



A recent study conducted by the Agency for Healthcare Research and Quality demonstrated that patient-reported data from administration of the SF-36 or SF-12 Health Surveys provides value in predicting future medical expenses.

Using the SF-36 and SF-12 Health Surveys to Predict Medical Expenses

The Background

Average employer health insurance premiums rose 7.7% in 2006 – two times the rate of inflation. Healthcare spending is more than four times the amount spent on national defense, while health insurance costs are the fastest growing expense for employers. To address these issues, benefit modifications, care management, consumer-driven health plans, and other approaches are being employed.

With so many variables affecting healthcare costs, it can be very difficult to predict what those costs will be. At the same time, however, policymakers, healthcare administrators and researchers, businesses, and others need accurate predictions so they can make informed decisions about important healthcare issues.

Meeting the Challenge

Models developed to predict future costs of patient care have commonly been based on various patient factors found in medical records and claims databases. Common examples include demographic variables (e.g. age, sex), current clinical diagnosis or condition (e.g. heart disease), and prior medical expenses. Meanwhile, many researchers have found that standardized measures of patient-reported health status or patient-reported outcomes (PROs) provide unique information that can add incremental power to risk prediction models¹⁻⁴. Not only can these assessment tools provide information that is not available from diagnoses or other health record information, they also may reveal the patient's thoughts about the desirability and efficacy of treatment, which, in turn, may influence their utilization of medical services.

Examining the Power of PRO Surveys

One PRO measure that has demonstrated its usefulness in predicting medical expenses is the SF-36[®] Health Survey from QualityMetric[™]. Several studies have found health status data from the SF-36 to improve the prediction of medical expenses beyond what is possible using demographic and/or medical information alone⁵⁻⁷.

The federal government's Agency for Healthcare Research and Quality (AHRQ) investigated the predictive power of PRO information in collaboration with QualityMetric by determining the ability of the abbreviated version of the SF-36 – the SF-12[®] Health Survey – to contribute to the prediction of medical expenses using a large U.S. national sample⁸. The AHRQ originally adopted the SF-12 as part of its annual Medical Expenditure Panel Survey (MEPS), which provides comprehensive information on the financing and utilization of medical care based on a national probability sample.

In its investigation, the AHRQ used data from over 5,500 respondents to a self-reported version of the MEPS, as well as their prior medical expense data extracted from claims databases. For each respondent, 30-day averages were computed based on medical expenses incurred during the six months prior to them completing the SF-12, and a period of six to 16 months after they completed the SF-12. Using these data, six models incorporating different combinations of demographic, clinical, and/or prior expense data were developed. Each model – both with and without the inclusion of SF-12 physical component summary (PCS) and mental component summary (MCS) scores – was evaluated for its ability to predict the expenses during the period after completion of the SF-12.



The Results

The AHRQ researchers found that the SF-12 scores added significant incremental value to the predictive ability of all six combinations of variables used to predict future expenses. For example, the amount of variance in actual healthcare expenses accounted for by the model that included only gender and age more than doubled with the inclusion of the SF-12 scores. Even with the best predictive model that included gender, age, other demographic variables, prior expenses, and existing medical conditions, the addition of PCS and MCS scores resulted in more than a 10% increase in the amount of variance in future healthcare expenses accounted for by the model. In short, the AHRQ found that one can get a good estimate of the level of expense risk without a lot of effort, making obtaining this information very cost-effective.

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A New Development: The Medical Expense Predictor

Building on the AHRQ findings, QualityMetric developed the Medical Expense Predictor™. Using age, gender, and SF-12 or SF-36 data, this capability provides a real-time prediction of average monthly medical expense that can be used to stratify individuals according to expense risk. Beyond this, the Medical Expense Predictor provides the appropriate benchmarks for interpreting the level of expense risk of an individual patient.

In addition, the ability of the Medical Expense Predictor to track costs over time can significantly facilitate the efforts of pharmaceutical, biotechnology, and medical device companies to demonstrate better outcomes and economics, and thus help them position their products for inclusion in the formularies of key players. “Pharmaceutical companies are using expenditure prediction as a way to translate a treatment’s health status benefits into reductions in healthcare expenses,” says Mark Kosinski, MA, Vice President and Senior Scientist, Outcomes Insight Consulting™ Division. “This translation helps them understand the expense risk of populations, particularly populations for which they have no other information.”

Insurance companies, self-insured employers, and managed care organizations can use the Medical Expense Predictor to help forecast resource utilization and service pricing through current health status data. As Kosinski points out, “Managed care and disease management companies are using health status information to stratify patients by predicted health expense, thus identifying those likely to benefit from more concentrated case management. Here, too, the ability to use easily obtained SF-12 or SF-36 data can make a substantial contribution absent the availability of any medical, demographic, or prior expense information. In such instances, the Medical Expense Predictor will give insurance plans and managed care companies the ability to risk stratify a sector of the population they have no information on.”

Check out the chart to the right to see a sample of the invaluable information provided by QualityMetric's Medical Expense Predictor.



PREDICTED MEDICAL EXPENSE GUIDELINE*

	PREDICTED PER MONTH EXPENSE	THIS INDIVIDUAL'S PREDICTED EXPENSE IS:
This individual	\$267	at the 66 th percentile of predicted expenses.
General U.S. population of same age and gender	\$193	38% above the general U.S. population average.
General U.S. population, healthy person	\$137	95% higher than the norm.
Condition Benchmarks (Note: These are not additive for the individual)		
Chronic back problems or sciatica	\$307	equal to or below the norm.
*References: Fleishman JA, Cohen JW, Manning WG, Kosinski M. Using the SF-12 health status measure to improve predictions of medical expenditures. Med Care 2006; 44, 154-163. Also presented at the Academy Health Annual Meeting, 2005.		

The predicted per month expenses listed are estimates only.

References

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About QualityMetric Incorporated

QualityMetric works with the world's largest healthcare and life sciences companies to measure health outcomes. Our products help market new drugs and biologics, track health improvement or decline, screen populations for disease, and identify future health risks. QualityMetric's patient-reported outcome (PRO) surveys provide scientifically valid assessments of both physical and mental health. Our PROs include the SF-36v2[®], SF-12v2[®], and SF-8[™] Health Surveys, the SF-10[™] Health Survey for Children, Asthma Control Test[™] (ACT[™]), Pain Impact Questionnaire[™] (PIQ-6[™]), and DYNHA[®] Dynamic Health Assessments. Our Outcomes Insight Consulting[™] Division can develop customized PROs and provide in-depth analysis of the results. QualityMetric's founder and CEO, John E. Ware, Jr., PhD is a thought-leader in the field of psychometrics and health outcome measurement. Visit us at www.qualitymetric.com.