorder Measure: Medication for OUD

We applied one quality measure addressing the treatment of patients with an OUD diagnosis in FY 2019 that assessed for the receipt of approved medication for OUD during the same year (Table 8.2). The measure is NQF-endorsed and is a first-year measure in the HEDIS 2020 measure set (National Committee for Quality Assurance, 2020; NQF, various dates). Approved medications are buprenorphine, oral naltrexone, long-acting injectable naltrexone, and methadone. We recognize that the FDA does not currently include oral naltrexone on its list of approved treatments for OUD—only the injectable formulation (FDA, 2019). However, we present this measure as indicated in NQF documentation (NQF, various dates).

Measure Rationale and Overview

In 2015, 63 percent of overdose deaths in the United States were due to opioid use (Rudd et al., 2016). That same year, DHHS noted medication for OUD as one of three priority areas to combat opioid abuse, with the other two being improved opioid prescribing practices and expanded use of naloxone (DHHS, 2015). An examination of mortality data linked to electronic health records in a large university health care system revealed high morbidity and mortality among patients with OUD (Hser et al., 2017). The VA/DoD CPG for the management of SUDs strongly recommends offering medication for OUD—buprenorphine/naloxone, extended-release injectable naltrexone, or methadone—along with a weaker recommendation for counseling in SUD treatment settings. The guideline states that there is insufficient evidence to recommend for or against oral naltrexone (VA and DoD, 2015). Medication is also part of a consensus guideline for treatment of OUD by the American

TABLE 8.2
Quality Measure Assessing Medication for OUD

Measure Topic	Measure Statement	Numerator	Denominator
Medication for OUD	Patients with OUD who received medication for OUD	Received approved medication for OUD during the 12-month observation period	Patients with an OUD diagnosis of opioid abuse, dependence, or remission

Society of Addiction Medicine, but that guideline suggests reserving oral naltrexone to limited cases in which patient motivation is high and there is close adherence supervision (American Society of Addiction Medicine, 2020).

Measure Results

Less than a quarter (22 percent) of those diagnosed with OUD in FY 2019 received any recommended medication during the same year (Table 8.3). When we limited the denominator to service members with OUD and at least one visit associated with a chronic pain diagnosis (n = 332), the measure score was 21.1 percent.

Of the 123 service members who were treated with medication, 35.8 percent received buprenorphine, 66.7 percent received oral naltrexone, and 12.2 percent received injectable naltrexone.[1] These medication categories were not mutually exclusive. As noted earlier, this NQF-endorsed measure includes oral naltrexone as an acceptable medication option, yet this medication is not currently FDA-approved, and it is not a strongly recommended medication for OUD. Thus, the score for this measure—excluding oral naltrexone from recommended treatment—was 10.3 percent, suggesting that few service members with OUD receive strongly recommended medication treatment.

We also examined the percentage of service members with acute low back pain and chronic pain (our quality measure denominators) who had any SUD or OUD during the three-month (acute low back pain) and

TABLE 8.3
Measure Score for Medication for OUD, FY 2019

Recommended Care	Numerator	Denominator	Measure Score (%)
Received recommended medication for OUD during the 12-month observation period	123	554	22.2

[1] Given that we were not able to distinguish dispensed methadone for OUD from chronic pain treatment, we do not report a separate score for methadone treatment. We also excluded one case treated only with methadone from the measure numerator and denominator.

12-month (chronic pain) observation periods. Of those with acute low back pain, 1.8 percent were diagnosed with any type of SUD, and 0.1 percent had an OUD diagnosis. Among those with chronic pain, 3.7 percent had a diagnosis of any type of SUD, and 0.3 percent a diagnosis of OUD.

Because it was a first-year HEDIS measure, no measure performance data were available at the time of our analyses. However, performance scores from 2014 Medicaid data from 16 states were presented as evidence of a performance gap when this measure was submitted for NQF endorsement. The overall average score was 57.2 percent, with a range of 13.1–76.5 percent across states. Stratification by age showed the lowest rate among patients 18–24 years old (47.1 percent) (NQF, various dates). These data would suggest that the MHS rate of medication treatment for OUD (22 percent) is a potential area for quality improvement.

Summary

In this chapter, we presented the results of a single quality measure that assessed the use of medication treatment for OUD. We included this measure because it is NQF-endorsed and a HEDIS 2020 measure, and because it represents one key modality in the complex treatment of those with OUD. We identified 554 service members with an OUD diagnosis in FY 2019. As noted earlier, the OUD population identified here might not represent all active-component service members with an OUD diagnosis in FY 2019. Our key findings were as follows:

- **Few service members with an OUD diagnosis received medication for that condition:** Less than a quarter (22 percent) of those with OUD received medication treatment. Results for this measure from a study using 2014 Medicaid data from 16 states averaged 57 percent, suggesting that there is room for quality improvement in this area. The measure score for service members with OUD who received treatment with buprenorphine or injectable naltrexone was 10 percent.
- **Few received OUD medications that are strongly recommended:** Buprenorphine and injectable naltrexone are the medications with the strongest recommendations for OUD treatment. Yet, only 7.9 percent

of service members with OUD in our data set received buprenorphine, and only 2.7 percent received injectable naltrexone. Far more received oral naltrexone (14.8 percent), a medication that is not strongly recommended.

CHAPTER NINE

Findings and Recommendations

In this report, we described how we developed a set of 14 quality measures designed to assess aspects of outpatient care for pain, including care associated with procedures, acute low back pain, chronic pain, opioid prescribing, and medication treatment for OUD. We used these measures to assess care delivered to service members by the MHS in FYs 2018–2019, with the goal of identifying strengths and areas for improvement in pain care. In this chapter, we highlight the strengths and limitations of the analyses in this report, present key findings on the quality of outpatient pain care, and offer policy recommendations and directions for future research.

Strengths and Limitations

The analyses presented in this report have several strengths. First, our set of measures was able to assess several important domains of outpatient noncancer pain care, including acute and chronic pain, as well as opioid prescribing and medication treatment for OUD. Characterizing performance with respect to the measures across multiple domains of pain care should yield broader insights regarding where the MHS is already providing high-quality care to service members and where there are opportunities for improvement. Second, we selected the measures with careful consideration of CPGs—including those from VA/DoD—as well as input from content experts outside our team. This should increase the likelihood that the resulting measures assess aspects of pain care that MHS providers are expected to deliver. Third, the measure set relies solely on administrative data that are routinely collected by the MHS, and these administrative data are robust: They include all health care encounters for TRICARE beneficia-

ries at MTFs and in the private sector, delivered by civilian providers and in facilities contracted and paid for by TRICARE. Administrative data–based quality measures rely on existing data, increasing the feasibility for the MHS to monitor them on an ongoing basis. Moreover, these data are updated routinely, which allowed us to examine care delivery across the MHS over the study period.

The analyses in this report also have several limitations. First, we identified only one existing NQF-endorsed measure that was suitable for inclusion in our set of quality measures: medication treatment for OUD. This required our team to develop 13 new measures to assess a broader scope of pain care—albeit measures that were consistent with recommendations in CPGs. Developing valid quality measures is a time-intensive process, and the measures developed for this project require further assessment of their reliability and validity. Second, although we incorporated input from RAND experts who were not members of the research team to refine our measure set, this was not a formal consensus panel process. Use of the Delphi method or similar frameworks could ensure broad stakeholder engagement and buy-in for a prospective measure set.

Third, both the measures and our analyses were limited by the quality, availability, and comprehensiveness of the administrative data. Pharmacologic treatments—particularly those that can be obtained only with a prescription, such as opioid analgesics—are more accurately and completely captured by administrative data than other pain treatment modalities. As a result, several of our pain care quality measures relate to opioid prescribing. A number of other important aspects of care are documented only in unstructured medical record notes (e.g., recommended exercise, patient and caregiver education, patient-centered and shared decisionmaking, assessment of patient outcomes, rationale for modification of therapy), meaning that this information is not captured in administrative data and therefore limited the breadth and types of quality measures that we were able to construct. An important example pertains to NPT: Tai chi and yoga, which have a significant evidence base supporting their use in pain care, are not captured in MHS administrative data. The scope of our quality measures was therefore necessarily limited to aspects of pain care that could be reasonably assessed with administrative data.

Furthermore, we focused on assessing outpatient, nonemergent, noncancer pain and therefore did not assess other types of pain or pain care in emergency or inpatient settings. A related limitation of administrative data concerns the application of binary thresholds—for example, to identify a new treatment episode for low back pain (versus ongoing treatment) or to identify chronic pain (versus acute pain). In each instance, we articulated a conceptual justification for these thresholds; however, it is important to acknowledge that such thresholds are somewhat arbitrary, can be patient-specific, and vary in the research literature. Administrative data may contain errors associated with variability in provider coding of diagnoses and treatments, and the existence of a diagnosis code does not guarantee that the condition was a focus of the encounter. Pharmacy data may similarly be subject to provider input variation or error. For example, the "quantity dispensed" field could be inaccurate for oral liquid preparations, in particular, because they may be dispensed in less-discrete amounts than tablets. For this reason, we did not include oral solutions when calculating MME. Because we did not assess this source of opioids (oral solutions), the size of its contribution to average or total dispensed MME is unknown.

Finally, our analyses of the quality of chronic pain care did not distinguish service members at the beginning of their episode of chronic pain care from those later in their chronic pain trajectory. Because service members might have pain-related conditions that are diagnosed outside of the MHS or prior to their entry into the military, it is difficult to accurately determine the stage of their chronic pain treatment episode. Accordingly, we attempted to develop chronic pain quality measures to reflect care that is recommended across multiple stages of chronic pain treatment.

Despite these limitations, to our knowledge, this report provides the most comprehensive assessment of pain care delivered to active-component service members by the MHS to date. These measures provide a foundation for discussion about the safety and quality of pain care, as well as a valuable baseline for prospective performance monitoring. The remainder of this chapter presents the main findings from the report, followed by recommendations for improving MHS pain care.

Key Findings

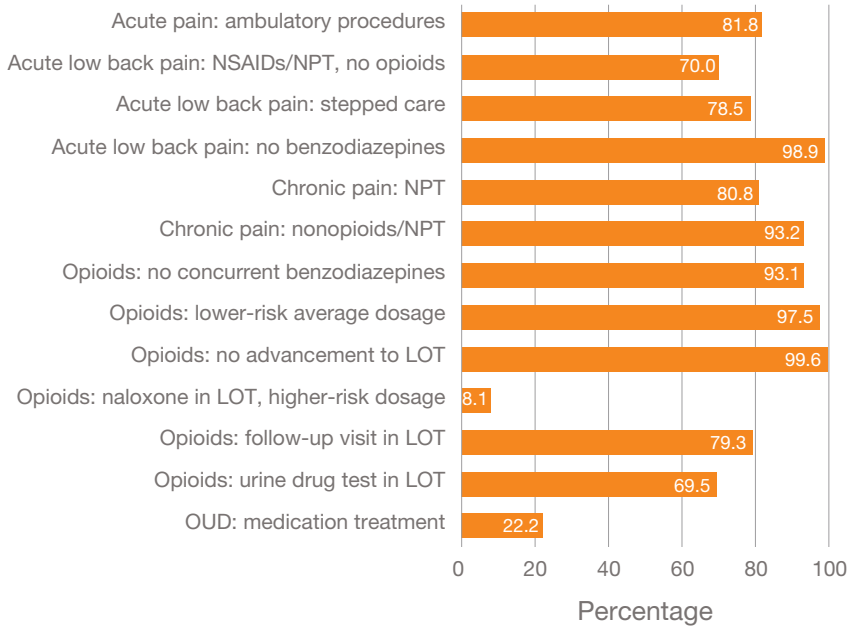
Figure 9.1 provides an overview of MHS performance on each of the quality measures, highlighting areas of strength and opportunities for improvement.

Nearly 80 Percent of Service Members with Acute Low Back Pain Received Treatment Consistent with "Stepped Care"

The MHS encourages stepped care for pain management, whereby noninvasive NPT and nonopioid medications are recommended as first-line treatments, and opioid use is reserved for severe pain that has not responded to these lower-risk interventions. We found that 79 percent of service members with a new episode of low back pain received treatment consistent with

FIGURE 9.1

Percentage of Procedures or Service Members with Recommended Pain Care, by Quality Measure



NOTES: The figure does not include the quality measure addressing opioids after dental procedures. We had based the measure on a DHA policy regarding on opioid prescribing after dental procedures that was under review at the time of this research. Although performance on the measure was low (47 percent), our analyses of performance compared with recent consensus panel recommendations suggested that performance was actually higher.

stepped care, meaning that, in the three months following their initial back pain visit, they received NPT or nonopioid medication prior to receiving any opioids. Service members with more than one visit for low back pain were more likely to receive stepped care: Ninety-one percent of those with two or more visits received recommended care.

Of those service members who did not receive stepped care (21 percent), 84 percent had no documented receipt of NPT or nonopioid medications. It is possible that these individuals were not offered NPT or nonopioid medications or that they were offered these treatments but declined. It is also possible that some of these individuals received recommended treatments that were not coded in the MHS data; if so, the percentage of service members receiving stepped care for acute low back pain might have been higher than 79 percent. Seventeen percent of service members who did not receive stepped care received opioids in the absence of or prior to NPT or nonopioid medication.

Service Members with Chronic Pain Are a Large Population with Complex Health Care Needs

Our data indicated that nearly 100,000 service members experienced chronic pain in FY 2018, with low back pain being the most common chronic pain condition in this population. Chronic pain was frequently comorbid with other medical conditions. For example, 37 percent of service members with chronic pain had a BH condition, 29 percent had symptoms of a sleep disorder, and 36 percent were dispensed a psychotropic medication. A subset of service members with chronic pain were identified as "high utilizers," defined as the top quartile of health care utilization in our study population. High utilizers had a median of 42 outpatient encounters in the observation year, including a median of six BH specialty visits and 21 non-BH specialty visits, and 70 percent had a BH condition. Our findings therefore suggest that there is a subpopulation of service members with chronic pain who represent medically complex cases and have high health care needs. This population merits further study to determine why their health care utilization is so high and whether there are opportunities to improve the quality and coordination of their care.

More Than 80 Percent of Service Members with Chronic Pain Received at Least Some NPT, but Few Received Some Particular Types of NPT That Are Recommended

Among service members with chronic pain, 81 percent had at least one visit for a recommended NPT. Physical and occupational therapy was the most common type of NPT received (75 percent), followed by guided or supervised exercise (55 percent) and chiropractic care/manipulation (47 percent). In contrast, receipt of other types of NPT was low, despite recommendations supporting their use. For example, only 7 percent received acupuncture, 3 percent received psychotherapy associated with a pain diagnosis, and 2 percent received biofeedback/hypnotherapy. With respect to psychotherapy, it was unclear whether the modality was cognitive behavioral therapy—a recommended NPT for pain—or an alternative psychotherapy with a weaker evidence base. And although a large majority of service members with chronic pain received NPT, it was unclear whether they received an adequate number of visits for NPT. During the 12-month observation period, the median number of visits for physical or occupational therapy was four; it was three for chiropractic care/manipulation and two for other types of NPT. Our findings suggest that there is scope for expanding the availability and use of some NPTs that might be underutilized, and the adequacy of the number of NPT visits remains uncertain.

Opioid Prescribing Was Largely Consistent with Recommended Guidance

In the large majority of cases in which MHS providers used opioids to treat pain, they followed practices that mitigated risks associated with opioid prescribing. For example, 93 percent of service members who were dispensed seven or more days of opioids had no concurrent use of benzodiazepines exceeding seven days. Nearly all service members (98 percent) who were dispensed opioids had an average daily dosage below 90 MME, and 81 percent had an average daily dosage below 50 MME. Less than 1 percent of opioid-naïve service members who were dispensed opioids progressed to LOT within 12 months. Although one-third of service members with chronic pain received an opioid during the observation period, few (7 percent) had an average daily MME of 50 or higher, and less than 2 percent were on or

progressed to LOT. Our findings suggest that the MHS performs well on multiple metrics assessing the safety and quality of opioid prescribing.

Rates of Naloxone Dispensing for Service Members on Higher-Risk Daily Opioid Dosages Were Low

A number of federal agencies, including VA, CDC, and DHHS, have recommended naloxone co-prescribing for individuals who receive opioids and are at increased risk of overdose—particularly those who receive a higher daily dose. Despite this, we found that only 8 percent of service members on LOT who were dispensed opioids at a daily dose of 50 MME or more were dispensed naloxone within three months. Across all opioid dispensing events in FY 2019 with a daily dose of 50 MME or higher (i.e., not restricted to LOT), naloxone was co-prescribed only 2 percent of the time. It is possible that some service members obtained naloxone from sources outside the MHS. Nevertheless, rates of naloxone co-dispensing were low and represent an opportunity for quality improvement.

