



## Facility-level changes in receipt of pharmacotherapy for opioid use disorder: Implications for implementation science

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### ABSTRACT

**Background:** The U.S. is facing an opioid epidemic, but despite mandates for pharmacotherapy for opioid use disorder to be available at Veterans Health Administration (VHA) facilities, the majority of veterans with opioid use disorder do not receive these medications. In implementation research, facilities are often targeted for qualitative inquiry or quality improvement efforts based on quality measure performance during a one-year period. However, sites that experience quality performance changes from one year to the next may be highly informative because mechanisms that impact facility change may be more discoverable. The current study examined changes in receipt of pharmacotherapy for opioid use disorder in a national healthcare system to determine the extent to which sites fluctuated in performance over a two-year period and illustrate how changes in quality measures over time may be useful for implementation research and healthcare surveillance of quality measures.

**Methods:** Using national VHA data from Fiscal Years (FY) 2016 and 2017, we calculated quality measure performance as the number of patients who received pharmacotherapy for opioid use disorder (i.e., methadone, buprenorphine, and naltrexone) divided by the number of patients with a current non-remitted opioid use disorder diagnosis for each FY at each facility (n = 129) and examined change from FY16 to FY17.

**Results:** The mean rate of receipt of pharmacotherapy for opioid use disorder was 38% (facility range = 3% to 74%) in FY16 and 41% (facility range = 2% to 76%) in FY17. The average facility-level change in performance was 3% and ranged from -19% to 26%. There were 32 facilities that decreased in provision of pharmacotherapy, 12 facilities with no change, and 85 facilities that increased.

**Conclusions:** For facilities with average or high performance, it was difficult to maintain their performance over time. Identifying and learning from facilities with recent fluctuations may be more informative to guide the design of future quality improvement efforts than studying facilities with stable high or low performance.

### 1. Introduction

The United States is facing a major opioid epidemic with > 42,000 people dying from opioid overdose deaths in 2016 (Seth, Scholl, Rudd, & Bacon, 2018). U.S. military veterans are also affected by this epidemic: There has been a 62% increase in veterans diagnosed with

opioid use disorder at Veterans Health Administration (VHA) facilities between Fiscal Year (FY) 2004 (N = 30,093) (Oliva, Trafton, Harris, & Gordon, 2013) and FY12 (N = 48,689) (Finlay et al., 2016) and rates of opioid overdose among veterans increased from 2001 to 2009 (Bohnert et al., 2014). Addressing the opioid crisis is a high priority for the Department of Veterans Affairs (VA) and the White House. Two

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medications, methadone and buprenorphine, are the most effective treatments for opioid use disorder (Amato et al., 2005; Amato, Minozzi, Davoli, & Vecchi, 2011; Kleber, 2008; Mattick, Breen, Kimber, & Davoli, 2009), and there is evidence to consider naltrexone as a second line medication (Department of Veterans Affairs & Department of Defense, 2015). These medications are mandated to be available and considered for all eligible veterans who receive care at the VHA medical facilities (Department of Veterans Affairs, 2008), but the majority of veterans with a current opioid use disorder do not receive these medications. The primary goal of this study was to examine changes in the quality measure of receipt of pharmacotherapy for opioid use disorder. Improving receipt is critical to address the opioid epidemic because these medications are effective at treating opioid use disorder and are mandated to be available at all VHA facilities.

Implementation scientists and quality improvement managers often investigate high and low performing facilities – positive and negative deviance studies (Rose & McCullough, 2017) – to learn about barriers and facilitators to access to and use of pharmacotherapy for opioid use disorder. For example, a study of adoption of pharmacotherapy for alcohol use disorder in VHA facilities used facility-level quantitative data to select the 30 highest and lowest adopting facilities to invite to participate in a survey and follow-up interviews (Harris et al., 2013). High and low outlier anticoagulation clinics, which were 3 of the top and 3 of the bottom 10 performing sites in terms of anticoagulation control, were selected for qualitative inquiry in another study conducted in the VHA (Rose et al., 2012). However, positive and negative deviance approaches generally focus on one-year time periods, which may fail to elucidate the complex mechanisms that impact improvement or deterioration. Studying healthcare facilities that experience significant changes in quality performance from one year to the next may provide more comprehensive insights compared to studying facilities with stable high or low performance. As a secondary aim, we assess how measuring change in the quality metric of pharmacotherapy for opioid use disorder over more than one year would impact the selection of facilities for further investigation compared with traditional positive and negative deviance approaches. This “change” approach may have value for broader implementation research and healthcare surveillance of quality measures to ensure patients are receiving high quality care. Although applicable to any quality measure, pharmacotherapy for opioid use disorder is an optimal example for informing implementation research because the importance of treating opioid use disorder and the focus on improving access to these medications in the US.

