

Impact of Managed Care, Eligibility Expansion and Limited Benefits on Quality of Care in the Oregon Health Plan

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INTRODUCTION

Five years ago, amidst the hue and cry of advocates^{1, 2}, and professional organizations' objections³, the State of Oregon began a unique and controversial initiative that expanded eligibility for Medicaid health care coverage, while attempting to limit per capita costs through the use of managed care and a reduced basic benefits package. Although evidence suggested that managed care systems provided quality care and improved access for many Medicaid beneficiaries^{4,5,6}, concern centered on the ability of those considered the most vulnerable, such as children and adults with chronic diseases^{7,8}, to navigate the system. In addition, there were stark objections to reducing the benefit package on equity grounds: "The Oregon program rations care for the poor but asks no sacrifice of the powerful... Strategies such as Oregon's that invoke unmet needs to justify cutting care for the vulnerable are politically convenient and ethically execrable"⁹.

Nevertheless, the Oregon Health Plan (OHP), as this program is known, appears to have been more controversial before, than after implementation. Whereas, there were over 100 articles about OHP in Medline between its inception in 1989 and its implementation in 1994, there have been only half as many articles in Medline subsequently. The OHP has, in fact, extended health care coverage to over 300,000 previously uninsured Oregon residents with broad public support and very little outcry. The public support for the plan and lack of outcry stem from four main reasons. First, despite the prior lack of definitive evidence of the impact of managed care systems on children or adults with chronic disease, most states have now adopted managed care systems for Medicaid. Second, the unique process of evidence and value ascertainment that went into formulating the list of condition-treatment categories that determine the benefit package involved health care professionals, legislators, public citizens and health care

advocacy groups¹⁰. Third, services dropped from the benefit package when eligibility was expanded, were primarily self-limiting or conditions for which treatment is ineffective. The few dropped services that resulted in widespread public objection, such as simple hernia repair in children, were quickly reinstated. Finally, the Health Care Financing Administration, which authorizes OHP as a Section 1115 waiver program, has declined to approve several requests by the Oregon Medical Assistance Program to discontinue coverage for services that might have resulted in more significant public objection. Thus, “by most measures, the Oregon experiment appears to be a success.”¹¹

This apparent success, however, has not been measured against the original concern about how children and adults with chronic diseases would fare under OHP. As part of the HCFA-sponsored independent evaluation of OHP, this study addresses that concern by reporting on the effect of the three OHP interventions (expansion of eligibility, enrollment in managed care, and prioritization of services) on outcomes of care for three vulnerable populations enrolled in OHP – children with asthma, adults with diabetes, and adults with low back pain. The outcomes on which we report include whether or not standard care was received, perceived change in health status, beneficiaries’ assessments of the care they received, and reported unmet need. Pediatric asthma and adult diabetes are often used as “tracer” conditions in studies of the effect of delivery system changes on patient outcomes, because the standards of care for these conditions are well established and accepted. Appropriate care for low back pain is more difficult for external evaluators to measure due to individual patient factors, but low back pain was chosen as a tracer condition for this study because it is a highly prevalent “below-the-line” or uncovered service that was covered by Medicaid before OHP began.

THEORETICAL MODEL

We adapted the Revised Institute of Medicine Framework for Managed Care by Gold¹², which postulates an expanded role of the healthcare system and marketplace among the traditional measures of structure, process and outcomes of care within managed care systems. Following this framework, we can test for the effects of the three OHP interventions by comparing the outcomes of persons who are exposed to an intervention to the outcomes of those who are not exposed. The effect of eligibility expansion can be measured by comparing the outcomes of persons in expansion eligibility categories with the outcomes of persons in traditional Medicaid eligibility categories. The effect of managed care enrollment can be measured by comparing persons enrolled in HMOs with persons in the fee-for-service Medicaid program. The effect of the priority list can be measured by comparing persons with above-the-line-conditions to persons with below-the-line conditions. Because of data limitations described below in the Methods and Limitations sections, these comparisons could only be made for certain tracer conditions samples. Nevertheless, this model provides the basis for evaluating the impact of each of the OHP interventions (expansion, managed care and the priority list) in vulnerable OHP populations on outcomes related to quality of care.

The outcomes used in this study address the impact of the OHP interventions on four generally accepted dimensions of quality health care: access to care, as represented by perceived unmet need; the adequacy of the clinical process, as measured by whether or not the medical care received meets clinical standards; beneficiary satisfaction, as measured by their ratings of the clinical and administrative performance of providers; and the impact on health, as measured by the probability of getting better or worse during the reference period.

METHODS

Data Sources

Three data sources were used. OHP administrative data, including eligibility files and encounter and claims data, were used to identify OHP members eligible for the study. Trained interviewers administered a computer-assisted telephone interview (CATI) to eligible enrollees between June and October 1998 to determine individual-level data. A parent, usually the mother, of the child with asthma served as a proxy respondent. Survey items included questions about the type of current and past health insurance, usual source of medical care, health care utilization, unmet health care needs, health status, and family and demographic characteristics. The interview also included a series of items specific to each tracer condition that were designed to elicit information about the frequency and severity of symptoms, prior treatment, and functional impairment related to the medical condition. The 1995 Area Resource File (ARF) identified county-level market variables, including population counts and the number of primary care providers per capita in the county of residence.

Eligibility for the Study

Sampling Frame Construction. The sampling frame for the survey was constructed using OHP's May 1998 eligibility file. The sample was limited to OHP members in the initial (or Phase 1) eligibility categories that include Aid to Families with Dependent Children/Temporary Assistance to Needy Families, the 1989 children's Medicaid expansions, and the new OHP-specific expansions for persons with income no greater than 100 percent of the Federal Poverty Level. Encounter and claims data for persons eligible in May 1998 were used to identify those persons who had diagnostic codes for diabetes, asthma, and low back pain.

Among that group, persons must have appeared on the OHP eligibility files in 10 of the 12 months preceding May 1998 and must have been in one of the following Phase 1 eligibility categories for each of those months: ADC (2), ADC Unemployed (82), ADC Extended Medicaid (XE), PLM-C < federal poverty level (L1), PLM-C > federal poverty level (L5), new family (L3), and new adults/couples (L4). ADC represents traditional Medicaid public assistance eligibility and PLM-C represents the 1989 children's eligibility expansion to 133% of the federal poverty level. New family and new adults/couples are the OHP expansion categories for persons with and without children, respectively. One year of OHP eligibility was required because the reference period for many of the survey questions was one year. Ineligibility for two of the 12 months was permitted because we did not want to exclude persons who had been briefly ineligible for administrative reasons or errors. Sampled members from the adult populations (diabetes and low back pain) were also required not to have had a pregnancy eligibility code (L2 or L6 or pregnancy related claims or encounters) in any of those 12 months.

