



Impact of Medication-Assisted Treatment for Opioid Addiction on Medicaid Expenditures and Health Services Utilization Rates in Vermont



Mary Kate Mohlman, Ph.D. ^{a,*}, Beth Tanzman, M.S.W. ^a, Karl Finison, M.A. ^b,
Melanie Pinette, M.E.M. ^b, Craig Jones, M.D. ^a

^a Vermont Blueprint for Health, NOB 1 South, 280 State Drive, Waterbury, VT 05671, USA

^b Onpoint Health Data, 254 Commercial Street, Suite 257, Portland, ME 04101, USA

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ABSTRACT

In the face of increasing rates of overdose deaths, escalating health care costs, and the tremendous social costs of opioid addiction, policy makers are asked to address the questions of whether and how to expand access to treatment services. In response to an upward trend in opioid abuse and adverse outcomes, Vermont is investing in statewide expansion of a medication-assisted therapy program delivered in a network of community practices and specialized treatment centers (Hub & Spoke Program). This study was conducted to test the rationale for these investments and to establish a pre-Hub & Spoke baseline for evaluating the additive impact of the program. Using a serial cross-sectional design from 2008 to 2013 to evaluate medical claims for Vermont Medicaid beneficiaries with opioid dependence or addiction (6158 in the intervention group, 2494 in the control group), this study assesses the treatment and medical service expenditures for those receiving medication-assisted treatment compared to those receiving substance abuse treatment without medication. Results suggest that medication-assisted therapy is associated with reduced general health care expenditures and utilization, such as inpatient hospital admissions and outpatient emergency department visits, for Medicaid beneficiaries with opioid addiction. For state Medicaid leaders facing similar decisions on approaches to opioid addiction, these results provide early support for expanding medication-assisted treatment services rather than relying only on psychosocial, abstinence, or detoxification interventions.

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1. Introduction

1.1. Opioid Epidemic

Opioid addiction continues to grow as a public health problem with significant impacts on morbidity and mortality, health care expenditures, crime, and health outcomes. In 2013, 1.9 million Americans were dependent on pain relievers, and 517,000 were dependent on heroin (Substance Abuse and Mental Health Services Administration (SAMHSA), 2014a). Kolodny et al. estimated that this figure was closer to 5 million when including individuals with active opioid prescriptions who may also have been addicted (Kolodny, Courtwright, Hwang, et al., 2015). While use of prescription opioids has held steady or declined since 2002, heroin use has increased (Substance Abuse and Mental Health Services Administration (SAMHSA), 2014a). The growth in heroin use has carried over to patterns in mortality, which is increasing nationally (Department of Health and Human Services, 2015). In 2010, 3036 deaths resulted from heroin overdoses and 16,651 deaths from

opioid pain reliever overdoses. In 2013, heroin overdose deaths more than doubled to 8257 while opioid pain reliever overdose deaths dropped slightly to 16,235 (National Institute on Drug Abuse, 2015). Furthermore evidence associates nonmedical use of pain relievers with subsequent heroin use (Muhuri, Gfroerer, & Davies, 2013), highlighting the link between licit and illicit drug use and the need to address both as a continuum of the same epidemic.

Vermont's experience mirrors the national trend. Nonmedical use of prescription pain relievers among Vermonters age 12 years and older declined between 2012 and 2013 (from 4.6% to 3.7%; p -value <0.01), (Substance Abuse and Mental Health Services Administration (SAMHSA), 2014b) even as opiate-attributed deaths (from 39 to 68 per year) and overdoses (from 1.4 to 2.2 discharges per 10,000 people) increased from 2010 to 2013 (Vermont Department of Health, 2014a). Between 2008 and 2012, the average number of infants exposed to opiates at birth more than doubled, increasing from 17.8 births per 1000 hospital deliveries to 39.8 (Vermont Department of Health, 2014b). One possible explanation for the increase in adverse opioid-related outcomes is an increase in heroin use. The addictions treatment system intake experience appears to support this conclusion. From 2011 to 2013, the number of Vermonters receiving treatment for prescription opiates and heroin increased from 2864 (654 for heroin and 2210 for

* Corresponding author at: Vermont Blueprint for Health, NOB 1 South, 280 State Drive, Waterbury, VT 05671, USA. Tel.: +1 802 241 0263.

E-mail address: marykate.mohlman@vermont.gov (M.K. Mohlman).

prescription opiates) to 3971 (1375 for heroin and 2596 for prescription opiates) – a 38.6% overall increase, with a 110.2% increase for heroin and a 17.5% increase for prescription opiates (Vermont Department of Health, 2014b).

The combination of increasing overdose deaths, opiate-exposed newborns, and demand for treatment services constituted a public health emergency, and Vermont policymakers determined that a systemic response was needed. However, in a small, rural state, policymakers must consider the cost of expanding access to treatment for opioid addiction and the impact on overall health care and medical service expenditures.