Few Service Members with OUD Received Medication Treatment

The VA/DoD CPG for the management of SUDs strongly recommends offering medication for OUD in the form of buprenorphine/naloxone, extended-release injectable naltrexone, or methadone, although there was insufficient evidence to recommend for or against oral naltrexone (VA and DoD, 2015). Only 22 percent of service members diagnosed with OUD received any recommended medication for OUD in the same year. Among individuals with OUD who received medication treatment, oral naltrexone was the most frequently dispensed (66 percent), followed by buprenorphine (36 percent) and injectable naltrexone (12 percent). OUD treatment therefore also represents an opportunity to improve the quality of care delivered by the MHS.

Direct Care Providers Were More Likely Than Private-Sector Providers to Adhere to Opioid-Prescribing Recommendations After Dental and Ambulatory Procedures

Following dental procedures, DHA recommends, at most, an initial one-day supply of short-acting opioids. In FY 2019, 47 percent of the studied dental procedures met this recommendation. Long-acting opioids were not

dispensed after dental procedures. Guideline-concordant care was observed at higher rates among direct care providers (50 percent) than private-sector providers (34 percent). Receipt of recommended care also varied widely across specific procedures, ranging from 38 percent for extractions of impacted teeth to 95 percent for gingivectomy. However, this recommendation of no more than a one-day supply of opioids is currently under review. When we compared performance based on dispensed MME to a recent consensus panel's recommendations, we observed higher performance (78 percent), suggesting that the current policy recommendation might be too stringent.

Following ambulatory procedures, DHA recommends, at most, an initial five-day supply of short-acting opioids. In FY 2019, 82 percent of the studied ambulatory procedures met this recommendation. Long-acting opioids were rarely dispensed after ambulatory procedures. Guideline-concordant care was higher among direct care providers (84 percent) than private-sector providers (80 percent), and performance varied across specific procedures. When we compared MMEs dispensed following ambulatory procedures to a recent consensus panel's recommendations, performance was lower (49 percent), suggesting that the recommended five-day supply might be too generous for some procedures.

Our findings indicate that there are opportunities to improve post-procedural pain management. The variation we observed across specific procedures, together with recent consensus panel recommendations noting that analgesic requirements differ by procedure, suggest that one strategy to improve the safety of post-procedural opioid use is to develop procedure- and opioid-specific (tablet strength or MME) prescribing guidelines.

Policy Implications

Recommendation 1. Select a Set of High-Priority Pain Care Quality Measures to Monitor and Report Routinely

Continually measuring the quality of pain care is essential to determining whether patients receive recommended care and for providing ongoing feedback to providers to improve care. Ideally, this feedback is provided in the context of a learning health care system, in which multiple factors

align to promote an environment that fosters continuous improvement. In a learning health care system, all stakeholders are engaged and have access to transparent data infrastructure and real-time performance results with the goal of improving (AHRQ, undated; Institute of Medicine, 2013). An MHS review group assessed MHS care and made recommendations that reinforced the focus on standardization of care, process improvement, and transparency (DoD, 2014). Our analyses summarized quality measure performance across a variety of areas of outpatient care for noncancer pain. Most of these measures are new and will require ongoing validation. However, the measure results documented several areas of good performance and other areas where improvement may be indicated. We used a large set of measures to assess pain care, but the MHS should select a smaller set for enterprise-wide use to monitor the quality of specific aspects of pain care on an ongoing basis, which will assist in establishing benchmarks and tracking the impact of quality-improvement efforts.

Recommendation 2. Increase Delivery of Recommended NPTs for Pain to Support Consistent Implementation of the Stepped-Care Model

VA/DoD CPGs for the management of low back pain, OA of the knee and hip, and opioid therapy for chronic pain all strongly recommend NPT as a preferred first-line option for the treatment of chronic pain, as well as an important component of a multidisciplinary approach to pain management (VA and DoD, 2014, 2017a, 2017c). Many forms of NPT have been shown to result in reduced pain and improved post-treatment function for common types of chronic pain (Skelly et al., 2018, 2020). Our analyses showed high levels of use of NPT, such as physical and occupational therapy, guided or supervised exercise, and chiropractic care/manipulation. However, other NPTs, such as acupuncture, biofeedback/hypnotherapy, and psychotherapy associated with a pain diagnosis, were less frequently received. Other types of recommended NPT, such as cognitive behavioral therapy, yoga, and tai chi, are not coded in administrative data, making it difficult to assess their utilization. Ensuring the incorporation of structured fields in GENESIS® to capture these types of treatments could facilitate their use and provide a means to document utilization over time in direct care settings.

Several barriers have been documented to the use of NPT, including access problems (lack of availability, travel time, long wait times for appointment), lack of provider awareness of the evidence base, and patient lack of awareness or skepticism of a treatment's effectiveness (Becker et al., 2017). Strategies to address these barriers include provider education and training, developing a comprehensive list of local resources, patient education, and ensuring sufficient time to discuss and deliver NPTs (Giannitrapani et al., 2018; Tick et al., 2018). The MHS should maximize the availability of NPT and ensure provider and service member awareness of these treatment options and their potential benefits.

Recommendation 3. Assess the Utilization Patterns of "High-Need" Service Members with Chronic Pain and Implications for Care Delivery

Our analyses identified a subset of service members with chronic pain who had particularly high levels of health service utilization, suggesting high health care needs and higher costs of care. Notably, the large majority of this population (70 percent) had a comorbid BH diagnosis. Prior research has identified specific populations of service members with more medically complex chronic pain syndromes, including service members with complex polytrauma as a result of combat injuries—particularly blast injuries (Clark et al., 2009)—and service members with the "polytrauma clinical triad" of chronic pain, PTSD, and TBI (Giordano et al., 2018; Lew et al., 2009). Key challenges in providing care for medically complex patients with high health care utilization in any setting include facilitating communication and coordination among multiple health care providers, as well as assisting patients with self-management of their conditions and adherence to complex treatment regimens (Blumenthal et al., 2016; McCarthy, Ryan, and Klein, 2015).

The MHS should undertake several steps to support the delivery of high-quality, multidisciplinary health services to high-need service members with chronic pain. As a first step, additional in-depth research is required to characterize the needs of this patient population in greater detail, along with the reasons for high health service utilization. This will be essential to designing interventions to improve these service members' health outcomes and readiness. For example, it is important to understand whether additional complex chronic pain syndromes—beyond the already recognized

syndromes of complex polytrauma and the polytrauma clinical triad—are present in this population and whether they contribute to these service members' high levels of utilization. Based on the research findings, the MHS might wish to examine whether its existing programs for medically complex service members, including care management services (Chenault, 2006; Grace-Simons, 2019), are indeed reaching high-need service members with chronic pain and effectively addressing their needs. The findings, in turn, could be used to strengthen MHS programs for service members with chronic pain and other complex comorbidities, as well as to scale-up successful care delivery models.

Recommendation 4. Increase Naloxone Dispensing to Service Members with Higher-Risk Opioid Use

Naloxone co-prescribing is recommended to reduce the risk of overdose among at-risk patients who have been prescribed opioids for pain. To encourage increased naloxone dispensing when appropriate, DHA issued a procedural instruction in June 2018 that established procedures for pharmacists at MTFs to prescribe and dispense naloxone to eligible service members through standing orders (DHA Procedural Instruction 6025.04, 2018). Despite this, we found low rates of naloxone dispensing to service members who received higher-risk daily doses of opioids in FY 2019.

There are several approaches that the MHS could consider to build on its existing efforts to increase naloxone dispensing to service members at risk of opioid overdose. The first is to formally evaluate the implementation and effectiveness of its existing quality-improvement initiatives related to naloxone co-prescribing to identify successful strategies worthy of scaling up across MTFs. The DHA procedural instruction for naloxone prescribing by MTF pharmacists is one example. DHA is already charged with monitoring the program's implementation and measuring effectiveness. Findings from an evaluation could be used to improve the program by identifying implementation barriers and helping MTFs overcome them and by identifying high-performing MTFs and disseminating best practices across the MHS. Another example is DoD's Opioid Overdose Education and Naloxone Distribution Program, which was established in 2019 and modeled after VA's successful initiative of the same name. DoD's program was piloted at Madigan Army Medical Center in 2019, and intervention components included

training both providers and pharmacists in best practices for naloxone prescribing (Grace-Simons, 2019). Evidence from this and other pilots can help guide DoD's efforts to reach its stated goal of a 90-percent naloxone prescription rate for at-risk patients.

Second, the MHS could adopt lessons from successful initiatives to increase naloxone dispensing in nonmilitary settings, such as the VA and civilian health systems (Peckman and Boggs, 2016; Rubin, 2019b; Wilson et al., 2017). The evidence base on best practices for achieving high rates of naloxone co-prescribing continues to evolve, but key features of successful programs include provider education and training, engaging pharmacists as partners and embedding them in ambulatory practices, and automatic naloxone prescribing to all patients on LOT facilitated by prompts in the electronic health record (Behar et al., 2017; Cariveau et al., 2019; Coffin et al., 2016; Peckman and Boggs, 2016; Siff et al., 2021; Takeda et al., 2016; West et al., 2019; Wilson et al., 2017). In addition, standing orders to pharmacies (i.e., laws or policy directives allowing naloxone to be dispensed to any individual who meets the eligibility criteria without the need for an in-person consultation with a health care provider) and granting pharmacists independent prescribing authority for naloxone have been associated with improved access to naloxone (Abouk, Pacula, and Powell, 2019; Gertner, Domino, and Davis, 2018).

Recommendation 5. Increase Medication Treatment for Service Members with OUD

Service members with OUD are at risk for increased morbidity and mortality (Hser et al., 2017). There have been multiple calls to increase efforts to identify service members with SUDs early and to ensure that they receive recommended treatment (Institute of Medicine, 2012). Medication for OUD is a first-line treatment, recommended by the VA/DoD CPG for the management of SUDs, yet our findings suggest that less than one-quarter of service members in our study population with OUD in FY 2019 received medication treatment during the same year (22 percent), and few received medications that are strongly recommended for OUD. We note that our data did not include all service members with OUD. Interestingly, results were similar for a related measure of receipt of medication for OUD. Specifically, 17 percent of service members identified in FY 2016 who had a new episode

of OUD (six months without prior OUD treatment) received recommended medication treatment within six months (Hepner et al., 2021).

Due to military policies on illicit drug use and SUDs, service members diagnosed with OUD are likely to be subsequently separated from the military (Army Regulation 600-85, 2020). Yet, all the service members with OUD in our study population remained in the military during the measurement year and were eligible for inclusion in this measure. Although these service members might eventually transition to VA or civilian sources of care, it is essential that they initiate recommended treatment while still in the military. The MHS should seek to ensure that these service members are offered medication treatment for OUD and track the rates of receipt of recommended medication.

Furthermore, transition assistance programs should support separating service members in connecting with a prescribing provider to ensure continuity of care. In 2019, the National Academies of Sciences, Engineering, and Medicine published a report calling for increased use of medication for OUD (National Academies, 2019). The report highlighted major barriers to receiving this care, including stigma, inadequate education, and restrictive regulations. Similarly, a recent rapid review identified the most common barriers to increasing utilization of medication for OUD (Mackey et al., 2020). Barriers included stigma associated with OUD medications, logistical issues (e.g., patient and provider time, costs, insurance, and regulatory requirements), beliefs about treatment (among both patients and providers), and knowledge gaps regarding OUD and medications (among both patients and providers). Several specific strategies for increasing medication treatment for OUD were recently outlined in the areas of addressing provider, institutional, regulatory, financial, and other barriers (Madras et al., 2020), some of which might be appropriate to implement in the MHS.

Recommendation 6. Update Opioid Prescribing Guidance for Procedures to Improve Specificity and Appropriateness of Guidance

Current guidelines for prescribing opioids for acute pain (related to procedures or not) tend to broadly suggest an initial maximum supply of opioids (Dowell, Haegerich, and Chou, 2016). However, studies have shown that most patients receive more opioid tablets than they ultimately need for

post-procedure pain control (Hartford et al., 2019; Hill et al., 2017; Maughan et al., 2016; Wojahn et al., 2018). Guidance for procedure-specific prescribing could mitigate this problem, particularly for the most commonly performed procedures (National Academies, 2020). Our analyses showed variability in the initial quantity of opioids dispensed for dental and selected ambulatory procedures related to the type of procedure performed and the type of provider (direct versus private-sector care). Recent consensus panels have made procedure-specific recommendations for dental and common surgical (often ambulatory) procedures indicating specific quantities and types of opioids to be prescribed (Farooqi et al., 2020; Overton et al., 2018), and some state collaboratives have followed suit in creating procedure-specific recommendations (Hansen et al., 2020; Michigan Opioid Prescribing Engagement Network, undated). Current MHS policy guidance for opioid prescribing for dental procedures is under review, and the guideline for outpatient procedures recommends no more than a five-day supply of any type of opioid (DHA Procedural Instruction 6025.04, 2018). Creating procedure-specific recommendations for opioid types and quantities or dispensed MME could minimize initial over- or underprescribing and help identify areas for quality improvement. These recommendations could be provided to contracted private-sector providers to help standardize prescribing practices across MHS care settings.

Summary

The pervasive impact of pain on military readiness and ability to deploy has made provision of high-quality pain care a strategic priority for the MHS. This report offers the most comprehensive examination to date of the quality and safety of pain care in the MHS and its alignment with evidence-based CPGs. The measures that we developed to assess pain care provide a valuable baseline for performance monitoring as the MHS continues to improve the care and support it provides to service members with acute and chronic pain.

APPENDIX A

Technical Specifications for Quality Measures

This appendix provides technical specifications for implementing the quality measures discussed in this report. Using MHS administrative data, we applied these measures to evaluate the quality of outpatient pain care that service members received for acute pain related to procedures, acute low back pain or acute exacerbation of chronic low back pain, and chronic pain, as well as opioid prescribing and medication treatment for OUD. The measures do not address inpatient pain care, cancer-related pain, or surgical or otherwise invasive treatments. The administrative data sources used in our study, along with the criteria for identifying potential denominator populations, can be found in Chapter Three of this report.

In this appendix, we present the technical specifications for each measure according to the domain of pain care that the measure assesses. Each section includes the measure statement, numerator, denominator, definitions used in the numerator and denominator, and any denominator exclusions. The eligibility period for each measure is the window of time during which patients or events were identified for denominator inclusion. The observation period began after eligibility criteria were met for inclusion in the denominator. The duration of the eligibility and observation periods varied by quality measure (see Chapter Three). Eligible service members were enrolled in TRICARE on a near-continuous basis and did not deploy or separate from the military during the observation period. These eligibility criteria ensured that there was enough time to observe whether recommended care was provided.

Key variable definitions that apply to more than one quality measure domain are presented in Appendix B. Variable definitions that applied to a

single quality measure domain are included in this appendix at the beginning of the relevant section.

This appendix is organized into the following sections, which align with the domains addressed by our quality measures and presented in Chapters Four through Eight of this report:

- Acute Pain Related to Procedures
- Acute Low Back Pain
- Chronic Pain
- Opioid Prescribing
- Medication for Opioid Use Disorder.

Acute Pain Related to Procedures

The measures used to assess the quality of acute pain care address the type and quantity of opioid medication, if any, initially given to patients for pain related to dental procedures and common ambulatory procedures. If opioids are prescribed, the type of opioid and initial days of supply is the focus of the measures. The measures do not address any subsequent opioid refills.

Acute Pain Measure: Dental Procedures

Key Definitions

See Appendix B for definitions of the following terms:

- *opioid-naïve*
- *opioids*
- *short-acting opioids* (see the section "Short- and Long-Acting Opioids").

The following additional definition is used for this measure:

- *Dental procedures:* Applicable dental procedures include oral surgery, periodontic treatment, dental implants, and endodontic treatment (see Table A.1).

Measure Statement

Percentage of dental procedures for which pain was initially treated with no opioids or a short-acting opioid and no more than a one-day supply.

Numerator

Initial pain treatment with no opioids or short-acting opioids and no more than a one-day supply.

Denominator

Dental procedures performed on opioid-naïve patients during the observation period.