Age requirements varied by condition. The ages for children with asthma and adults with low back pain were chosen to assure that sample members were either children or adults without Medicare for the entire reference period. Thus, children with asthma were required to be between ages 1 and 17 on May 1, 1998 and adults with low back pain were required to be between the ages 19 and 64 on May 1, 1998. Because claims data are known to misclassify the type of diabetes in as many as 30% of cases, the diabetes sample was limited to adults between ages 22 and 45 (on May 1, 1998), to secure a more homogenous sample of patients with Diabetes Mellitus Type 1. Patients with Type 1 diabetes have diminished or no pancreatic secretion of insulin, and are usually insulin dependent within a year of presentation. As a group, they may have a more severe clinical course than those with Diabetes Mellitus Type II. Persons over the

age of 45 were excluded because the probability of obtaining a sample of Type 1 diabetes after age 45 decreases substantially while the probability of Type II diabetes increases. Persons age 19-21 years were excluded so that sample members had at least two years of adult care for diabetes before the reference period and were no longer eligible for other public health insurance programs such as Title V, Children's Special Health Care Services. Adults who met these criteria for both the low back pain and diabetes samples were included in the diabetes sample only. The final frames for the diabetes, pediatric asthma, and low back pain samples contained 596, 3,166, and 4,706 persons, respectively.

Screening Interview. When reached by telephone, sample members were screened to exclude any who were no longer enrolled in OHP and who did not meet the following condition-specific criteria:

- Diabetes: Diabetes diagnosed by a medical person before age 30; started insulin injections within one year of diagnosis; currently using insulin; not pregnant within the last 12 months.
- Asthma: Current age greater than one and less than eighteen; asthma diagnosed by a medical person.
- Low Back Pain: First low back pain more than 12 months ago and had an episode of low back pain within the past 30 days; not pregnant within the last 12 months. Following the survey, medical encounter data were used to exclude 21 respondents whose low back pain was accompanied by other complicating factors (such as motor vehicle accident or cancer) that made it difficult to interpret their responses.

Sampling

Twenty individuals were selected from the sampling frame of each population for a pretest to assure that the CATI performed properly with eligible sample members. These persons were excluded from the sampling frame for the full study. A stratified random sample was selected from the frame, with explicit strata defined by the three conditions and implicit

strata defined by type of plan (HMO or fee-for-service), eligibility category, and the name of plan for managed care cases. The target sample size for each condition was 460 persons. Because the diabetes universe was so close to that number, the entire universe was selected. Final frame and sample sizes for the three conditions are included in Exhibit 1.

Exhibit 1

Sampling Frame and Sample Size by Condition

	<u>Frame</u>	<u>Sample Size</u>
Pediatric asthma	3,146	460
Diabetes	576	576
Low back pain	4,056	460

Data Collection

The survey took place between June and October 1998. The CATI was preceded by an introductory letter mailed to the sample member's home. Cases with incorrect or missing telephone numbers were traced through directory assistance, family members, and electronic searches of commercial databases.

Following data collection, sample members were classified as respondents, ineligible, nonrespondents with known eligibility (e.g. refusals), and nonrespondents with unknown eligibility (e.g., persons who could not be located). Only about five percent of sample members who were located refused to participate in the study. Because eligibility was unknown for such a high proportion of nonrespondents, nonresponse adjustments were computed using the CASRO¹³ method, which assigns persons who cannot be located to eligible and ineligible categories using the same proportions as persons who were located. In total, 493 interviews were completed among all three tracer conditions. Adjusting for eligibility, response rates for the asthma

(n=205), diabetes (n=94), and low back pain (n=160) samples were, 67.2%, 63.4%, and 66.3%, respectively. These rates are comparable to other published studies of Medicaid populations.^{14,15,16} The small number of completed interviews relative to the initial sample size, especially for diabetes, stems mainly from the high percentage of sample members who did not meet the screening eligibility criteria.

ANALYSIS

General Model

We used multivariable regression analysis to test the effect of each of the three interventions (eligibility expansion, capitation, and the priority list), controlling for the other two interventions and other factors suggested by the theoretical model. The general theoretical model adapted from Gold¹², posits that the outcome measure of quality is a function of personal, health care delivery system, market and process characteristics:

$$\text{Outcome} = f(\text{personal, health delivery system, market, process})$$

Where Outcome is one of four measures: an indicator of whether standard care was received, an indicator of whether health status changed, the beneficiary's rating of plan performance, or the beneficiary's report of unmet need.

Personal characteristics are measured by age, marital status, number of children in family, education level, race/ethnicity, sex, and health status.

Health delivery system is measured by one variable each for two of the delivery system interventions (eligibility expansion and managed care) and by the three tracer conditions (impact of benefit package limitations).

Market is measured by two county characteristics i.e., the number of primary care providers and urbanicity.

Process is measured by the type of the usual source of care.

Application of the General Model for Specific Estimates

Although this general model was used for all equations, there are several characteristics of the data that require us to apply the general model in different ways, depending on which intervention and which outcome measure is being investigated. The standard care outcome was modeled separately by condition because care is unique to each condition and because standard care could not be assessed for low back pain from the survey data. The other outcomes are measured identically in all three samples and therefore can be modeled using a combined data set to provide the largest possible sample and, hence, power to detect differences. In each of the models that included all three conditions (health care ratings, unmet need, change in health status), we choose diabetes as the reference level such that each model contains two pairwise contrasts – diabetes vs. low back pain and diabetes vs. asthma. This allows us to determine if there are differences in an adult above-the-line condition vs. an adult below-the-line condition or if there are differences in covered chronic conditions in adults vs. children. In addition, contrast statements in SUDAAN provide Wald chi square and p-values to examine other group differences. To look at below vs. *both* above-the-line conditions, we ran a contrast statement of LBP vs. both asthma and diabetes. We were also able to contrast the child above-the-line condition (asthma) with the adult below-the-line condition (LBP).

Several characteristics of the data however limited our ability to test all intervention effects in all conditions. Well before OHP started, Oregon Medicaid covered children through age 11 in families with income up to 100 percent FPL, and up to 133 percent FPL for children age 0-5, under the 1989 Medicaid expansions. Thus, only children 12-17 years old could be classified as OHP expansion members¹⁷. Because there were few such individuals in the sample and their health care use characteristics are likely to differ substantially from that of younger

children, it was not feasible to test the impact of expansion in children with asthma. Second, the strict screening criteria for the diabetes sample resulted in a more homogeneous sample as intended, but also yielded few eligible cases. The small sample size included almost no one in the fee-for-service delivery system. Because the effect of the capitation intervention is measured in our models by comparing persons in HMOs to persons in the fee-for-service system, we were unable to test this intervention in persons with diabetes.

Because of these data limitations, the impact of eligibility expansion is estimated only among adults and the impact of capitation is estimated only among children with asthma and adults with low back pain. We use all three tracer conditions to examine the impact of the priority list to establish a limited benefit package. Exhibit 2 summarizes these decisions.

Exhibit 2

Populations With Which the Impact of Interventions on Outcomes Can Be Tested in the Quality of Care Analysis for the Oregon Medicaid Reform Demonstration Evaluation

	Outcome Measures (Dependent Variables)			
Interventions	Standard Care	Satisfaction	Unmet Need	Change in Health Status
Capitation	Asthma	Asthma & LBP	Asthma & LBP	Asthma & LBP
Expansion	Diabetes	Diabetes & LBP	Diabetes & LBP	Diabetes & LBP
Priority List	-----	Asthma, Diabetes, & LBP	Asthma, Diabetes, & LBP	Asthma, Diabetes, & LBP

The specific variables included in each model appear in Exhibits 3, 9 and 10, which present the parameter estimates. Variable definitions are provided in the next two sections. Parameter estimates of the effect of the interventions on the four outcomes were computed using the adjusted sampling weights, SUDAAN® software to adjust variances for the effect of unequal

weights resulting from stratification, and either logistic regression, ordered logistic regression, or ordinary least squares (OLS) regression, depending on the structure of the outcome variable.

