How Rebates, Copayments, and Administration Costs Affect the Cost-effectiveness of Osteoporosis Therapies

Using case studies, researchers assess the effect of rebate rates on the cost-effectiveness of two oral bisphosphonates that are competing for tier 2 positioning

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ABSTRACT

Purpose: Because of rising drug expenditures, cost considerations have become essential, necessitating the requirement for cost-effectiveness analyses for managed care organizations (MCOs). The study objective is to examine the impact of various drug-cost components, in addition to wholesale acquisition cost (WAC), on the cost-effectiveness of osteoporosis therapies.

Design: A Markov model of osteoporosis was used to exemplify different drug cost scenarios.

Methodology: We examined the effect of varying rebates for oral bisphosphonates — risedronate and ibandronate — as well as considering the impact of varying copayments and administration costs for intravenous zoledronate. The population modeled was 1,000 American women, ≥50 years with osteoporosis. Patients were followed for 1 year to reflect an annual budget review of formularies by MCOs. The cost of therapy was based on an adjusted WAC, and is referred to as net drug cost. The total annual cost incurred by an MCO for each drug regimen was calculated using the net drug cost and fracture cost. We estimated cost on a quality adjusted life year (QALY) basis.

Principal findings: When considering different rebates, results for risedronate versus ibandronate vary from cost-savings (i.e., costs less and more effective) to approximately $70,000 per QALY. With no risedronate rebate, an ibandronate rebate of approximately 65% is required before cost per QALY surpasses $50,000. With rebates greater than 25% for risedronate, irrespective of ibandronate rebates, results become cost-saving. Results also showed the magnitude of cost savings to the MCO varied by as much as 65% when considering no administration cost and the highest coinsurance rate for zoledronate.

Conclusion: Our study showed that cost-effectiveness varies considerably when factors in addition to the WAC are considered. This paper provides recommendations for pharmaceutical manufacturers and MCOs when developing and interpreting such analyses.

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INTRODUCTION

Formularies have evolved considerably over the last century into dynamic guides that assist health care providers in evaluating and selecting drug products (Wang 2004, Nichol 2007). In the past, the evaluation of drugs by MCOs for inclusion on the formulary focused on safety and efficacy. With rising drug expenditures and a national drug bill reaching close to $200 billion, cost considerations have become essential. Formulary selection processes now place greater emphasis than in the past on the assessment of economic efficiency of drug treatments, utilizing cost-effectiveness and budget impact analyses (Wang 2004). Since the release of the AMCP Format for Formulary Submissionsin 2001, drug manufacturers commonly submit dossiers that include economic data for formulary decision making (Spooner 2007).

Health economic analyses require an accurate estimate of the cost of the drug and its comparators to act as useful tools for decision making. Guidelines set forth by the ISPOR Task Force for budget-impact analyses (Mauskopf 2007) recommend that the cost of an intervention must be applicable to the decision maker and include all relevant costs. Other guidelines provide similar recommendations (Marshall 2008, Hunik 2001, Fry 2003).

The drug acquisition cost is traditionally measured by the WAC and may be all that is required for simple scenarios. The WAC is preferred over the average wholesale price (AWP) because it is closer to the MCO's real-world cost, particularly for generic drugs (Hunik 2001). In analyses taken from the MCO perspective, however, additional drug-

cost components (e.g., rebates) need to be considered, as WAC is only a benchmark for further negotiations (AMCP 2007). Incorporating all of these additional cost components may be difficult if cost data (e.g., rebate information) are not publicly available and if the details of drug-pricing systems vary across payers.

The drug-pricing system is highly complex and variable in the United States and is in a state of reform (Patient Protection and Affordable Care Act of 2010). Multiple transactions among various stakeholders are involved, and there is often little transparency in payment methods for prescription drugs (AMCP 2007). The true drug cost to an MCO depends on several factors, including manufacturer rebates, discounts provided to pharmacy networks, administration costs, and copayments. For discounts and rebates in particular, the negotiations that occur between MCOs and manufacturers depend on such variables as volume, market share, and formulary placement, and may thus vary considerably across MCOs (AMCP 2007).