Technical Specifications: Numerator

The numerator targets the initial dispensed pain medication (if any) and not subsequent treatment with medication further into the post-procedure period. Identify medications dispensed on the day of the procedure. If none, look on post-procedure day 1, and, if none, look on post-procedure day 2. Determine whether opioids were dispensed, including the type of opioid (short-or long-acting) and days of supply. Numerator includes cases in which the patient received no opioids or no more than a one-day supply of short-acting opioids for the initial post-procedure prescription.

Technical Specifications: Denominator

The unit of measurement is procedures rather than the patients. Identify dental procedures (Table A.1) performed during the time of interest from Active Duty Dental Program (ADDP) and Direct Care Dental Encounter Data (DED) files. Eligible procedures are those performed within the first 363 days of the observation year and on an outpatient basis or in an inpatient setting that did not involve an overnight stay. Include only cases in which the patient was opioid-naïve at the time of the procedure. Service for a procedure date may include more than one CDT code, but it counts as one procedure in the denominator.

Denominator Exclusions

Exclude patients whose dental procedure was associated with an overnight inpatient stay or who were not opioid-naïve at the time of the procedure.

Exclude procedures for which opioid solutions were dispensed because it is difficult to accurately assess the quantity dispensed. Also exclude patients to whom any of the following applied in the *month* during which the procedure was performed:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment
- deployment or separation from service.

TABLE A.1
CDT Codes for Dental Procedures

CDT Code	Description
	Oral surgery
D7140	Extraction, erupted tooth or exposed root (elevation and/or forceps removal)
D7220	Removal of impacted tooth—soft tissue
D7230	Removal of impacted tooth—partially bony
D7240	Removal of impacted tooth—complete bony
D7241	Removal of impacted tooth—complete bony, with unusual surgical complications
D7250	Surgical removal of residual roots (cutting procedure)
D7210	Surgical removal of erupted tooth requiring removal of bone and/or sectioning of tooth, and including elevation of mucoperiosteal flap if indicated
D7310	Alveoloplasty in conjunction with extractions—four or more teeth or tooth spaces, per quadrant
D7311	Alveoloplasty in conjunction with extractions—one to three teeth or tooth spaces, per quadrant
D7320	Alveoloplasty not in conjunction with extractions—four or more teeth or tooth spaces, per quadrant
D7321	Alveoloplasty not in conjunction with extractions—one to three teeth or tooth spaces, per quadrant
D7951	Sinus augmentation with bone or bone substitutes via a lateral open approach.
D7952	Sinus augmentation via a vertical approach
D7953	Bone replacement graft for ridge preservation—per site

Table A.1—Continued

CDT Code	Description
D7295	Harvest of bone for use in autogenous grafting procedure
D7960	Frenulectomy—also known as (frenectomy or frenotomy)—separate procedure not incidental to another procedure
D7963	Frenuloplasty
	Periodontic treatment and implants
D4210	Gingivectomy or gingivoplasty—four or more contiguous teeth or tooth bounded spaces per quadrant
D4211	Gingivectomy or gingivoplasty—one to three contiguous teeth or tooth bounded spaces per quadrant
D4212	Gingivectomy or gingivoplasty to allow access for restorative procedure, per tooth
D4240	Gingival flap procedure, including root planning—four or more contiguous teeth or tooth bounded spaces per quadrant
D4241	Gingival flap procedure, including root planning—one to three contiguous teeth or tooth bounded spaces per quadrant
D4245	Apically positioned flap
D4249	Clinical crown lengthening—hard tissue, by report
D4260	Osseous surgery (including elevation of a full thickness flap and closure)—four or more contiguous teeth or tooth bounded spaces per quadrant
D4261	Osseous surgery (including elevation of a full thickness flap and closure)—one to three teeth or bounded teeth spaces per quadrant
D4263	Bone replacement graft—first site in quadrant
D4264	Bone replacement graft—each additional site in quadrant
D4265	Biologic materials to aid in soft and osseous tissue regeneration
D4266	Guided tissue regeneration—resorbable barrier, per site
D4267	Guided tissue regeneration—non-resorbable barrier, per site (includes membrane removal)
D4270	Pedicle soft tissue graft procedure
D4273	Autogenous connective tissue graft procedure, (including donor and recipient surgical sites) first tooth implant, or edentulous tooth position in graft
D4283	Autogenous connective tissue graft procedure (including donor and recipient surgical sites)—each additional contiguous tooth, implant or edentulous tooth position in same graft site

Table A.1—Continued

CDT Code	Description
D4275	Non-autogenous connective tissue graft (including recipient site and donor material), first tooth, implant, or edentulous tooth position in graft
D4285	Non-autogenous connective tissue graft procedure (including recipient surgical site and donor material)—each additional contiguous tooth, implant or edentulous tooth position in same graft site
D4276	Combined connective tissue and double pedicle graft, per tooth
D4277	Free soft tissue graft procedure (including donor site surgery), first tooth or edentulous tooth position in graft
D4278	Free soft tissue graft procedure (including donor site surgery), each additional contiguous tooth or edentulous tooth position in same graft site
D6010	Surgical placement of implant body: endosteal implant
	Endodontic treatment
D3410	Apicoectomy—anterior
D3421	Apicoectomy—bicuspid (first root)
D3425	Apicoectomy—molar (first root)
D3426	Apicoectomy (each additional root)
D3427	Periradicular surgery without apicoectomy
D3428	Bone graft in conjunction with periradicular surgery—per tooth, single site
D3429	Bone graft in conjunction with periradicular surgery—each additional contiguous tooth in the same surgical site
D3431	Biologic materials to aid in soft and osseous tissue regeneration in conjunction with periradicular surgery
D3432	Guided tissue regeneration, resorbable barrier, per site, in conjunction with periradicular surgery
D3920	Hemisection (including any root removal), not including root canal therapy
D3450	Root amputation—per root

NOTE: CDT = Code on Dental Procedures and Nomenclature.

Acute Pain Measure: Ambulatory Procedures

Key Definitions

See Appendix B for definitions of the following terms:

- *opioid-näive*
- *opioids*
- *short-acting opioids* (see the section "Short- and Long-Acting Opioids").

The following additional definition is used for this measure:

- *Ambulatory procedures:* Ambulatory procedures include shoulder and wrist procedures, arthroscopic knee procedures, laparoscopic appendectomy and cholecystectomy, breast excisions, and thyroidectomy (Table A.2).

Measure Statement

Percentage of ambulatory procedures for which pain was initially treated with no opioids or a short-acting opioid and no more than a five-day supply.

Numerator

Initial pain treatment with no opioids or short-acting opioids and no more than a five-day supply.

Denominator

Ambulatory procedures performed on opioid-naïve patients during the observation period.

Technical Specifications: Numerator

The numerator targets the initial dispensed pain medication (if any) and not subsequent treatment with medication later in the post-procedure period. Identify medications dispensed on the day of the procedure. If none, look on post-procedure day 1, and, if none, look on post-procedure day 2. Determine whether opioids were dispensed, including the type of opioid (short- or long-acting) and days of supply. Numerator includes cases in which the patient received no opioids or no more than a five-day supply of short-acting opioids for the initial post-procedure prescription.

Technical Specifications: Denominator

The unit of measurement is procedures rather than the patients. Identify ambulatory procedures by CPT code (Table A.2) performed during the time of interest. Eligible procedures are those performed within the first 363 days of the observation year and on an outpatient basis or in an inpatient setting that did not involve an overnight stay. Include only cases in which the patient was opioid-naïve at the time of the procedure. Service for a procedure date may include more than one CPT code, but it counts as one procedure in the denominator.

Denominator Exclusions

Exclude patients whose procedure was associated with an overnight inpatient stay or who were not opioid-naïve at the time of the procedure. Exclude procedures for which opioid solutions were dispensed because it is difficult to accurately assess the quantity dispensed. Also exclude patients to whom any of the following applied in the *month* during which the procedure was performed:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment
- deployment or separation from service.

TABLE A.2
CPT Codes for Ambulatory Procedures

CPT Code	Description
	Shoulder procedure
29827	Arthroscopy, shoulder, surgical, with rotator cuff repair
	Wrist procedures
29848	Endoscopy, wrist, surgical, with release of transverse carpal ligament
64721	Neuroplasty, median nerve at carpal tunnel
	Knee procedures (arthroscopic)
29866	Arthroscopy, knee, surgical; osteochondral autograft(s) (e.g., mosaicplasty (includes harvesting of the autograft)
29867	Arthroscopy, knee, surgical; osteochondral allograft (egg, mosaicplasty)

Table A.2—Continued

CPT Code	Description
29868	Arthroscopy, knee, surgical; meniscal transplantation (includes arthrotomy for meniscal insertion), medial or lateral
29873	Arthroscopy, knee, surgical; with lateral release
29874	Arthroscopy, knee, removal loose body or foreign body (e.g., osteochondritis, dissecans fragmentation, chondral fragmentation)
29875	Arthroscopy, knee, surgical; synovectomy, limited (e.g., plica or shelf resection) (separate procedure)
29876	Arthroscopy, knee, surgical; synovectomy, major, two or more compartments (egg, medial or lateral)
29877	debridement/shaving or articular cartilage (chondroplasty)
29879	abrasion arthroplasty (includes chondroplasty where necessary, or multiple drilling or microfracture)
29880	Arthroscopy, knee, surgical, with meniscectomy (medial AND lateral, including meniscal shaving) including debridement/shaving or articular cartilage (chondroplasty), same or separate compartments
29881	Arthroscopy, knee, surgical, with meniscectomy (medial OR lateral, including meniscal shaving) including debridement/shaving or articular cartilage (chondroplasty), same or separate compartments
29882	with meniscus repair (medial OR lateral)
29883	with meniscus repair (medial AND lateral)
29884	Arthroscopy, knee, surgical; with lysis of adhesions, with or without manipulation (separate procedure)
29885	Arthroscopy, knee, surgical; drilling for osteochondritis dissecans with bone grafting, with or without internal fixation (including debridement of base of lesion)
29886	Arthroscopy, knee, surgical; drilling for intact osteochondritis dissecans lesion
29887	Arthroscopy, knee, surgical; drilling for intact osteochondritis dissecans lesion with internal fixation
29888	Arthroscopically aided anterior cruciate ligament repair/augmentation or reconstruction
29889	Arthroscopically aided posterior cruciate ligament repair/augmentation or reconstruction
	Cholecystectomy (laparoscopic)
47562	Laparoscopy, surgical, cholecystectomy

Table A.2—Continued

CPT Code	Description
47563	with cholangiography
47564	with exploration of common bile duct
	Hernia repair
49505	Repair initial inguinal hernia, age 5 years or older, reducible, unilateral (no modifier "50")
49520	Repair recurrent inguinal hernia, any age, reducible, unilateral (no modifier "50")
49525	Repair inguinal hernia, sliding, any age, unilateral (no modifier "50")
49585	Repair umbilical hernia, age 5 years or older, reducible
49650	Laparoscopy, surgical, repair initial inguinal hernia, unilateral (no modifier "50")
49651	Laparoscopy, surgical, repair recurrent inguinal hernia, unilateral (no modifier "50")
49652	Laparoscopy, surgical, repair ventral, umbilical, spigelian, or epigastric hernia (included mesh insertion, when performed), reducible
	Appendectomy (laparoscopic)
44970	Laparoscopy, surgical, appendectomy
44979	Unlisted laparoscopy procedure, appendix
	Breast procedures
19301	Mastectomy, partial (e.g., lumpectomy, tylectomy, quadrantectomy, segmentectomy)
19302	with axillary lymphadenectomy
19303	Mastectomy, simple, complete
	Thyroidectomy
60210	Partial thyroid lobectomy, unilateral, with or without isthmusectomy
60212	with contralateral subtotal lobectomy, including isthmusectomy
60220	Total thyroid lobectomy, unilateral, with or without isthmusectomy
60225	with contralateral subtotal lobectomy, including isthmusectomy
60240	Thyroidectomy, total or complete

Acute/Acute Exacerbation of Low Back Pain

These quality measures assess the care provided for a new episode of acute low back pain or an acute exacerbation of chronic low back pain. The measures assess treatment received for the low back pain, use of opioids, and use of benzodiazepines.

Key Definitions

See Appendix B for definitions of the following terms:

- *benzodiazepines*
- *cancer diagnosis*
- *nonpharmacologic treatment* (NPT)
- *nonsteroidal anti-inflammatory drugs* (NSAIDs); oral NSAIDs only
- *opioid-naïve*
- *opioids*.

The following additional definitions are used in this section:

- *Low back pain:* ICD-10 codes defining low back pain are shown in Table A.3. The diagnostic code can be in the primary or secondary position.
- *New episode of low back pain:* An outpatient visit for low back pain and no encounters (outpatient, inpatient, emergency department) associated with low back pain (primary or secondary diagnosis as noted in Table A.3) in the prior 12 months.
- *Nonopioid medication for acute low back pain:* These medications include oral NSAIDs and a short-term (14 days or less) supply of nonbenzodiazepine muscle relaxants.
- *NSAIDs* (see Appendix B); oral NSAIDs only.
- *Nonbenzodiazepine muscle relaxants:* Drawn from PDTS therapeutic classes 122004, 122012, and 122092, including baclofen, carisoprodol (Soma), chlorzoxasone (Lorzone, Paraflex, Parafon Forte DSC, Remular-S), cyclobenzaprine (Amrix, Fexmid, Flexeril), metaxalone (Skelaxin), methocarbamol (Robaxin), orphenadrine (Banflex, Flexon, Norflex), and tizanidine (Zanaflex). *Exclusions:* Injectables and inpatient uses.

- *Not currently taking benzodiazepines:* The patient was not dispensed benzodiazepines in the 30 days prior to the start of the new episode of low back pain.
- *Red flags for acute low back pain:* Patients with some red-flag diagnoses in the three months prior to or after the initial visit for acute/acute exacerbation of low back pain were excluded from the denominator because of the likelihood that their care would not be typical of most acute low back pain patients (Table A.4). Because our measures focus on stepped care and opioids, we excluded patients treated for OUD during the observation period from the acute low back pain measure denominators. We also excluded the rare case treated with rectal suppository belladonna-opium during the observation period because that treatment likely indicated that the patient had a competing pain diagnosis.

TABLE A.3
ICD-10 Codes for Low Back Pain

ICD-10 Code	Description
M47.815–M47.817	Thoracolumbar/lumbar/lumbosacral spondylosis without myelopathy
M47.15, M47.16	Thoracolumbar or lumbar spondylosis with myelopathy
M51.25–M51.27	Displacement of thoracolumbar/lumbar/lumbosacral intervertebral disc
M51.35–M51.37	Degeneration of thoracolumbar/lumbar/lumbosacral intervertebral disc
M54.30–M54.32	Sciatica
M43.00	Spondylolysis, site unspecified
M43.05–M43.08	Spondylolysis, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M43.10	Spondylolisthesis, site unspecified
M43.15–M43.18	Spondylolisthesis, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M54.15–M54.18	Radiculopathy (thoracic, thoracolumbar, lumbar, lumbosacral, sacro or sacrococcygeal)
M54.89, M54.9	Dorsalgia
M54.5	Low back pain
M54.40–M54.42	Lumbago with sciatica

TABLE A.4
Red-Flag Exclusions for Acute Low Back Pain

ICD-10 Code	Description
G83.4	Cauda equina syndrome
M21.371-M21.379	Foot drop
A40.*, A41.*, R57.*, R65.*	Sepsis/systemic inflammatory response syndrome
A49.*, B95.*, B96.*, M86.*, G06.1, G07	Other bacterial infection, osteomyelitis, spinal abscess
N31.*, N39.42, N39.498, R32	Urinary incontinence, neuropathic bladder
K59.2, R15.*	Bowel incontinence
M48.4*, M48.5*, S32.* and S33* EXCEPT S33.100A, S33.110A, S33.120A, S33.130A, S33.131A, S33.140A, S33.5XXA, S33.6XXA, S33.8XXA, S33.9XXA	Sprains, fractures, dislocations of thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
G81.*, G82.*, G83.*	Paralysis
G89.0, G89.2*, G89.3, G89.4	Chronic pain
C00-D49, EXCEPT C44.*, D04.*, and D48.5	Cancer, excluding nonmelanoma skin cancer and benign/uncertain skin lesions
R63.4, R64	Weight loss
D57.*	Sickle cell anemia

Acute/Acute Exacerbation of Low Back Pain Measure: NSAIDs and NPT

Measure Statement

Percentage of patients with a new episode of acute/acute exacerbation of low back pain who received NSAIDs or NPT within three months and no opioids.

Numerator

Patients treated with NSAIDs or NPT within three months of the new episode of low back pain but not treated with opioids.

