Developing an opioid use disorder treatment cascade: A review of quality measures

Arthur Robin Williams[a,b,*], Edward V. Nunes[a,b], Adam Bisaga[a,b], Harold A. Pincus[a,b,c], Kimberly A. Johnson[d], Aimee N. Campbell[a,b], Remien H. Remien[e], Stephen Crystal[f], Peter D. Friedmann[g], Frances R. Levin[a,b], Mark Olfson[a,b]

[a] Columbia University Department of Psychiatry, United States
[b] New York State Psychiatric Institute, United States
[c] New York-Presbyterian Hospital, United States
[d] University of South Florida Department of Psychiatry, United States
[e] HIV Center for Clinical and Behavioral Studies, Columbia University, United States
[f] Institute for Health, Health Care Policy and Aging Research, Rutgers, United States
[g] Department of Medicine, University of Massachusetts-Baystate and Baystate Health, United States

A B S T R A C T

Background: Despite increasing opioid overdose mortality, problems persist in the availability and quality of treatment for opioid use disorder (OUD). Three FDA-approved medications (methadone, buprenorphine, and naltrexone) have high quality evidence supporting their use, but most individuals with OUD do not receive them and many experience relapse following care episodes. Developing and organizing quality measures under a unified framework such as a Cascade of Care could improve system level practice and treatment outcomes. In this context, a review was performed of existing quality measures relevant to the treatment of OUD and the literature assessing the utility of these measures in community practice.

Methods: Systematic searches of two national quality measure clearinghouses (National Quality Forum and Agency for Healthcare Research and Quality) were performed for measures that can be applied to the treatment of OUD. Measures were categorized as structural, process, or outcome measures. Second stage searches were then performed within Ovid/Medline focused on published studies investigating the feasibility, reliability, and validity of identified measures, predictors of their satisfaction, and related clinical outcomes.

Results: Seven quality measures were identified that are applicable to the treatment of OUD. All seven were process measures that assess patterns of service delivery. One recently approved measure addresses retention in medication-assisted treatment for patients with OUD. Twenty-nine published studies were identified that evaluate the quality measures, primarily focused on initiation and engagement in care for addiction treatment generally. Most measures and related studies do not specifically incorporate the evidence base for the treatment of OUD or assess patient level outcomes such as overdose.

Conclusion: Despite considerable progress, gaps exist in quality measures for OUD treatment. Development of a unified quality measurement framework such as an OUD Treatment Cascade will require further elaboration and refinement of existing measures across populations and settings. Such a framework could form the basis for applying strategies at clinical, organizational, and policy levels to expand access to quality care and reduce opioid-related mortality.

1. Introduction

In 2016, unintentional overdose fatalities exceeded 63,000 deaths, the great majority involving opioids (CDC, 2017). Overdoses frequently occur among persons who were recently discharged from detoxification programs, treatment, or criminal justice settings (Binswanger et al., 2007; Cousins, Boland, Courtney, et al., 2015; Ravndal & Amundsen, 2010; Sordo, Barrio, Bravo, et al., 2017; Strang, Mccambridge, Best, et al., 2003). Unintentional overdose death is often a consequence of untreated or improperly treated opioid use disorder (OUD), reflecting a

long-standing addiction treatment gap in the United States and the difficulties patients face in accessing evidence-based care (Ghitza & Tai, 2014; Volkow, Friedan, Hyde, & Cha, 2014). Despite FDA approval of three effective medications (methadone, buprenorphine, and XR-naltrexone) shown to reduce overdose among patients with OUD (Degenhardt, Bucello, Mathers, et al., 2010; Lee, Friedmann, Kinlock, et al., 2016; Lee, Nunes, Novo, et al., 2018), there remain low rates of initiation and retention on these medications (Aletraris, Bond, & Roman, 2015; Timko, Schultz, Cucciare, Vittorio, & Garrison-Diehn, 2016; Turner, Kruszewski, & Alexander, 2015). An alarmingly low percentage - barely a fifth - of the 2.4 million individuals estimated to have OUD (SAMHSA, 2017) receive any specialty care in a given year (Saloner, 2015; Wu, Zhu, & Swartz, 2016). With only a third of those in specialty care estimated to receive one of the three FDA-approved MAT medications during a care episode, and a 6-month retention rate under 30–50% in most settings (Morgan, Shackman, Leff, Linas, & Walley, 2018; Timko, Schultz, Cucciare, Vittorio, & Garrison-Diehn, 2016; Tkacz, Severt, Cacciola, & Ruetsch, 2011), only a fraction of individuals with OUD achieve long-term remission in the US (Williams, Nunes, & Olfson, 2017).