Drug therapy for osteoporosis is a good example of a therapeutic area for which several factors, in addition to WAC, may need to be considered to reflect the true drug cost to an MCO. The United States market currently includes a number of branded and generic bisphosphonates, with different efficacy, forms of administration, and formulary tier status.

This paper presents cost-effectiveness case studies, using examples of osteoporosis therapies according to different scenarios. The first case study assesses the impact of varying rebate rates on the cost-effectiveness of two oral bisphosphonates (i.e., risedronate and ibandronate) competing for tier 2 positioning. The second case study considers scenarios in which copayments and administration costs vary for intravenous (IV) zoledronate.

METHODS

This study uses scenarios to illustrate the effects of applying rebates, copayments and coinsurance (based on formulary tier status), and administration costs, in addition to the WAC, to the results of cost-effectiveness analyses for bisphosphonate therapy. For each case study, two therapies were chosen to illustrate the impact of specific drug-cost components. To conduct the analyses, a previously developed and published model of osteoporosis was used (Tosteson 2009). This model is consistent with an osteoporosis reference model proposed by Zethraeus (2007) and has been used for conducting analyses in several countries (Grima 2002, Kruse 2005, Burge 2004, Saadi 2004, Grima 2008).

In brief, the Markov model follows cohorts of patients through a series of health states, including fractures. Within a 1-year model cycle, patients can: (a) experience a fracture, (b) die from nonfracture causes or, (c) remain healthy. The risk of fracture was based on age-specific fracture rates adjusted for the presence of risk factors, such as low bone mineral density (BMD) and previous fractures. The model's inputs for age-specific fracture rates, mortality rates, efficacy, costs and utility values can be found in Table 1, and are based largely on U.S. data sources. The patient population under study was that of 1,000 American women, age 50 years or older and whose BMD scores were –2.5 or less. These patients received the osteoporotic treatment under consideration and were followed for 1 year to reflect an annual budget review of formularies by managed care. A cost per QALY gained was estimated.

Components of net drug cost

The cost of osteoporosis therapy was based on an adjusted WAC and is referred to as the "net drug cost" from the MCO perspective. All costs are expressed in 2009 dollars. In the case studies, the net drug cost was calculated by adjusting the WAC for the pharmacy network discount, pharmacy dispensing fee, drug administration cost, copayment/coinsurance, and rebate discount as a percentage of WAC, per the formula below:

Net drug cost
= WAC
+ pharmacy network discount
+ dispensing fee
+ drug administration cost
– copayment/coinsurance
– rebate discount

Pharmacy network discount and dispensing fees: Pharmacy network discount is a cost to the MCO that is added to the WAC and which is a percentage of the drug cost (up to 10 percent). Dispensing fees may vary by pharmacy and drug type. Among oral bisphosphonates, risedronate and ibandronate have an average dispensing fee of $1.26 and $1.17 per prescription (i.e., every 4 weeks), respectively (MarketScan 2009). For zoledronate, a pharmacy dispensing fee of $1.49 was used, as zoledronate is typically administered in the physician's office or hospital.

Drug administration cost: For the MCO, administration of IV zoledronate represents an added cost component of this drug. Expenses include nursing time and materials (IV supplies, hydration fluids) for administration, as well as an additional blood test for serum calcium. This fee for zoledronate was estimated to be $233.93 (MarketScan 2009).

Copayment: The copayment is a fixed dollar amount payment per prescription (AMCP 2007). The level of copayment depends on the formulary tier status of the drug. Average national copayments are: tier 1 drugs,

$12.22; tier 2, $26.67; tier 3, $42.22 per dose (AMCP 2007, inflated to 2009 costs).

Coinsurance: This is a fixed percentage of WAC paid by the patient after a deductible has been met (AMCP 2007). For tier 4 drugs, a patient's coinsurance is, on average, 20%–30% of the WAC. Both copayments and coinsurance reduce the drug cost to the MCO.

Rebates: Pharmaceutical companies offer rebates, as a percentage of WAC, to MCOs. Often, rebates are used as a vehicle to attain desirable formulary positioning. Rebates for a drug vary by insurance plan and company and, typically, are not publicly available.

