



Elimination of the Out-of-Pocket Charge for Children's Primary Care Visits: An Application of Value-Based Insurance Design

Martín-J. Sepúlveda, MD¹, M. Christopher Roebuck, PhD², Paul Fronstin, PhD³, Pablo Vidales-Calderon, PhD⁴, Ashish Parikh, MD⁵, and Kyu Rhee, MD⁶

Objective To evaluate the impact of a value-based insurance design for primary care among children.

Study design A retrospective analysis of health care claims data on 25 950 children (<18 years of age) was conducted. Individuals were enrolled in a large employer's health plans when zero out-of-pocket cost for primary care physician visits was implemented. A rigorous propensity score matching process was used to generate a control group of equal size from a database of other employer-sponsored insureds. Multivariate difference-in-differences models estimated the effect of zero out-of-pocket cost on 21 health services and cost outcomes 24 months after intervention.

Results Zero out-of-pocket cost for primary care was associated with significant increases ($P < .01$) in primary care physician visits (+32 per 100 children), as well as decreases in emergency department (−5 per 100 children) and specialist physician visits (−12 per 100 children). The number of prescription drug fills also declined (−20 per 100 children), yet medication adherence for 3 chronic conditions was unaffected. The receipt of well child visits and 4 recommended vaccinations were all significantly ($P < .05$) greater under the new plan design feature. Employer costs for primary care increased significantly ($P < .01$) in association with greater utilization (\$29 per child), but specialist visit costs declined (−\$12 per child) and total health care costs per child did not exhibit a statistically significant increase.

Conclusion This novel application of value-based insurance design warrants broader deployment and assessment of its longer term outcomes. As with recommended preventive services, policymakers should consider exempting primary care from health insurance cost-sharing. (*J Pediatr* 2016;175:195-200).

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Pediatricians have long championed the value of accessible, comprehensive, coordinated, continuous, and family-centered care for children in the “medical home” model.^{1,2} Medical homes for children with and without special care needs have demonstrated improved well-child visits, delivery of preventive services, adoption of health-promoting behaviors, and reduced emergency department visits and hospital admissions.³⁻⁵ This evidence together with analogous data on primary care's impact on adult health^{6,7} led IBM to partner with the American Academy of Pediatrics and their counterparts in adult primary care medicine to promote both greater access and investments in new models of primary care in 2006. These collaborations resulted in the creation of the Patient-Centered Primary Care Collaborative.⁸

In addition to support for the expansion and transformation of primary care in national health care reform, IBM also sought to promote greater use of primary care among its own insured population. It was hoped that some of the clinical and cost outcomes of primary care-focused health systems could be replicated. To accomplish this objective, the portion of the office visit charge for physician services paid by the patient or parent (“cost-sharing” or “out of pocket” cost for primary care physician [PCP] visits) was eliminated in 2010. This value-based insurance design approach to foster greater use of highly cost-effective interventions had been employed previously by others to bolster medication adherence but had not yet been applied to PCP visits in 2010.^{9,10}

We present the results of a retrospective observational study of a large sample of children younger than the age of 18 years enrolled in IBM health plans over 4 years—24 months pre- and 24 months postimplementation of the elimination of out of pocket cost for PCP office visits. The research objective was to assess the impact of this plan design change on health services utilization and costs. A propensity score-matched cohort of children enrolled in similar commercial health plans was used as a control group. The present work reports on the novel application of value-based insurance design to primary care for children, which in turn has broader health policy implications.

COPD	Chronic obstructive pulmonary disease
DiD	Difference-in-differences
EPO	Exclusive Provider Organization
PCP	Primary care physician
PPO	Preferred Provider Organization

From the ¹IBM Corporation, Yorktown Heights, NY; ²RxEconomics LLC, Hunt Valley, MD; ³Employee Benefit Research Institute, Washington, DC; ⁴IBM Corporation, Mexico City, Mexico; ⁵Summit Medical Group, Berkeley Heights, NJ; and ⁶IBM Corporation, Somers, NY

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Methods

The following definitions are employed for certain terms used in the report to describe aspects of utilization costs for health services. “Out-of-pocket cost” will refer to costs that must be paid by the member because these are not reimbursed by the plan. Out-of-pocket costs are in addition to the insurance premium charged for the health insurance. Out-of-pocket costs include: deductibles (costs that must be paid entirely by the member before the insurance reimburses anything), “co-insurance” (a percentage of a charge for a specific service that must be paid by the member each time it is consumed), and co-payments (a fixed flat dollar amount for a specific service that must be paid by the member each time it is consumed).

