Trends in Patient Cost Sharing for Clinical Services Used as Quality Indicators

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BACKGROUND: Patient copayments for all medical services have increased dramatically. There are few data available regarding how copayments have changed for services commonly considered to be quality indicators.

OBJECTIVE: Describe the relative change in copayments for services used as quality indicators and interventions subject to programs to control utilization.

DESIGN: A large claims database was used to assess copayment changes from 2001 to 2006 for selected drug and non-drug services in patient cohorts with specific chronic diseases.

SUBJECTS: Approximately 5 million commercially-insured individuals enrolled in a variety of fee-for-service and capitated health plans.

MEASUREMENTS: Copayment trends were calculated as the change in the average amount paid per unit service from 2001 to 2006.

RESULTS: Out-of-pocket payments for services targeted by quality improvement initiatives increased substantially [>50%] and in a similar magnitude to interventions subject to programs to control their use. For prescription drugs, the trend was driven more by copayment increases for branded medications [$10 per prescription] than for generic drugs [$2 per prescription]. Copayments for non-drug preventive services rose modestly.

CONCLUSIONS: Benefit designers should consider reversing the trend of copayment increases for services considered to be indicators of high quality care.

KEY WORDS: copayments; costs; payments.
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INTRODUCTION

Copayments that consumers pay at the point of care for medical services have risen dramatically. This is particularly true of prescription drugs; from 2000 to 2007 the average copayment for generic drugs, preferred branded drugs and non-preferred branded drugs increased by 38%, 67%, and 48% respectively.[1]

Measuring the clinical effects of rising out-of-pocket payments is complicated given the heterogeneity in health benefits produced by different services. Market advocates generally support higher copayments as a way to reduce unnecessary care.[2] Others note that patients' responses to copayment changes are not strongly related to the clinical merits of the service.[3] Reviews of the available evidence conclude that when patients are required to pay a greater share of the cost, use of both essential and non-essential services are reduced.[4,5]

Few data are available regarding how copayments have changed for specific services and whether changes differ by perceived level of clinical effectiveness. Accordingly, our aim is to describe the relative change in copayments for services commonly considered to be quality indicators as well as for interventions subject to programs to control utilization.

METHODS AND DATA

Defining Indicators of High Quality Care

Given the vast number of services, it is impossible to classify every clinician visit, diagnostic test, procedure or medication as essential or non-essential. Furthermore, the health effects of any specific service often depend on the patient population receiving it. A two-step approach was used to define quality care indicators. First, to ensure that services were selected for patients who would strongly benefit from their use, cohorts with specified chronic diseases that are often targeted by disease management initiatives were identified. These conditions include asthma, congestive heart failure, coronary artery disease, depression, diabetes, peptic ulcer disease, and osteoporosis. Cohort definitions were based on ICD-9-CM codes [See Appendix 1]. Cohorts were not mutually exclusive; an individual diagnosed with multiple conditions was included in samples for all relevant diagnoses.

Second, for each cohort/clinical condition, services, including prescription drug classes and non-drug interventions—using HEDIS criteria where possible—were identified from published guidelines [Table 1]. There was not a central source for the ascertainment of the quality metrics identified, yet most of the measures are included in pay-for-performance pro-

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Table 1. High Value Services

Disease	Medication	Service
Asthma	Inhaled corticosteroids	
Congestive heart failure	Beta blockers	
	Angiotension converting enzyme (ACE) inhibitors	
	Angiotensin II receptor antagonists (ARBS)	
	Aldosterone antagonist	
Coronary artery disease	Statins	
(post myocardial infarction)	Angiotension converting enzyme (ACE) inhibitors	
	Beta blockers	
	Clopidogrel	
Major depression	Selective serotonin reuptake inhibitors (SSRI)	
Diabetes	Anti-diabetic medications	Eye exams
	Angiotension converting enzyme (ACE) inhibitors	
	Angiotensin II receptor antagonists (ARBS)	
	Statins	
Osteoporosis	Anti-resorptive therapy	DEXA scan
Peptic ulcer disease		*H. pylori* testing
Prevention		
Women aged ≥ 40 years		Breast cancer screening
Women 21–65		Cervical cancer screening
Men and women ≥ 50 years		Colon cancer screening
All persons ≥ 65 years		Influenza vaccine
Other		
Erectile dysfunction	Erectile dysfunction drugs	
All persons ≥ 18 years	Sleep aids, nonsedating antihistamines, anti-fungal medications	

grams, signifying payers' willingness to devote resources to increase their use.

