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Osteoporosis Care in the United States After Declines in Reimbursements for DXA

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Abstract

In January 2007, in the United States (US), Medicare initiated a series of cuts to reimbursement for dual-energy X-ray absorptiometry (DXA) services performed in the nonfacility setting that by January 2010 reduced payments for these services by more than 60% compared with 2006 levels. The objectives of this study were to determine if a temporal association exists between Medicare Physician Fee Schedule changes in office-based DXA reimbursement and attendance at educational conferences for osteoporosis, physicians' perceptions of changes in their medical practices, or national trends in retail prescription medications for osteoporosis in those aged 65 and older.

Compared with the 2 yr before the decline in Medicare reimbursement for DXA (2005–2006), attendance at educational meetings for osteoporosis in the US declined in the 2 yr after these cuts (2007–2008) by 6%; declines in attendance were only present in meetings selective for bone densitometry. Survey participants reported changes in DXA services with approximately one-third indicating that they had either decreased the number of DXAs they performed or declined service contracts or hardware/software updates compared with 2005–2006. The number of retail prescriptions for Food and Drug Administration–approved osteoporosis drugs (excluding estrogen compounds and raloxifene) in the age 65 and older population increased by 5.5% in the

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time period 2007–2008 compared with 2005–2006. However, in the last year of the study (2008), total retail prescriptions for these drugs experienced for the first time over the interval of the study, a decline (1.4%) compared with the previous year. This occurred despite a 2.6% increase in the US population age 65 and older.

In conclusion, there were temporal associations noted between Medicare cuts in DXA payments in attendance at educational conferences for bone densitometry, self-report of office-based provision of DXA services in the US, and retail prescriptions for osteoporosis therapies.

Keywords

DXA; Medicare cuts; United States

Introduction

In 2006, it was estimated that there were approximately 16,000 central dual-energy X-ray absorptiometry (DXA) units in use across the United States (US) (personal communication, International Society for Clinical Densitometry [ISCD]), with the majority of all DXA testing performed in the nonfacility (i.e., private practice) setting (1). At that time, Medicare (the major health insurer for citizens aged 65 yr and older and for the disabled in the US), reimbursement for central DXA testing in the nonfacility setting, un-adjusted for geographic cost index, averaged \$139.00. In January 2007, changes in reimbursement for diagnostic imaging imposed by Section 5102 of the Deficit Reduction Act, a legislation that affects many aspects of domestic entitlement programs, including Medicare, dropped reimbursement for central DXA to \$82.00. The mandated 5-yr review of the Medicare Physician Fee Schedule instituted a further graduated decline in reimbursement for DXA services in the nonfacility setting (2). By January 2010, the average Medicare reimbursement for central DXA performed in the nonfacility setting was \$61.66 (3). In March 2010, as part of health care reform legislation, Medicare began reimbursing DXAs at no less than 70% of 2006 rates (retroactive to January 1, 2010), or approximately \$98.00 for 2010 and 2011 while a 2-yr study by the Institute of Medicine of the impact of these Medicare fee cutbacks in DXA is undertaken. However, because these figures are still far below the \$134 projected costs of performing a central DXA calculated by the Lewin Group (a health care policy and management consulting firm) in 2007 (4), and because it is uncertain what will happen to reimbursements for DXA after 2011, access to DXA testing in the nonfacility setting remains threatened.

It is important to understand the impact of these Medicare reimbursement cuts on DXA testing, as prior studies have suggested that bone mineral density (BMD) testing is a critical predictor of whether or not pharmacological therapies to prevent future fractures are prescribed (5). However, no study to date has examined the impact of these reimbursement cuts on the care of patients at risk for fractures.

The purpose of this study is to examine the temporal association between Medicare fee cuts for DXA reimbursement in nonfacility-based sites, which were enacted as part of Federal Regulation CMS-1512-PN and Section 5102 of the Deficit Reduction Act, and attendance at

clinical educational conferences for osteoporosis within the US, physicians' self-report of changes in their medical practices with respect to DXA testing, and prescribing patterns for osteoporosis in the age 65 and older population in the 2 yr before these Medicare fee changes (2005–2006) compared with the 2 yr after these changes (2007–2008).

