

Effects of the loss of dental coverage on the use and cost of other medical care

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Study Aims and Significance

- ✦ Identify the impact of the loss of dental coverage on treatment expenditures and use of dental-related care in medical settings by “Standard” Medicaid beneficiaries in the Oregon Health Plan (non-categorically eligible adults with income < 100% FPL)
- ✦ Focus on all ambulatory care and emergency department treatment with ambulatory dental diagnoses (521-523, 525.3, 525.9)
- ✦ Limited research on dental coverage loss and implications for other ambulatory medical care

Policy & Study Challenges

- ✦ Co-pays for medical care instituted simultaneously with dental coverage loss
- ✦ Co-pays likely to impede “substitution” from dental to medical setting
- ✦ “Sorting” effect of co-pays increases significance of any substitution found.

Oregon Health Plan Changes

- ✦ In February 2003, OHP created a separate, limited benefit package for its non-categorical, adult beneficiaries
- ✦ “Standard” (vs. “Plus”) benefit package included:
 - ✦ Comprehensive co-payments (service denial/no limit)
 - ✦ Reduced benefits (no Dental, Eye, Hearing, Outpatient MH/CD, DME/Supplies, or Non-Emergent Transportation)
 - ✦ More stringent premium payment rules w/ six-month “lock-out”
- ✦ Policy change resulted in dramatic reduction in Standard enrollment, largely due to premium payment policies

Co-Payment Schedule

- ✦ Inpatient hospital - \$250 per admission
- ✦ Outpatient hospital - \$20 Surgery, \$5 other
- ✦ Emergency Room - \$50 (waived if admitted)
- ✦ Physician - \$5 (vaccine/preventative \$0)
- ✦ Lab/X-ray - \$3 each
- ✦ RX - \$2 preferred, \$3 generic, \$15 brand name
- ✦ Ambulance - \$50
- ✦ Home Health/Other Therapists - \$5

Design

- ✦ Pre-post comparison of dental-related care in medical settings
- ✦ Natural, quasi-experiment with a propensity score matched comparison group
- ✦ Comparison group is categorically eligible TANF and Disabled ("OHP Plus") adults who did not experience the policy change
- ✦ Policy effects measured as the "difference-in-difference" between Standard and Plus
- ✦ Policy effects measured as rates of change (%)

Study Period

- ★ November 2001 through October 2002 & May 2003 through April 2004
- ★ 12 months pre/12 months post
- ★ Symmetric in seasonality
- ★ Remove 6 month period around OHP benefit changes to avoid implementation effects

Study Sample

- ★ OHP “Standard” and “Plus” beneficiaries who meet the following conditions:
 - ★ Ages 18-64
 - ★ Enrolled throughout each pre- and post-policy annual period
 - ★ Consistently enrolled as Plus or Standard after the policy change
 - ★ Not diagnosed with Schizophrenia or pregnant with birth during study period
- ★ Propensity score matching of Plus to Standard on age, gender, ethnicity, physical & behavioral health status and prior dental service use/risk
- ★ 14,122 Standard & 14,016 Plus

Data

- ✦ FFS claims and MCO encounter data
- ✦ Claims and encounter data valued at average FFS rates during study period
- ✦ Emergency Department and other ambulatory hospital & physician office-based services

Measurement

- ✦ Probability of use, expenditures per user, and expenditures per person (two-part model)
- ✦ Annual measurements for each individual pre- and post-policy
- ✦ Service Categories:
 - ✦ All ambulatory
 - ✦ Ambulatory Emergency

Estimation

- ✦ Logistic regression for probability of use
- ✦ OLS regression of (log) expenditures per user with re-transformation (Duan's smearing technique)
- ✦ Bootstrap estimates for all difference-in-difference estimates
- ✦ Huber-White sandwich estimator for standard errors with clustering to account for repeated measurement across individuals