Drugs were examined by medication class (e.g., statins, beta-blockers). Both brand and generic [when available] medications within a class were included, since quality measurement systems do not distinguish between brand and generic options. This acknowledges the imperfect substitutability among different medications in the same class and also recognizes that increased copays for branded drugs may lead patients to discontinue treatment as opposed to substitute to a generic alternative.

In addition to the disease-specific cohorts, age-based cohorts were examined to determine the rate of copayment change for specific preventive services [e.g. cancer screening and immunizations] that are commonly used as quality indicators.

Copayment changes were determined for several medication classes frequently subject to interventions to control utilization. These included medications for erectile dysfunction, sleep aids, non-sedating anti-histamines, and anti-fungal agents used for toenail infections.

Data Source and Study Population

The Thomson Reuters MarketScan® Database, which provides data for up to 15 million commercially insured individuals under age 65, was used to assess the change in copayments for selected services between 2001 and 2006. Information on inpatient/outpatient services, prescription drug claims and enrollment is included. For this analysis, large- and medium-sized firms representing about 5 million enrollees annually were selected to minimize differences in the sample composition.

Measuring Copayment Change

Measuring changes in cost sharing is complicated by the diversity of strategies. Firms use different combinations of fixed copayment schedules, coinsurance rates, and deductibles. For prescription drugs, distinctions are often made for generic/branded drugs, preferred/non-preferred branded drugs and whether a prescription is filled using mail order or retail pharmacy. Similarly, for medical (non-drug) services, distinctions may be based on whether the provider is in or out of network.

Copayment changes were quantified by the average amount paid per unit service (drugs—30 day supply; non-drug services—the submitted claim). This approach accounts for the various design elements that impact patient cost sharing, including substitution among formulary tiers and delivery locations for drug and non-drug services.

RESULTS

Patient copayments for services considered to be quality indicators were not immune from the trend towards increased cost-shifting [Table 2]. In the aggregate, patients paid an additional $5 per prescription, an increase of over 50% over 6 years, for drug classes used as quality metrics for specific clinical conditions. This trend was largely driven by copayment increases for brand medications within these classes, which rose more than $10 per prescription. In absolute terms, copayments for generic medications within the specified classes rose modestly, less than $2 per prescription. Copayments for cancer screening, DEXA scanning for osteoporosis, and *H. pylori* testing [a quality measure for peptic ulcer disease] increased a similar nominal amount. Patient copayment for vaccines increased less than $1, but given the low baseline copay, this represented a doubling of the average out of pocket payment.

The relative and absolute increase in copayments for sleep aids, non-sedating anti-histamines, and anti-fungal drugs was similar to those designated as quality indicators [41% increase in copayments overall; approximately $10 for branded drugs and less than $1 for generics]. Copayments for branded

Table 2. Changes in Copayments for Selected Medical Services, by Clinical Condition

	Total	Brand	Generic	Non-drug
Asthma	$12.32	$12.32	N/A	N/A
	(11.36, 13.28)	(11.36, 13.28)		
	87.3%	87.3%	N/A	N/A
Congestive heart failure	$5.18	$10.08	$1.23	N/A
	(5.07, 5.30)	(9.88, 10.27)	(0.87, 1.59)	
	63.8%	104.5%	23.8%	N/A
Coronary artery disease	$4.88	$9.60	$1.48	N/A
	(4.73, 5.03)	(9.35, 9.84)	(0.93, 2.02)	
	56.6%	95.0%	28.9%	N/A
Major depression	$6.06	$12.13	−$0.38	N/A
	(6.00, 6.13)	(12.05, 12.21)	(−0.50, −0.27)	N/A
	52.4%	102.2%	−4.9%	
Diabetes	$4.35	$11.29	$1.43	$7.78
	(4.3, 4.4)	(11.19, 11.38)	(1.08, 1.78)	(7.53, 8.03)
	42.8%	109.8%	27.7%	65.2%
Osteoporosis	$10.69	$11.05	$0.58	$4.46
	(10.40, 10.99)	(10.73, 11.37)	(−0.02, 1.17)	(3.45, 5.47)
	109.3%	106.5%	9.8%	20.7%
Peptic ulcer disease	N/A	N/A	N/A	$2.11
	N/A	N/A	N/A	(−5.17, 9.38)
				18.8%
Cancer screening	N/A	N/A	N/A	$1.39
	N/A	N/A	N/A	(1.31, 1.47)
				19.4%
Influenza vaccine	$0.68	N/A	N/A	N/A
	(0.66, 0.70)	N/A	N/A	N/A
	110.7%			
Erectile dysfunction	$32.51	$32.27	$13.16	N/A
	(32.16, 32.85)	(31.93, 32.61)	(5.71, 20.61)	N/A
	134.5%	132.3%	213.3%	
Sleep aids/Anti-Histimines/Anti-fungals	$6.41	$11.52	$0.33	N/A
	(6.32, 6.50)	(11.35, 11.69)	(0.06, 0.60)	N/A
	41.3%	69.1%	2.7%	