Denominator

Opioid-naïve patients with a new episode of low back pain.

Technical Specifications: Numerator

Include oral NSAIDs or NPT received at the time of or within three months after the first encounter for the new episode of low back pain. Exclude from the numerator cases in which opioids were received during the three-month observation period.

Technical Specifications: Denominator

Identify the first outpatient encounter for low back pain (ICD-10 code in any position) in the first nine months of the observation year. Keep only encounters that meet the definition of a new treatment episode, have no red flags in the 90 days before or after the initial visit, and for which the patient was opioid-naïve at the initial visit.

Denominator Exclusions

Exclude patients who were not opioid-naïve, received care for low back pain in the prior 12 months, or had a red-flag diagnosis in the 90 days before or after the first low back pain visit (see *red flags for acute low back pain* at the beginning of this section under "Key Definitions"). Also exclude patients for any of the following during the three-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment
- deployment or separation from military service.

Acute/Acute Exacerbation of Low Back Pain Measure: Stepped Care

Measure Statement

Percentage of patients with a new episode of acute/acute exacerbation of low back pain who received nonopioid medication or NPT within three months and no opioids or who received such treatment prior to receiving opioids.

Numerator

Patients treated with nonopioid medication or NPT within three months of the new episode of low back pain and not treated with opioids or who received nonopioid medication or NPT prior to receiving opioids.

Denominator

Opioid-naïve patients with a new episode of low back pain.

Technical Specifications: Numerator

Include treatments received at the time of or within three months after the first encounter for the new episode of low back pain. Exclude from the numerator cases in which opioids were received prior to NPT or nonopioid medication.

Technical Specifications: Denominator

Identify the first outpatient encounter for low back pain (ICD-10 code in any position) during the first nine months of the observation year. Keep only encounters that meet the definition of a new treatment episode, have no red flags in the 90 days before or after the initial visit, and for which the patient was opioid-naïve at the initial visit.

Denominator Exclusions

Exclude patients who were not opioid-naïve, received care for low back pain in the prior 12 months, or had a red-flag diagnosis in the 90 days before or after the first low back pain visit (see *red flags for acute low back pain* at the beginning of this section under "Key Definitions"). Also exclude patients for any of the following in the three-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment
- deployment or separation from military service.

Acute/Acute Exacerbation of Low Back Pain Measure: Avoidance of Benzodiazepines

Measure Statement

Percentage of patients with a new episode of low back pain who were not treated with benzodiazepines.

Numerator

Patients with no initiation of benzodiazepines in the three months after the start of the new episode of low back pain.

Denominator

Opioid-naïve patients with a new episode of low back pain and not currently taking benzodiazepines.

Technical Specifications: Numerator

Include all patients who were not dispensed seven or more days of benzodiazepines in the three months after the start of the new episode of low back pain. The exclusion of patients who received less than a seven-day supply is designed to avoid capturing acute use of benzodiazepines, such as for sedation related to procedures (Gaither et al., 2014).

Technical Specifications: Denominator

Identify the first outpatient encounter for low back pain (ICD-10 code in any position) in the first nine months of the observation year. Keep only encounters that meet the definition of a new treatment episode, have no red flags in the 90 days before or after the initial visit (see *red flags for acute low back pain* at the beginning of this section under "Key Definitions"), and for which the patient was opioid-naïve and not currently taking benzodiazepines at the initial visit.

Denominator Exclusions

Exclude patients who were not opioid-naïve, currently taking benzodiazepines, received care for low back pain in the prior 12 months, or had a red-flag diagnosis in the 90 days before or after the first low back pain visit. Also exclude patients for any of the following during the three-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment
- deployment or separation from military service.

Chronic Pain

These measures look at care related to chronic pain, including NPT and nonopioid medication treatment. Chronic pain is defined by the diagnosis of a condition that is chronic or pain that has lasted for more than three months. The measures do not address all chronic pain; rather, they pertain to selected chronic pain diagnoses.

Key Definitions

See Appendix B for definitions of the following term:

- *nonpharmacologic treatment* (NPT).

The following additional definitions are used in this section:

- *Chronic pain:* One encounter with an ICD-10 diagnosis code (in the primary or secondary position) of a chronic pain condition or two encounters with diagnosis codes (in the primary or secondary position) of the same pain condition that are three to 12 months apart. The chronic conditions include knee OA, hip OA, and fibromyalgia. The pain conditions (requiring two diagnoses) include low back pain and neck pain (Table A.5).
- *Index visit:* The "index" visit is the first encounter during the eligibility period when a relevant chronic pain diagnosis met the definition of "chronic." For low back and neck pain, it is the first visit with an encounter with a same diagnostic-cluster ICD-10 code in the prior three to 12 months. For OA (knee or hip) and fibromyalgia, it is the first encounter with the relevant diagnosis in the eligibility period. The eligibility period for the chronic pain measures is 12 months to allow time to capture a second pain visit when indicated to establish chronicity. The index visit starts the 12-month observation period.
- *Nonopioid medication for chronic pain:* Nonopioid medication treatment is specific to the diagnostic clusters that apply to the patient during the recruitment period:
  - low back pain: oral NSAIDs (see Appendix B) or duloxetine (Cymbalta, Irenka)
  - neck pain: oral NSAIDs (see Appendix B)

  - knee/hip OA: oral or topical NSAIDs (see Appendix B) or duloxetine (Cymbalta, Irenka)
  - Fibromyalgia:
    - any SNRI (desvenlafaxine, Aptryxol, Khedezla, Pristiq); duloxetine, (Cymbalta, Irenka); levomilnacipran, (Fetzima); milnacipran, Savella); or venlafaxine, (Effexor);
    - gabapentin (Gralise, Horizant, Neurontin);
    - Pregabalin (Lyrica).

TABLE A.5
ICD-10 Codes for Chronic Pain Clusters and Encounter Requirements

ICD-10 Code	Description
Low back pain: Requires 2 encounters, 3–12 months apart	
M40.05	Postural kyphosis, thoracolumbar region
M40.15	Other secondary kyphosis, thoracolumbar region
M40.205	Unspecified kyphosis, thoracolumbar region
M40.295	Other kyphosis, thoracolumbar region
M40.35–M40.37	Flatback syndrome, thoracolumbar/lumbar/lumbosacral regions
M40.45–M40.47	Lordosis, unspecified, thoracolumbar/lumbar/lumbosacral regions
M40.55–M40.57	Lordosis, unspecified, thoracolumbar/lumbar/lumbosacral regions
M41.25–M41.27	Other idiopathic scoliosis, thoracolumbar/lumbar/ lumbosacral regions
M41.35	Thoracogenic scoliosis, thoracolumbar region
M41.45–M41.47	Neuromuscular scoliosis, thoracolumbar/lumbar/ lumbosacral regions
M41.55–M41.57	Other secondary scoliosis, thoracolumbar/lumbar/ lumbosacral regions
M41.85–M41.87	Other forms of scoliosis, thoracolumbar/lumbar/ lumbosacral regions
M42.15–M42.18	Adult osteochondrosis of spine, thoracolumbar/lumbar/ lumbosacral/sacral and sacrococcygeal regions

Table A.5—Continued

ICD-10 Code	Description
M43.05–M43.08	Spondylolysis, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M43.15–M43.18	Spondylolisthesis, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M43.5X5–M43.5X8	Other recurrent vertebral dislocation, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M43.8X5–M43.8X8	Other specified deforming dorsopathies, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M46.05–M46.08	Spinal enthesopathy, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M47.15–M47.16	Other spondylosis with myelopathy, thoracolumbar/lumbar regions
M47.25–M47.28	Other spondylosis with radiculopathy, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M47.815–M47.818	Spondylosis without myelopathy or radiculopathy, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M47.895–M47.898	Other spondylosis, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M48.05	Spinal stenosis, thoracolumbar region
M48.061–M48.062	Spinal stenosis, lumbar region, with/without claudication
M48.07–M48.08	Spinal stenosis, lumbosacral/sacral and sacrococcygeal regions
M48.15–M48.18	Ankylosing hyperostosis, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M48.25–M48.27	Kissing spine, thoracolumbar/lumbar/lumbosacral regions
M48.35–M48.38	Traumatic spondylopathy, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M48.45X*, excluding M48.45XA	Fatigue fracture of vertebra, thoracolumbar region, subsequent encounters/sequelae
M48.46X*, excluding M48.46XA	Fatigue fracture of vertebra, lumbar region, subsequent encounters/sequelae
M48.47X*, excluding M47.47XA	Fatigue fracture of vertebra, lumbosacral region, subsequent encounters/sequelae

Table A.5—Continued

ICD-10 Code	Description
M48.48X*, excluding M48.48XA	Fatigue fracture of vertebra, sacral and sacrococcygeal region, subsequent encounters/sequelae
M48.55X*, excluding M48.55XA	Collapsed vertebra, thoracolumbar region, subsequent encounters/sequelae
M48.56X*, excluding M48.56XA	Collapsed vertebra, lumbar region, subsequent encounters/sequelae
M48.57X*, excluding M47.57XA	Collapsed vertebra, lumbosacral region, subsequent encounters/sequelae
M48.58X*, excluding M48.58XA	Collapsed vertebra, sacral and sacrococcygeal region, subsequent encounters/sequelae
M48.8X5–M48.8X8	Other specified spondylopathies, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M49.85–M49.88	Spondylopathy in diseases classified elsewhere, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M51.05–M51.06	Intervertebral disc disorders with myelopathy, thoracolumbar/lumbar regions
M51.15–M51.17	Intervertebral disc disorders with radiculopathy, thoracolumbar/lumbar/lumbosacral regions
M51.25–M51.27	Other intervertebral disc displacement, thoracolumbar/lumbar/lumbosacral regions
M51.35–M51.37	Other intervertebral disc degeneration, thoracolumbar/lumbar/lumbosacral regions
M51.45–M51.47	Schmorl's nodes, thoracolumbar/lumbar/lumbosacral regions
M51.85–M51.87	Other intervertebral disc disorders, thoracolumbar/lumbar/lumbosacral regions
M51.9	Unspecified thoracic, thoracolumbar and lumbosacral intervertebral disc disorder
M53.3	Sacrococcygeal disorders, not elsewhere classified
M53.85–M53.88	Other specified dorsopathies, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions
M53.9	Dorsopathy, unspecified
M54.15–M54.18	Radiculopathy, thoracolumbar/lumbar/lumbosacral/sacral and sacrococcygeal regions

Table A.5—Continued

ICD-10 Code	Description
M54.30–M54.32	Sciatica
M54.40–M54.42	Lumbago with sciatica
M54.5	Low back pain
M54.89	Other dorsalgia
M54.9	Dorsalgia, unspecified
M62.830	Muscle spasm of back
M80.08XD	Age-related osteoporosis with current pathological fracture, vertebra(e), subsequent encounter for fracture with routine healing
M80.08XS	Age-related osteoporosis with current pathological fracture, vertebra(e), sequela
M80.88XD	Other osteoporosis with current pathological fracture, vertebra(e), subsequent encounter for fracture with routine healing
M80.88XS	Other osteoporosis with current pathological fracture, vertebra(e), sequela
M99.03–M99.04	Segmental and somatic dysfunction of lumbar/sacral regions
M99.13–M99.14	Subluxation complex (vertebral) of lumbar/sacral regions
M99.23–M99.24	Subluxation stenosis of neural canal of lumbar/sacral regions
M99.33–M99.34	Osseous stenosis of neural canal of lumbar/sacral regions
M99.43–M99.44	Connective tissue stenosis of neural canal of lumbar/sacral regions
M99.53–M99.54	Intervertebral disc stenosis of neural canal of lumbar/sacral regions
M99.63–M99.64	Osseous and subluxation stenosis of intervertebral foramina of lumbar/sacral regions
M99.73–M99.74	Connective tissue and disc stenosis of intervertebral foramina of lumbar/sacral regions
M99.83–M99.84	Other biomechanical lesions of lumbar/sacral regions
S32.000D, S32.000S	Wedge compression fracture of unspecified lumbar vertebra, subsequent encounter for routine healing or sequelae

Table A.5—Continued

ICD-10 Code	Description
S32.008D, S32.008S	Other fracture of unspecified lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.009D, S32.009S	Unspecified fracture of unspecified lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.010D, S32.010S	Wedge compression fracture of first lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.018D, S32.018S	Other fracture of first lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.019D, S32.019S	Unspecified fracture of first lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.020D, S32.020S	Wedge compression fracture of second lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.028D, S32.028S	Other fracture of second lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.029D, S32.029S	Unspecified fracture of second lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.030D, S32.030S	Wedge compression fracture of third lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.038D, S32.038S	Other fracture of third lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.039D, S32.039S	Unspecified fracture of third lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.040D, S32.040S	Wedge compression fracture of fourth lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.048D, S32.048S	Other fracture of fourth lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.049D, S32.049S	Unspecified fracture of fourth lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.050D, S32.050S	Wedge compression fracture of fifth lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.058D, S32.058S	Other fracture of fifth lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.059D, S32.059S	Unspecified fracture of fifth lumbar vertebra, subsequent encounter for routine healing or sequelae
S32.110D, S32.110S	Nondisplaced Zone I fracture of sacrum, subsequent encounter for routine healing or sequelae

Table A.5—Continued

ICD-10 Code	Description
S32.111D, S32.111S	Minimally displaced Zone I fracture of sacrum, subsequent encounter for routine healing or sequelae
S32.119D, S32.119S	Unspecified Zone I fracture of sacrum, subsequent encounter for routine healing or sequelae
S33.100D, S33.100S	Subluxation of unspecified lumbar vertebra, subsequent encounter or sequelae
S33.110D, S33.110S	Subluxation of L1/L2 lumbar vertebra, subsequent encounter or sequelae
S33.120D, S33.120S	Subluxation of L2/L3 lumbar vertebra, subsequent encounter or sequelae
S33.130D, S33.130S	Subluxation of L3/L4 lumbar vertebra, subsequent encounter or sequelae
S33.140D, S33.140S	Subluxation of L4/L5 lumbar vertebra, subsequent encounter or sequelae
S33.5XXD, S33.5XXS	Sprain of ligaments of lumbar spine, subsequent encounter or sequelae
S34.21XD, S34.21XS	Injury of nerve root of lumbar spine, subsequent encounter or sequelae
S34.22XD, S34.22XS	Injury of nerve root of sacral spine, subsequent encounter or sequelae
S39.002D, S39.002S	Unspecified injury of muscle, fascia and tendon of lower back, subsequent encounter or sequelae
S39.012D, S39.012S	Strain of muscle, fascia and tendon of lower back, subsequent encounter or sequelae
S39.092D, S39.092S	Other injury of muscle, fascia and tendon of lower back, subsequent encounter or sequelae
S39.82XD, S39.82XS	Other specified injuries of lower back, subsequent encounter or sequelae
S39.92XD, S39.92XS	Unspecified injuries of lower back, subsequent encounter or sequelae
Neck pain: Requires 2 encounters, 3–12 months apart	
M40.03	Postural kyphosis, cervicothoracic region
M40.12	Other secondary kyphosis, cervical region
M40.202	Unspecified kyphosis, cervical region
M40.292	Other kyphosis, cervical region

Table A.5—Continued

ICD-10 Code	Description
M41.22	Other idiopathic scoliosis, cervical region
M41.42	Neuromuscular scoliosis, cervical region
M41.52	Other secondary scoliosis, cervical region
M41.82	Other forms of scoliosis, cervical region
M42.12	Adult osteochondrosis of spine, cervical region
M43.02	Spondylolysis, cervical region
M43.12	Spondylolisthesis, cervical region
M43.6	Torticollis
M43.8X2	Other specified deforming dorsopathies, cervical region
M46.02	Spinal enthesopathy, cervical region
M47.11	Other spondylosis with myelopathy, occipito-atlanto-axial region
M47.12	Other spondylosis with myelopathy, cervical region
M47.21	Other spondylosis with radiculopathy, occipito-atlanto-axial region
M47.22	Other spondylosis with radiculopathy, cervical region
M47.811	Spondylosis without myelopathy or radiculopathy, occipito-atlanto-axial region
M47.812	Spondylosis without myelopathy or radiculopathy, cervical region
M47.891	Other spondylosis, occipito-atlanto-axial region
M47.892	Other spondylosis, cervical region
M48.01	Spinal stenosis, occipito-atlanto-axial region
M48.02	Spinal stenosis, cervical region
M48.11	Ankylosing hyperostosis, occipito-atlanto-axial region
M48.12	Ankylosing hyperostosis, cervical region
M48.21	Kissing spine, occipito-atlanto-axial region
M48.22	Kissing spine, cervical region
M48.32	Traumatic spondylopathy, cervical region
M48.42XD	Fatigue fracture of vertebra, cervical region, subsequent encounter for fracture with routine healing