### 1.1. Pharmacotherapy for opioid use disorder among veterans

The VHA serves approximately 8 million veteran patients per year with over 50,000 patients diagnosed with a current opioid use disorder. At VHA, methadone, buprenorphine, and naltrexone are offered through licensed opioid treatment programs and buprenorphine and naltrexone are also provided in other clinical settings such as primary care. Despite the mandate to provide these medications, the provision of pharmacotherapy for opioid use disorder varies widely across VHA facilities nationally. In FY08, the rate of receipt of opioid pharmacotherapy treatment, defined as visiting a methadone clinic and/or filling a prescription for buprenorphine, among 35,240 veterans with opioid use disorder visiting VHA facilities ranged from 0% to 66% (Oliva, Harris, Trafton, & Gordon, 2012). The total number of patients diagnosed with opioid use disorder has increased over time as has the number of veterans receiving pharmacotherapy for opioid use disorder (Oliva et al., 2013). However, these studies did not examine facility-level changes in this quality measure over time. Studies that have examined barriers to and facilitators of pharmacotherapy for opioid use disorder, both within and outside the VA, have used nationally representative survey or telephone interviews (Aletraris, Edmond, Paino, Fields, & Roman, 2016; Knudsen, Abraham, & Oser, 2011), convenience samples (e.g., selected participant from a local area, surveyed

conference participants) (Barry et al., 2009; Cunningham, Kunins, Roose, Elam, & Sohler, 2007; Friedmann et al., 2012), facilities with a high prevalence of patients with opioid use disorder (Gordon et al., 2011), and purposive sampling to represent a wide range of departments in two health care systems (Green et al., 2014). Although unique information may be drawn using these various methodologies, the results may reflect general beliefs rather than recent specific incidents or mechanisms that would explain how facilities improve or worsen on a quality measure.

### 1.2. Targeting facilities for implementation science efforts

Implementation science is the study of methods that improve the utilization of evidence-based treatments and policies in health care (Fogarty International Center, 2018). To inform the design and testing of strategies to improve provision of evidence-based practices, implementation scientists often undertake in-depth qualitative studies of the barriers and facilitators to high-quality treatment in low and high performing facilities (Gilmer, Katz, Stefancic, & Palinkas, 2013; Harris et al., 2013; Proctor et al., 2009; Rose et al., 2012). In these negative or positive deviance studies, low or high performing facilities are identified by using a single survey or time period (e.g., one FY period) to measure treatment quality. However, lessons learned from stable high-performing facilities may not provide the whole picture when designing strategies to help low-performing facilities improve. Facilities that have been stable in their performance metrics may not be informative of the mechanisms that influence change and could be utilized at other facilities. Quality measures that have changed from the prior year may give a signal of factors that may be influencing change, but the within-facility fluctuations in quality measures must be sufficiently large to suggest that informative on-the-ground activities are occurring. We use pharmacotherapy for opioid use disorder as a timely example of how change in a quality measure can be examined to identify facilities where mechanisms of change are in play and target these facilities for further inquiry.

### 1.3. Current study

The primary aim of this study was to evaluate the magnitude of within-facility changes in an addiction treatment quality measure, pharmacotherapy for opioid use disorder, over a two-year period. We examined the proportion of patients who received pharmacotherapy for opioid use disorder in FY16 through FY17 at VHA facilities to determine whether the rate of receipt increased or decreased at facilities over time and the extent to which the rate of receipt changed. Such data can be used to target future investigations that elucidate the mechanisms of change in performance over time, and ultimately to design and test strategies to improve access and use of pharmacotherapy for opioid use disorder. The secondary aim of this study was to provide an illustrated example of how examining changes in a quality measure over time may be used to aid in healthcare quality surveillance. Although we used pharmacotherapy for opioid use disorder as the quality measure of interest, potentially any quality measure could be examined over longer time periods to provide a different picture of quality within a healthcare system.

## 2. Materials and methods

### 2.1. Denominator sample

We followed the American Society for Addiction Medicine's (ASAM) specifications for opioid use disorder diagnosis using International Classifications of Diseases -10th (ICD-10) Edition-CM codes (Harris, Weisner et al., 2016). Using national VHA outpatient and inpatient clinical records, we identified veteran patients who received an opioid use disorder diagnosis during an outpatient visit or inpatient stay in

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