Note: Cells represent the change in cost-sharing between 2001 and 2006 in dollars, the 95% Confidence interval of the change in dollars and the percentage change between 2001 and 2006

erectile dysfunction drugs experienced a disproportionate copayment increase [135% or about $33], suggesting plan designers were cognizant of the relative value of this particular drug class.

DISCUSSION

Faced with rising expenditures, payers increasingly require beneficiaries to pay a greater amount for all medical interventions—regardless of their clinical impact.[1] Simultaneously, there is a growing emphasis on quality of care and management of chronic disease. In the aggregate, we find that services targeted by quality improvement initiatives experienced a relative increase in copayments of similar magnitude to services for which mechanisms are frequently implemented to reduce utilization. Although the relative copayment increases were substantial over the study duration, a low baseline cost sharing level in 2000 produced only modest increases in absolute terms in most instances. We acknowledge that these results lack generalizability due to the relatively small number of measures studied. Moreover, the findings are limited by the fact that we did not examine the cost-related changes in the service use over time.

Although the aggregate trends in relative copayment increases were similar among prescription drugs, the absolute copayment increases were concentrated on branded medications. This behavior suggests that payers perceive investing in all generic agents as an important value proposition. The fact that payers are charging substantially more for branded agents—even in drug classes targeted by disease specific performance improvement programs, or when no generic agent is available—has clinical implications. The effects of these cost-shifting trends directed primarily on branded agents depend on the extent to whether patients, when faced with higher branded copayments, shift to generic alternatives [if available] or abandon the class entirely.

Given that the alternative effects of higher branded copayments impact health and financial outcomes differently, certain scenarios must be acknowledged. First, when a generic option is not available in certain medication classes [e.g., inhaled corticosteroids for asthma, angiotensin II receptor blockers (ARBs) for congestive heart failure and diabetes] implementing a copayment increase for all brand name drugs without regard to availability of generic substitutes will result in decreased utilization within these high value classes.[4,5] When a generic agent is not available, benefit plans should set copayments for branded drugs in classes designated as quality indicators at a lower level than branded drugs in other classes.

Second, while the debate pertaining to the relative merits of different branded and generic drugs within drug classes [i.e. therapeutic substitution] is beyond the study scope, there are circumstances where access to a variety of branded and generic agents within a class are clinically desirable due to heterogeneity in patient responses [e.g., allergy, drug interaction, adverse effect, lack of desired clinical effect] or the need for multiple agents to achieve the desired clinical outcome [e.g.

diabetes mellitus, hypertension]. For these situations, the copayment for branded drugs in high value classes should be lowered after an unsuccessful trial with an available generic option, or when generic options have been used as indicated and the desired clinical result is not met [e.g. hemoglobin A1C or LDL levels]. This "reward the good soldier" or "step-edit with copayment relief" approach maintains financial incentives to use generic agents initially, but mitigates concern that patients who do not respond to generics as intended would discontinue essential medications altogether due to the additional financial burden associated with branded drugs.

Efforts to control costs should not needlessly produce preventable reductions in quality of care. While increases in cost sharing may be justified as a response to cost pressures, it is difficult to defend raising copayments for services considered to be indicators of high quality care. In light of this evidence demonstrating escalating patient copayments for important quality indicators, benefit designers must recognize the heterogeneity in health care services when setting patient contributions. While acquisition cost is an important element of cost sharing, it should be acknowledged that there are certain clinical instances where low cost alternatives are not available and/or do not achieve the desired clinical outcome.