Note: Downstream drug costs, such as those pertaining to adverse events, should be considered in economic evaluations. For bisphosphonates, these are not anticipated to vary considerably between therapies, and therefore, are not included.

Fracture costs, QALYs, and cost-effectiveness

In the model, fractures were associated with costs that contributed to the total osteoporosis cost. Relevant costs included hospitalizations, phy-

TABLE 1
Summary of key model inputs data

Parameter	Value		Source
RR[1,2] of mortality in the year following a vertebral fracture 50–69 years 70–90+ years	 1.69–3.11 1.14–1.58		Kanis 2003 Note: These values will change if a different source is used for nonvertebral fracture rates.
RR of mortality in the year following a nonvertebral fracture 50–69 years 70–90+ years	 1.57–1.78 1.49–1.82		
Nonvertebral fracture incidence rates in the general population (per 10,000)[3] 50–69 years 70–85+ years	 70.1–172.3 201.5–600.2		Melton 1999
Vertebral fracture incidence rates in the general population (per 10,000) 50–69 years 70–85+ years	 37–134 196–447		Melton 1993
General population health utility 50–69 years 70–80+ years	 0.81–0.837 0.724–0.771		Hanmer 2006
Utility multiplier			Kanis 2004 Oleksik 2000
Nonvertebral	0.792		
Vertebral	0.820		
Treatment effectiveness (RRR at 1 year)	**Nonvertebral**	**Vertebral**	Harrington 2004, Harris 1999 Chesnut 2004, Black 2007, Boniva [product monograph] 2008
Risedronate	74%	65%	
Ibandronate	0%	58%	
Zoledronate[4]	25%	60%	
Fracture costs (i.e., hospital, physician, rehabilitation, etc. over 1 year following fracture)	**Nonvertebral** $14,018	**Vertebral** $1,346	Ohsfeldt 2006, Simon 2005; adjusted for 2009 dollars
Wholesale acquisition costs			MediSpan Price RX 2009
Risedronate	$1,187.55		
Ibandronate	$1,187.20		
Zoledronate	$1,073.10		

[1] Value for mid-point of age range reported [2] Relative risk compared to the general population
[3] Includes the following fracture types: distal forearm, humerus, clavicle, pelvis, proximal femur, shaft/distal femur, tibia/fibula
[4] One-year data were available for vertebral fracture efficacy only; it was assumed that the reported three-year efficacy for non-vertebral fractures was applicable to one year.
RR=relative risk; RRR=relative risk reduction

sician visits, lab tests, and medications. Therapies effective in reducing the risk of fracture result in reductions in the total cost of fracture treatment, compared with less-effective therapies. Given that nonvertebral fractures — and more specifically, hip fractures — carry greater costs than vertebral fractures, therapies that are less effective at reducing nonvertebral fractures will produce fewer cost offsets to the health care system. Each state in the model carried a health utility used to calculate QALYs. The QALY is a composite measure combining the length of a patient's life with the quality of life measured on a 0–1 utility scale (Drummond 1997). Costs, efficacy and utility inputs are all described in Table 1.

The total annual cost incurred by an MCO for each drug regimen was calculated using the net drug cost and the fracture treatment cost. Cost-effectiveness ratios were calculated by dividing incremental total annual costs by the incremental total QALYs gained. This ratio was the basis for comparison in different case studies.

Case study 1: Impact of rebates

This case study examined the impact of including different rebates on the incremental cost-effectiveness of two oral bisphosphonates (i.e., ibandronate and risedronate) that compete for tier 2 formulary positioning. The analysis was conducted simulating a population of 1,000 American women. As ibandronate and risedronate have similar WACs, different rebate rates can have an important impact on cost-effectiveness. Further, reported differences in efficacy between these comparators may affect cost-effectiveness (Table 1). Generic alendronate was not considered, as it is predominantly a first-line therapy with tier 1 status.