Insurance eligibility information, as well as medical and pharmacy administrative claims from IBM’s Preferred or Exclusive Provider Organization plans (PPO or EPO plans, respectively) were employed in this study. More than 75% of active IBM employees ages 18-64 years were enrolled in these noncapitated network plans containing accurate costs at the claim level. These data covered the period January 1, 2008, through December 31, 2011—24 months before and 24 months after introduction of no out-of-pocket cost to members for primary care visits on January 1, 2010. A 24-month follow-up was chosen to provide a sufficient period of time for study group members to become acquainted with the new plan design change. To be included in the analyses, individuals had to have been younger than 18 years of age and continuously enrolled throughout the entire study period. The same inclusion criteria were applied to comparable data from Truven Health Analytics’ MarketScan Commercial Claims and Encounters Database to construct a control group using the propensity score matching process described in this article. MarketScan is a large national dataset, which includes person-specific inpatient, outpatient, and prescription drug claims data, as well as health insurance enrollment information. These data are from more than 350 payers—composed largely of employers—and they are representative of insured active employees and their dependents. Consequently, MarketScan has been utilized in many published peer-reviewed studies.¹¹

Study and Control Groups

The study cohort consisted of all 25 950 children from a total population of 101 100 covered lives in IBM PPO and EPO health plans. Propensity score matching was employed to construct a control group of equal size from MarketScan data on employer-insured children. This technique is intended to set up a simulated randomized controlled-trial wherein all individuals at baseline are equally likely to receive the treatment—in this case, the zero out-of-pocket cost for primary care office visits. Propensity scoring accomplishes this by matching study group members to controls based on their likelihood of being in the zero out of pocket cost for primary care visit cohort, and this probability is derived

using a multivariate model of treatment assignment. In the present case, a probit was estimated using a comprehensive set of regressors including age, sex, geographic region, and plan type (ie, EPO, PPO). Additionally, 6 county-level measures derived from the 2009-2010 Area Resource File were merged into the analytical dataset and included in the propensity score model: urban vs rural residence, prevalence of 4-year college degrees, median household income, and the numbers (per 10 000 residents) of generalist physicians, specialist physicians, and hospital beds.¹² To control for baseline health status, the Charlson Comorbidity Index (2008 and 2009) also was used in the matching. This method categorizes 17 comorbidities such as diabetes, cancer, and chronic obstructive pulmonary disease (COPD), using diagnosis codes from patient claims data and has been used with pediatric populations.¹³⁻¹⁵ Preperiod (2008 and 2009) values of all outcome measures described below also were included in the propensity scoring model. As a result of this matching process, covariate balance between the study and control groups was deemed adequate (**Table I**).^{16,17}

Outcome Measures

Twenty-one outcomes were examined including 6 health services utilization measures—the annual number of: (1) inpatient hospital admissions; (2) inpatient hospital days; (3) emergency department visits; (4) PCP visits; (5) specialist physician visits; and (6) prescription drug fills (in 30-day equivalents). Also included were 7 related annual health care cost variables; 5 indicators for receipt of a well-child visit and recommended vaccines (tetanus, pneumonia, influenza, and human papillomavirus); and 3 medication adherence flags for asthma, diabetes mellitus, and depression (**Table II**). Individuals were classified as having 1 or more of these chronic conditions if they had at least 1 inpatient or 2 outpatient medical claims with an associated diagnosis code during a calendar year. The indicators of medication adherence were calculated using proportion of days covered during a calendar year (PDC) at or greater than 0.80 ($PDC \geq 0.80$).¹⁸

Statistical Analyses

As previously noted, zero out-of-pocket cost for PCP visits was instituted on January 1, 2010, for the study group. PCPs included those designated in pediatrics, internal medicine, family medicine, and general practice. Before 2010, study subjects were charged 15% or 20% coinsurance for PCP visits depending on the specific plan. Patient costs for specialist physician visits remained unchanged at 25% coinsurance throughout the entire study period. Finally, since 2006, US Preventive Services Task Force recommended preventive services were provided without cost to all members.

To estimate the effect of zero out-of-pocket cost for primary care on study outcomes, the difference-in-differences (DiD) econometric technique was used. This method measures the average change in the dependent variable pre- and postintervention for both the study and control groups,

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