1.2. Treatment for Opioid Abuse or Dependence

Medication-assisted treatment (MAT) is defined by the U.S. Department of Health and Human Services' Center for Substance Abuse Treatment as “the use of medications, in combination with counseling and behavioral therapies to provide a whole patient approach to the treatment of substance use disorders” (Substance Abuse and Mental Health Services Administration (SAMHSA), 2016). The approach involves long-term use of medications and is akin to insulin use among people with diabetes. Evidence has demonstrated that MAT, the combination of medication and counseling, is more effective at treatment retention and reduction of heroin and prescription opiate abuse than using time-limited medication (i.e., opioid detoxification or tapering) or psychosocial and abstinence interventions; the latter approaches are associated with higher rates of relapse (Fullerton, Kim, Thomas, et al., 2014; Thomas, Fullerton, Kim, et al., 2014). Furthermore, maintenance MAT is associated with improved birth outcomes when given to opioid-addicted pregnant women, although neonatal abstinence syndrome remains a concern (Fullerton et al., 2014; Thomas et al., 2014). Both Fullerton et al. and Thomas et al. found mixed results on whether MAT affected the use of other illicit drugs, criminal behavior, and risk factors for human immunodeficiency virus (HIV) or hepatitis C virus (HCV). Other studies, however, do indicate an association between MAT and reduced overall mortality and specifically while in prison, recidivism, and treatment engagement among those recently released from prison (Degenhardt, Larney, Kimber, et al., 2014; Farrell-MacDonald, MacSwain, Cheverie, Tiesmaki, & Fischer, 2014; Larney, Gisev, Farrell, et al., 2014; Zaller et al., 2013).

1.3. Cost of Medication-Assisted Treatment for Opioid Abuse or Dependence

While the effectiveness of maintenance MAT in reducing opioid use has been demonstrated, the treatment itself comes with higher direct costs than tapering, abstinence, or psychosocial interventions. In 2009, \$866 million was spent across all payers on substance abuse prescription medicine, 93% of which went towards buprenorphine, one of the drugs used to treat opioid addiction (Substance Abuse and Mental Health Services Administration (SAMHSA), 2013). While the costs of methadone are negligible, the daily dosing and other services provided in opioid treatment programs (OTPs) where methadone is dispensed are relatively high.

However, the question remains as to whether MAT costs can be offset by reductions in other health care expenditures. Relatively few studies have examined the total cost of health care services for opioid addicts. Two studies have looked at data from commercial health insurance claims on the overall health care costs and utilization rates for those using MAT compared to those treated without MAT (Baser, Chalk, Fiellin, & Gastfriend, 2011; McCarty et al., 2010). McCarty et al. found that over a five-year period, members on MAT had 50% lower total annual health plan costs than those who had two or more visits to an addiction treatment department and no methadone and 62% lower than those with zero or one visit for addiction treatment and no methadone (McCarty et al., 2010). Baser et al. found that after a six-month period, those with MAT had significantly lower overall annual

health plan costs compared to those with no medication (\$10,192 vs. \$14,353; p -value <0.0001) (Baser et al., 2011). The difference was driven largely by lower inpatient services and non-opioid-related outpatient services for the group receiving medication (Baser et al., 2011).

McAdam-Marx et al. reported in 2010 that Medicaid beneficiaries with opioid abuse, dependence, or poisoning had nearly triple the total medical costs adjusted for baseline sample characteristics compared to beneficiaries matched by age, gender, and state with no opioid abuse diagnosis (\$23,556 vs. \$8436; p -value <0.001). The opioid dependence/abuse group also had higher prevalence of comorbidities, such as psychiatric disorders, pain-related diagnoses, and other substance abuse conditions (McAdam-Marx, Roland, Cleveland, & Oderda, 2010). While this study considered overall cost, it did not address MAT costs in particular or any impact treatment may have had on overall cost.

Focusing specifically on a Medicaid population is important for two reasons. First, Medicaid beneficiaries as a population remain at greater risk for substance abuse, including opioid addiction and overdose. Approximately 12% of Medicaid beneficiaries between ages 18 and 64 years has a substance use disorder (Mann, Frieden, Hyde, Volkow, & Koob, 2014). In Washington State, the U.S. Centers for Disease Control and Prevention (CDC) found that between 2004 and 2007, 45.5% of fatal prescription opioid painkiller overdoses involved people enrolled in Medicaid (Coolen, Best, Lima, Sabel, & Paulozzi, 2009). Second, Medicaid's share of all substance abuse expenditures has increased from 9% to 21% between 1986 and 2009 (Substance Abuse and Mental Health Services Administration (SAMHSA), 2013). This equates to Medicaid spending approximately \$5 billion in 2009 on substance abuse treatment, an amount that includes federal, state, and local funds. This dollar amount and the findings by McAdam-Marx et al. (2010) indicate that state Medicaid programs have an interest in understanding the potential impact of expanding MAT services on total expenditures and utilization of medical services.

This study examines Vermont's Medicaid expenditures for opioid addiction treatment and other medical and non-medical services, including special Medicaid services (SMS), which are services uniquely reimbursed by Medicaid that target social, economic, and rehabilitative needs (e.g., transportation, home and community-based services, case management, dental, residential treatment, day treatment, mental health facilities, and school-based services). More explicitly, it compares the health care expenditures between two groups with opioid addiction: those receiving MAT (“MAT group”), specifically methadone or buprenorphine, and those receiving non-medication treatment approaches, such as behavioral therapies alone (“non-MAT group”), with the goal of assessing the cost effectiveness of MAT and establishing baseline data against which expanded and enhanced treatment access can be evaluated.

2. Material and Methods

2.1. Data Source and Sample Population

This study reviewed annual medical expenditures and utilization rates (per person) for Vermont Medicaid enrollees from 2008 to 2013 who were identified as having an opioid addiction or dependency. The data source for this study was Vermont's all-payer claims database, the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES). Due to limitations arising from the statutorily-mandated de-identified status of VHCURES, this study could not use a cohort design, but instead relied on annual cross-sectional data for each year in the study period.

The study population included members with Medicaid coverage, ages 18–64 years, who had claims in VHCURES indicating treatment for opioid addiction between the calendar years 2008 and 2013. Within each year, members participating in MAT were compared to members with opioid addiction receiving non-MAT therapies. Expenditures and

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