In this case study, tier 2 status is assumed for both risedronate and ibandronate, with a copayment of $26.67 per prescription and 13 annual prescriptions. Pharmacy network discounts were assumed the same for both drugs, with slight variations in dispensing fee per prescription. The rebate discounts for risedronate and ibandronate were varied from 0 to 90%, and the cost-effectiveness ratios were studied for different rates. Given that the most probable rebate rates are not publicly available, we chose to report a range of hypothetical results to illustrate how rebates may affect results.

Case study 2: Impact of administration fees and tier status

This case study examined the impact of varying administration fees and tier status for IV zoledronate compared to an oral bisphosphonate (i.e., risedronate). As an IV bisphosphonate, zoledronate is associated with an administration cost and different copayment structure due

to alternative tier status and once-annual dosing. Table 2 provides the cost components comprising the net drug cost. As shown, the two drugs have a similar WAC; however, the net drug cost to the MCO varies because of differences in cost components. For example, the net drug cost for zoledronate (i.e., $1,266) could be approximately 50 percent more than risedronate (i.e., $857) when considering only administration costs and a once-annual copayment.

The annual WAC for risedronate and zoledronate is comparable and described in Table 2. The risedronate copayment assumed tier 2 status with a $26.67 per-prescription copayment (i.e., $347 annual). The zoledronate copayment assumes tier 3 status, as the majority (i.e., 63 percent) of zoledronate prescriptions are covered this way (Reclast, CTP Report 2009), with a $42.22 per-prescription copayment paid annually. In the different scenarios, the assumptions for risedronate tier status were held constant, but the tier status was varied for zoledronate to tier 4 status (with a coinsurance of 20% or 30%). Zoledronate is also associated with an administration cost for IV delivery of $233.93 per infusion; these include Medicare fees for serum calcium test (CPT code 82310), infusion administration cost (average fees of CPT codes 90760, 90765, and 90774), and supplies (CPTcode A4223) (MarketScan 2007).

Dispensing fees for risedronate were $16.41 annually. As the majority of zoledronate prescriptions are administered in a physician's office or the hospital (Reclast, CTP Report 2009), a retail pharmacy dispensing fee (i.e., $1.49 per prescription) is incorporated.

RESULTS

Case study 1: Impact of rebates

Total costs per 1,000 women for risedronate were lower than total costs for ibandronate when no rebates were part of the model. The total cost for risedronate in 1 year was $1,075,260 per 1,000 women. Total cost consisted of $217,887 for fracture costs (i.e., 20 percent of the total cost was fracture-related) and $857,373 for drug cost (80 percent of the total cost was for the drug). The total 1-year cost of treatment with ibandronate was more than 50 percent higher than for risedronate, at $1,646,500 per 1,000 women. Total cost consisted of $790,677 for fracture costs (i.e., 48 percent of the total cost was fracture-related) and $855,823 for drug cost (52 percent of the total cost was for the drug). Although drug costs were comparable, the total cost of treating

TABLE 2

Case study 2: Annual net drug costs for risedronate and zoledronate, varying copayment and administration costs related to zoledronate

Case study 2	WAC ($)	Admin cost ($)	Dispensing fee ($)	Copayment ($)	Net drug cost
Scenario 1					
Risedronate	1,187.55	0	16.41	346.58	857.38
Zoledronate	1,073.10	233.93	1.49	42.22	1266.30
Scenario 2					
Risedronate	1,187.55	0	16.41	346.58	857.38
Zoledronate	1,073.10	233.93	1.49	214.62[1]	1093.90
Scenario 3					
Risedronate	1,187.55	0	16.41	346.58	857.38
Zoledronate	1,073.10	233.93	1.49	321.93[2]	986.59
Scenario 4					
Risedronate	1,187.55	0	16.41	346.58	857.38
Zoledronate	1,073.10	0	1.49	42.22	1032.37
Scenario 5					
Risedronate	1,187.55	0	16.41	346.58	857.38
Zoledronate	1,073.10	0	1.49	214.12[1]	859.97
Scenario 6					
Risedronate	1,187.55	0	16.41	346.58	857.38
Zoledronate	1,073.10	0	1.49	321.93[2]	752.66

[1]Tier 4 status with 20% copayment
[2]Tier 4 status with 30% copayment
WAC=wholesale acquisition cost

fracture was higher for patients given ibandronate.