We hypothesized that in the 2 yr after cuts in Medicare reimbursement for DXA (2007 and 2008) compared with the 2 yr before these cuts (2005 and 2006), that attendance at clinical osteoporosis and bone-related educational conferences would decrease, that there would be less availability of central DXA testing within physicians' offices, and that prescription therapies for osteoporosis treatment in the age 65 and older population would decline. The study was approved by the Veterans Administration, Memphis, TN, institutional review board.

Methods

Educational Conferences

Educational conferences that included substantial information on osteoporosis within the US from 2005–2006 and 2007–2008 were stratified based on the authors' judgment of meeting objectives into those highly selective for bone densitometry information, those moderately selective for bone densitometry information, and those least selective for bone densitometry. Included in those meetings that were highly selective for bone densitometry information were the ISCD regional and national meetings and the ISCD position development conference. The Southern Medical Association Osteoporosis Course, the Metabolic Bone Disease Society of Colorado Meeting, and the Santa Fe Bone Symposium were included in those meetings moderately selective for bone densitometry information and the National Osteoporosis Foundation (NOF) Meeting and the American Society for Bone and Mineral Research (ASBMR) were included in those meetings least selective for bone densitometry. The ASBMR is the only one of these meetings that also may be held in Canada. All meetings were held yearly, except for the ISCD position development conference and the NOF, which were held once during each time period of the study.

Surveys

We conducted surveys on the ISCD Web site in 2008 and 2009, which began at the time of the ISCD national meeting each year and ended approximately 1 mo later (survey dates 3/10/08 to 4/23/08 and 3/2/09 to 4/24/09). These surveys were available to ISCD members and nonmembers. Only physicians who were Medicare-participating providers and who practiced in a nonfacility setting were instructed to complete the survey. Survey reminders were subsequently sent to all 2813 US ISCD members each year.

If a potential participant indicated that they did not order any DXAs (whether at their practice or elsewhere), the survey closed, and their initial demographic data were not included. Only those who completed the survey ($n = 328$ for 2008) and ($n = 238$ for 2009) were included. The survey was essentially identical in both years, except for changes in the dates queried and additional queries concerning DXA referrals from outside the respondent's own medical practice in the 2009 survey. Information on practice type (solo

private practice, group private practice, solo or group hospital practice, university-based practice), specialty of practitioner (internal medicine, family practice, rheumatology, endocrinology, radiology, obstetrics/gynecology (ob/gyn), orthopedics, all others), geographic setting of practice rural (<50,000 persons) or urban (≥50,000 persons) (6), years in practice, whether or not the practice owned or leased a DXA, the volume of DXAs performed, the number of DXA machines in the practice, the availability of other DXAs located in close proximity to their practices, the DXA technologists' training (radiation [RT] or nuclear medicine technologist [NMT], certified DXA technologist [CDT], both RT/NMT and CDT, neither RT/NMT nor CDT, or unknown), the existence of DXA service contracts and software/hardware upgrades to the DXA machine was obtained by self-report.

Potential predictors of (1) changes in the number of DXAs performed, (2) changes in the number of DXA referrals, and (3) the likelihood of termination/reassignment of a DXA technologists' position including type of practice, specialty of practitioner, geographic setting of practice, years in practice, number of DXAs performed/month, number of DXA machines operated, and training of DXA technologists during this time period were examined.