Results

Sample Characteristics

Characteristic	Plus	Standard
Subjects	14,016	14,122
Gender		
Male	38.8%	38.6%
Female	61.2%	61.4%
Ethnicity		
Caucasian	86.7%	86.6%
Non-Caucasian	13.3%	13.4%
Age Group		
18-34 yrs	27.6%	27.7%
35-49 yrs	44.2%	44.1%
50-64 yrs	28.1%	28.2%
Physical/Behavioral Health		
Chronic Physical	73.9%	74.1%
Mental Health	35.0%	35.0%
Substance Abuse	15.3%	15.4%
Prior Dental Care		
No prior use	46.8%	47.2%
Prior use - no restorative	27.4%	27.2%
Prior use w/ restorative	25.8%	25.6%

- ✦ Propensity score matching eliminates differences on matched characteristics

Pre-Policy Use and Expenditures For Dental-Related Medical Care

Sample/Measure	Plus	Standard	p < .05
All Ambulatory			
Probability of Use	4.0%	2.1%	*
Expenditures per User	\$568.53	\$177.74	*
Expenditures per Person	\$22.96	\$3.80	*
Emergency Department			
Probability of Use	1.9%	1.2%	*
Expenditures per User	\$126.38	\$143.28	
Expenditures per Person	\$2.44	\$1.72	*

- ✦ Despite matching, ambulatory use of dental related services is much higher among PLUS subjects

Pre-Post Change in Dental Diagnoses

Diagnosis Code	Description	Baseline # Claims	Standard	Plus	Difference-in -Difference
All Ambulatory Dental-Related Care					
521	Diseases of hard tissues of teeth	170	14.7%	-44.8%	59.5%
522	Diseases of Pulp and Periapical Tissues	313	15.0%	-7.6%	22.7%
523	Gingival and Peridontal Diseases	51	2.0%	-47.7%	49.7%
525 ¹	Other Diseases and Conditions of the Teeth and Supporting Structure	447	-11.9%	-29.1%	17.2%
Total		981	2.0%	-36.4%	38.4%
Emergency Department					
521	Diseases of hard tissues of teeth	170	35.1%	0.0%	35.1%
522	Diseases of Pulp and Periapical Tissues	313	51.6%	-5.7%	57.3%
523	Gingival and Peridontal Diseases	51	-11.1%	-33.3%	22.2%
525 ¹	Other Diseases and Conditions of the Teeth and Supporting Structure	447	-5.7%	-28.4%	22.8%
Total		981	14.7%	-18.9%	33.6%

¹ Limited to 525.3 - Retained Dental Root & 525.9 - Unspecified

✦ Absolute increases in 521-523, and relative increases in all diagnostic categories.

Pre-Post Change in Use and Expenditures

Sample/Measure	Plus	p< .05	Standard	p< .05	Difference-in -Difference	p< .05
All Ambulatory Services						
Probability of Use	-28.1 *		6.3		47.8 *	
Expenditures per User	-10.8 *		-9.9		1.0	
Expenditures per Person	-35.9 *		-4.3 *		49.3 *	
Emergency Department						
Probability of Use	-19.9 *		5.3		31.5 *	
Expenditures per User	1.0		1.6		0.5	
Expenditures per Person	-19.1 *		6.9 *		32.2 *	

★ Large relative increases in use and expenditures per person

Summary of Findings

- ✦ Loss of dental coverage results in increased probability of use and increased expenditures per person dental-related medical care
- ✦ Increased use and expenditures occur in both general and emergency ambulatory settings
- ✦ Increased use and expenditures occur despite large co-pays for medical care services

Conclusions

- ✦ "Canary in Coal Mine" effect:
 - ✦ Loss of dental coverage clearly creates unmet need for essential services
 - ✦ Large relative effects but small absolute effects (expenditure effects = < 1% of dental benefit costs)
- ✦ Importance of dental coverage cannot be argued simply on cost substitution grounds.

Limitations

- ✦ Non-equivalent initial use and expenditure (despite matching) relies on relevance of control group trend
- ✦ Policy may have indirectly affected Plus beneficiaries
- ✦ Sample is not fully representative, higher chronic illness, longer than average enrollment
- ✦ Sample had access to dental coverage (pre-policy) – impacts on those never having dental coverage may be much greater
- ✦ Co-payments likely dampen the substitution effect
- ✦ Study measures do not capture all potential health/medical care effects of dental coverage loss