Definition of Outcome Variables

Standard Care for Asthma. We developed a dichotomous measure of standard care for children with asthma based on 1991 National Heart, Blood & Lung Institute guidelines.¹⁸ The definition varied depending on the severity of the child's asthma. To determine the level of severity, the child's primary caregiver (usually the mother) was asked a series of questions about the child's asthma symptoms during the four weeks prior to the interview. Asthma severity was categorized as severe, moderate or mild according to responses on the frequency of symptoms, sensitivity to exercise, and missed days of school or daycare due to asthma symptoms. Asthma was considered severe if the child experienced coughing or wheezing on most or every night; or coughing, wheezing, or shortness of breath after minimal exercise; or four or more absences from school or day care in the past 4 weeks because of asthma symptoms. Thirty-six percent of cases were coded as severe (n=74). Of the remaining cases, asthma was defined as moderate if children experienced coughing or wheezing on some nights; or coughing, wheezing, or shortness of breath after moderate exercise; or two to three absences from school or day care in the past four weeks because of asthma symptoms. Thirty-three percent (n=69) of cases were coded as moderate. The remaining cases, (31% or n=62) were coded as mild if neither the "severe" nor the "moderate" conditions were met.

To meet the criteria for standard care, children with severe asthma must take a β -agonist, (either all the time or only with symptoms) and an anti-inflammatory (steroid or cromolyn) all the time. Sixteen percent of children with severe asthma received standard care. Children with

moderate asthma were coded as receiving standard care if they took a β -agonist (either all time or only with symptoms) and an anti-inflammatory or theophylline all the time. Children with mild asthma met the standard if they used a β -agonist with symptoms. Five cases with mild asthma initially did not meet the expected standard for medication because they appeared over-medicated. These cases were re-coded as meeting the standard, because it was possible that a medication regimen based on previous symptoms was still in effect, even though those symptoms had abated during the four-week survey reference period. Two mild asthma cases could not be evaluated on standard care criteria because respondents could not recall the type and frequency of their children's asthma medication.

Standard Care for Diabetes. The standard-care measure for adults with diabetes is based on American Diabetes Association (ADA) guidelines.¹⁹ Respondents with diabetes were asked a series of questions about the type and frequency of ambulatory visits they received. In order to meet the criteria for standard care, respondents must report having received a foot exam, an eye exam, and dietary counseling at least once during the past 12 months. All three services must have been received for care to be considered standard or acceptable. The diabetes and asthma standard care models were estimated using logistic regression, because the dependent variables are dichotomous.

Change in Health Status. A single survey item asked respondents to rate their health as much worse, somewhat worse, about the same, somewhat better, or much better than one year ago. The original five-level responses were collapsed into three ordinal categories coded as "worse", "about the same", or "better" than one year ago. Ordered logistic regression was used to predict change in health status.

Health Care Ratings. Ten items in the interview measured beneficiary's assessments of the availability of care, their access to medical specialists, physician-patient communication, and the adequacy of health care benefits for preventive and sick-care services (the 10 items are presented in the results section). Respondents were asked to rate each of these items on a five-point scale from Poor to Excellent. Individual items to which respondents answered "don't know", "refused", or "not applicable" were considered missing. However, missing or invalid responses for respondents with at least five valid responses were imputed by using the mean of the non-missing items. Correlation of the ten items was high (Cronbach alpha=.92). Thus, summing the responses across the ten items created a composite satisfaction variable. OLS regression was used to model respondents' satisfaction with the health care they received as members of OHP, because the ratings measure is continuous.

Unmet Need. The survey included a series of three items that were designed to elicit information on whether or not respondents experienced unmet health care needs in three areas: prescription drugs, visits to specialists, and alcohol/drug or mental health treatment. Our objective in using this variable was to determine if persons who perceived a need for the service were able to get it. Thus, each item is constructed from two questions that enable us to exclude persons who did not perceive a need for the service and to classify those who did, as receiving it or not. The first question asked respondents whether they had received service in the last twelve months. If they had, they were classified as needing and receiving the service. Respondents who had not received the service were then asked if they had needed, but had been unable to obtain the service. Seven percent of the cases answered "no" to both questions and were excluded from the analysis because they neither received, nor wanted to receive, such services in the past 12 months. The remaining cases were coded as wanting and receiving the service ("yes"

to the first question) or as wanting but not receiving the service (“no” to the first question and “yes” to the second). Separate variables were created for prescription medications, access to specialists, and mental health/drug dependency treatment. A composite dichotomous variable was then created to indicate if the beneficiary had experienced any unmet need for health care services during the past 12 months. Logistic regression was used to model this probability.

Definition of Explanatory Variables

Personal. Personal variables from the survey included age, marital status, number of children in family, education level, race/ethnicity, and sex. Since unmet health care need and change in health status were reported over the past 12 months, current health status was not included as a control variable in those regressions. For the pediatric asthma sample, the adult respondent’s marital status, education, and race/ethnicity were obtained. The age of sampled members was coded as a continuous variable with a range of 1-17 years for the pediatric asthma cases and 19 to 64 years for adults the low back pain or diabetes. The number of children in the sampled member’s family was also coded as a continuous variable with a range of 0 to 7. Reference cell coding (dummy coding) was used to create dichotomous variables to indicate married vs. not married, less than high school education vs. high school education or more, male vs. female, and white vs. nonwhite.

Different health status instruments were completed for adults and children. The adults completed the SF-12 Health Survey (SF-12), which provides scores for general physical (PCS12) and mental (MCS12) health status²⁰. The SF-12 scores were computed according to the standard SF-12 scoring algorithms. Because the algorithm does not provide a method of imputation for

missing data²¹, fourteen adult cases were dropped from models that included the health status variable.

Parents answered three questions about the health of sampled children. These questions were adopted from the child health supplement of the 1988 National Health Interview Survey. In the absence of validated scoring algorithms for these questions, we created scores that were the mean of the simple sum of the responses. For these three items, better health status was given a "1" while poorer health status was given a "0". Higher scores, therefore, indicated better health. An observation with missing data for 2 or more of the 3 questions received a missing score. For those observations that had just one of three responses missing, the missing response was imputed by the average of the nonmissing responses²². Internal consistency reliability²³ for these scores was acceptable ($r=0.66$).

The raw scores of the adult and child scales were not comparable because adults and child proxies did not answer the same questions. However, we were able to derive a common metric for both instruments by expressing the scores of each as deviations from a norm. Norms were defined as the average score for a sociodemographically (i.e., age and gender) equivalent group in the general population. General population data for the adult SF-12 Health Survey scores came from the 1990 National Survey of Functional Health Status conducted by the National Opinion Research Center²⁴ and based on the sample frame of the 1989 and 1990 General Social Survey. General population data for the child health scores came from the National Center for Health Statistics²⁵. Deviation scores were calculated by subtracting the observed score from the norm and dividing by the general population standard deviation (root MSE as the estimate of the standard deviation). Each individual's score, adult or child, is interpreted as a departure from what would be expected – as the degree to which the person is

healthier or sicker than is typical for his or her age and gender. Each individual's score was then multiplied by 10 and that result was added to 50. This allows one to see at a glance where an individual or group falls relative to "normal" health. For example, a score of 50 may be interpreted as "average" health whereas a score at 55 may be interpreted as half a standard deviation above average.

