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Osteoporosis medication adherence: Physician perceptions vs. patients' utilization☆,☆☆

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ABSTRACT

Few data are available on physician perceptions of osteoporosis medication adherence. This study compared physician-estimated medication adherence with adherence calculated from their patients' pharmacy claims. Women aged ≥45 years, with an osteoporosis-related pharmacy claim between January 1, 2005 and August 31, 2008, and continuous coverage for ≥12 months before and after first (index) claim, were identified from a commercial health plan population. Prescribing physicians treating ≥5 of these patients were invited to complete a survey on their perception of medication adherence and factors affecting adherence in their patients. Pharmacy claims-based medication possession ratio (MPR) was calculated for the 12-month post-index period for each patient. Physicians who overestimated the percentage of adherent (MPR ≥0.8) patients by ≥10 points were considered "optimistic". Logistic regression assessed physician characteristics associated with optimistic perception of adherence. A total of 376 (17.2%) physicians responded to the survey; 62.0% were male, 58.2% were aged 45 to 60 years, 55.3% had ≥20 years of practice, and 35.4% practiced in an academic setting. Participating physicians prescribed osteoporosis medications for 2748 patients with claims data (mean [SD] age of 62.0 [10.6] years). On average, physicians estimated 67.2% of their patients to be adherent; however, only 40% of patients were actually adherent based on pharmacy data. Optimistic physicians (73.4%) estimated 71.9% of patients to be adherent while only 32.2% of their patients were adherent based on claims data. Physicians in academic settings were more likely to be optimistic than community-based physicians (odds ratio 1.69, 95% CI: 1.01, 2.85). Overestimation of medication adherence may impede physicians' ability to provide high quality care for their osteoporosis patients.

Introduction

Osteoporosis is a degenerative bone disease that is common in postmenopausal women [1]. In the United States (U.S.), 10 million men and women have osteoporosis and the number of affected individuals is expected to increase to 14 million by 2020 [1]. Fracture is the most costly consequence of osteoporosis and fracture-related costs are projected to increase from $17 billion in 2005 to over $22 billion by 2020 [2]. In Europe, osteoporotic fractures accounted for an estimated 1.75% of the total disease burden, and for more disability-adjusted life years lost than most common cancers with the exception of lung cancer [3].

Initial fractures increase the risk of subsequent fractures, with 40% to 60% of individuals with low-trauma fractures experiencing an additional fracture over 10 years, and a 34% higher risk of subsequent fracture among individuals with a previous high-trauma fracture compared with individuals without a fracture history [4,5]. Fractures can also increase subsequent mortality risk for up to 10 years post fracture [6].

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Bisphosphonates (alendronate, risedronate, ibandronate, and zoledronic acid) are commonly prescribed treatments for osteoporosis. Other osteoporosis agents prescribed in the U.S. include raloxifene (a selective estrogen receptor modulator [SERM]), teriparatide (a recombinant form of parathyroid hormone), calcitonin, and denosumab (a RANKL inhibitor) [7]. Estrogen replacement therapy is also prescribed for osteoporosis in postmenopausal women, but its use has diminished with increasing long-term safety concerns, and product labeling suggests that if estrogen replacement therapy is prescribed for the prevention of osteoporosis, it should be considered only for women at significant risk of developing postmenopausal osteoporosis [8–10].

Osteoporosis treatment adherence correlates with improvement in bone mineral density and reduction of fracture risk [11]. However, nonadherence is common among osteoporosis patients and mitigates these clinical benefits [12–14]. Physicians who are unaware of what proportion of their own patients is nonadherent may overestimate the therapeutic benefits their patients are receiving, and may be less likely to inquire about their patients' adherence or to provide opportunities to discuss difficulties a patient may have in taking their medications. Although physician perceptions of patients' medication adherence have been examined in therapeutic areas as diverse as diabetes, hypertension, and HIV, little is known about physician perceptions of adherence in osteoporosis patients [15–19].

Our study was undertaken to 1) compare physician estimates of osteoporosis medication adherence in postmenopausal women with adherence measured using linked pharmacy claims data, and 2) assess physician characteristics associated with misclassification in the estimation of their patients' adherence.