Coincident with the intensifying opioid epidemic, there have been increasing calls for development and use of quality measures to track and improve the quality of care for behavioral health and implement policy strategies to identify and incentivize use of best practices (Pincus, Scholle, Spaeth-Rublee, Hepner, & Brown, 2016). Given the proliferation and adoption of quality measures over the past twenty years in other areas of medicine, there is much that can be learned from quality of care frameworks that have succeeded in other fields. Developing a cascade of care model to focus and inform interventions has been effective in the management of chronic health conditions including HIV (Gardner, McLees, Steiner, del Rio, & Burman, 2010), Hepatitis C (Yehia, Schranz, Umscheid, et al., 2014), and diabetes (Ali, Bullard, Gregg, et al., 2014). A more comprehensive framework for measuring and improving the health care system response to the challenge of OUD could be an important tool in reducing the harms associated with the OUD epidemic. It could, for example, guide improvement of accreditation standards for treatment programs, data collection and reporting, treatment planning and monitoring of key targets, and implementation strategies to improve outcomes and reduce opioid overdose mortality (Socias, Volkow, & Wood, 2016; Williams, Nunes, & Olfson, 2017). Perhaps most important, such a framework could quantify the current gaps in care processes for individuals with OUD and provide tools for goal setting, accountability, measurement of progress, identification of needed treatment resources, and increases in the use of guideline-consistent, evidence based care processes.

For instance, the HIV Cascade of Care framework establishes key stages through which HIV infected persons can progress (engagement in care, antiretroviral initiation, viral suppression, retention in care) to maximize health and eliminate transmission risk to others (Gardner, McLees, Steiner, del Rio, & Burman, 2010). Successful progression through each stage is dependent on satisfaction of prior stages. Adapting the cascade framework to OUD offers an informative model for organizing quality of care measurement. The model is premised on the concept that patients who achieve long-term recovery from opioids are likely to do so through a stepwise process with each step dependent on success with the prior step. It posits that patients must first engage in care in order to initiate MAT. Among those who initiate MAT successfully, efforts are then needed to retain patients in care. As an example, Belenko, Knight, Wasserman, et al. (2017) have demonstrated the utility of applying the cascade framework to juvenile justice populations with substance use to detect gaps in care and opportunities for improvement.

At the population level, effective treatment of OUD presents a series of clinical challenges that could be addressed through development of linked quality measures. Measures could systematically target key processes and outcomes for patients diagnosed with OUD or following

overdose. This review includes a systematic search of national quality measure clearinghouses for measures that might be applied to the treatment of OUD, emphasizing the four stages of an OUD Treatment Cascade once patients have already been identified as having OUD: 1). Engagement in care, 2). MAT initiation, 3). Retention, and 4). Remission. A search was then performed of the literature investigating the use of these measures to assess their feasibility, reliability, importance and association with clinically meaningful outcomes. A discussion is subsequently provided on how measures could be consolidated, operationalized, and strengthened to improve outcomes for affected individuals across different settings under a unified OUD Treatment Cascade framework derived from Williams, Nunes, and Olfson (2017).

2. Methods

We performed a systematic search of two national quality measure clearinghouses containing over 3000 healthcare quality measures currently in use by healthcare organizations spanning all clinical fields. The Agency for Healthcare Research and Quality (AHRQ) is a federal agency in the Department of Health and Human Services with the mission to produce evidence to make health care safer, higher quality, more accessible, equitable, and affordable. AHRQ maintains a National Quality Measure Clearinghouse (NQMC). The National Quality Forum (NQF) is a not-for-profit, nonpartisan, multi-stakeholder membership-based organization that works "to catalyze improvements in healthcare" and endorses measures developed by other parties such as the National Council on Quality Assurance (NCQA), The Joint Commission, professional associations and healthcare policy institutes such as the RAND Corporation, often supported by the Centers for Medicaid and Medicare Services (CMS). Both the AHRQ and NQF maintain comprehensive databases cataloging quality measures and their provenance (Goldman, Spaeth-Rublee, Nowels, Ramanuj, & Pincus, 2016).

Within the AHRQ and NQF databases, search terms included, "opioid use disorder," "opioid addiction," "heroin addiction," "substance use disorder," OR "substance abuse." Measures were included in the review if they 1). Could be applied directly to the treatment of OUD, 2). Precisely defined a numerator and denominator. Measures were excluded if they 1). Addressed prevention, screening, or identification of OUD only (for instance, measures regarding high dose prescribing of opioids), 2). Were not specific to the direct treatment of OUD (for instance, screening for nicotine use among patients with OUD) or 3). Related to general quality of care for any medical condition (for instance, the percent of hospitalized patients counseled on discharge instructions).

Measures were further categorized as structural, process, or outcome measures (Donabedian, 1988; Garnick, Horgan, & Chalk, 2006) according to "measure domain" in the clearinghouses. Structural measures address the capacity of a clinical organization or system to provide effective care, such as the percentage of emergency departments with a continuously available addiction specialist or the percentage of OUD specialty treatment programs with at least one buprenorphine waivered physician. Structural measures can be incorporated into accreditation standards and recognition programs. They also often include the capacity to collect and report process and outcomes measures. Process measures assess whether effective, evidence-based care is actually being provided, such as the percent of patients who receive a urine drug screen or the percent of patients prescribed a MAT medication upon intake to specialty treatment. In some health care environments, process measures can be assessed in real time as they occur through electronic health records. Finally, outcome measures, which often require risk adjustment based on patient characteristics for comparative purposes, typically refer to patients' clinical outcomes, such as the percentage of OUD patients initiating buprenorphine with subsequent opioid negative urines or with clinically meaningful improvements in health and quality of life (Bray et al., 2017; Jones,