Health Care System Intervention Variables

The intervention variables were created using administrative data from the State of Oregon. OHP's May 1998 eligibility file was used to create a dichotomous variable indicating whether the sample member was eligible for OHP under traditional Medicaid eligibility rules or under the "new" OHP expansion guidelines.

The same file was used to create a variable that identifies the sampled member's delivery care system under OHP. Beneficiaries can be assigned to one of three delivery and payment systems in OHP: risk-based capitation, primary care case management, or unrestricted fee-for-service. Phase 1 OHP members (essentially TANF/AFDC, 1989 children's expansion members and OHP expansion members) are required to enroll with a capitated health plan that contracts with the Oregon Medical Assistance Program (OMAP). In counties with inadequate health plan coverage, the Oregon Medical Assistance Program contracts with primary care case managers, who receive a case management fee but are otherwise paid on a fee-for-service basis. Individuals with special provider relationships, who are newly eligible, or who are changing plans may be permitted to have unrestricted access to providers on a fee-for-service basis. Although the primary care case management system is considered a form of managed care, it was combined with the unrestricted fee-for-service system to create a dichotomous indicator for

capitation or fee-for-service coverage. Because the choice of capitation or fee-for-service is determined by the rules of the system, unobserved bias associated with selection is not as great a problem as it would be, if the choice were left to the beneficiary, because the rules are observed and can be controlled for explicitly in the model. Where data are available, we have attempted to control for the factors known to determine this assignment using health status and market structure variables. Nevertheless, the different criteria for assignment to these categories is a limitation on the certainty to which program effects can be attributed to this intervention.

The effect of the priority list is measured only in models that combine conditions, by comparing the non-reimbursed diagnosis (low-back pain) to the reimbursed conditions (asthma, diabetes, or both) as depicted in Exhibit 2. These models include a two- or three-level variable that indicates the condition.

Market. Several measures related to managed care market structure were created using the 1995 Area Resource File (ARF)²⁶ and administrative data provided by the State of Oregon. Based on the ARF Rural/Urban Continuum Code, residence in a metropolitan county was coded one if the patient's county of residence was part of a Metropolitan Statistical Area and zero otherwise. The number of primary care providers per 100,000 residents in the patient's county was calculated by summing the number of medical doctors (MDs) and doctors of osteopathy (DOs) in family practice, general practice, or general internal medicine and then dividing by the total county population. These ARF data were obtained from the American Medical Association for MDs, the American Osteopathic Association for DOs, and the US Census for the population denominator. This variable ranged from 19.31 to 102.21.

Process. A three-level variable was created to indicate if the respondents had a usual source of care at a doctor's office/HMO office or private clinic; a usual source of care at a

hospital, public health department, community/rural clinic; or no usual source of care or a usual source of care at an emergency room or urgent care clinic.

RESULTS

Exhibit 3 presents the means of the continuous and frequencies of the categorical explanatory variables for the three condition-specific populations. This section presents summary descriptions of the status of OHP members, by condition, with respect to each of the four outcome measures. The following section presents the results of regression analyses performed to determine if those outcomes were influenced by the three OHP interventions.

Description of Outcome Measures

Standard Care. Exhibit 4 displays the percentages of children with asthma and adults with Type 1 diabetes who received acceptable care under OHP, according to NHLBI standards for asthma and ADA standards for diabetes. Meeting standard care depends on two factors for asthma (use of an inhaled β -agonist and an anti-inflammatory agent) and three factors for diabetes (receiving a foot exam, a dilated eye exam, and dietary counseling). Exhibit 4 indicates the percentage that received each of these individual elements, as well as the percentage that achieved the combined standard, so that the particular factor driving the overall probability of meeting the standard may be identified. Because standard care for asthma varies by severity, those percentages are presented separately for each severity level.

Exhibit 3
Descriptive Statistics for Independent Variables in Regression Models

Independent Variables	Asthma (n=205) <u>Percentage</u>	Diabetes (n=94) <u>Percentage</u>	Low Back Pain (n=160) <u>Percentage</u>	Overall (n=459) <u>Percentage</u>
Structure—personal				
Age (Mean, SE)	(7.01, 0.36)	(33.53, 0.70)	(40.43, 0.93)	(24.1, 0.54)
Marital Status				
Not Married	69.7%	77.3%	71.6%	70.9%
Married	30.3%	22.7%	28.4%	29.1%
Number of Children in Family (Mean, SE)	(2.27, 0.10)	(0.76, 0.11)	(0.99, 0.10)	(1.60, 0.07)
Education				
Less than High School Education	31.1%	23.7%	27.5%	29.2%
High School Grad/GED or More	68.9%	76.3%	72.5%	70.8%
Race				
White/Nonhispanic	72.7%	78.3%	83.9%	78.3%
Nonwhite	27.3%	21.7%	16.1%	21.7%
Sex				
Female	40.3%	48.5%	65.0%	52.6%
Male	59.7%	51.5%	35.0%	47.4%
Health Status Deviation from the Norm* (mean, SE)	(32.81, 1.28)	(36.62, 1.58)	(27.9, 1.23)	(30.64, 0.86)
Intervention				
Expansion Population				
Old rule	97.7%	21.6%	35.2%	64.8%
New rule	2.3%	78.4%	64.8%	35.2%
Delivery System				
FCHP	91.9%	94.6%	93.6%	92.8%
PCCM/FFS	8.1%	5.4%	6.4%	7.2%
Structure—Market				
Respondent Lives in Metropolitan County				
No	22.2%	33.1%	37.0%	29.7%
Yes	77.8%	66.9%	63.0%	70.3%
No. of Primary Care Providers in Co. Per 100,000 Co. Residents (Mean, SE)	(61.29, 1.88)	(60.89, 2.63)	(61.82, 1.80)	(61.53, 1.26)
Process—Access				
Type of Usual Source of Care				
Dr Office/Private Clinic	79.7%	72.5%	69.7%	74.6%
Clinic (Hospital,HD,Rural/Cnty)	17.6%	23.6%	22.1%	19.9%
None/ER/Urgent Care	2.8%	3.9%	8.2%	5.5%

* Deviation score could not be produced for 14 adult cases that did not provide valid responses to the SF-12

Exhibit 4

Percentage of Cases Receiving Standard Care by Condition and Severity

	<u>All Cases</u>	<u>Severe</u>	<u>Moderate</u>	<u>Mild</u>
Asthma				
Inhaled β -agonist	90.2%	89.1%	90.0%	91.7%
Anti-Inflammatory	20.0%*	17.6%	22.6%	NA
Standard Care	40.6%	16.3%	21.5%	91.7%
Diabetes				
Foot Exam	80.9%			
Dilated Eye Exam	67.9%			
Dietary Counseling	41.5%			
Standard Care	29.1%			

*Percentage includes severe and moderate cases of asthma only.

One out of six children with severe asthma (16%) and about one out of five with moderate asthma (22%) received standard medication for their severity level, while nearly all those with mild asthma received standard care. Overall, 41% of children with asthma received standard care. Ninety percent of children at all three severity levels were using inhaled β -agonists, but only one-fifth were appropriately using anti-inflammatory medications. Thus the low level of appropriate anti-inflammatory drug use drives the low rates of standard care among children with severe and moderately severe asthma. Anti-inflammatory drugs are not necessary in mild asthma, and in this category, a very high rate of standard care was achieved (92%).