Table A.5—Continued

ICD-10 Code	Description
M48.42XS	Fatigue fracture of vertebra, cervical region, sequelae of fracture
M48.52XD	Collapsed vertebra, not elsewhere classified, cervical region, subsequent encounter for fracture with routine healing
M48.52XS	Collapsed vertebra, not elsewhere classified, cervical region, sequelae of fracture
M48.8X1	Other specified spondylopathies, occipito-atlanto-axial region
M48.8X2	Other specified spondylopathies, cervical region
M49.81	Spondylopathy in diseases classified elsewhere, occipito-atlanto-axial region
M49.82	Spondylopathy in diseases classified elsewhere, cervical region
M50.**	Cervical disc disorders
M53.0	Cervicocranial syndrome
M53.1	Cervicobrachial syndrome
M53.81	Other specified dorsopathies, occipito-atlanto-axial region
M53.82	Other specified dorsopathies, cervical region
M54.11	Radiculopathy, occipito-atlanto-axial region
M54.12	Radiculopathy, cervical region
M54.2	Cervicalgia
M79.12	Myalgia of auxiliary muscles, head and neck
M95.3	Acquired deformity of neck
M99.01	Segmental and somatic dysfunction of cervical region
M99.11	Subluxation complex (vertebral) of cervical region
M99.21	Subluxation stenosis of neural canal of cervical region
M99.31	Osseous stenosis of neural canal of cervical region
M99.41	Connective tissue stenosis of neural canal of cervical region

Table A.5—Continued

ICD-10 Code	Description
M99.51	Intervertebral disc stenosis of neural canal of cervical region
M99.61	Osseous and subluxation stenosis of intervertebral foramina of cervical region
M99.71	Connective tissue and disc stenosis of intervertebral foramina of cervical region
M99.81	Other biomechanical lesions of cervical region
S12.201*, excluding S12.201A and S12.201B	Unspecified nondisplaced fracture of third cervical vertebra, subsequent encounter/sequelae
S12.231*, excluding S12.231A and S12.231B	Unspecified traumatic nondisplaced spondylolisthesis of third cervical vertebra, subsequent encounter/sequelae
S12.251*, excluding S12.251A and S12.251B	Other traumatic nondisplaced spondylolisthesis of third cervical vertebra, subsequent encounter/sequelae
S12.291*, excluding S12.291A and S12.291B	Other nondisplaced fracture of third cervical vertebra, subsequent encounter/sequelae
S12.301*, excluding S12.301A and S12.301B	Unspecified nondisplaced fracture of fourth cervical vertebra, subsequent encounter/sequelae
S12.331*, excluding S12.331A and S12.331B	Unspecified traumatic nondisplaced spondylolisthesis of fourth cervical vertebra, subsequent encounter/sequelae
S12.351*, excluding S12.351A and S12.351B	Other traumatic nondisplaced spondylolisthesis of fourth cervical vertebra, subsequent encounter/sequelae
S12.391*, excluding S12.391A and S12.391B	Other nondisplaced fracture of fourth cervical vertebra, subsequent encounter/sequelae
S12.401*, excluding S12.401A and S12.401B	Unspecified nondisplaced fracture of fifth cervical vertebra, subsequent encounter/sequelae
S12.431*, excluding S12.431A and S12.431B	Unspecified traumatic nondisplaced spondylolisthesis of fifth cervical vertebra, subsequent encounter/sequelae
S12.451*, excluding S12.451A and S12.451B	Other traumatic nondisplaced spondylolisthesis of fifth cervical vertebra, subsequent encounter/sequelae
S12.491*, excluding S12.491A and S12.491B	Other nondisplaced fracture of fifth cervical vertebra, subsequent encounter/sequelae
S12.501*, excluding S12.501A and S12.501B	Unspecified nondisplaced fracture of sixth cervical vertebra, subsequent encounter/sequelae
S12.531*, excluding S12.531A and S12.531B	Unspecified traumatic nondisplaced spondylolisthesis of sixth cervical vertebra, subsequent encounter/sequelae

Table A.5—Continued

ICD-10 Code	Description
S12.551*, excluding S12.551A and S12.551B	Other traumatic nondisplaced spondylolisthesis of sixth cervical vertebra, subsequent encounter/sequelae
S12.591*, excluding S12.591A and S12.591B	Other nondisplaced fracture of sixth cervical vertebra, subsequent encounter/sequelae
S12.601*, excluding S12.601A and S12.601B	Unspecified nondisplaced fracture of seventh cervical vertebra, subsequent encounter/sequelae
S12.631*, excluding S12.631A and S12.631B	Unspecified traumatic nondisplaced spondylolisthesis of seventh cervical vertebra, subsequent encounter/ sequelae
S12.651*, excluding S12.651A and S12.651B	Other traumatic nondisplaced spondylolisthesis of seventh cervical vertebra, subsequent encounter/ sequelae
S12.691*, excluding S12.691A and S12.691B	Other nondisplaced fracture of seventh cervical vertebra, subsequent encounter/sequelae
S12.8XXD	Fracture of other parts of neck, subsequent encounter
S12.8XXS	Fracture of other parts of neck, sequelae
S12.9XXD	Fracture of neck, unspecified, subsequent encounter
S12.9XXS	Fracture of neck, unspecified, sequelae
S13.0XX*, excluding S13.0XXA	Traumatic rupture of cervical intervertebral disc, subsequent encounter/sequelae
S13.100*, excluding S13.100A	Subluxation of unspecified cervical vertebrae, subsequent encounter/sequelae
S13.130*, excluding S13.130A	Subluxation of C2/C3 cervical vertebrae, subsequent encounter/sequelae
S13.140*, excluding S13.140A	Subluxation of C3/C4 cervical vertebrae, subsequent encounter/sequelae
S13.150*, excluding S13.150A	Subluxation of C4/C5 cervical vertebrae, subsequent encounter/sequelae
S13.160*, excluding S13.160A	Subluxation of C5/C6 cervical vertebrae, subsequent encounter/sequelae
S13.170*, excluding S13.170A	Subluxation of C6/C7 cervical vertebrae, subsequent encounter/sequelae
S13.180*, excluding S13.180A	Subluxation of C7/T1 cervical vertebrae, subsequent encounter/sequelae

Table A.5—Continued

ICD-10 Code	Description
S13.4XX*, excluding S13.4XXA	Sprain of ligaments of cervical spine, subsequent encounter/sequelae
S13.8XX*, excluding S13.8XXA	Sprain of joints and ligaments of other parts of neck, subsequent encounter/sequelae
S13.9XX*, excluding S13.9XXA	Sprain of joints and ligaments of unspecified parts of neck, subsequent encounter/sequelae
S14.2XX*, excluding S14.2XXA	Injury of nerve root of cervical spine, subsequent encounter/sequelae
S16.1XX*, excluding S16.1XXA	Strain of muscle, fascia and tendon at neck level, subsequent encounter/sequelae
S16.2XX*, excluding S16.2XXA	Laceration of muscle, fascia and tendon at neck level, subsequent encounter/sequelae
S16.8XX*, excluding S16.8XXA	Other specified injury of muscle, fascia and tendon at neck level, subsequent encounter/sequelae
S16.9XX*, excluding S16.9XXA	Unspecified injury of muscle, fascia and tendon at neck level, subsequent encounter/sequelae
S17.8XX*, excluding S17.8XXA	Crushing injury of other specified parts of neck, subsequent encounter/sequelae
S17.9XX*, excluding S17.9XXA	Crushing injury of neck, part unspecified, subsequent encounter/sequelae
S19.80X*, excluding S19.80XA	Other specified injuries of unspecified part of neck, subsequent encounter/sequelae
S19.89X*, excluding S19.89XA	Other specified injuries of other specified part of neck, subsequent encounter/sequelae
S19.9XX*, excluding S19.9XXA	Unspecified injury of neck, subsequent encounter/ sequelae
Knee osteoarthritis: Requires one encounter	
M17.*	Unilateral/bilateral primary/secondary osteoarthritis of the knee
Hip osteoarthritis: Requires one encounter	
M16.*	Unilateral/bilateral primary/secondary osteoarthritis of the hip
Fibromyalgia: Requires one encounter	
M79.7	Fibromyalgia

Chronic Pain Measure: Nonpharmacologic Treatment

Measure Statement

Percentage of patients with chronic pain who received NPT in the 12 months after the index visit.

Numerator

Patients treated with NPT within 12 months of the index visit.

Denominator

Patients with chronic pain.

Technical Specifications: Numerator

Include patients who received any NPT during the 12 months after the index visit.

Technical Specifications: Denominator

1. Search during the 12-month eligibility period for the first encounters with a relevant ICD-10 code (Table A.5) from the five diagnostic clusters.
2. For each cluster, determine whether the requirements for "chronic pain" have been met—that is, the patient had either one visit for an inherently chronic diagnosis (knee/hip OA or fibromyalgia) or two visits within the same diagnostic cluster (low back pain or neck pain) three to 12 months apart. The same-cluster visit could have been before or after the first same-cluster visit in the recruitment period.
3. After identifying all relevant diagnostic clusters, identify the earliest chronic pain visit within the recruitment period. This is the first visit with the chronic pain diagnosis (knee/hip OA or fibromyalgia) or a pain diagnosis (low back pain or neck pain) with a diagnosis in the same diagnostic cluster in the prior three to 12 months. The prior visit may have occurred in the 12 months prior to the start of the eligibility period. The earliest chronic pain visit is the "index visit," and it starts the 12-month observation period.

Denominator Exclusions

Exclude patients for any of the following during the 12-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment that exceeded one month
- deployment or separation from military service.

Chronic Pain Measure: NPT or Nonopioid Medication

Measure Statement

Percentage of patients with chronic pain who received NPT or nonopioid medication.

Numerator

Patients who received NPT or nonopioid medication within 12 months of the index visit.

Denominator

Patients with chronic pain.

Technical Specifications: Numerator

Include all NPT received in the 12 months following the index visit. Include patients who received appropriate nonopioid medication during that same period for any relevant diagnostic cluster identified in the recruitment period. See the section "Key Definitions" at the beginning of this section for a list of nonopioid medications by diagnostic cluster.

Technical Specifications: Denominator

1. Search during the 12-month eligibility period for the first encounters with a relevant ICD-10 code (Table A.5) from the five diagnostic clusters.
2. For each cluster, determine whether the requirements for "chronic pain" have been met—that is, the patient had either one visit for an inherently chronic diagnosis (knee/hip OA or fibromyalgia) or

two visits within the same diagnostic cluster (low back pain or neck pain) three to 12 months apart. The same-cluster visit could have been before or after the first same-cluster visit in the recruitment period.

3. After identifying all relevant diagnostic clusters, identify the earliest chronic pain visit in the recruitment period. This is the first visit with the chronic pain diagnosis (knee/hip OA or fibromyalgia) or the visit with a pain diagnosis (low back pain or neck pain) where there was also a visit with a diagnosis from the same diagnostic cluster in the prior three to 12 months. The prior visit may have occurred in the 12 months prior to the start of the eligibility period. The earliest pain visit that meets criteria for chronicity is the "index visit," and it starts the 12-month observation period.

Denominator Exclusions

Exclude patients for any of the following during the 12-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment that exceeded one month
- deployment or separation from military service.

Opioid Prescribing

These measures assess opioid prescribing for noncancer pain, including concomitant use of benzodiazepines, high daily dosage of opioids, LOT, use of naloxone, follow-up, and drug testing.

When computing scores for opioid prescribing measures and related descriptive analyses, we used the following specifications:

- *Same dispense date, same days of supply, and same drug:* We assumed that opioids dispensed on the same date and for the same days of supply were part of a *single* dispensing episode. These episodes included circumstances in which the same opioid was dispensed at more than one dosage to create a dosage not otherwise available in a single tablet. We

used the concurrent days of medications to determine the daily dosage prescribed for that drug.

- *Same dispense date and same days of supply, but not the same drug:* We assumed that different opioids dispensed on the same date and for the same days of supply were part of a *single* dispensing episode. We used the concurrent days of medications to determine the prescribed daily dosages.
- *Overlapping days of supply but different dispense dates:* We considered opioid dosages on overlapping days from dispensing episodes with varying dates to have been taken concurrently for the overlapping days. Therefore, we used the overlapping days of medications to determine the daily dosages.
- *Refills:* The same medication and same dose overlapping by seven days or less could be considered a refill. We added the overlapping days to the total days and considered them part of the same dispensing episode. Unless otherwise specified, analyses in this report considered all cases of overlap as adding to the total daily dosage on overlap days.
- *Morphine milligram equivalent (MME):* See Appendix B for conversion factors. We applied the following rules to our MME calculations:
  - We excluded opioids from MME calculations: Buprenorphine and buprenorphine combination products, injectable opioid formulations, oral solutions, packets, and nasal spray.
  - We included overlapping opioids in our computation of the daily dosages unless otherwise specified.
  - Daily dosage MME = (number of mg units supplied × quantity supplied)/(days of supply) × MME conversion factor.
  - Total dispensed MME = (number of mg units supplied × quantity supplied) × MME conversion factor.
  - Average daily dosage MME = (Total mg dosage for all opioid days/total opioid days) × MME conversion factor.
- *Unit of measurement:* Various approaches were used to express compliance with an opioid prescribing standard. Most of our analyses involved calculating results at the patient level (e.g., percentage of patients whose daily dosage from all dispensing episodes were always less than *x*). In a few cases, results are described at the event level (e.g.,

percentage of prescribing episodes in which the daily dosage was less than *x*).

Key Definitions

See Appendix B for definitions of the following terms:

- *benzodiazepines*
- *long-term opioid therapy* (LOT)
- *morphine milligram equivalent* (MME)
- *opioid-naïve*
- *opioids.*

The following additional definition is used in this section:

- *naloxone:* naloxone hydrochloride injection (Evzio), naloxone nasal spray (NARCAN).

Opioid Prescribing Measure: Opioids Without Concurrent Benzodiazepines

Measure Statement

Percentage of patients who received opioids but did not receive concomitant benzodiazepines.

Numerator

Patients who received no concomitant treatment with benzodiazepines.

Denominator

Patients who received seven or more days of supply of opioids.

Technical Specifications: Numerator

No dispensed medication with concomitant days of opioids and benzodiazepines or concomitant use is less than seven consecutive days. The threshold of seven consecutive days of concomitant use has been used in previous studies (Hwang et al., 2016).

Technical Specifications: Denominator

From PDTS, identify all patients who received seven or more days of supply of opioids at any time during the eligibility year. Exclude days supplied that extend after the end of the eligibility year. For multiple claims on the same day of service, use the prescriptions with the longest days of supply. The exclusion of less than seven days of supply is designed to avoid capturing acute use of benzodiazepines, such as for sedation related to procedures (Gaither et al., 2014).

Denominator Exclusions

Exclude patients for any of the following during the 12-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment that exceeded one month
- deployment or separation from military service.

Opioid Prescribing Measure: Lower-Risk Average Daily Dosage

Measure Statement

Percentage of patients taking opioids whose dispensed average daily dosage is less than 90 MME.

Numerator

Patients with an average daily opioid dosage of less than 90 MME.

Denominator

Patients taking opioids.

Technical Specifications: Numerator

For all patients who were dispensed opioids during the eligibility period, calculate the average daily dosage MME for the total days of opioids: total daily dosage MME for all opioid days/total opioid days (not including days with no opioid supply). Exclude from the calculation opioids that are oral solu-

tions, injections, suppositories, and buprenorphine. Include in the numerator patients whose average daily dosage MME did not exceed 89 MME.

Technical Specifications: Denominator

Include all patients who were dispensed an opioid during the eligibility period.

Denominator Exclusions

Exclude patients for any of the following during the 12-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment that exceeded one month
- deployment or separation from military service.

Opioid Prescribing Measure: No Advancement to LOT

Measure Statement

Percentage of opioid-naïve patients who were dispensed opioids and did not advance to LOT.

Numerator

Patients who received opioids but did not advance to LOT.

Denominator

Opioid-naïve patients who were dispensed opioids.

Technical Specifications: Numerator

Starting with the first opioid prescription, determine whether the patient advanced to LOT over the course of the subsequent 12 months. The numerator is those whose opioid use during the 12-month observation period did not meet the definition of LOT (see Appendix B).

