



## Design and impact of bundled payment for detox and follow-up care



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### ABSTRACT

**Introduction:** Recent payment reforms promote movement from fee-for-service to alternative payment models that shift financial risk from payers to providers, incentivizing providers to manage patients' utilization. Bundled payment, an episode-based fixed payment that includes the prices of a group of services that would typically treat an episode of care, is expanding in the United States. Bundled payment has been recommended as a way to pay for comprehensive SUD treatment and has the potential to improve treatment engagement after detox, which could reduce detox readmissions, improve health outcomes, and reduce medical care costs. However, if moving to bundled payment creates large losses for some providers, it may not be sustainable. The objective of this study was to design the first bundled payment for detox and follow-up care and to estimate its impact on provider revenues.

**Methods:** Massachusetts Medicaid beneficiaries' behavioral health, medical, and pharmacy claims from July 2010–April 2013 were used to build and test a detox bundled payment for continuously enrolled adults ( $N = 5521$ ). A risk adjustment model was developed using general linear modeling to predict beneficiaries' episode costs. The projected payments to each provider from the risk adjustment analysis were compared to the observed baseline costs to determine the potential impact of a detox bundled payment reform on organizational revenues. This was modeled in two ways: first assuming no change in behavior and then assuming a supply-side cost sharing behavioral response of a 10% reduction in detox readmissions and an increase of one individual counseling and one group counseling session.

**Results:** The mean total 90-day detox episode cost was \$3743. Nearly 70% of the total mean cost consists of the index detox, psychiatric inpatient care, and short-term residential care. Risk mitigation, including risk adjustment, substantially reduced the variation of the mean episode cost. There are opportunities for organizations to gain revenue under this bundled payment design, but many providers will lose money under a bundled payment designed using historic payment and costs.

**Conclusions:** Designing a bundled payment for detox and follow-up care is feasible, but low case volume and the adequacy of the payment are concerns. Thus, a detox episode-based payment will likely be more challenging for smaller, independent SUD treatment providers. These providers are experiencing many changes as financing shifts away from block grant funding toward Medicaid funding. A detox bundled payment in practice would need to consider different risk mitigation strategies, provider pooling, and costs based on episodes of care meeting quality standards, but could incentivize care coordination, which is important to reducing detox readmissions and engaging patients in care.

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### 1. Introduction

Nearly 12% of Medicaid beneficiaries over age 18 have a substance use disorder (SUD) (Center for Behavioral Health Statistics and Quality, 2014), and 14% of newly eligible low-income adults have a

substance use disorder (SUD) (Mark, Wier, Malone, Penne, & Cowell, 2015). Over a fifth of annual admissions to SUD treatment are for detox (Center for Behavioral Health Statistics and Quality, 2014). Studies have shown that continuity of care after detox is associated with better outcomes, including reduced detox readmission (Lee et al., 2014; Mark, Vandivort-Warren, & Montejano, 2006). However, many receiving detox services do not receive follow-up treatment. For example, Carrier et al. (2011) found 52% of all patients admitted to New York state-certified treatment centers between January 1, 2007 and June

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30, 2997 did not obtain aftercare within 6 months of detox. Similarly, a study using employer health insurance claims showed that only 49.4% of detox episodes were followed by continuing care within 30 days of discharge (Mark, Dilonardo, Chalk, & Coffey, 2003).

Fee-for-service (FFS) is the dominant approach to paying SUD treatment providers. While FFS encourages acceptance of higher severity patients, such as individuals with co-occurring SUD and mental and physical health problems, it can discourage coordination between providers (Robinson, 2001). A payment that bundles detox and follow-up care together has the potential to improve engagement in treatment after detox, which could reduce detox readmissions, improve health outcomes, and reduce medical care costs. However, if this type of payment creates large losses for some providers, it could be unsustainable and lead to unintended consequences.

The Affordable Care Act (ACA) and many states' health care reforms have sought to foster the implementation of new ways to pay health care providers to drive delivery system innovations and improvements in patients' health and health care. These payment reforms move away from FFS to alternative models that shift financial risk from payers to providers, incentivizing providers to manage patients' utilization. New payment models attempt to correct for inefficiencies of FFS and capitation and emphasize efficiency and coordination between providers.

Bundled payment, a fixed payment that includes the prices of a group of services that would typically treat an episode of care in a defined period of time, is considered one of the most promising new payment models (Hussey, Eibner, Ridgely, & McGlynn, 2009; Mechanic & Altman, 2009). Bundled payment is more comprehensive than other episode-based approaches such as case rates and diagnostic-related group payment because it can include hospital, physician, and other clinical services in a single rate, as well as services delivered at different health care organizations. Nationally, Medicare (Centers for Medicare and Medicaid Services, 2014), Medicaid, and private payers have tested bundled payment models. The predominant Medicare bundled payment model works by establishing a target price based on historical Medicare payments for a defined episode, which includes services provided 72 h prior to hospital admission, the inpatient hospital stay, and services during the 90-day post-acute period (e.g., rehab, skilled nursing facilities, home health, physical therapy, readmissions, drugs) (Iorio et al., 2016). Medicare retrospectively reconciles payment for all services from all providers in the episode to determine if total actual payments were more or less than the target price.