Using ADA criteria, standard care for type 1 diabetes among adults is defined as reporting receipt of a foot exam, a dilated eye exam, and dietary counseling during the 12-month reference period. A foot exam was the service most likely to be received (81%), followed by the eye exam (68%), and then dietary counseling (42%). Fewer than one third of beneficiaries in our diabetes category received all three services and, thus, standard care. Although the low rate of standard care for diabetes is driven mainly by the dietary counseling rate, substantial proportions

failed to receive foot and eye exams as well. Thus, the low standard care rate is driven, to some extent, by all three services.

Health Care Ratings. The mean health care rating overall was 34.8 (range 11-50). Adults with diabetes and parents of children with asthma reported higher mean health care ratings (37 and 38, respectively) than adults with low back pain (32). To see how the scores were distributed over the range, we divided the range into 4 ten-point segments and computed the distribution of populations over those segments (Exhibit 5). Parents of children with asthma were more likely to be in the highest health care ratings (48%) compared to adults with diabetes (38%) or low back pain (22%). In pairwise comparisons, adults with LBP were significantly less satisfied than those with diabetes or asthma.

Exhibit 5

Distribution of the Health Care Rating Score

<u>Rating Scores</u>	<u>Diabetes</u>	<u>Asthma</u>	<u>Low Back Pain</u>	<u>Overall</u>
11-20	4.3%	3.2%	17.9%	10.4%
21-30	20.6%	15.8%	27.3%	21.6%
31-40	36.9%	33.0%	33.0%	33.1%
41-50	38.2%	47.9%	21.8%	34.9%
Mean	36.97	37.97	31.53	34.81

Exhibit 6 displays the mean scores on the 1-5 scale for each of the individual performance items that comprise the ratings scale. The ratings are presented separately for each group and the rank order within group appears in parentheses next to each rating, with 1 indicating the highest rated item and 10 the lowest. The way doctors answer questions and explain things received the highest rating in all three groups. Coverage for treatment when sick received the second highest rating from persons with asthma and diabetes. Contrary to expectations, it was given the third highest rating by persons with low back pain, even though

treatment for low back pain is not a covered service. This suggests that either low back pain may not have been the dominant medical concern of these persons or that they are receiving treatment despite the fact that the service is not covered. Ability to see a specialist received the lowest rating overall from persons with asthma and low back pain. Persons with diabetes also gave it a low rating, but not their lowest. The availability of care on nights and weekends and the availability of advice by telephone also received uniformly low ratings. Although the ratings from persons with low back pain were substantially lower than ratings from the other two groups on every item, the three groups were remarkably consistent in the way they ranked the items.

Exhibit 6
Mean Score for Each Item Contained Within the Health Care Rating Measure

<u>Item</u>	<i>Mean Score</i>			<u>Overall</u>
	<u>Diabetes</u>	<u>Asthma</u>	<u>LBP*</u>	
Your ability to see the doctor or other medical person you want to see	3.81 (4)	3.84 (5)	3.17 (6)	3.52 (4)
The availability of care on nights and Weekends	3.41 (8)	3.49 (9)	2.83 (9)	3.17 (9)
The availability of medical information and advice by telephone	3.46 (7)	3.69 (7)	2.96 (8)	3.33 (8)
The amount of time it takes to travel to the doctor or other medical person	3.39 (9)	3.62 (8)	3.30 (4)	3.46 (6)
The amount of time you get to spend with a doctor or other medical person during a visit	3.67 (5)	3.73 (6)	3.22 (5)	3.48 (5)
The amount of time you have to wait between making an appointment and the day of your visit	3.58 (6)	3.88 (4)	2.98 (7)	3.43 (7)
Your ability to see a specialist when you think you need one	3.46 (7)	3.48 (10)	2.68 (10)	3.09 (10)
The way your doctor answers your questions and explains things	4.18 (1)	4.16 (1)	3.62 (1)	3.90 (1)
Rate OHP's coverage for preventive care and routine office visits under OHP	3.90 (3)	3.99 (3)	3.42 (2)	3.71 (3)
Rate OHP's coverage for treatment when you are sick	4.10 (2)	4.10 (2)	3.35 (3)	3.74 (2)

* Low Back Pain

Unmet Need. Unmet need was assessed by determining the percentage of persons who received any of three services and the percentage who believed they needed the service but were unable to get it. Exhibit 7 presents the percentages reporting these two states by service and condition. Overall, 45% of persons reported having received a specialist visit, 92% a prescription drug, and 19% mental health or substance abuse treatment. Of the three services, seeing a specialist and receiving a prescription drug are the two most relevant to persons with the three tracer conditions. Children with asthma were less than half as likely as adults with diabetes to see a specialist, but they were almost twice as likely to report an unmet need for specialist care. Almost all patients received a prescription drug. Children with asthma were slightly less likely to receive one than the two groups of adults, but they were also less likely to report an unmet need for drugs. This pattern suggests that access to specialist care may be a problem for children with asthma, but access to prescription drugs is not.

Exhibit 7

Percentage of Cases Receiving Care and Unmet Need for Care by Condition

	<u>Diabetes</u>	<u>Asthma</u>	<u>Low Back Pain</u>	<u>Overall</u>
<u>Receiving Care</u>¹				
Specialist	71.6	30.0	58.2	45.0
Rx	96.5	88.7	95.3	92.2
MH/SA	24.5	9.6	27.4	18.8
<u>Unmet Need</u>²				
Specialist	18.4	32.6	35.4	33.6
Rx	24.3	16.1	26.6	21.7
MH/SA	26.1	14.8	14.1	14.8
Any of the 3	31.5	25.6	39.0	34.6

¹Based on all observations

²Excludes persons who did not want or receive care

Persons with low back pain reported the highest level of unmet need across all the three services combined (39%) and for both specialists (35%) and prescription drugs (27%). The population of chronic pain patients may have increased perception of need because their pain is not adequately controlled and have a poorer functional status, and thus may have increased care-seeking behaviors. However, children with asthma were almost as likely to have an unmet need for specialist care and adults with diabetes were almost as likely to have an unmet need for drugs.

Change in Health Status. Exhibit 8 presents the percentages of persons with each condition who reported that their health status changed for better or worse or stayed the same during the 12-month survey reference period. Since sampled individuals were enrolled in OHP for at least 10 of those 12 months, these data represent reported change while under OHP coverage. Almost half of all persons (45%) reported that their health had improved, while far fewer (21%) reported that it had deteriorated. The overall propensity toward improvement in health status (i.e., change for the better was the overall modal response) is mainly attributable to children with asthma—the only condition-specific group in which change for the better was the mode. Their parents reported that almost two-thirds of them had improved but only 5% had gotten worse. In contrast, only 39% of adults with diabetes and only 28% of adults with low back pain reported better health. Adults with low back pain were the only group who were more likely to report worse health than better. This pattern may reflect the capability to intervene successfully in these conditions, regardless of insurance coverage. Of the three conditions, pediatric asthma is the most responsive to clinical intervention, followed by diabetes, and finally low back pain. In fact, chronic or recurrent low back pain may have a debilitating clinical course despite best medical therapy. Thus, the propensity toward change for the worse in the low-back pain group might be attributable to either an inevitable clinical course or to the lack of treatment

for a below-the-line condition. In the absence of low back pain care standards from the telephone interview, it is difficult to interpret this constellation of findings.