Technical Specifications: Denominator

The denominator is opioid-naïve patients who were dispensed opioids during the 12-month eligibility period. The 12-month observation period starts when the first outpatient opioid medication is dispensed.

Denominator Exclusions

Exclude patients who were not opioid-naïve at the time that opioids were first dispensed or for any of the following during the 12-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment that exceeded one month
- deployment or separation from military service.

Opioid Prescribing Measure: Naloxone in LOT and Higher-Risk Daily Dosage

Measure Statement

Percentage of patients on LOT who were dispensed opioids with a daily dosage of 50 MME or higher who were also dispensed naloxone within three months.

Numerator

Patients who were dispensed naloxone within three months.

Denominator

Patients on LOT who were dispensed a daily opioid dosage of 50 MME or higher.

Technical Specifications: Numerator

Include all patients who were dispensed naloxone within three months of the first opioid dispensing date during the observation year. The observation period starts when opioids are first dispensed during the eligibility period at a daily dosage of 50 MME or higher.

Technical Specifications: Denominator

Identify patients who meet the definition of LOT (i.e., 90 days of opioids with no gap of more than 31 days) during the first nine months of the eligibility year and who were on LOT at any opioid dosage. From those patients, identify those who were dispensed opioids with a daily dosage of 50 or more MME during the first nine months of the eligibility year. Exclude

from the calculation opioids that are solutions, injections, suppositories, and buprenorphine. Exclude from the denominator patients who were dispensed naloxone in the 24 months prior to the first dispensed opioids with a daily dosage of 50 MME or higher.

Denominator Exclusions

Exclude patients who were dispensed naloxone in the 24 months prior to the dispensing of opioids with a daily dosage of 50 MME or more. Also exclude patients for any of the following during the three-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment
- deployment or separation from military service.

Opioid Prescribing Measure: Follow-Up Visit in LOT

Measure Statement

Percentage of patients on LOT who had follow-up E&M visits at least every 90 days.

Numerator

Patients with a follow-up E&M visit at least every 90 days.

Denominator

Patients on LOT.

Technical Specifications: Numerator

For the patients who met the definition of LOT and continued to meet it for at least an additional 90 days, as well as for subsequent 90-day periods of LOT until the end of the eligibility year, check the timing of subsequent outpatient E&M visits (Table A.6). For each patient's eligibility period, check for any gaps between E&M visits that exceeded 90 days. Fulfilling the requirements of the measure means that the E&M visits during the entire time of continued LOT were timed such that there was never a gap between visits that exceeded 90 days.

TABLE A.6
CPT Codes for Outpatient E&M Visit

CPT Codes	Description
99201, 99202, 99203, 99204, 99205, 99212, 99213, 99214, 99215	Office or other outpatient services: E&M services
99241, 99242, 99243, 99244, 99245	Office or other outpatient consultations
90862	Pharmacological management, including prescription use, and review of medication with no more than minimal medical psychotherapy
+90863	Pharmacological management, including prescription and review of medication, when performed with psychotherapy services (for providers who cannot report E&M codes)

Technical Specifications: Denominator

Identify all patients who meet the definition of LOT during the eligibility period. To do this, determine when the patient reached the definition of LOT (90 days of supply were dispensed with no gaps greater than 31 days) and select patients whose LOT continued for an additional 90 days beyond the 90 days that met minimum definition of LOT, as well as those who continued to meet the definition of LOT.

Denominator Exclusions

Exclude patients for any of the following during the three-month observation periods:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment
- deployment or separation from military service.

Opioid-Prescribing Measure: Urine Drug Testing in LOT

Measure Statement

Percentage of patients on LOT who had urine drug testing.

Numerator

Patients who received urine drug testing at least once in 12 months.

Denominator

Patients on LOT.

Technical Specifications: Numerator

Patient had at least one drug screening test at any time during the 12-month measurement period. Codes for urine drug testing are listed in Table A.7.

Technical Specifications: Denominator

The denominator is limited to those on LOT at the beginning of the 12-month observation period who meet the specifications for LOT for the entire 12-month period (i.e., taking opioids with no gaps of more than 31 days).

Denominator Exclusions

Exclude patients for any of the following during the 12-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment that exceeded one month
- deployment or separation from military service.

TABLE A.7

CPT and HCPCS Codes for Urine Drug Testing

CPT Code	Description
80305	Testing capable of being read by direct optical observation only. Test includes validity testing when performed and may be performed only once per date of service. Use 80306 when test is read by instrument-assisted direct optical observation. Test includes validity testing when performed and may be performed only once per date of service. Use 80307 when test is performed by instrumented chemistry analyzers (e.g., Immunoassay, enzyme assay, TOF, MALDI, LDTD, DESI, DART, CHPC, GC mass spectrometry). Test includes validity testing when performed and may be performed only once per date of service
80306	Drug test(s), presumptive, any number of drug classes, qualitative; any number of devices or procedures, (e.g., immunoassay) read by instrumented assisted direct optical observation (e.g., dipstick, cups, cards, cartridges) includes sample validation when performed, per date of service
80307	GC-MS/MS, LC-MS, LC-MS/MS, LDTD, MALDI, TOF) includes sample validation when performed, per date of service.
80324	Amphetamines, 1 or 2
80325	Amphetamines, 3 or 4
80326	Amphetamines, 5 or more
80345	Barbiturates
80348	Buprenorphine
80353	Cocaine
80354	Fentanyl
80358	Methadone
80359	Methylenedioxyamphetamines (MDA, MDEA, MDMA)
80365	Oxycodone
80367	Propoxyphene
80372	Tapentadol
80373	Tramadol

Table A.7—Continued

CPT Code	Description
G0480	Drug test(s), definitive, utilizing (1) drug identification methods able to identify individual drugs and distinguish between structural isomers (but not necessarily stereoisomers), including but not limited to GC/MS (any type, single or tandem) and LC/MS (any type, single or tandem and excluding immunoassays [e.g., IA, EIA, ELISA, EMIT, FPIA] and enzymatic methods [e.g., alcohol dehydrogenase]), (2) stable isotope or other universally recognized internal standards in all samples (e.g., to control for matrix effects, interferences and variations in signal strength), and (3) method or drug-specific calibration and matrix-matched quality control material (e.g., to control for instrument variations and mass spectral drift); qualitative or quantitative, all sources, includes specimen validity testing, per day; 1–7 drug class(es), including metabolite(s) if performed
G0481	8–14 drug class(es), including metabolite(s) if performed
G0482	15–21 drug class(es), including metabolite(s) if performed
G0483	22 or more drug class(es), including metabolite(s) if performed

Medication for Opioid Use Disorder

This measure assesses for medication treatment of OUD. This single measure was most relevant to the opioid measures addressed in this report. The measure is NQF-endorsed and is a first-year measure in the HEDIS 2020 measure set (National Committee for Quality Assurance, 2020; NQF, various dates).. We selected the population included in our study on the basis of potential eligibility for the pain care quality measure denominators. Therefore, results for this measure are not representative of all active-component service members with OUD in FY 2019 (see Chapter Three).

Key Definition

OUD: At least one encounter with a diagnosis of opioid abuse, dependence, or remission (primary or secondary) at any time during the 12-month observation period (Table A.8).

TABLE A.8
ICD-10 Codes for Opioid Use Disorder

ICD-10 Code	Description
F11.1*	Opioid abuse
F11.2* (including F11.21, in remission)	Opioid dependence

Opioid Use Disorder Measure: Medication Treatment for OUD

Measure Statement

Percentage of patients with OUD who received medication treatment for OUD.

Numerator

Patients who received approved medication treatment for OUD in the 12-month observation period.

Denominator

Patients with a diagnosis of OUD in the 12-month observation period.

Technical Specifications: Numerator

Patients with OUD during the 12-month observation period who received or were administered medication treatment for OUD.

Our analyses included approved medications for OUD dispensed or administered at any time during the observation year (Tables A.9 and A.10). Given that oral naltrexone was not on the current list of FDA-approved OUD treatment at the time of this research, we calculated the measure with and without oral naltrexone as a treatment.

Technical Specifications: Denominator

Include all patients with an encounter associated with an ICD-10 diagnosis for OUD during the 12-month observation period.

TABLE A.9
Approved Medications for OUD

Medication	Brand Names
Buprenorphine hydrochloride	Belbuca, Buprenex, Butrans, Subutex, Probuphine
Buprenorphine-naloxone	Bunavail, Suboxone, Zubsolv
Methadone	
Naltrexone	ReVia, Vivitrol

TABLE A.10
HCPCS Codes Related to Medications for OUD

HCPCS Code	Description
Buprenorphine	
J0570	Buprenorphine implant 74.2 mg
J0571	Buprenorphine oral 1 mg
J0572	Buprenorphine/Naloxone up to 3 mg buprenorphine
J0573	Buprenorphine/Naloxone 3.1 to 6 mg buprenorphine
J0574	Buprenorphine/Naloxone 6.1 to 10 mg buprenorphine
J0575	Buprenorphine/Naloxone over 10 mg buprenorphine
J0592	Buprenorphine Hydrochloride
Naltrexone	
J2315	Injection, Naltrexone, Depot form, 1 mg
Methadone	
H0020	Alcohol and/or drug services; Methadone administration and/or service (provision of the drug by a licensed program)
S0109	Methadone, oral, 5 mg

Denominator Exclusions

Exclude patients for any of the following during the 12-month observation period:

- cancer diagnosis (see Appendix B for definition)
- lapse in TRICARE enrollment that exceeded one month
- deployment or separation from military service.

Note that because our data did not allow us to distinguish between methadone OUD treatment and chronic pain treatment, we excluded from the measure numerator and denominator cases that passed this measure solely on the basis of methadone treatment.

APPENDIX B

Key Cross–Measure Domain Definitions

The following definitions apply to several quality measures across the various domains of pain care. Key definitions that apply to a single domain of pain care are not specified here but can be found within the relevant section in Appendix A.

Benzodiazepines

Drawn from PDTS therapeutic classes 282408 and 281208—benzodiazepines (hypnotic/sedative/anxiolytic). The following medications are included: Alprazolam (Niravam, Xanax), clobazam (Onfi), chlordiazepoxide, clonazepam (Klonopin), clorazepate (Tranxene), diazepam (Valium), estazolam, flurazepam, halazepam, lorazepam (Ativan), oxazepam, quazepam (Doral), temazepam (Restoril), and triazolam (Halcion). Exclusions: Injectable formulations, gel kits, and inpatient use.

Cancer Diagnosis

A cancer diagnosis may appear in any code position in a patient's administrative record. Cancer diagnoses include ICD-10 codes C00–D49 but exclude C44.*, D04.*, and D48.5 (nonmelanoma skin cancer and benign and uncertain lesions of the skin).

Long-Term Opioid Therapy (LOT)

LOT is defined as total days of supply of dispensed opioids that equals or exceeds 90 days with maximal allowable gaps of 31 days.

Morphine Milligram Equivalent (MME)

Average daily MME is calculated for each opioid prescription dispensed based on MME conversion factors (Table B.1). MME per day is computed by strength per unit *x* (number of units/days of supply) times the MME conversion factor.

Exclusions: Opioids that are excluded from this computation include injectable opioids, buprenorphine and buprenorphine combination products, rectal suppositories, nasal spray, and oral solutions. *See additional specifications for opioid prescribing measures in the section "Opioid Prescribing" in Appendix A.*

TABLE B.1
Opioid MME Conversion Factors

Opioid	Conversion Factor
Buprenorphine patch[a]	12.60
Buprenorphine tab or film	10.00
Butorphanol	7.00
Codeine	0.15
Dihydrocodeine	0.25
Fentanyl buccal, sublingual, lozenge/troche	0.13
Fentanyl film or oral spray	0.18
Fentanyl nasal spray	0.16
Fentanyl patch[b]	7.20
Hydrocodone	1.00
Hydromorphone	4.00
Levorphanol	11.00

Table B.1—Continued

Opioid	Conversion Factor
Meperidine	0.10
Methadone	3.00
Morphine	1.00
Opium	1.00
Oxycodone	1.50
Oxymorphone	3.00
Pentazocine	0.37
Tapentadol	0.40
Tramadol	0.10

SOURCE: CDC, 2018.

[a] The MME conversion factor for buprenorphine patches is based on the assumption that 1 mg of parenteral buprenorphine is equivalent to 75 mg of oral morphine and that one patch delivers the dispensed micrograms per hour over a 24-hour day. For example, 5 µg/hr buprenorphine patch × 24 hrs = 120 µg/day buprenorphine = 0.12 mg/day = 9 mg/day oral MME. In other words, the conversion factor not accounting for days of use would be 9/5, or 1.8. However, because the buprenorphine patch remains in place for seven days, we multiplied the conversion factor by 7 (1.8 × 7 = 12.6). In this example, MME/day for four 5-µg/hr buprenorphine patches dispensed for use over 28 days would work out as follows, for example: 5 µg/hr buprenorphine patch × (4 patches/28 days) × 12.6 = 9 MME/day. Note that because this allowance has been made based on the typical dosage of one buprenorphine patch per seven days, you should first change all days' supply in your prescription data to follow this standard, i.e., days' supply of buprenorphine patches = number of patches × 7.

[b] The MME conversion factor for fentanyl patches is based on the assumption that 1 mg of parenteral fentanyl is equivalent to 100 mg of oral morphine and that one patch delivers the dispensed micrograms per hour over a 24-hour day. For example, 25 µg/hr fentanyl patch × 24 hrs = 600 µg/day fentanyl = 60 mg/day oral MME. In other words, the conversion factor not accounting for days of use would be 60/25, or 2.4. However, because the fentanyl patch remains in place for three days, we multiplied the conversion factor by 3 (2.4 × 3 = 7.2). In this example, MME/day for ten 25 µg/hr fentanyl patches dispensed for use over 30 days would work out as follows: 25 µg/hr fentanyl patch × (10 patches/30 days) × 7.2 = 60 MME/day. Note that because this allowance has been made based on the typical dosage of one fentanyl patch per three days, you should first change all days' supply in your prescription data to follow this standard, i.e., days' supply for fentanyl patches = number of patches × 3.

Nonpharmacologic Treatment (NPT)

The definition for NPT is based on those treatments that are coded in administrative data (Table B.2). NPT includes psychological therapies, physical and occupational therapy, exercise, massage, chiropractic care/manipulation, acupuncture, hypnotherapy/biofeedback, stress management/relaxation, multidisciplinary rehabilitation, physical medicine, and pain clinic. NPT includes an assessment with a relevant practitioner (e.g., physical therapist), regardless of whether treatment was initiated and the type of treatment. In some cases, the CPT or HCPCS code must be accompanied by other coded detail to confer credit. Those requirements are listed at the start of the relevant section. If not, the code by itself is sufficient to confer NPT credit.