Prescription Drug Therapies for Osteoporosis

National Prescription AuditTM information was purchased from IMS Health for the years 2005–2008, including the number of prescriptions for osteoporosis drugs and the specialties of these prescribers. For the purposes of these analyses, only Food and Drug Administration (FDA)–approved retail drug therapies for osteoporosis in those aged 65 and older were included. If age of the patient was unspecified, these prescriptions were not included in the analyses. The FDA-approved drug therapies for osteoporosis included in these analyses were risedronate (Actonel[®], Actonel plus calcium[®]), alendronate (Fosamax[®], Fosamax with D[®], various generic manufacturers), ibandronate (Boniva[®]), Reclast[®], salmon calcitonins (recombinant), nasal (Fortical[®]), salmon calcitonin (Miacalcin[®], Calcimar[®], and various generic manufacturers), and teriparatide (Forteo[®]). Estrogen and estrogen/progesterone preparations, which are FDA approved for use in osteoporosis, were not included, as they are often used for reasons other than skeletal health (7). Raloxifene was excluded as it was also FDA approved for breast cancer prevention (8,9) in the more recent years of our observation period. Specialty of providers was classified in an identical fashion to our survey including the categories of primary care (including general practitioners, family practitioners, internal medicine, medicine-pediatrics, doctor of osteopathy, nurse practitioners, and physician assistants), ob/gyn, rheumatology, endocrinology, orthopedics, and others. Prescriptions by veterinarians, dentists, and optometrists were excluded from all analyses. Prescriptions from nuclear medicine physicians and radiologists were also excluded from all analyses because of the small number of prescriptions from these providers.

Statistical Analyses

The total number of attendees at educational conferences and temporal changes in these percentages from 2005 to 2008 was described. Survey results including absolute numbers and percentage of all responses from 2008 to 2009 were analyzed using descriptive

statistics. Logistic regression was done to determine predictors of changes before and after Medicare fee cuts in (1) number of DXAs performed (2008 and 2009 surveys), (2) number of referrals for DXA from outside practitioners (2009 survey), and (3) whether a technologist's position had been changed (reassigned or terminated) (2008 and 2009 surveys). The numbers of FDA-approved retail prescription drug therapies for osteoporosis (excluding estrogen compounds and raloxifene) for the subspecialist categories identified above in the years 2005–2008 were described. Chi-square analysis was used to determine whether there was a significant difference between the total number of FDA-approved drugs for osteoporosis outlined in our analyses compared with all retail prescription drug therapies in the age 65 and older population (market share of osteoporosis drugs) in 2005 and 2006 relative to 2007 and 2008.

Results

Attendance at Educational Conferences for Osteoporosis

In the 2 yr (2005–2006), before enactment of cuts in Medicare reimbursement for central DXA testing in the nonfacility setting compared with the 2 yr (2007–2008) following these regulations, attendance at all osteoporosis meetings included in these analyses declined 6% ($n = 16,814$ for 2005–2006) and ($n = 15,828$ for 2007–2008). This decline was driven by decreases in attendance at meetings highly selective for bone densitometry, which experienced a 31% decline. However, for those meetings that were moderately selective for bone densitometry there was a 16% gain in attendance ($n = 879$ for 2005–2006 and $n = 1018$ for 2007–2008) and for those meetings that were least selective for bone densitometry there was an increase in attendance of approximately 5% ($n = 9616$ for 2005–2006 and $n = 10,095$ for 2007–2008) (Fig. 1).

Survey Responses

Survey response rates among US ISCD members sent the survey reminder were 11% in 2008 and 8% in 2009; all complete survey responders were ISCD members. Most respondents to the 2 surveys practiced in group (nonhospital) and urban settings were rheumatologists and had been in practice for 20+ yr. In 2008, 38% of all technologists employed in these practices were ISCD-certified DXA technologists; by 2009, this remained approximately the same (39%). Most of these practices owned or leased a DXA between 2005 and 2008 and operated only 1 DXA machine. In the first year of Medicare DXA reimbursement cuts (2007), 37% indicated that they had decreased the number of DXAs they performed in their offices, 3% had stopped doing DXAs altogether, 37% reported no change in the number of DXAs performed in their offices, and 23% reported an increase in the number of DXAs performed in their offices. By 2009, 37% again indicated that they had decreased the number of DXAs performed in their offices, but only 1% had stopped doing DXAs altogether; 27% reported no change in the number of DXAs and 36% reported an increase in the number of DXAs performed in their offices. In 2008, 27%, and by 2009, 35%, had allowed their DXA maintenance/service contracts to expire, and more than 50% had declined DXA software or hardware upgrades. Twenty-seven percent of respondents had reassigned or terminated a DXA technologist's position in 2008; this had increased to 31% by 2009. In the 2009 survey, a question not previously queried on the 2008 survey was

included, inquiring as to whether the number of DXA scans done as referrals (scans done on patients not within the practice group) had changed in 2008 compared with 2007. Thirty-one percent of practitioners reported a decrease in the number of outside referral scans; however, 25% of the respondents indicated that their number of DXA referrals had increased in 2008 compared with 2007 (Table 1).