Exhibit 8
Percentage of Persons Reporting Change in Health Status in Last 12 Months

<u>Change in Health Status</u>	<u>Diabetes</u>	<u>Asthma</u>	<u>Low Back Pain</u>	<u>Total</u>
Worse	18.2	4.6	36.8	20.5
Same	42.9	32.1	35.5	34.1
Better	38.9	63.3	27.7	45.4

Impact of OHP Interventions and Other Factors on Quality of Care Outcomes

We used regression analyses to determine if the three OHP interventions (eligibility expansion, capitation, and limited coverage) influenced the patterns described above for the four quality-of-care outcomes. The impact of mandatory enrollment in capitated health plans is represented in the models by an indicator variable contrasting health plan enrollees with fee-for-service or PCCM members. The impact of eligibility expansion is represented by an indicator variable contrasting members in traditional Medicaid categories with members in expansion categories. The impact of the priority list is represented by an indicator variable contrasting each of the three tracer conditions. In this section, we present the results of those regressions. Exhibit 3 presents the means of the continuous and frequencies of the categorical explanatory variables for the three condition-specific populations.

Standard Care. The impact of the capitation and expansion interventions on standard medical care was estimated separately for adults with diabetes and children with asthma using logistic regression. The full models and resulting odds ratios are presented in Exhibit 9.

Exhibit 9

Adjusted Odds Ratios and Confidence Intervals for Models Predicting Standard Care

	Asthma (DF=204)		Diabetes ¹ (DF=93)	
	<u>Adjusted Odds Ratio</u>	<u>Confidence Interval</u>	<u>Adjusted Odds Ratio</u>	<u>Confidence Interval</u>
Model Intercept	0.35	(0.09 - 1.38)	0.72	(0.02 - 23.85)
Independent Variables				
Structure—Personal				
Age	1.06	(0.99 - 1.14)	0.98	(0.89 - 1.07)
Marital Status²				
Married	1.50	(0.76 - 2.97)	--	--
Not Married	1.00		--	--
Number of Children in Family	1.11	(0.87 - 1.43)	--	--
Education				
Less than High School Education	0.49	(0.22 - 1.10)	5.79	(1.97 - 17.02) *
High School Grad/GED or More	1.00		1.00	
Race				
Nonwhite	0.88	(0.37 - 2.06)	1.79	(0.54 - 5.93)
White/Nonhispanic	1.00		1.00	
Sex				
Male	0.98	(0.51 - 1.88)	1.51	(0.49 - 4.64)
Female	1.00		1.00	
Structure—Financial				
Expansion Population				
New rule	--	--	0.52	(0.15 - 1.78)
Old rule	--	--	1.00	
Delivery System				
PCCM/FFS	0.31	(0.11 - 0.89) *	--	--
FCHP	1.00		--	--
Structure—Market				
Respondent Lives in Metropolitan County				
No	1.23	(0.57 - 2.65)	2.24	(0.71 - 7.04)
Yes	1.00		1.00	
No. of Primary Care Providers in Co. Per 100,000 Co. Residents	1.00	(0.99 - 1.02)	0.99	(0.97 - 1.01)
Process—Access				
Type of Usual Source of Care				
Clinic (Hospital,HD,Rural/Cnty)	0.75	(0.32 - 1.79)	1.43	(0.36 - 5.74)
None/ER/Urgent Care	1.16	(0.21 - 6.50)	1.84	(0.23 - 14.8)
Dr Office/Private Clinic	1.00		1.00	

*Adjusted Odds Ratios significant at p<=.05

¹ Because of the small number of observations we defined a more parsimonious model for diabetes. Marital status & number of children in the family are not included because bivariate analysis and preliminary regressions indicated that neither variable was related to the receipt of standard care.

² Marital status of parent for children with asthma.

Controlling for personal, market, and access characteristics, persons eligible through the OHP expansion categories appeared less likely to receive standard medical care than persons in traditional Medicaid eligibility categories. Although substantial, this difference was not statistically significant. Lack of power with the small sample size may have hindered our ability to find a statistically significant effect of expansion on clinical quality. We found that diabetic patients with less than a high school education were almost six times more likely to receive standard medical care. As seen in the descriptive analyses (Table 4), the standard of care is driven primarily by the rate of dietary counseling. When the components of the diabetes standard care model were broken down (analyses not shown), there were no differences in the number of people reporting having received a foot or eye exam; however, those with less than a high school education were nearly twice as likely to report having received nutrition counseling (chi sq, $p < .03$).

Children with asthma in the fee-for-service system were less than one-third as likely to receive standard care as children in fully capitated health plans. Enrollment in capitated health plans is mandatory unless health plans are unavailable, the beneficiary is temporarily between health plans, or there is some special prior relationship with a provider that justifies an exemption from health plan enrollment. Because the factors that determine enrollment in the fee-for-service system are known, we attempted to control for them explicitly. In bivariate analyses (not shown), there was no difference in FFS/PCCM compared to FCHP members in their age, race/ethnicity, education, marital status, usual source of care, number of children in the family, or health status deviation scores. Fully capitated health plan members were more likely to be female, live in metropolitan counties, and have a higher mean number of PCPs per county than those in the FFS/PCCM system. Other, unobserved market or personal variables, for which

we were not able to control may account for the differences in FFS/PCCM versus FCHPs. No other factors were significant at $p < .05$ in this model.

Health Care Ratings

The OLS regression, controlling for each OHP intervention, confirms the univariate findings (Exhibit 10). Four variables, including one of the interventions, were significantly associated with differences in health care ratings. Compared to adults with diabetes (the reimbursed or “above-the-line” condition), adults with low back pain (the non-reimbursed or “below-the-line” condition) were less satisfied with their care while parents with children were the most satisfied. Contrasting asthma and diabetes combined vs. LBP, verified that those with the below-the-line condition were significantly less satisfied than those with the above-the-line conditions. Neither of the other two interventions, expansion nor capitation, had an effect on patients’ health care ratings. Health care ratings increased as health status improved. Nonwhites were less satisfied with their care than whites. Persons without a usual source of care or who used urgent or emergency care centers as their usual source were less satisfied than whites and persons who used a doctors’ office, hospital outpatient clinic or public clinic.

Unmet Need. Using logistic regression, only two variables were significantly associated with increased perception of unmet need (Exhibit 10). Persons without a usual source of care or who used an urgent or emergency care center were about three times as likely to have an unmet need as person who used a doctors’ office. Males were more likely to report unmet need than females. None of the OHP interventions had a significant impact on unmet need, although the regression-adjusted odds ratios retain the trend described in the univariate analyses above. Adults with low back pain seem more likely to report an unmet need than adults with diabetes, who in

Exhibit 10

Models Predicting Health Care Rating, Unmet Health Care Need, and Negative Change in Health Status