Methods

Data source

All claims data were obtained from the Health Insurance Portability and Accountability Act (HIPAA)-compliant HealthCore Integrated Research Database (HIRD^{SM}) which includes information for 43 million individuals enrolled in a variety of Blue Cross/Blue Shield health plans in 14 states. Although the database covers the U.S., the largest proportion of enrollees resided in the Western region. An independent institutional review board approved the study protocol and questionnaire. Physicians provided formal consent to participate, and all survey data were de-identified and reported only in aggregate.

Identification of patients and physicians

Women aged ≥45 years with outpatient pharmacy claim(s) for an oral bisphosphonate (weekly or monthly), calcitonin, SERM, or teriparatide between January 1, 2005 and August 31, 2008 were identified using administrative claims data from the HIRD^{SM}. Physicians were identified by linking eligible women to their prescribing physicians. If contact information for the prescribing physician was unavailable, the patient was excluded from the cohort.

The index date was set to the date of the first osteoporosis pharmacy claim for the eligible osteoporosis medications. Patients were required to have continuous health plan coverage for ≥12 months before and after the index date, and to be new to pharmacologic therapy (i.e., no osteoporosis medication claims in the 12-months pre-index). Patients who had claims for ≥2 osteoporosis medications at index, who were diagnosed with malignant neoplasm or Paget's disease, or were receiving medication consistent with the treatment of Paget's disease in the 12-months pre-index, or who had claims for skilled-nursing facility care on the index date were excluded from this study.

Physician survey

Physicians who prescribed index osteoporosis medication for ≥5 study cohort patients between March 15, 2010 and June 22, 2010 were invited via mail, email, or fax to participate in the survey. This ensured that the sample included a range of prescribing physicians, rather than exclusively those who were high volume prescribers of osteoporosis medications. The 26-item physician questionnaire was used to collect information on their demographics (gender, age, geographic region, specialty, years in practice, practice setting, and patient volume), their perceptions of treatment adherence in the postmenopausal osteoporosis patients they treated, approaches to managing osteoporosis, and their perceptions of factors that influenced patient adherence (Table 1). The survey was available in hardcopy and online; the online version was pilot-tested by 10 physicians prior to full implementation. Participating physicians were allowed to terminate the survey at any point and received $100 upon completion. A 20% response rate was targeted.

Study measures

The measures for the primary analysis of this study were patients' osteoporosis medication adherence and physician perceptions of patients' osteoporosis medication adherence. Patients' medication adherence was assessed by calculating the medication possession ratio (MPR) for each patient using pharmacy data. MPR was defined as the total number of days of osteoporosis medication supplied in the 12-month post-index period divided by 365 days. Patients with MPR ≥0.8 were considered adherent.

Physician perceptions of patients' medication adherence were assessed from the following survey question: “What percentage of your patients do you estimate adhere to post-menopausal osteoporosis (PMO) medication therapy after 1 year? Adherence is defined as both persistence and compliance (following dosing instructions at least 80% of the time).” Although common definitions of adherence used for research purposes usually distinguish between persistence (i.e. non-discontinuation) and compliance, the question combined these concepts in recognition that a clinician is usually most interested in whether the patient is taking the drug as prescribed, which requires both persistence and compliance. Moreover, self-reported data about drug use provided by patients to their treating physicians during office visits has uncertain validity to help doctors accurately identify and discriminate between nonpersistence and noncompliance,

Table 1
Physician survey content.

Physician characteristics	Gender, age, years in practice, geographic region, specialty, practice setting, academic affiliation, and patient volume
Diagnosing and managing postmenopausal osteoporosis (PMO)	Equipment used and patient characteristics considered to diagnose osteoporosis Initiating therapy with samples and/or prescriptions Follow-up intervals after prescribing osteoporosis agent(s)
PMO medication adherence	Level of adherence needed for clinical benefit Factors that influence patient adherence Physician behaviors used to support patient adherence (ask patients about problems with their medication; ask family/caregiver about medication adherence; review medical records or pharmacy data for indications of refills) *What percentage of your patients do you estimate adhere to post-menopausal osteoporosis (PMO) medication therapy after 1 year?* Adherence is defined as both persistence and compliance (following dosing instructions at least 80% of the time).