Predictors of Changes in Provision of DXA Services

Significant predictors of changes in provision of DXA services including changes in the number of DXAs performed, changes in the number of DXA referrals, and the likelihood of reassignment/termination of a DXA technologist's position after Medicare reimbursement cuts for DXA included subspecialty of provider, type of practice, and number of DXA machines operated. Overall rheumatologists, those in solo practice, and practices with fewer than 3 DXA scanners showed the most declines in provision of DXA services after cuts in Medicare reimbursement (Table 2). Additionally, in 2009, those in university-based practices were significantly more likely to experience an increase in the number of DXA referrals; odds ratio 1.66 (95% confidence interval: 1.12, 2.47). No other variables included in our survey (Table 1) were significant predictors of changes in provision of these DXA services (data not shown).

Prescription Drug Therapies for Osteoporosis

In persons 65 yr and older, retail prescriptions for FDA-approved osteoporosis drugs increased 5.5% in the period during 2007 and 2008 compared with 2005 and 2006. Prescriptions for FDA-approved bisphosphonate therapies for osteoporosis increased 8.2% between these 2 time periods. Combined prescriptions for calcitonin and teriparatide decreased 22.1% during these time periods (Table 3). Total retail prescriptions for all these osteoporosis medications increased in every year of our study except in 2008. In 2008, for the first time over the time period of our analyses, total retail prescriptions for these medications declined; this decline was present across all categories of FDA-approved osteoporosis drugs included in our study. Total market share of all FDA-approved medications for osteoporosis (total number of retail prescriptions for FDA-approved osteoporosis medications/total number of all retail prescriptions in those aged 65 and older) decreased from 1.94% in 2005–2006 to 1.89% in 2007–2008, a difference that was statistically significant ($p < 0.0001$).

In persons aged 65 and older, the number of prescriptions for FDA-approved drugs for osteoporosis increased by 8.2% in primary care and 5.8% in endocrinology remained relatively stable in ob/gyn (1.2% decrease), and rheumatology (2.3% decrease), and experienced sharp declines in orthopedics (22.9% decrease) in the time period of 2007–2008 compared with 2005–2006. However, by 2008, compared with the previous year, all specialties experienced declines in these prescriptions. The largest declines again were present for orthopedics (Table 4).

Discussion

In the 2 yr after cuts in Medicare reimbursement for DXA services in the nonfacility setting, attendance by physicians and technologists at US educational meetings for osteoporosis focused on bone densitometry declined, and physicians reported that delivery of DXA services in their offices changed. These changes included substantial declines in upgrading of DXA technology and reassignment or termination of DXA technologists' positions. In contrast, attendance at educational meetings for osteoporosis not specifically devoted to bone densitometry experienced small increases. Although the total number of FDA-approved retail prescriptions for osteoporosis medications in those aged 65 and older increased slightly over the combined 2 yr after these reimbursement cuts for DXA, by the end of 2008, there was a decline in these prescriptions that was present across all specialties.

The impact of this declining attendance at educational conferences devoted to bone densitometry remains to be determined. Key components of successful continuing medical education opportunities allow physicians' ongoing opportunities to generate important questions, interpret new knowledge, and judge how to apply that knowledge in clinical settings (10). The ISCD regional meetings, which experienced these declines in attendance after declines in Medicare reimbursement for DXA services, provide a forum for "hands-on training" for DXA in clinical practice for both physicians and technologists. This decline suggests that physicians may be less interested in offering DXA services. However, despite these declines in attendance at bone densitometry meetings, it is somewhat reassuring that attendance at educational conferences for osteoporosis outside those focused on DXA continued to increase over the 2 time periods. This suggests to the authors that there is still ongoing interest in learning how best to manage patients with osteoporosis, even if the practitioner does not offer DXA services at his/her office.

