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Methadone maintenance and the cost and utilization of health care among individuals dependent on opioids in a commercial health plan

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ABSTRACT

Background: Few health plans provide maintenance medication for opioid dependence. This study assessed the cost of treating opioid-dependent members in a commercial health plan and the impacts of methadone maintenance on costs of care.
Methods: Individuals with diagnoses of opioid dependence (two or more diagnoses per year) and at least 9 months of health plan eligibility each year were extracted from electronic health records for the years 2000 through 2004 (1,518 individuals and 2,523 observations across the study period—some individuals were in multiple years). Analyses examined the patterns and costs of health care for three groups of patients: (1) one or more methadone visits during the year (n = 1,298; 51%); (2) no methadone visits and 0 or 1 visits in the Addiction Medicine Department (n = 370; 15%); (3) no methadone visits and 2 or more visits in addiction medicine (n = 855; 34%).
Results: Primary care (86%), emergency department (48%) and inpatient (24%) visits were common. Mean total annual costs to the health plan were $11,200 (2004 dollars) per member per year. The health plan's costs for members receiving methadone maintenance were 50% lower ($7,163) when compared to those with two or more outpatient addiction treatment visits but no methadone ($14,157) and 62% lower than those with one or zero outpatient addiction treatment visits and no methadone treatment ($18,694).
Conclusions: Use of opioid maintenance services was associated with lower total costs of care for opioid-dependent members in a commercial health plan.

1. Introduction

Methadone maintenance is the most effective treatment to date for opioid dependence (National Consensus Development Panel on Effective Treatment of Opiate Addiction, 1998). Methadone is a synthetic opioid agonist used as a maintenance medication because it can be taken orally once a day and, in sufficient dosages, relieves craving and withdrawal symptoms (Lowinson et al., 2005). A cochrane review of randomized trials comparing methadone maintenance to treatment without opioid maintenance for opioid dependence found high quality evidence that methadone maintenance improved retention in care and led to greater reductions in the use of heroin and moderate quality of evidence that methadone treatment reduced criminal activity and mortality (Mattick et al., 2009).

There is also reasonably strong evidence that methadone maintenance is cost-effective, from the societal perspective, for treatment of heroin abusing populations (Simeons et al., 2006). Contemporary patient populations, however, may include more individuals dependent on prescription opioids, while most previous studies have focused on low income and uninsured populations. Thus, little evidence is available about the relative costs and cost-effectiveness of opioid maintenance treatment among insured populations or members of commercial health plans. Information on costs from this perspective could improve decisions about covering methadone in private insurance programs and systems.

Despite 40 years of use and overwhelming evidence of effectiveness, opioid maintenance treatments remain controversial (Kleber, 2008), and commercial and Medicaid health plans have been reluctant to include methadone maintenance in their benefit packages (McCarty et al., 1999). Interviews with managers in a commercial health plan disclosed that the health plan does not purchase methadone services because they do not want to attract individuals who require chronic care; members who need methadone maintenance are directed to publicly funded treatment (McCarty et al., 1999). In 2008, however, the United States Congress passed the Paul

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Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act. Group health plans are now required to provide mental health and addiction treatment coverage equivalent to the coverage provided for most health problems if the health plan covers behavioral health services. As a result, many health plans may need to reconsider the treatments they offer for opioid dependence.

Concerns that opioid-dependent individuals may use more expensive health care services reflect empirical data showing that abuse of illicit and prescription opioids contributes to elevated rates of hospital admissions and emergency visits. Individuals treated for opioid abuse or dependence in a public hospital in San Francisco, for example, had 2-year mean expenditures ($13,393) about 2.5 times greater than expenditures for patients not using opioids (Masson et al., 2002). Similarly, an analysis of claims data from 16 self-insured employers, using 6 months of data before and after a first diagnosis of opioid abuse, found the mean per patient 12-month cost of care was eight times greater among opioid abusers ($15,884) than in a matched comparison group ($1,830; 2003 dollars) (White et al., 2005).

Treatment participation, conversely, appears to reduce the cost of health care among drug users. A retrospective cohort analysis of New York Medicaid data suggested lower costs for HIV positive and HIV negative drug users who received regular medical care and drug abuse treatment (Laine et al., 2001). Similarly, patients enrolled in a methadone maintenance program had lower hospital and emergency room utilization than a comparison group participating in a needle exchange program (Stein and Anderson, 2003).

Most analyses of health services use and costs among opioid-dependent drug users focus on uninsured patients and Medicaid recipients. While one study assessed health care costs within self-insured employer health plans, this analysis included individuals diagnosed with opioid abuse and opioid poisoning in addition to opioid dependence (White et al., 2005). There are relatively few data on health care utilization and cost among opioid-dependent individuals in commercial health plans. Health and health care patterns may differ for opioid-dependent individuals with commercial health insurance compared to those who are uninsured. Prior cost analyses, moreover, focused on costs to society rather than costs to the health plan. Health plans may be reluctant to provide a treatment that reduces criminality but does not reduce costs to the health plan. Thus, utilization and cost data from a commercial health plan that covers methadone maintenance have the potential to inform decisions about providing opioid maintenance medications from the health plan perspective.