We assessed the impact of various rebate rates. Figure 1 describes the cost per QALY gained for risedronate vs. ibandronate when applying various rebate rates. The figure demonstrates the cost per QALY remains below $50,000 for most scenarios, despite greater rebates applied to ibandronate. For example, with no risedronate rebate, an ibandronate rebate of approximately 65% is required before the cost per QALY surpasses $50,000. When a rebate as low as 10% is applied to risedronate, the cost-effectiveness remains below $50,000 even with ibandronate rebates up to 90%. With rebates >25% for risedronate, irrespective of the ibandronate rebate rates, results become cost-saving with risedronate, with a lower total annual cost (i.e., drug plus fracture-related costs) and higher QALYs for risedronate. In Figure 1, results modeled on rebates ranging from 30% to 90% for ibandronate and from 0 to 25% for risedronate are shown because rebate rates above 25% for risedronate resulted in lower total costs for risedronate, irrespective of ibandronate rebate. Rebate rates above 80% for ibandronate resulted in a discounted drug cost exceeding the copayment amount; therefore, cost-effectiveness did not change beyond this point.

Figure 2 shows the rebates for ibandronate and risedronate necessary to result in equal total treatment costs for patients treated with each drug. The rebate rates range from 0 to 25% for risedronate and from 48% to 73% for ibandronate. For example, when a zero rebate was applied to risedronate, a rebate rate of 48% for ibandronate would be required to make total costs for the two treatment arms equal. Similarly, rebate rates of 5%, 10%, 15%, and 20% for risedronate required rebate rates of 53%, 58%, 63%, and 68%, respectively, for ibandronate to achieve similar total costs of treatment in each study arm.

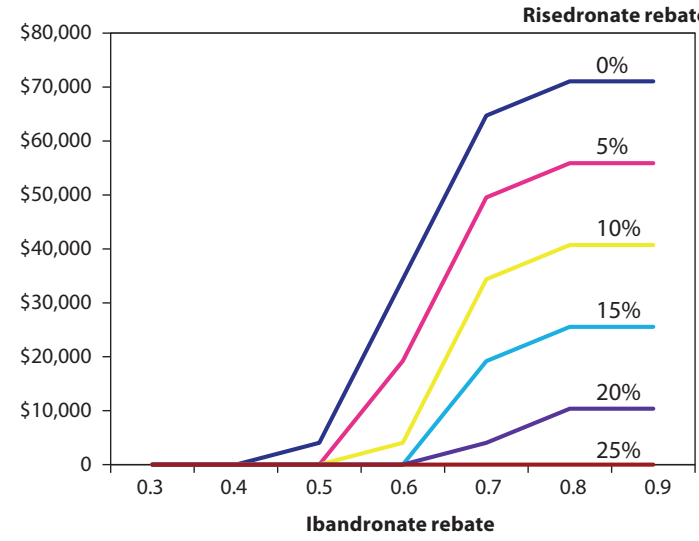

Figure 1. Cost per QALY for risedronate versus ibandronate, given ibandronate rebate rates between 30% and 90% and risedronate rebate rates between 0% and 25%, for a population.

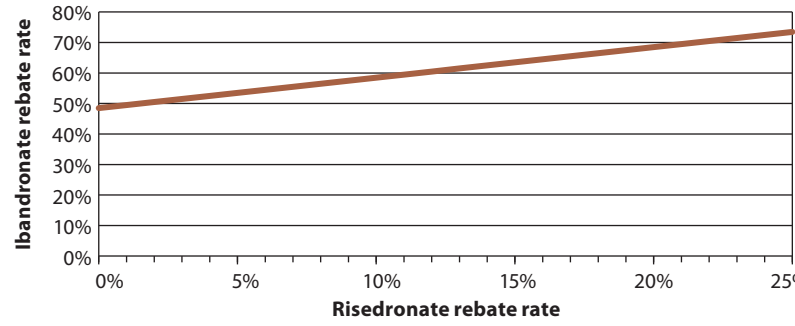

Figure 2. Rebate rates for ibandronate and risedronate that result in equal total costs (i.e., fracture-related + drug) of treatment with the two drugs