TABLE B.2
CPT, HCPCS, and Specialty/Clinic Codes for NPT

Code	Description and Additional Requirements (if applicable)
	Psychotherapy
	The CPT codes for *psychotherapy* must be accompanied by an additional code at the same encounter to qualify as NPT: Psychotherapy CPT code (listed below) *AND* Chronic pain diagnostic cluster code (see Table A.8) in any position *OR* ICD-10 code F54 (psychological and behavioral factors associated with disorders or diseases classified elsewhere) in any position *OR* ICD code for chronic pain: G89.21, G89.22, G89.28, G89.29, G89.4, in any position.
90791	Psychiatric diagnostic evaluation
90792	Psychiatric diagnostic evaluation with medical services
90832	Psychotherapy, 30 minutes, patient with or without family
90833	30 minutes
90834	45 minutes
90836	Psychotherapy, 45 minutes, with E&M service of 90 minutes or longer
90837	Psychotherapy, 60 minutes
90838	Psychotherapy, 60 minutes, with E&M service

Table B.2—Continued

Code	Description and Additional Requirements (if applicable)
90839	Psychotherapy for crisis, first 60 minutes
90840	Each additional 30 minutes
90853	Group psychotherapy
90863	Pharmacologic management with psychotherapy services
90899	Psychiatric service or therapy
99354	Prolonged E&M or psychotherapy service, outpatient, beyond first hour
99355	Each additional 30 minutes
	Stress management/relaxation
The following *stress management/relaxation* code stands alone to give credit for NPT.	
S9454	Stress management relaxation therapy, non-physician
	Chiropractic care/manipulation
E&M encounters with a *chiropractor* for pain-related assessment must be accompanied by an additional code at the same encounter to qualify as NPT: E&M CPT code (listed below) *AND* Direct care: Provider specialty code: 713 (chiropractor) *OR* MEPRS clinic code: BED (chiropractic) Private-sector care: Provider specialty code: 35 (chiropractor).	
99201	E&M, new patient, focused
99202	Expanded
99203	Detailed
99204	Comprehensive, moderate complexity
99205	Comprehensive, high complexity
99211	E&M, established patient, focused
99212	Expanded
99213	Detailed
99214	Comprehensive, moderate complexity

Table B.2—Continued

Code	Description and Additional Requirements (if applicable)
99215	Comprehensive, high complexity
NOTE: The following *manipulation* codes stand alone to give credit for NPT.	
98940	Chiropractic manipulative treatment (CMT), spinal, 1–2 regions
98941	CMT, spinal, 3–4 regions
98942	CMT, spinal, 5 regions
98943	CMT, extraspinal, 1 or more regions
98925	Osteopathic manipulative treatment (OMT), 1–2 body regions
98926	OMT, 3–4 body regions
98927	OMT, 5–6 body regions
98928	OMT, 7–8 body regions
98929	OMT, 9–10 body regions
S8990	Physical or manipulative therapy performed for maintenance rather than restoration
S9090	Vertebral axial decompression, per session
Physical/occupational therapy and physical medicine, pain management	
E&M encounters with a *physical/occupational therapist or physical medicine physician* for pain-related assessment must be accompanied by an additional code at the same encounter to qualify as NPT: E&M CPT code (listed below) *AND* Direct care: Provider specialty code: 090 (physical medicine physician), 096 (physician physical medicine and rehabilitation/spinal cord injury), 321 (occupational medicine physician), or 950 (physical medicine and rehabilitation) *OR* MEPRS clinic code: BAR (physical medicine), BBL (pain management), or BLZ (outpatient rehabilitative services, not elsewhere specified) Private-sector care: Provider specialty code: 25 (physical medicine and rehabilitation).	
99201	E&M, new patient, focused
99202	Expanded
99203	Detailed

Table B.2—Continued

Code	Description and Additional Requirements (if applicable)
99204	Comprehensive, moderate complexity
99205	Comprehensive, high complexity
99211	E&M, established patient, focused
99212	Expanded
99213	Detailed
99214	Comprehensive, moderate complexity
99215	Comprehensive, high complexity
NOTE: The following *physical/occupational therapy evaluation* codes stand alone to give credit for NPT.	
97001	Physical therapy (PT) evaluation (pre-2017)
97161	PT evaluation, low complexity, 20 minutes
97162	PT evaluation, moderate complexity, 30 minutes
97163	PT evaluation, high complexity, 45 minutes
97002	PT reevaluation (pre-2017)
97164	PT reevaluation, est plan care
97003	Occupational therapy (OT) evaluation (pre-2017)
97165	OT evaluation, low complexity, 30 minutes
97166	OT evaluation, moderate complexity, 45 minutes
97167	OT evaluation, high complexity, 60 minutes
97004	OT reevaluation (pre-2017)
97168	OT reevaluation, established plan care
97005	Athletic training evaluation
97006	Athletic training reevaluation
NOTE: The following *physical modality* codes stand alone and give credit for NPT.	
97010	Heat/cold
97012	Traction
97014	Electrical stimulation
97016	Vasopneumatic devices

Table B.2—Continued

Code	Description and Additional Requirements (if applicable)
97018	Paraffin
97022	Whirlpool
97024	Diathermy
97026	Infrared
97028	Ultraviolet
97032	Electrical stimulation, each 15 minutes
97033	Iontophoresis
97034	Contrast baths
97035	Ultrasound
97036	Hubbard tank
97039	Unlisted modality
NOTE: The following *therapeutic procedure* codes stand alone and give credit for NPT.	
97110	Therapeutic procedure, 1 or more areas, 15 minutes, exercise for strength, endurance, ROM, flexibility[a]
97112	Neuromuscular reeducation or movement, balance, coordination, kinesthetic sense, posture, proprioception[a]
97113	Aquatic therapy with therapeutic exercise[a]
97116	Gait training[a]
97124	Therapeutic procedure, 1 or more areas, each 15 minutes; massage, including effleurage, petrissage, and/or tapotement (stroking, compression, percussion)
97139	Unlisted therapeutic procedure
97140	Manual therapy techniques (e.g., mobilization/manipulation, manual lymphatic drainage, manual traction,) 1 or more regions, each 15 minutes
97150	Therapeutic procedures, group[a]
97530	Therapeutic activities, direct patient contact, dynamic activities to improve functional performance[a]
64550	Application of surface transcutaneous neurostimulator
G0283	Electrical stimulation (unattended) to 1 or more areas, for indications other than wound care, as part of a therapy plan of care

Table B.2—Continued

Code	Description and Additional Requirements (if applicable)
S8948	Application of modality (constant provider attendance) to 1 or more areas; low-level laser, each 15 minutes
S9451	Exercise classes, non-physician provider, per session[a]
4242F	Counseling for supervised exercise program provided to patients during episode of back pain lasting longer than 12 weeks[a]
4245F	Patient counseling during initial visit to maintain or resume normal activities[a]
0278T	Transcutaneous electrical modulation pain reprocessing, each treatment session
	Acupuncture
NOTE: The following *acupuncture* codes stand alone to give credit for NPT.	
97810	Acupuncture, 1 or more needles, without electrical stimulation, 15 minutes
97811	Each additional 15 minutes
97813	Acupuncture, 1 or more needles, with electrical stimulation, 15 minutes
97814	Each additional 15 minutes
S8930	Electrical stimulation of auricular acupuncture points; each 15 minutes of personal one-on-one contact with patient
	Biofeedback/hypnotherapy
NOTE: The following *biofeedback/hypnotherapy* codes stand alone to give credit for NPT.	
90875	Individual psychophysiological therapy incorporating biofeedback training by any modality, with psychotherapy, 30 minutes
90876	45 minutes
90880	Hypnotherapy
90901	Biofeedback training, any modality
90911	Biofeedback training, perineal muscles, anorectal or urethral sphincter, including EMG or manometry
	Miscellaneous assessment/intervention

Table B.2—Continued

Code	Description and Additional Requirements (if applicable)
NOTE: The CPT codes for *miscellaneous assessment/intervention* must be accompanied by an additional code at the same encounter to qualify as NPT: Assessment/intervention CPT code (listed below) *AND* Chronic pain diagnostic cluster code (see Table A.8) in any position *OR* ICD-10 code F54 (Psychological and behavioral factors associated with disorders or diseases classified elsewhere) in any position *OR* ICD code for chronic pain: G89.21, G89.22, G89.28, G89.29, G89.4, in any position.	
96150	Initial assessment to determine biological, psychological, social factors affecting patient's physical health and any treatment problems
96151	Reassessment to evaluate condition and determine need for further treatment
96152	Health and behavior intervention, each 15 minutes, face-to-face, individual
96153	Health and behavior intervention, group

[a] Included in category of guided or supervised exercise.

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)

Drawn from PDTS therapeutic class 280804, NSAIDs. The following medications are included: Celecoxib (Celebrex), diclofenac (various), diflunisal, etodolac, fenoprofen (Nalphon), flurbiprofen, ibuprofen (various), indomethacin (Indocin, Tivorbex), ketoprofen, ketorolac, meclofenamate, mefenamic acid (Ponstel), meloxicam (Mobic, Viviodex), nabumetone (Relafen), naproxen (various), oxaprozin (Daypro), piroxicam (Feldene), salicylates (various), sulindac (Clinoril), and tolmetin. A distinction is made between oral and topical NSAIDs. See individual measures for measure-specific applicable formulations.

Exclusions: Injectable and nasal spray formulations, low-dose aspirin, inpatient use.

Opioids

These are drawn from PDTS therapeutic classes 280808, opiate agonists, and 280812, opiate partial agonists. Opioids include the following: buprenorphine, butorphanol, codeine, dihydrocodeine, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, opium, oxycodone, oxymorphone, pentazocine, tapentadol, and tramadol.

Exclusions: Opioid cough and cold preparations, injectable formulations, inpatient use, and all single-agent and combination buprenorphine products used to treat opioid use disorder (OUD). This includes buprenorphine sublingual tablets, Probuphine implant, and all buprenorphine/naloxone combination products in combination with a diagnosis of OUD. *See specifications for individual measures; other exclusion or inclusion criteria may apply. Also see specifications for opioid prescribing measures in the section "Opioid Prescribing" in Appendix A.*

Opioid-Naïve

This is defined as not having received opioids in the prior 90 days. Consider the patient not opioid-naïve if opioids were dispensed during that time or if opioids were dispensed earlier and the total days' supply overlaps with the 90 days prior to the initial visit.

Short- and Long-Acting Opioids

Short acting opioids are immediate release formulations. Long-acting opioids could include formulations of medications from the short-acting list that are extended- or sustained-release (Table B.3). Short-acting formulations may include the designation "IR" for immediate release. Long-acting formulations may include the designation "ER" or "XR" for extended release.

Exclusions: Injectable formulations and inpatient use.

TABLE B.3

Short- and Long-Acting Opioids

Short-Acting Opioids	Long-Acting Opioids
Butorphanol (nasal spray)	
	Buprenorphine (buccal/tablet/transdermal)
Codeine	
Dihydrocodeine	Dihydrocodeine ER
Fentanyl (spray, sublingual, buccal)	Fentanyl TDS (transdermal)
Hydrocodone	Hydrocodone ER
Hydromorphone	Hydromorphone ER
Levorphanol	
Meperidine	
	Methadone
Morphine	Morphine ER
Opium/belladonna	
Oxycodone	Oxycodone ER
Oxymorphone	Oxymorphone ER
Pentazocine	
Tapentadol	Tapentadol ER
Tramadol	Tramadol ER

NOTE: ER = extended-release formulation.

APPENDIX C

Comorbidity and Health Care Utilization Among Service Members with Chronic Pain, by Pain Condition

Table C.1 shows the percentage of service members with chronic low back pain, chronic neck pain, knee OA, hip OA, or fibromyalgia at their initial chronic pain visit during the eligibility period for this study.

We also conducted supplemental analyses to examine differences among service members by the condition of the index visit. BH diagnoses and use of psychotropic medications were more frequent during the observation year among those with neck pain or fibromyalgia at the index visit than among those with low back pain or OA of the hip or knee (Table C.2). Although fibromyalgia accounted for only a small share of chronic pain diagnoses,

TABLE C.1
Chronic Pain Condition at Index Visit, FY 2018

Chronic Pain Condition	% (*n* = 97,987)
Chronic low back pain	79.7
Chronic neck pain	12.2
Knee OA	6.4
Hip OA	1.1
Fibromyalgia	0.6

NOTE: The table shows condition at first chronic pain visit during the eligibility period.

TABLE C.2

Comorbidity and Psychotropic Medication During the 12-Month Observation Period of Service Members with Chronic Pain at Index Visit, FYs 2018–2019

Comorbidity/Psychotropic Medication	Total % (*n* = 97,987)	Chronic Low Back Pain % (*n* = 78,092)	Chronic Neck Pain % (*n* = 11,983)	Knee OA % (*n* = 6,282)	Hip OA % (*n* = 1,078)	Fibromyalgia % (*n* = 552)
Any BH diagnosis[a]	37.1	36.8	39.7	33.6	37.6	68.5
Adjustment disorder	16.3	16.3	16.9	13.2	14.2	32.1
Anxiety disorder	14.1	13.7	16.4	11.6	14.4	39.3
Depression (major depressive disorder, dysthymia)	9.5	9.3	10.4	7.7	10.6	33.7
PTSD	7.4	7.0	9.0	8.6	8.6	20.7
Alcohol use disorder	3.1	3.2	2.8	2.2	3.6	3.3
Drug use disorder	1.0	1.0	1.0	0.6	0.6	1.3
Psychotropic medications	41.1	40.3	47.7	35.7	40.5	84.4
Antidepressants	24.6	23.9	29.2	20.9	22.7	75.0
Hypnotics/sedatives/anxiolytics	21.0	20.7	23.8	18.5	20.2	36.4
Benzodiazepines[b]	10.5	10.5	11.9	7.4	8.3	17.9
Antipsychotics	1.5	1.4	1.9	1.3	1.4	6.0
Sleep disorder/symptoms	29.0	27.7	32.6	35.0	31.3	54.5

[a] Includes any ICD-10 F-code and excludes sleep disorders.

[b] Included in category of hypnotics/sedatives/anxiolytics.

service members with this condition were markedly more likely to have BH diagnoses (69 percent) or sleep disorders (55 percent), and they were more likely to take psychotropic medication (84 percent).

Service members with fibromyalgia were also more likely to see a BH specialty provider (74 percent) or rheumatologist (36 percent) and to be seen in a pain management clinic (23 percent) (Table C.3).

When stratifying opioid use by pain condition at the index visit, we found that service members with knee or hip OA or fibromyalgia were more likely to receive opioids than those with chronic low back pain or chronic neck pain (Table C.4).

Health care utilization in the observation year was highest among service members whose index visit was for fibromyalgia; 53.6 percent had at least one BH specialty encounter (median number of encounters 7.5), 52.4 percent had been seen in an emergency department, and 12.3 percent had an inpatient stay (not shown).

About half of service members with an index visit for chronic low back or chronic neck pain received chiropractic care/manipulation (Table C.5). Psychotherapy associated with a pain diagnosis, health assessment/intervention, and acupuncture were far less common, with the exception of service members whose index visit was related to fibromyalgia.

The median number of NPT visits by pain condition at the index visit was highest for fibromyalgia (seven visits) followed by chronic neck pain (six visits), chronic low back pain and hip OA (five visits), and knee OA (four visits) (data not shown).

More than half of service members with chronic low back pain, chronic neck pain, or knee OA received both nonopioid medication and NPT, as did 46 percent of those with fibromyalgia (Table C.6). NPT without nonopioid medication was most frequent among service members with hip OA (42 percent).

TABLE C.3

Sources of Care During the 12-Month Observation Period of Service Members with Chronic Pain at Index Visit, FYs 2018–2019

Care	Total % (*n* = 97,987)	Chronic Low Back Pain % (*n* = 78,092)	Chronic Neck Pain % (*n* = 11,983)	Knee OA % (*n* = 6,282)	Hip OA % (*n* = 1,078)	Fibromyalgia % (*n* = 552)
Provider types seen						
Primary care	96.2	96.4	95.2	96.3	95.5	98.7
BH	42.8	43.1	43.5	35.5	36.6	74.5
Neurology	20.4	19.2	32.0	13.3	13.5	38.0
Orthopedics	21.7	17.9	23.6	57.3	68.6	21.0
Physical medicine/rehabilitation	15.2	15.0	18.4	11.4	15.8	18.3
Rheumatology[a]	1.3	1.0	1.4	1.5	1.9	35.5
Pain management clinic[a]	16.7	17.2	19.0	6.2	8.5	23.0

[a] Direct care only.

TABLE C.4

Opioid Use During the 12-Month Observation Period of Service Members with Chronic Pain by Condition at Index Visit, FYs 2018–2019

Opioid Use	Total % (n = 97,987)	Chronic Low Back Pain % (n = 78,092)	Chronic Neck Pain % (n = 11,983)	Knee OA % (n = 6,282)	Hip OA % (n = 1,078)	Fibromyalgia % (n = 552)
Any opioids	33.3	32.2	34.5	41.6	49.4	39.1
On opioids at index visit	2.6	2.4	3.0	3.0	4.4	4.2
On LOT at index visit	0.7	0.7	0.9	0.5	0.8	0.9
On opioids at index visit and advanced to LOT	0.2	0.2	0.2	0.1	0.4	0.2
On opioids only after index visit	31.1	30.0	31.9	39.2	46.0	35.7
On opioids only after index visit and advanced to LOT	0.6	0.6	0.7	0.4	0.7	1.4
Average daily MME ≥30	17.7	16.5	19.4	26.9	34.5	18.7
Average daily MME ≥50	7.4	6.5	9.0	13.1	18.7	6.7
Risk of continued use: ≥15-day supply in 30 days	8.0	7.8	8.3	9.5	13.5	11.2
Risk of continued use: ≥31-day supply in 62 days	3.2	3.1	3.2	3.5	4.0	5.1

TABLE C.5

Types of NPT Received by Service Members with Chronic Pain by Condition at Index Visit, FYs 2018–2019

NPT	Total % (*n* = 97,987)	Chronic Low Back Pain % (*n* = 78,092)	Chronic Neck Pain % (*n* = 11,983)	Knee OA % (*n* = 6,282)	Hip OA % (*n* = 1,078)	Fibromyalgia % (*n* = 552)
Any NPT	80.8	81.7	84.4	64.7	72.5	72.6
Physical/occupational therapy[a]	75.1	75.7	78.4	62.9	71.1	64.5
Exercise	54.7	54.9	56.1	50.0	59.5	48.2
Chiropractic care/manipulation[b]	47.0	49.1	51.7	17.5	22.0	25.5
Acupuncture	7.0	7.0	9.1	3.1	3.8	16.8
Psychotherapy associated with pain diagnosis	3.1	3.0	3.8	1.6	2.0	21.0
Health assessment/ intervention associated with pain diagnosis	2.7	2.7	2.7	1.1	1.7	14.1
Biofeedback/hypnotherapy	1.5	1.4	1.9	1.4	1.6	7.1

NOTE: NPT categories are not mutually exclusive.