	Health Care Rating (DF=456)		Unmet Health Care Need (DF=433)		Negative Change in Health Status (DF=456)	
	Beta	SE	Adj OR	Confidence Interval	Adj OR	Confidence Interval
Model Intercept						
Intercept 1	32.40	2.83	0.32	(0.08-1.28)	0.16	(0.05 – 0.58)
Intercept 2	--	--	--	--	1.02	(0.29 – 3.57)
Independent Variables						
Medical Tracer Condition						
Asthma	5.54 [□]	1.94	0.68	(0.25 – 1.81)	0.57	(0.22 – 1.43)
Low Back Pain	-4.50 [□]	1.28	1.55	(0.81 – 2.95)	2.21*	(1.21 – 4.04)
Diabetes	Ref.		1.00		1.00	
Age	0.10	0.06	1.00	(0.97 – 1.03)	1.00	(0.97 – 1.03)
Marital Status						
Married	-0.34	1.00	0.72	(0.40 – 1.33)	0.89	(0.54 – 1.47)
Not Married	Ref.		1.00		1.00	
Number of Children in Family	-0.58	0.37	1.16	(0.93 – 1.45)	1.04	(0.86 – 1.24)
Education						
Less than High School Education	-1.98	1.04	0.69	(0.39 – 1.21)	1.15	(0.72 – 1.83)
High School grad/GED or More	Ref.		1.00		1.00	
Race						
Nonwhite	-3.23 [□]	1.17	0.86	(0.41 – 1.77)	0.67	(0.37 – 1.21)
White/Nonhispanic	Ref.		1.00		1.00	
Sex						
Male	-0.74	1.00	1.68*	(1.01 – 2.81)	1.05	(0.65 – 1.68)
Female	Ref.		1.00		1.00	
Health Status Deviation	0.13 [□]	0.03	--	--	--	--
Intervention						
Expansion Population						
New Rule	-0.29	1.59	1.10	(0.52 – 2.35)	1.74	(0.84 – 3.64)
Old Rule	Ref.		1.00		1.00	

Exhibit 10 (continued)

Models Predicting Health Care Rating, Unmet Health Care Need, and Negative Change in Health Status

	Health Care Rating (DF=456)		Unmet Health Care Need (DF=433)		Negative Change in Health Status (DF=456)	
	<u>Beta</u>	<u>SE</u>	<u>Adj OR</u>	<u>Confidence Interval</u>	<u>Adj OR</u>	<u>Confidence Interval</u>
Delivery System						
PCCM/FFS	-1.78	1.94	1.28	(0.57 – 2.87)	1.38	(0.66 – 2.89)
FCHP	Ref.		1.00		1.00	
Structure—Market						
Respondent Lives in Metropolitan Co.						
No	0.72	1.14	1.27	(0.74 – 2.20)	1.00	(0.62 – 1.63)
Yes	Ref.		1.00		1.00	
No. of Primary Care Providers in Co. per 100,000 Co. Residents	-0.03	0.02	1.00	(0.99 – 1.01)	1.00	(0.99 – 1.01)
Process—Access						
Type of Usual Source of Care						
Clinic (Hospital, HD. Rural/Cnty)	1.34	1.14	0.61	(0.31 – 1.19)	1.36	(0.76 – 2.43)
None/ER/Urgent Care	-8.28[□]	2.08	2.93*	(1.03 – 8.33)	1.18	(0.47 – 2.95)
Dr Office/Private Clinic	Ref.		1.00		1.00	

Ref. = reference group.

[□] p<= 0.0001, [□] p<=0.001, [□] p<=0.01, * p<=0.05

turn are more likely to report one than parents of children with asthma. The contrast between the below-the-line condition (adults with low back pain) and the above-the-line conditions (children with asthma and adults with diabetes) also was not significant (Wald F = 2.77, p<.10) but did indicate a similar trend.

Change in Health Status. Finally, we present the ordered logistic regression for the probability of health status *deteriorating* over the previous 12 months, so an odds ratio above 1.00 indicates that the probability of deteriorating health status is greater than it is for the reference category (Exhibit 10). Adults with low back pain were more than twice as likely to

report worsening health over the previous year than adults with diabetes. Above vs. below-the-line contrasts were significant i.e., those with LBP most likely to report worsening health status. However, once again, neither expansion nor capitation affected change in health status.

DISCUSSION

The purpose of this analysis was to determine if and how the three OHP interventions (mandatory enrollment in capitated health plans, eligibility expansion to 100% of the Federal Poverty Level, and restrictions on coverage through the use of a priority list for treatment of certain conditions) affect the quality of care delivered to Oregon citizens. Four dimensions of quality were studied: (1) the technical quality of clinical care, as measured by the extent to which care received by beneficiaries conforms to generally accepted standards, (2) beneficiaries' satisfaction with the clinical and administrative aspects of their care, as measured by a 10-item performance rating scale, (3) barriers to access, as measured by reports of unmet need for three services, and (4) change in health status under OHP coverage during the preceding year. Exhibit 11 summarizes the effects of each intervention on these outcomes.

Exhibit 11

Summary of OHP Intervention Effects

Outcomes	OHP Interventions		
	Capitation	Expansion	Priority List
Standard Care	Positive	Not Significant	Not Estimated
Ratings	Not Significant	Not Significant	Asthma>Diabetes>LBP
Unmet Need	Not Significant	Not Significant	Not significant
Health Status	Not significant	Not Significant	LBP Worse

Capitation

In 1996, approximately 40% of all Medicaid recipients were enrolled in some form of managed care²⁷, compared to recent estimates of 63%²⁸. The question has shifted from “Should Medicaid and other low income or vulnerable populations be enrolled in managed care systems?” to “What are the implications of doing so?” Capitation is hypothesized to affect the quality of care in two basic but opposing ways: it may influence providers to reduce expenditures, even at the expense of quality care²⁹ or it may encourage primary prevention with integration and coordination of services, hence improving the quality of care. Primary care case management is intended to do the latter without the risk of the former. To date findings of the effect of managed care on health outcomes have been mixed. In general, those in prepaid health care systems demonstrate no differences in health or functional status³⁰ or in unmet need¹⁵, but they do report improvement in health care ratings and satisfaction^{15,21}. However, the improvement in health care ratings may not hold true for more vulnerable populations where some studies have found decreased satisfaction with managed care.^{31,32}

Our study found that children with asthma who enrolled in FCHPs were more likely to receive care that met generally accepted standards than children who were served by the fee-for-service system. Although the percent receiving standard care is low, these percentages are better or comparable to other chart review benchmarks of OHP^{33,34} and other sites³⁵. Capitation had no influence on the perceived change in health status, health care ratings, and unmet need. Thus, beneficiaries’ own judgments about how they are being treated under OHP were the same in both delivery systems, but clinicians’ judgment about how well beneficiaries are being cared for found that the capitation system is doing a better job.

Our analysis enabled us to rule out several potential reasons for this difference, but not all. For example, use of the fee-for-service delivery system in OHP is much more common in rural Oregon than it is metropolitan areas, but a measure of urbanization was included in the models and was never significant. On the other hand, prior health status differences between FCHP and fee-for-service members could not be ruled out because our only measure of health status followed the reference period for the utilization reports that determined whether or not standard care was received. It is possible that fee-for-service members were less healthy before the utilization reference period, because persons with special provider relationships were permitted to use the fee-for-service system as an alternative to FCHP enrollment. However, if health status were the cause, we would expect that children in the fee-for-service system would be more likely than those in FCHPs to receive standard care, because of their special provider relationships. Instead, the FCHPs did better. It is more likely that the difference is attributable to better coordination of care in FCHPs, through use of primary care physicians, physician education and disease management programs; or that younger, more recently educated physicians who are more likely to follow practice guidelines³⁶ are also more likely to join FCHPs.

This finding is consistent with a growing body of knowledge, which suggests that Medicaid beneficiaries may do better in capitated health plans than they do in fee-for-service Medicaid. Fee-for-service Medicaid has long been criticized as a second class system, in which beneficiaries have trouble finding private physicians who will accept them or treat them equally with privately insured patients. It appears that, at least among children with asthma in Oregon, capitated health plans provide higher quality care, as measured by the important dimension of

clinical standards. However, we found no differences between capitation and fee-for-service in beneficiaries' perceptions of access, satisfaction, and health outcomes.