Case study 2: Impact of administration fees and tier status

Table 3 describes the results of the six scenarios when the administration cost and coinsurance rate for zoledronate are varied. The total annual cost of treating 1,000 women with zoledronate decreases from approximately $1.86 million to $1.46 million when higher coinsurance rates are introduced. The costs for risedronate remain constant but are approximately 20 percent lower than the lowest zoledronate cost. As efficacy does not vary, the incremental QALYs for risedronate, compared with zoledronate, remained at 2.59 per 1,000 women. The cost-effectiveness analyses showed cost-saving results for risedronate in all scenarios. Cost savings to the MCO varied by as much as 65 percent when no administration cost and the highest coinsurance were modeled for zoledronate.

DISCUSSION

The intent of our study was to illustrate the importance of obtaining an accurate estimate of the total drug cost when conducting health

TABLE 3

Case study 2: Cost-effectiveness results for risedronate compared to zoledronate when varying the tier status and administration fees associated with zoledronate in 1,000 American women ages 50 and over

Scenario		Total annual cost (risedronate)	Total annual cost (zoledronate)	Incremental cost (cost savings)
Copayment = $42.22 (tier 3 status)	Admin cost = $233.93	$1,075,260	$1,859,180	($783,920)
	Admin cost = $0	$1,075,260	$1,688,710	($613,450)
Coinsurance = 20% (tier 4 status)	Admin cost = $233.93	$1,075,260	$1,582,600	($507,340)
	Admin cost = $0	$1,075,260	$1,627,870	($552,610)
Coinsurance = 30% (tier 4 status)	Admin cost = $233.93	$1,075,260	$1,457,400	($382,140)
	Admin cost = $0	$1,075,260	$1,351,290	($276,030)

economic analyses for MCOs. To facilitate this objective, we utilized a published model of osteoporosis, adapted to the United States for fracture events and costs, to analyze the effects of differences in drug-cost components for bisphosphonates. Overall, our study showed cost-effectiveness varies greatly when factors in addition to WAC are considered.

Results from the first case study demonstrate that when considering rebate values, conclusions vary from cost-saving to incremental ratios of $70,000 per QALY, with the majority of ratios below $50,000 per QALY. In our example, we compared risedronate with ibandronate, two oral bisphosphonates with a similar WAC that compete for tier 2 formulary status.

The interesting finding in this case study was that when rebate rates were higher for ibandronate, risedronate typically remained either cost-effective (i.e., <$50,000 per QALY) (Grosse 2007) or cost-saving compared with ibandronate in most scenarios. This was because the higher efficacy for risedronate assumed in the model would result in more fractures being averted, resulting in greater cost savings and offsetting the higher total drug cost.

These findings have important implications for MCOs that consider the link between formulary tiers and manufacturer rebates. Rebates provide MCOs with incentives to: (a) give branded drugs tier 2 rather than tier 3 status, (b) include branded drugs on formularies when alternative therapeutic equivalents are available, and (c) to limit the number of branded drugs on tier 2, so as to increase the unit rebate for a preferred drug (AMCP 2007). Given the importance of rebate negotiations in formulary decision making, our findings demonstrate the need for the inclusion of various plausible rebate discounts in analyses and encourage use of cost-effectiveness analyses, alongside rebate negotiations, when making decisions about the tier status of a product.

In our analysis, varying the additional components of the net drug cost from the MCO perspective, in most cases, affected cost-effectiveness results. Of greatest impact, assuming higher tier status (i.e., tier 4) with associated coinsurance rates of 30% affected the magnitude of cost savings to the MCO by as much as 60 percent compared with a lower tier status. In the case study scenarios, components of net drug cost (e.g., dispensing fee) that were very similar or that resulted in marginal cost differences between the comparators had no impact on results.