[a] Excluding codes specific to exercise.

[b] Some manipulation was provided in a physical therapy setting.

TABLE C.6

Nonopioid Medication and NPT for Chronic Pain by Condition at Index Visit, FYs 2018–2019

Treatment	Total % (*n* = 97,987)	Chronic Low Back Pain % (*n* = 78,092)	Chronic Neck Pain % (*n* = 11,983)	Knee OA % (*n* = 6,282)	Hip OA % (*n* = 1,078)	Fibromyalgia % (*n* = 552)
Nonopioid medication or NPT (quality measure)	92.3	93.7	93.6	88.0	80.8	85.7
NPT and no nonopioid medication	23.6	24.1	28.0	11.9	42.2	27.2
Nonopioid medication and no NPT	12.5	12.0	9.3	23.3	8.3	13.0
Both nonopioid medication and NPT	57.2	57.6	56.3	52.8	30.3	45.5

APPENDIX D

Opioid Prescribing

In addition to assessing the quality measure for average MME dispensed, we explored some variations to assess opioid dispensing that remained below 90 MME. We examined dispensing episodes at the service member level. An "episode" was based on the dispensing date and opioids with the same duration of days of supply. We looked at episodes that included any overlapping opioids regardless of dispense date, as well as episodes limited to the same dispense date. From these episodes, we computed the percentage of service members whose average daily dosages remained below 90 MME (Table D.1, rows 2 and 3). We also computed the percentage of service members whose maximum daily MME was below 90 for all opioid days during the 12-month observation period (Table D.1, row 4). See the section "Opioid Prescribing" in Appendix A for technical specifications for these analyses.

TABLE D.1
Descriptors of Dispensed Opioids Under 90 MME, FY 2019

Dispensing Descriptor	*n*	%
Service members who were dispensed opioids during the measurement time frame		
Service members with average daily MME that was <90 MME (*quality measure*)	177,251	97.5
Service members with average daily dosage for all dispensing episodes of <90 MME (including overlapping opioids from other dispense dates)	173,726	95.5
Service members with opioids dispensed, including opioids with same dispense date and same days supplied, with daily dosage for all dispensing episodes <90 MME	173,301	95.3
Service members with maximum daily dosage for all opioid days (including overlapping opioids) of <90 MME	171,405	94.3

We also looked at individual dispensing episodes (i.e., opioids dispensed on the same date and with the same number of days of supply) as a means of approximating prescriber intent as to the daily dosage provided. We found that 96.3 percent of 277,941 dispensing episodes had a daily dosage of less than 90 MME.

Of the 4,577 service members who received an average daily MME of 90 or more (i.e., did not receive the recommended care based on the quality measure), 34 percent averaged 90 MME, 30 percent averaged 90–100 MME, 34 percent averaged 101–150 MME, and the average for 2 percent exceeded 150 MME (Table D.2).

We also examined the number of days during the 12-month observation period that daily dosages exceeded 90 MME (Table D.3) and the distribution of 10,202 dispensing episodes with a daily dosage of 90 MME or higher (Table D.4).

TABLE D.2
Ranges of Opioid Average Daily Dosage of 90 MME or More, FY 2019

Average Daily MME	*n*	%
90	1,552	33.9
91–100	1,364	29.8
101–120	1,006	22.0
121–150	553	12.1
>150	102	2.2
Total	4,577	100.0

TABLE D.3

Days with 90 MME or More for Service Members with an Average Daily Dosage of 90 MME or More, FY 2019

Days with ≥90 MME	*n*	%
1–2	1,509	33.0
3–4	1,314	28.7
5–7	1,395	30.5
8–14	245	5.4
15–30	48	1.0
>30	66	1.4
Total	4,577	100.0

TABLE D.4

Daily MME for Opioid Dispensing Episodes of 90 MME or More, FY 2019

Dispensed Daily Dosage ≥90 MME	*n*	%
90	4,001	39.2
91–100	2,494	24.4
101–120	2,146	21.0
121–150	1,120	11.0
>150	441	4.3
Total	10,202	100.0

NOTE: Each dispensing episode includes all opioids dispensed on the same date and for the same supply of days.

APPENDIX E

Assessing Pain During Clinical Care

The MHS aims to improve the routine assessment of pain using the Defense and Veterans Pain Rating Scale (DVPRS) 2.0, a measure that reflects the impact of pain on functioning rather than providing a single rating of pain intensity. In this appendix, we present preliminary analyses of the use of the DVPRS by MTF providers for service members with chronic pain. Implementing the DVPRS in the MHS has been an ongoing process; it had been incorporated into electronic clinical workflow forms as of April 2019 and was continuing to be integrated into the current electronic health record and GENESIS® at the time of our analyses (Office of the Secretary of Defense, 2019).

DVPRS as Standardized Tool to Assess Pain

Historically, providers have asked patients to rate the intensity of their pain to screen for pain, document its severity, and monitor changes over time. The most common approaches are a numeric 1–10 rating scale and a visual analogue scale (e.g., drawn faces of a person experiencing pain) (Chiarotto et al., 2019). This approach to pain assessment has significant limitations (Ballantyne and Sullivan, 2015; Sullivan and Ballantyne, 2016). The assessment could be inconsistently administered by providers, it relies on a patient's subjective assessment, and it can have little clinical utility in guiding treatment. Furthermore, this approach subtly implies to both providers and patients that the goal of treatment is a complete absence of pain, potentially leading to prescribing more pain medication than necessary.

The DVPRS was developed to provide a standardized tool for evaluating pain that incorporates more information than a basic rating scale. It

has been shown to be a valid and reliable tool and provides a means to standardize the assessment of pain and its related outcomes (Buckenmaier et al., 2013; Polomano et al., 2016). The DVPRS begins with a single 0–10 rating of pain intensity and includes descriptors to help patients associate a numeric rating with the degree to which the pain interferes with activities (Defense and Veterans Center for Integrative Pain Management, undated b). The DVPRS also includes four supplemental items that assist the provider in evaluating the biopsychosocial impact of the pain. These four items assess the degree of interference with usual activities, interference with sleep, how the pain affects the patient's mood, and its contribution to stress. The DVPRS has been designated as the standard pain scale for assessment of pain in the stepped-care model (DHA Procedural Instruction 6025.04, 2018). The DVPRS is also part of the Pain Assessment and Screening Tool and Outcome Registry (PASTOR) which includes other measures of functioning and is a provider decisionmaking tool, particularly for those service members in a tertiary-level care for pain (DHA Procedural Instruction 6025.04, 2018).

DVPRS Scores for Service Members with Chronic Pain

DVPRS scores for these analyses came primarily from two Tri-Service Workflow (TSWF) Alternate Input Method (AIM) forms: the CORE AIM form used by primary care providers and the Behavioral Health Consultant form. At the time of these analyses, TSWF forms were integrated into the electronic health record and allowed providers to enter patient data in a structured format that facilitated extraction and analyses of data elements of interest. Because our most recent data were from FY 2019, our analyses reflect care that coincided with the early stages of the DVPRS implementation. Our data contained DVPRS scores starting in May 2019. Therefore, we included service members in these analyses who met the criteria for chronic pain (see Appendix A) in the first six months of FY 2019 and who had at least one outpatient primary care visit between May and September 2019 with a chronic pain diagnosis coded in any position. Additional requirements for

inclusion were no cancer diagnosis, no lapse in TRICARE enrollment, and no separation or deployment in the five-month observation period.

The TSWF forms included two DVPRS pain intensity ratings, one for current pain and one for average pain in the past week. We considered a DVPRS score to be present if there was a pain intensity rating for either the current pain or average pain in the past week. Although the four supplemental items on the impact of pain could be used to assess pain of any level of intensity, the TSWF forms direct the provider to complete the supplemental functional impact items for those with a pain intensity rating of 4 or higher.

We identified 18,542 service members who met our criteria for chronic pain. Our data included 34,038 DVPRS scores for these service members. The DVPRS was administered far more often in primary care settings (84.5 percent) than in BH specialty care (4.2 percent), other subspecialty care (9.6 percent), and emergency department and other settings (1.7 percent). It should be noted that this could be a function of our data sources, which were two forms typically used in primary care settings.

As noted earlier, the first DVPRS scores in our data were associated with encounters starting in May 2019. Table E.1 shows DVPRS scores by month, the proportion of pain severity ratings of 4 or higher, and the proportion of DVPRS administrations that included the four supplemental items when indicated (i.e., when patients reported pain intensity of 4 or higher). More than 50 percent of DVPRS intensity scores in any given month were 4 or higher. Administration of the four supplemental items appeared to increase over time, suggesting that implementation of the complete DVPRS was a gradual process.

Findings were similar for rates of DVPRS use across MTFs. All MTFs used the DVPRS to some extent for current or past-week pain during pain-related visits in our five-month observation period. The percentage of pain-related visits with documented DVPRS scores at MTFs ranged from a low of 15.2 percent of visits to a high of 77.8 percent of visits, but documentation of the four supplemental items when indicated was rare. Therefore, we were unable to assess the use of the four supplemental functional impact scores for service members reporting pain intensity of 4 or higher.

TABLE E.1
Number of DVPRS Scores for Service Members with Chronic Pain and at Least One Primary Care Visit, by Month, May–September 2019

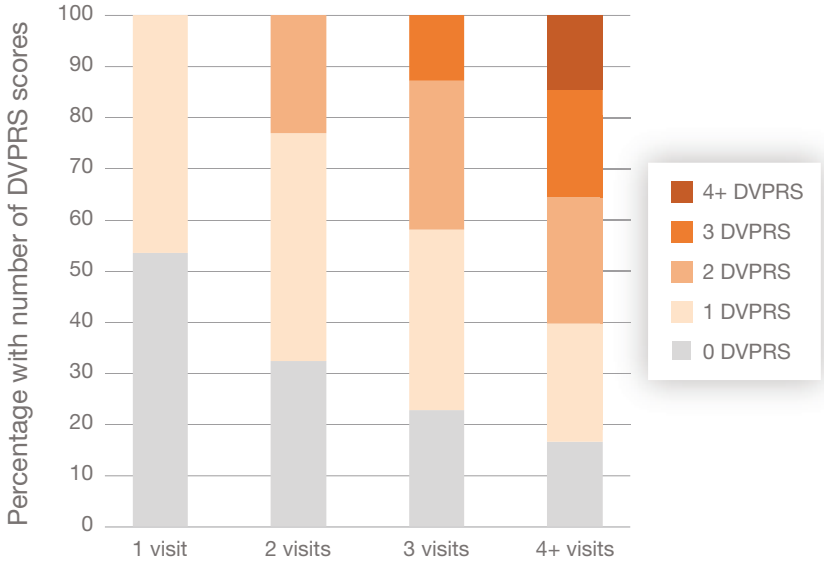
Month of Visit in 2019	Current or Past Week Pain Intensity Score Documented (*n*)	Current or Past Week Pain Intensity Score ≥ 4		If Score ≥ 4, All 4 Supplemental Functional Impact Scores Documented	
		n	%	*n*	%
May	4,608	2,547	55.3	5	0.2
June	7,364	4,026	54.7	5	0.1
July	8,142	4,366	53.6	12	0.3
August	8,132	4,421	54.4	35	0.8
September	5,792	3,162	54.6	601	19.0

DVPRS Scores of Pain Intensity at Pain-Related Primary Care Visits

The DVPRS is designed to be administered at every pain visit to monitor progress and inform treatment. Thus, we assessed the number of DVPRS scores (i.e., current or past-week pain intensity ratings) for service members with chronic pain relative to their number of pain-related primary care visits. We limited these analyses to primary care visits because the DVPRS was administered most often in primary care settings in our data. Overall, 44.5 percent of pain-related primary care visits had a documented DVPRS score. As expected, the percentage of service members with at least one DVPRS score increased as service members had more pain-related primary care visits (Figure E.1). Among service members with one visit, 46.6 percent had a DVPRS score, and 67.8 percent of those with two visits had at least one DVPRS score. However, 22.9 percent of those with three visits and 16.6 percent of those with four or more visits had no documented DVPRS scores.

FIGURE E.1

Percentage of Service Members with Chronic Pain with Current or Past-Week Pain Score, by Number of Scores and Number of Pain-Related Primary Care Visits, May–September 2019



Pain Intensity

We also examined the distribution of the intensity of pain documented by the 14,135 DVPRS scores collected during pain-related primary care visits in the observation period (Table E.2). When a DVPRS score was documented, no pain was indicated at 16 percent of visits, and scores of 4 or higher were documented at 62 percent of visits. Forty-eight percent of visits were associated with a pain intensity of moderate or severe. The distribution of pain intensity across primary care visits was similar for the first DPVRS score and all subsequent scores during the observation period.

TABLE E.2
Intensity of Pain of Service Members with Chronic Pain at Pain-Related Primary Care Visits, May–September 2019

DVPRS Pain Intensity Score	*n*	%
No pain (score 0)	2,189	15.5
Mild pain (score 1–4)	5,190	36.7
Moderate pain (score 5–6)	3,753	26.6
Severe pain (score 7–10)	3,003	21.2
Score ≥4	8,735	61.8

Summary

In this appendix, we presented analyses of DVPRS data from TSWF CORE and Behavioral Health Consultant forms for service members with chronic pain between May and September 2019. Just under half of pain-related primary care visits with a DVPRS score (48 percent) indicated that the patient's pain intensity was moderate to severe. Sixty-two percent of visits with documented current or past-week pain reflected scores of 4 or higher. Because the timing of our data coincided with the earliest period of DVPRS implementation, we were unable to fully assess its use, particularly with regard to the implementation of the four supplemental functional impact items for service members with a pain intensity rating of 4 or more. Our analyses indicated some initial implementation of the current and past-week pain scales across all MTFs and some early use of the supplemental functional items in September 2019.

Abbreviations

ACL	anterior cruciate ligament
AHRQ	Agency for Healthcare Research and Quality
BH	behavioral health
CDC	Centers for Disease Control and Prevention
CPG	clinical practice guideline
CPT	Current Procedural Terminology
DHA	Defense Health Agency
DHHS	U.S. Department of Health and Human Services
DoD	U.S. Department of Defense
DVPRS	Defense and Veterans Pain Rating Scale
E&M	evaluation and management
FDA	U.S. Food and Drug Administration
FY	fiscal year
HEDIS	Healthcare Effectiveness Data and Information Set
ICD	International Classification of Diseases
LOT	long-term opioid therapy
MHS	Military Health System
MME	morphine milligram equivalent
MTF	military treatment facility
NPT	nonpharmacologic treatment
NQF	National Quality Forum
NSAID	nonsteroidal anti-inflammatory drug
OA	osteoarthritis

OUD	opioid use disorder
PCL	posterior cruciate ligament
PDTS	Pharmacy Data Transaction Service
PTSD	posttraumatic stress disorder
SD	standard deviation
SNRI	serotonin and norepinephrine reuptake inhibitor
SUD	substance use disorder
TBI	traumatic brain injury
TSWF	Tri-Service Workflow
VA	U.S. Department of Veterans Affairs

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NATIONAL SECURITY RESEARCH DIVISION

Pain conditions are the leading cause of disability among active-duty service members. Given the significant implications for force readiness and service member well-being, the Military Health System (MHS) has made it a strategic priority to provide service members with the highest-quality treatment for pain conditions.

RAND researchers assessed MHS outpatient care for acute and chronic pain, including opioid prescribing. The assessment involved developing a set of 14 quality measures designed to assess aspects of outpatient care for pain, including care associated with dental and ambulatory procedures, acute low back pain, chronic pain, opioid prescribing, and medication treatment for opioid use disorder. This report offers the most comprehensive examination to date of the quality and safety of pain care in the MHS and its alignment with evidence-based clinical practice guidelines. It identifies several areas of strength in pain care delivery, along with some areas for improvement, and provides recommendations to support the MHS in continuing to improve pain care for service members.

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