Eligibility Expansion

Extending public health insurance to an additional 100,000 persons was not a significant independent predictor of the receipt of standard care, health care ratings, unmet need, or change in health status in these vulnerable populations. The goals of OHP included expanding medical coverage to more persons, without impairing quality. The findings of no difference between traditional Medicaid and the expansion population suggest the State of Oregon was able to build sufficient health care capacity to cover both traditional and new enrollees. A limitation of our study is that we do not have pre-OHP survey data to determine if the quality of care is merely lower for *everyone* under OHP. However, previous studies demonstrate that children and adults under OHP, compared to a low income uninsured population, have increased health care utilization, reduced unmet need and are as satisfied with their care^{37,38}.

Limitations of Coverage: “Below-the-line”

In our study, the impact of coverage limitations through the OHP priority list is assessed by comparing those with above-the-line conditions with a below-the-line condition. The main effect compares adults with diabetes to adults with low back pain while contrast statements were used to compare any above-the-line condition (asthma or diabetes) with the below-the-line condition. The priority list as a cost-control mechanism was developed under the premise that OHP should not pay for services that have little or no demonstrated clinical value. The AHCPR clinical practice guideline recommends conservative management of low back pain with over-

the-counter medications, counseling and exercise. Thus, refusal to pay for services thought to have little or no clinical value should have no adverse effect on the patient. Yet, after controlling for other variables in the model, persons with low back pain had significantly lower health care satisfaction ratings and were more likely to report worsened health over the past year than those with diabetes. There are three possible explanations for worsening health among LBP patients. First, it may be that denial of services caused worsening health. Second, it may be the natural history of LBP systematically differs from diabetes such that those with LBP would report worsening health status whether or not they received services, thus confirming the process used to establish the list. Or finally, it is possible that persons with LBP report worsening health to vindicate their condition, i.e. reporting a worsening health status to justify their use of health care services. Despite the lower health care satisfaction ratings and reports of worsened health status, it is particularly interesting, and perhaps paradoxical, that the low back pain patients did not perceive greater unmet need. Unmet need is the measure that should have been most sensitive to coverage limitations. Given the strikingly high percentage of patients who reported worsened health status in the low back pain population, further investigation of the impact of the coverage limits is warranted.

CONCLUSIONS AND IMPLICATIONS FOR POLICY AND PRACTICE

Conclusions about OHP Interventions and Quality of Care

The analysis of tracer conditions suggests that the use of capitation in the Oregon Health Plan has had a favorable impact on beneficiaries, but it raises questions about the implications of the coverage limitations, even for conditions that are not believed to be amenable to clinical intervention.

- Beneficiaries enrolled in fully capitated health plans were more likely to receive standard medical care for their chronic conditions than those who were covered by fee-for-service reimbursement, without differences in perceived unmet need, satisfaction, or change in health.
- Adults with a “below-the-line” condition, low back pain, gave lower ratings to their health plans and were more likely to report worsening health than those with a covered condition, diabetes, even though they did not perceive a greater amount of unmet need.
- The third OHP intervention, eligibility expansion, increased access to insurance coverage in Oregon without introducing a dual class system with respect to quality of care.

With respect to capitation and coverage limitations, it is desirable to find better outcomes or at least no differences between the intervention and comparison groups. With respect to eligibility expansion, no difference is clearly preferable to differences in either direction, because it indicates that OHP is delivering the same quality care to traditional and expansion members. Thus, we find evidence that two of the three OHP interventions have been beneficial. On balance, these findings vindicate the choices made about the design of OHP.

Implications for Clinical Care and Administration

From the perspective of clinical medicine, the findings highlight the Oregon Health Plan’s future challenges and current strengths. Most importantly, the low percentages of children with asthma and adults with Type 1 diabetes receiving standard care in OHP is unsettling. Only about one-fifth of children with severe and moderate asthma and only one-third of adults with Type 1 diabetes appear to be receiving standard care. These data do not enable us to compare these proportions to those that exist in the privately insured population or in the Oregon population in general; nor do they enable us to determine if the situation has improved or deteriorated since OHP began operations in 1994. Although these proportions are similar to

other national studies, they are, nevertheless, alarmingly low and point to a need for improved clinical practice and disease management methodologies.

Dietary control is one of the self-care behaviors necessary for adequate glycemic control, and is one of the cornerstones of diabetes self-management. The low percentage of adults with diabetes reporting that they received dietary counseling (42%) within the last 12 months could reflect true lack of dietary instruction, lack of effective communication between provider and patient or recall bias. Yet patients with all three conditions gave their highest rating to “the way [my] doctor answers [my] questions and explains things” – perhaps lending credence to the hypothesis that instruction is not occurring. And despite the recall bias inherent in self-report, if a patient does not remember receiving educational counseling, they are likely not following a standard diet. In any case, these findings provide an opportunity for the OHP clinician to empower patients to manage their own disease.

In addition to the way doctors communicate, the ratings indicate the greatest degree of satisfaction with OHP coverage for both preventive and therapeutic care. However, they also point to several clinical and administrative areas for improvement. The availability of care on nights and weekends and the availability of advice and information by telephone were among the lowest rated aspects of care. OHP sets standards that health plans are required to apply; however, these data may indicate that the health plans must find new and innovative ways of meeting their patient’s medical needs by improving infrastructure.

Implications for Medicaid and Public Health Insurance Policy

One clear lesson from the Oregon Health Plan for health care financing policy is that eligibility expansion can provide improved health coverage without down-grading the quality of

care. Although anecdotal reports of subscribers unhappy with managed care systems abound, capitation in the Medicaid program appears to have had a favorable effect on quality. It may be that middle class populations with access to private health insurance and health care providers perceive restrictions imposed by managed care companies as barriers. Yet, Medicaid beneficiaries and low income families, with historically poor health care access, may view enrollment in a private health plan as an improvement. One might hypothesize that the implications of managed care differ for persons with good access to providers and those with poor access, and that these differences may be important when formulating public policy.

The OHP prioritized list of covered and uncovered services was developed through a multi-year, multi-step process involving all aspects of Oregon society. Our data demonstrate that patients with a non-reimbursed condition, low back pain, report worse health status and are less satisfied with their health care than patients with a condition for which medical therapy was covered, Type I diabetes. Our data are not sufficiently robust to allow definitive statements about the impact of the priority list, but suggest that decreasing health care funding for some chronic illnesses may have deleterious outcomes. Certainly, future study with comparison populations is warranted before the priority list can be endorsed.

The 1997 Balanced Budget Act contained the landmark SCHIP legislation that provides \$20 billion dollars to States over the next 10 years to provide health insurance to uninsured children in low income families. States are given a fair amount of flexibility in developing their programs, although most are adopting managed care and many are offering limited benefit packages. The Act also relaxed the mandate that States receive federal approval prior to mandating managed care enrollment for Medicaid beneficiaries. As States shift from payers of health care, with the role of oversight and monitoring of service overuse, to purchasers of health

care, their role as monitors of quality and service underuse becomes paramount, especially for vulnerable populations. Our results on the use of capitation and coverage limitations provides lessons that can be adopted by states in developing their SCHIP model, as well as in managing their Medicaid programs. Capitation appears to be a reasonable strategy for covering low-income persons without access to employment-based insurance, but coverage limitations, as embodied by the priority list concept, warrants further study.

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