However, the impact of each drug-cost component may be different in other therapeutic areas. Therefore, components thought to be relevant should be uniquely assessed and varied in cost-effectiveness analyses. Further, apart from drug-related cost components of net drug cost, it is important to consider other costs (e.g., resource use related to side effects of drug therapy or drug-monitoring costs) that influence the total cost to the MCO. As these are considered downstream-related costs typically included in cost-effectiveness analyses, and were thought not to vary between bisphosphonate therapies, we did not explicitly include these in our analyses.

Our study differs from previous cost-effectiveness studies in osteoporosis, given that the majority of these studies have relied on WAC or other comparable alternatives (e.g., AWP) for drug-cost estimation (Fleurence 2007, Stevenson 2005). Given that several of these studies were based in countries other than the United States and conducted from various perspectives, it is difficult to establish how inclusion of any additional drug cost components would affect conclusions.

For some recent U.S. studies, copayments and rebates typically were not evaluated, even though the analyses included both public and private payers (Tosteson, 2008, Mobley 2006). For example, Tosteson (2008) conducted economic analyses of osteoporosis therapies from a health care system perspective. Similar to our study, Tosteson evaluated ibandronate and risedronate, among other comparators. However, drug-

acquisition costs obtained from First Databank ($799.76 for risedronate and $771.36 for ibandronate) provided benchmark prices but no detail on negotiations resulting in these figures. Results of this study showed risedronate dominated all scenarios, however, these conclusions may have been different if higher rebates for ibandronate had been applied. Further, budget-impact analyses completed over 3 years showed a decision to treat the 5.7 million women not receiving therapy with bisphosphonates would cost an additional $5,563 million. Undoubtedly, these costs predictions would have been substantially lower if rebates and patient copayments were considered.

The main limitation of our study is the small number of scenarios evaluated. Nevertheless, our data provide new and important information that highlight the need to consider drug-related costs, in addition to WAC, from an MCO perspective. Also, given our choice of therapeutic area, the scenarios in our study were considered sufficient and most relevant.

Second, our study is subject to the limitations imposed by any decision-modeling technique. Our model, however, has been extensively validated and utilized in several previous modeling studies, and has been subject to rigorous sensitivity analyses (Tosteson 2001, Zethraeus 2007, Grima 2002, Kruse 2005, Burge 2004, Saadi 2004).

Third, data were limited for certain cost components (i.e., exact rebate values) and thus may not be applicable to all settings. To account for this, we utilized upper and lower ranges based on what were, to our knowledge, the best available data.

Finally, we explored the scenarios from only one therapeutic area (osteoporosis) and class of drugs (bisphosphonates). Future analyses should consider additional therapeutic areas to widen our understanding of the influence of different drug cost components on cost-effectiveness.

Although MCOs increasingly use cost-effectiveness analyses, barriers that impede more extensive application still exist. A survey of MCOs reported less than half (46.2 percent) of the pharmacoeconomic models submitted with dossiers were deemed adequate (Nichol 2007). More than 65 percent of respondents modified the model with their own data, commenting that if manufacturers tailored the model to reflect situation-specific needs to individual MCOs, the model would be much more beneficial. Of respondents who varied assumptions in the model, price of drug products was considered a key driver. Given the knowledge of these limitations, our study can be considered a stepping stone in providing recommendations to manufacturers to help maximize the use and generalizability of models submitted as part of dossiers for formulary decision making.

On the basis of our findings, the following suggestions can be made for pharmaceutical manufacturers and MCOs: 1) Pharmaceutical manufacturers should consider all potential drug cost components relevant to the MCO (i.e., dispensing fees, acquisition costs, rebates, administration costs, copayments, coinsurance, pharmacy discounts) in their economic models and provide details pertaining to these data inputs and assumptions within dossiers for formulary decision making; and 2) MCOs and pharmaceutical manufacturers should work together to quantify information about all relevant drug-related costs to support accurate economic modeling. In the event of continued uncertainty, scenario analyses need to be conducted to capture the potential variability in drug costs across different MCOs, such analyses are more generalizable; 3) MCOs must become even more acutely aware of the importance of considering cost-effectiveness analyses, alongside other factors such as rebate negotiations, in decisions about formulary tier status. Cost-effectiveness analyses consider the interaction among numerous variables affecting the total costs, or cost savings, to an MCO. MC

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