Our surveys provide some unique information concerning changes in how DXA is being performed in the nonfacility setting. After cuts to Medicare reimbursement for DXA services across both surveys, approximately one-third of practitioners reported a decrease in the number of DXA studies performed or shutting down DXA testing in their offices, one-third reported no changes and one-third reported increases. However, the authors suspect that the numbers of physicians who stop performing DXAs in their offices will continue to increase over time, particularly as these DXA machines age and subsequently malfunction. This is suggested by our survey results in which a substantial number (more than one-third) of practitioners reported that they are not renewing their service contracts on DXA. The current cost of renewing a DXA service contract approximates \$6000–\$9000 per year (11). These contracts cover most expenses should the machine malfunction. In the absence of a service contract, costs to repair a DXA scanner are usually prohibitive. In addition, approximately 50% of respondents in both years of the survey had declined software and/or hardware upgrades to their DXA scanners, which may have serious implications in the ability to translate new advancements directly into clinical practice.

Our surveys also suggest that who is performing the DXA and where it is performed in outpatient settings has changed, with rheumatologists and those in solo practice performing fewer DXAs, and radiologists and those in university-based practice performing more

DXAs. Approximately, one-third of all DXA technologists had been terminated or had their positions reassigned by 2008; this was particularly true in practices that contained a single DXA machine. The impact of these changes on quality of care for osteoporosis needs further study, particularly because our survey participants projected that the number of future DXAs they performed would likely decrease.

Projected temporal trends in availability of DXA services suggest that individuals who have to travel more than 5 miles for this service are less likely to complete the test (1). In both years of our survey, most respondents indicated that their patients had access to DXA services within a 20-mile radius of their practices; however, whether or not this was within a 5-mile radius was not ascertained. BMD testing has been reported to be a critical predictor of whether or not pharmacological therapies to prevent future fractures are prescribed (5). Of concern, the Moran Study reported that use of DXA is declining in volume with overall DXA volume in 2008 decreased by 0.4% relative to 2007, which was double the decline from 2006 to 2007 (12). It will also be important to determine whether DXA utilization continues to decrease if changes in requirements for DXA certification of technologists occur. In CMS, Section 42 CFR 310.33 specified that, in the absence of a state licensing board, the technician must be certified by an appropriate national credentialing body; this may have an impact on DXA services in the near future.

Small increases in the total number of these retail prescriptions for osteoporosis medications continued over the aggregate 2-yr time period after these Medicare DXA reimbursement cutbacks. However, by the second year of these cutbacks, it was clear that, in temporal association with declines in the volume of DXAs performed, that a decrease occurred in the number of retail prescriptions for FDA-approved osteoporosis drug therapies across all specialties. This decline occurred despite the emergence of generic alendronate in 2008 and the availability of Medicare Part D (which beginning in 2006 paid for retail prescription drugs for seniors) and Medicare Part B (which pays for infusion drugs such as Reclast® and physician fees). Medicare Part D was initiated in 2006, however, increased spending on prescription drugs continued during the following 2 yr (13). Importantly, this decline occurred despite a 2.6% increase in the total population age 65 and older (from 37.9 million in 2007 to 38.9 million in 2008; US Census Data).

There are a number of important limitations to our study. The classifications of types of meetings (relative to selectivity for bone densitometry) used in our study were made by author consensus and may not be entirely accurate. We did not have detailed information on the attendees at these conferences including whether they practiced at a facility or nonfacility setting and whether or not they owned or leased DXAs. Our surveys provided only self-reported data, and the number of respondents was small in each survey with a low response rate. Survey respondents could have participated in either or both the 2008 and 2009 survey and no data were collected to determine whether the respondents were the same people in each year. In our instructions for the survey, we indicated that only physicians who practiced in nonfacility settings who were Medicare-participating providers should participate; however, we cannot be certain that these instructions were followed. Our survey data were from physicians who indicated that they ordered DXAs, and it is possible that these people were not directly knowledgeable and responsible for maintenance of software