Bundled payment is an example of supply-side cost sharing, which shifts the financial risk for health care costs from insurers to providers. Under traditional payment models, the provider organization would have been reimbursed for each service provided. By accepting bundled payment, provider organizations bear the marginal cost for additional days and services provided beyond services in the bundle. A range of outcomes of supply-side cost sharing can be measured, referred to as "behavioral responses." For acute care providers, predicted behavioral responses in the literature include premature discharge and inpatient/outpatient substitution (Harrow & Ellis, 1992). A potential unintended consequence of bundled payments is providers increasing the number of bundles in order to make more money, basically recreating FFS where the bundle is the service (Weeks, Rauh, Wadsworth, & Weinstein, 2013).

Bundled payment for surgical procedures has been found to reduce costs without decreasing quality (Dummit, Kahvecioglu, Marrufo, et al., 2016) and reduce inpatient costs, readmissions, and length of stay (Iorio et al.). Bundled payment implementation (Hussey, Ridgely, & Rosenthal, 2011; Ridgely, De Vries, Bozic, & Hussey, 2014) and the design of bundled payment models for chronic care (O'Byrne et al., 2013) have been challenging, though a bundled payment for diabetes care in the Netherlands did lead to improved care coordination (de Bakker et al., 2012).

Bundled payment has not yet been developed specifically for specialty SUD treatment services despite the burden of SUDs and the

need for quality improvement in that sector. A new bundled payment model for Medication-Assisted Treatment (MAT) that includes counseling and prescription drugs is being implemented in Massachusetts (Open Minds, 2017). Drawing from Medicare's bundled payment work, a bundled payment for detox care could include services immediately preceding detox, the detox stay, and services delivered in the post-detox period, which could include residential care, prescription drugs, counseling, and wraparound services. The objective of this study was to design a bundled payment that covered detox and continuing care, and to estimate the economic impact of the payment on SUD treatment programs.

## 2. Methods

### 2.1. Study setting

This study was conducted as part of a research partnership with a managed care organization that the Massachusetts' Medicaid program contracts with to manage behavioral health care for some of its beneficiaries. In 2014, 85,823 people in Massachusetts received SUD treatment services. Massachusetts residents receiving SUD treatment tend to be single, adult, white men (Bureau of Substance Abuse Services, 2014). The majority use alcohol and heroin, but the primary substance for which Massachusetts residents sought treatment in 2014 was heroin (Bureau of Substance Abuse Services, 2014). This contrasts with national data that indicate the most recent substance adults in the US sought treatment for was alcohol.

Sixty-four percent of Massachusetts Medicaid beneficiaries are enrolled in managed care. The managed care organization in this study served 27% ( $N = 383,000$ ) of Medicaid beneficiaries in 2014. For these beneficiaries, the state regulates the reimbursement rate for SUD services. Thirty-seven percent of beneficiaries are enrolled in one of five private managed care organizations. The remaining 33% of MassHealth beneficiaries are enrolled in FFS—these beneficiaries include some seniors, people with other coverage, and people who are institutionalized. (Massachusetts Medicaid Policy Institute and the Center for Health Law and Economics at University of Massachusetts Medical School, 2014).

### 2.2. Data

Detoxification bundled payment was developed using claims and insurance eligibility information from July 2010–April 2013, for Massachusetts Medicaid beneficiaries who were enrolled in both the state's primary care case management program and a managed behavioral health program. The claims recorded beneficiaries' use of medical, behavioral health (i.e., SUD and mental health), and pharmacy services. Medical claims data included information on the patient, provider, diagnosis, procedure codes, and type of service provided. Behavioral health claims included the same information as medical claims, but more detail on behavioral health care services, and they contained only one diagnosis code per claim line. The pharmacy claims included each prescription filled, the National Drug Code, quantity, strength, date filled, and days supplied, in addition to other variables.

For the initial design work, data from July 2010–April 2013 were used. For risk adjustment modeling, a period 6 months prior to an index service was used to predict total episode costs. Because of this six-month lag, the total episode costs predicted by the risk adjustment model represent the cost of episodes initiated between February 1, 2011 and April 8, 2013.

### 2.3. Description of population and samples

During the study period, 1,143,528 individuals were enrolled in the behavioral health managed care plan. There were a total of 211,531 beneficiaries who used behavioral health services, of whom 69,732 were continuously enrolled during the study period. Bundled payment design

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