Advocates of value-based insurance design (VBID) argue for a "clinically sensitive" cost sharing system that reflects clinical benefit and cost-effectiveness of interventions.[6–10] The basic VBID premise is that patient contributions for essential services remain low, mitigating the concern that higher cost sharing will lead to deleterious clinical outcomes. Numerous private and public sector employers, health plans, and pharmacy benefit managers have implemented VBID programs providing incentives to increase the use of services designated as quality indicators.[11,12] A controlled evaluation of a VBID intervention demonstrated significant increases in patient compliance.[13] As a result, momentum has spread to the public sector; VBID programs have been put into action by several state governments, and Congressional legislation was introduced in Congress (S.1040) to apply VBID principles in Medicare Part D.[14]

Benefit designers should consider reversing the trend of copayment increases for services considered to be indicators of high quality care. Moreover, payers desiring to optimize health gains per dollar spent should avoid "across the board" cost sharing, and instead implement a "value based" design that removes barriers/provides incentives to encourage desired behaviors for patients and providers.

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APPENDIX 1. COHORT DEFINITIONS

Asthma

Source of Definition: HEDIS

Age: 5–56 years old

Criteria: Patients that meet the following inclusion criteria will be selected:

- Indication of asthma, any time during the period January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006:
  - At least one Emergency Department visit with asthma (493.XX) as the principal diagnosis, OR
  - At least one acute inpatient discharge with asthma as the principal diagnosis, OR
  - At least four outpatient asthma visits with asthma as one of the listed diagnoses and at least two asthma medication dispensing events (see NDC codes in Asthma HEDIS Drugs.xls), OR
  - At least four asthma medication dispensing events

AND

- Continuous enrollment in a qualified health plan with concurrent continuous pharmacy benefits for 12 months (January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006). Each year, 2001 and 2006, will be evaluated separately. Patients do not need to be enrolled in both years.

If the patient takes at least four asthma medication dispensing events and leukotrine modifiers are the only asthma medication dispensed then the patient must either:

- Meet any one of the other three criteria, or
- Have at least one diagnosis of asthma in any setting

Asthma ICD-9-CM Diagnosis Codes: 493.xx

Congestive Heart Failure
Source of definition: ICD-9-CM and Other Criteria
Age: 18 years and older
Criteria: Patients that meet the following inclusion criteria will be selected:

- Indication of heart failure, any time during the period January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006:
  - At least 2 outpatient claims (primary or secondary diagnosis), OR
  - At least 1 inpatient admission with diagnosis of congestive heart failure, OR
  - At least 1 emergency department visit with diagnosis of heart failure

AND

- Continuous enrollment in a qualified health plan with concurrent continuous pharmacy benefits for 12 months (January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006). Each year, 2001 and 2006, will be evaluated separately. Patients do not need to be enrolled in both years.

Congestive Heart Failure ICD-9-CM Diagnosis Codes: 428.xx

Coronary Artery Disease (post AMI)
Source of Definition: HEDIS
Age: 35–64 years old
Criteria: Patients that meet the following inclusion criteria will be selected:

- Inpatient admission with a diagnosis for heart attack (AMI) (diagnosis code=410.xx) (or DRG=121, 122) and discharge status is alive

AND

- Continuous enrollment in a qualified health plan with concurrent continuous pharmacy benefits for 12 months (January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006). Each year, 2001 and 2006, will be evaluated separately. Patients do not need to be enrolled in both years.

Myocardial Infarction D/C alive CD-9-CM Diagnosis Codes: 410.xx
Myocardial Infarction D/C alive DRGs: 121, 122

Diabetes
Source of Definition: ICD-9-CM Codes and other criteria
Age: 18–75 years old
Criteria: Patients that meet the following inclusion criteria will be selected:

- Two or more prescriptions for an antidiabetic agent (See tab H-antidiabetics in "services and drugs 020508.xls") within any period from January 1, 2001 to December 31, 2001 or January 1, 2006 to December 31, 2006;