and hardware upgrades and for service contracts on these machines. In addition, most of our subspecialty respondents were rheumatologists. All respondents to our survey were ISCD members who may have limited the generalizability of the results. IMS data were simply all retail prescriptions in those aged 65 and older by specialty groups we included and did not reflect whether these were renewals or new prescriptions for osteoporosis. The impact of recently passed health care reform legislation in March 2010 on all our study parameters is unknown. Finally, a portion of the IMS 65 and older prescription data could have been represented in the unspecified age category.

In conclusion, care for patients with osteoporosis after federally legislated cuts in DXA reimbursement has changed substantially. Less formal training in DXA is occurring, but interest in education in other aspects of osteoporosis care continues. The subspecialty and type of practice performing DXAs have changed with more of these services being provided in larger practices and in hospital-based settings. Prescriptions for osteoporosis medications in those aged 65 and older are declining. The potential impact of these changes on the elderly population at risk for fracture is of serious concern.

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Fig. 1.
Attendance at educational conferences for osteoporosis.

Table 1

Survey of Provision of DXA Services by Survey Respondents in 2008 and 2009

Survey question	2008 Responses, (N = 286)	2009 Responses, (N = 206)
Practice type, n (%)		
Solo private practice	96 (29)	75 (32)
Group private practice	174 (53)	136 (57)
Solo or group hospital practice	33 (10)	15 (6)
University-based practice	25 (8)	12(5)
Physician specialty, n (%)		
Internal medicine	58 (20)	44 (20)
Family practice	37 (13)	30 (14)
Rheumatology	78 (26)	50 (23)
Endocrinology	33 (11)	30 (14)
Radiology	27 (9)	15 (7)
ob/gyn	36 (12)	37 (17)
Orthopedics	13 (4)	7 (3)
All others	13 (4)	9 (4)
Geographic setting of practice		
Rural	66 (22)	55 (25)
Urban	229 (78)	167 (75)
Years in practice, n (%)		
<5	14 (5)	7 (3)
5–9	34 (12)	14 (6)
10–14	31 (11)	23 (11)
15–19	57 (19)	39 (18)
20 or more	159 (54)	136 (62)
Did practice own/lease DXA between January 2005 and December 2007 (or 2008 for 2009 survey), n (%)		
1. Yes	286 (97)	209 (95)
Change in number of DXA in 2007 compared with previous 2 yr	67 (23)	50 (25)
# of DXAs increased	105 (37)	63 (31)
# of DXAs decreased	105 (37)	39 (19)
# of DXAs did not change	9(3)	0 (0)
Stopped ordering DXA	9 (3)	10 (5)
2. No	9 (3)	10 (5)
Ordered DXA at other facilities	5 (54)	5 (50)
# of DXAs increased	4 (80)	3 (75)
# of DXAs decreased	0 (0)	0 (0)
# of DXAs did not change	1 (20)	1 (25)
Stopped ordering DXA	0 (0)	0 (0)
Monthly number of DXAs performed, n (%)		
< 50	96 (34)	69 (33)