This study examines health care use and cost among individuals with diagnoses of opioid dependence in a large not-for-profit, prepaid, integrated health plan that provides a full range of health care services, including primary care and treatment for alcohol and drug dependence. In addition to comprehensive medical, mental health, and addiction services, the health plan purchases methadone maintenance for members diagnosed with opioid dependence. Membership includes employer groups, individual subscribers, and Medicaid and Medicare recipients.

2. Methods

2.1. Study setting

The study was conducted within Kaiser Permanente Northwest (KPNW), a not-for-profit pre-paid group-practice-model health maintenance organization serving about 475,000 members in northwest Oregon and southwest Washington State, United States. KPNW uses an electronic medical record comprising several databases, with data linked for each member by a unique health record number. All service use data are derived from health plan records of medical care encounters. Missed visits are not counted as visits. The study was approved and monitored by KPNW's Institutional Review Board for the Protection of Human Subjects.

The health plan's addiction treatment services are provided through the Addiction Medicine Department and are generally group-based, outpatient treatment, with supportive therapy, education, relapse prevention and family-oriented therapy. Medical assessment and treatment are also included, and individual counseling is provided as needed. When appropriate, methadone maintenance treatment is available through contracts with licensed opioid treatment programs. Addiction medicine visits include both medical and counseling visits.

2.2. Study participants

Annual utilization data were extracted for individuals whose electronic medical record included two or more diagnoses of opioid dependence and at least 9 months of health plan eligibility. The analysis was based on calendar years 2000 through 2004. Two or more diagnoses of opioid dependence per year were required to reduce potential false positives.

2.3. Study analyses

Analyses examined the use of addiction treatment services, including inpatient and residential treatment, methadone maintenance, and outpatient treatment for alcohol and drug problems. The analysis included general medical services categorized as primary care, inpatient care, and emergency services. The health plan either provided the care or paid for the care.

To assess the effects of addiction treatment services on health care utilization, individuals with opioid dependence diagnoses were categorized into three groups, based on utilization of outpatient addiction treatment services provided by the Addiction Medicine Department (counseling and medical visits): (1) 0–1 outpatient addiction medicine visits and no methadone visits (0 and 1 visits were combined because we consider a single visit minimal treatment and to ensure that we had sufficient cases for analysis), (2) 2 or more outpatient addiction medicine visits and no methadone visits, and (3) 1 or more methadone visits. These categories allowed us to compare individuals who (1) had diagnoses of opioid dependence and were seen by staff in the Addiction Medicine Department but did not engage in treatment, with (2) those individuals who engaged in treatment (attended at least two addiction medicine visits or entered a methadone maintenance program). Because the same individuals could appear in more than 1 year, we used generalized estimating equations (GEE) to test for differences in utilization and costs among the study groups across all years, controlling for age, gender, and Medicaid status. The groups were dummy coded; individuals with 1 or more methadone visits were the reference group. Negative binomial models examined health care utilization variables. Total costs were log transformed and used in a normal distribution GEE model. Cost analyses were adjusted to 2004 dollars. Total costs included addiction treatment services, emergency, inpatient, primary care and pharmacy expenditures.

To explore possible differences in health conditions across groups, all diagnoses for each member, in each year, were categorized using the Kaiser permanente clinical-behavioral disease classification system (CBC) (Hurtado and Greenlick, 1971), updated for ICD-9-CM codes. This system organizes health problems into groups that share important dimensions, including severity, etiology, duration, and anticipated use of medical care resources. The system has 19 primary categories (e.g., chronic disease, serious, microorganism, and less serious) with 118 subgroups. All disease codes and V codes are assigned to a single appropriate category, simplifying diagnosis-related analyses. For each clinical-behavioral classification category, GEE logistic models tested whether the three groups differed on having at least one diagnosis within the categories, controlling for age, gender, and Medicaid status.

3. Results

Over the 5-year study period, 2,523 observations were identified with two or more diagnoses of opioid dependence in any year among 1,518 unique individuals (some individuals appeared in two or more years). Most opioid-dependent health plan members received addiction treatment services: 51% received methadone (the mean annual days of methadone among individuals receiving methadone was 257 ± 117 days), 34% had two or more outpatient addiction treatment visits (mean annual visits = 21 ± 50), and 15% had one or no outpatient addiction treatment visits (mean annual visits = 0.3 ± 0.5). Table 1 summarizes available demographic information and patterns of services used for each study group.

Over 99% of individuals had health care costs during the year. Although the distribution of total costs was skewed (skewness = 5.81, kurtosis = 67.66), log costs were normally distributed (skewness = 0.17, kurtosis = 2.99). Annual use of primary care services was common (86%), and about half of the individuals (48%) had annual visits for emergency services. Each year, about one in four (24%) opioid-dependent individuals received inpatient care. The three comparison groups differed on gender, age, and Medicaid status. Men accounted for 53% of the methadone group,