AND

- Indication of diabetes (See below), any time during the period January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006
  - At least two diagnosis codes for diabetes with different dates of service in an outpatient setting, OR
  - One or more inpatient stays with a diabetes diagnosis in the primary diagnosis field, OR
  - One or more emergency department visits with a diagnosis of diabetes in the primary diagnosis field,

AND

- Continuous enrollment in a qualified health plan with concurrent continuous pharmacy benefits for at least 12 months (January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006). Each year, 2001 and 2006, will be evaluated separately. Patients do not need to be enrolled in both years.
- Exclusions:
- Gestational diabetes IDC-9-CM 648.8x

Diabetes ICD-9-CM Diagnosis Codes: 250.xx, 357.2, 362.0x, 366.41, 648.0x (maternity code that is sometimes excluded)

Major Depression
Source of Definition: HEDIS
Age: 18 years and older
Criteria: Patients that meet the following inclusion criteria will be selected:

- At least one principal diagnosis of major depression in any setting, OR
- At least two secondary diagnoses of major depression on different dates in any outpatient setting, OR
- At least one secondary diagnosis of major depression in any inpatient discharge

AND

- Continuous enrollment in a qualified health plan with concurrent continuous pharmacy benefits for at least 12 months (January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006). Each year, 2001 and 2006, will be evaluated separately. Patients do not need to be enrolled in both years.

Laboratory claims should not be included in the identification criteria.

Depression ICD-9-CM Diagnosis Codes: 296.2x, 296.3x, 298.0, 300.4, 309.0, 309.x, 311.x
Depression DRGs: 430, 426 (Exclude if the principal diagnosis is 301.12)

Osteoporosis
Source of Definition: ICD-9-CM and quality measures for osteoporosis found in the AHRQ's Quality Measures Clearinghouse
Age: 50 years and older
Criteria: Patients that meet the following inclusion criteria will be selected:

- At least one principal diagnosis of osteoporosis in any setting, AND
- Prescribed pharmacologic therapy in the 12 months (See K-Antiresorptive in "services and drugs 020508.xls")

AND

- Continuous enrollment in a qualified health plan with concurrent continuous pharmacy benefits for at least 12 months (January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006). Each year, 2001 and 2006, will be evaluated separately. Patients do not need to be enrolled in both years.

Osteoporosis ICD-9-CM Diagnosis Codes: 733.0x

Peptic Ulcer Disease
Source of Definition: ICD-9-CM
Age: 18 years and older
Criteria: Patients that meet the following inclusion criteria will be selected:

- At least one principal diagnosis of peptic ulcer disease in any setting, OR
- At least two secondary diagnoses of peptic ulcer disease on different dates in any outpatient setting, OR
- At least one secondary diagnosis of peptic ulcer disease in any inpatient discharge (or a DRG of 176, 177, 178)

AND

- Continuous enrollment in a qualified health plan with concurrent continuous pharmacy benefits for at least 12 months (January 1, 2001 – December 31, 2001 or January 1, 2006 – December 31, 2006). Each year, 2001 and 2006, will be evaluated separately. Patients do not need to be enrolled in both years.

Peptic Ulcer Disease ICD-9-CM Diagnosis Codes: 530.2x, 531.xx, 532.xx, 533.xx, 534.xx, V12.71
Peptic Ulcer Disease DRGs: 176, 177, 178

Breast Cancer Screening
Source of Definition: U.S. Preventive Services Task Force (USPSTF)
Criteria: Women aged 40 and older
Recommendation: Women aged 40 and older should have mammography, with or without clinical breast examination (CBE) every 1 – 2 years.

Cervical Cancer Screening
Source of Definition: U.S. Preventive Services Task Force (USPSTF)
Criteria: Women 21–65

Colon Cancer Screening
Criteria: Men and women age 50 and older
Source of Definition: U.S. Preventive Services Task Force (USPSTF)

Influenza Vaccine
Criteria: All persons age 6 months or older
Source of Definition: Centers for Disease Control and Prevention (CDC), Coordinating Center for Infectious Diseases (CCID) Key facts about seasonal flu vaccine. 2007 [cited 2008 January 15]; Available from: http://www.cdc.gov/flu/protect/keyfacts.htm.

Erectile Dysfunction Drugs
Criteria: All men over age 18

Sleep Aids, Nonsedating Antihistamines and Anti-fungal Medications
Criteria: All persons over age 18