Survey question	2008 Responses, (N = 286)	2009 Responses, (N = 206)
50–99	74 (26)	49 (24)
100–199	58 (20)	41 (20)
200 or greater	58 (20)	47 (23)
Number of DXA machines, n (%)		
1	234 (82)	172 (83)
2	35 (12)	21 (10)
3	11 (4)	7 (3)
More than 3	6 (2)	6 (3)
DXA access within 20 miles, n (%)		
Yes	87 (76)	2 (100)
No	11 (10)	0 (100)
Do not know	16 (14)	0 (100)
Association of reimbursement cuts with change in number of DXAs performed? n (%)		
Yes	74 (65)	2 (100)
No	40 (35)	0(0)
DXA maintenance and service contracts lapsed or expired? n (%)		
Yes	76 (27)	68 (35)
No	210 (73)	127 (65)
DXA software upgrades declined, n (%)		
Yes	135 (48)	104 (53)
No	150 (52)	91 (47)
DXA hardware upgrades declined, n (%)		
Yes	143 (50)	112 (57)
No	143 (50)	83 (43)
Technologist position terminated or reassigned, n (%)		
Yes	77 (27)	60 (31)
No	209 (73)	134 (69)
Technologist training, n (%)		
Radiologic technologist or nuclear medicine technologist	49 (17)	39 (20)
Certified DXA technologist	108 (38)	76 (39)
Both of the above	98 (34)	56 (29)
None of the above	31 (11)	22 (11)
Do not know	0 (0)	1 (1)
Projected changes in DXA numbers in year following survey, n (%)		
# will increase	34 (12)	28 (14)
# will decrease	106 (37)	70 (36)
# will not change	117 (41)	68 (35)
Stop doing DXA	29 (10)	28 (14)
Association of reimbursement cuts with change in DXA practices, n (%)		
Yes	133 (79)	101 (80)
No	36 (21)	25 (25)

Abbr: DXA, dual-energy X-ray absorptiometry; ob/gyn, obstetrics/gynecology.

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Table 2

Predictors of Changes in Provision of DXA Services

Predictors of changes in provision of DXA services	Increase in number of DXAs performed, OR (95% CI)		Decrease in number of DXA referrals, OR (95% CI)		Likelihood of reassignment/termination of DXA technologist position, OR (95% CI)	
	2008	2009	2008	2009	2008	2009
Type of practice						
Solo ^a	–	–	2.01 (1.12, 3.63)	–	1.8 (1.13, 278)	–
Private				0.57 (0.33, 0.98)		
University based	–	1.66 (1.12, 2.47)	–	–	–	–
# of DXAs operated	–	–	–	–	–	–
3 or more ^b	–	–	–	–	0.424 (0.253, 0.711)	–
Subspecialty of provider	–	–	–	–	–	–
OB/GYN	–	–	–	–	0.46 (0.25, 0.85)	0.62 (0.371, 1.02)
Radiologists	4.25 (0.18, 0.87)	–	–	–	–	–
Rheumatologists ^c	0.42 (0.18, 0.87)	–	1.91 (1.36, 2.70)	–	–	–
Internal Medicine	–	–	–	–	–	0.64 (0.41, 0.04)

Abbrev: DXA, dual-energy X-ray absorptiometry; OB/GYN, obstetrics/gynecology.

– : No significant differences present.

^aReference group is all other practices combined.^bReference group is 1 or 2 DXA scanners.^cReference group is all other subspecialties combined.

Table 3

Prescription Drug Therapies for Osteoporosis 2005–2008 (Percentage Change From Preceding Year)

Drug class	Yr 2005	Yr 2006	Yr 2007	Yr 2008
Bisphosphonates	13155000	19656000 (49%)	21108000 (7.4%)	24647000 (17%)
Teriparatide and calcitonin	1611000	2109000 (36%)	2030000 (−3.7%)	1869000 (−7.9%)
Total	14766000	21765000 (47%)	23138000 (6.3%)	26516000 (15%)

Table 4

FDA-Approved Prescription Drug Therapies by Specialty (Percentage Change From Preceding Year)

Provider specialty	Yr 2005	Yr 2006	Yr 2006	Yr 2008
Rheumatology	567888	788924 (39%)	815963 (3.4%)	927089 (14%)
Endocrinology	255921	396341 (55%)	423263 (6.8%)	484972 (15%)
Orthopedics	137046	169245 (23%)	156856 (-7.3%)	153156 (-2.4%)
ob/gyn	903335	1256964 (39%)	1316269 (4.7%)	1582670 (20%)
Primary care ^a	11411248	16962873 (49%)	18182512 (7.2%)	20801231 (14%)
Others	1470081	2162051 (47%)	2214045 (7.2%)	2536648 (14%)

Abbr: FDA, Food and Drug Administration; ob/gyn, obstetrics/gynecology.

^aInternal medicine, family practice, internal medicine-pediatrics, general practice, osteopathy, nurse practitioners, and physician assistants.