

Willingness to Pay for Hereditary Breast Cancer Testing: Variation by Exposure to Direct-to-Consumer Advertising and Perceived Breast Cancer Risk

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Background: In September, 2002, Myriad Genetics, Inc. (Myriad) initiated an intensive 5-month direct-to-consumer advertising (DTC-ad) campaign associated with its proprietary BRCA 1/2 genetic test in Denver and Atlanta. This selected marketing provided a natural experiment between populations exposed and unexposed to the DTC-ad. Genetic testing is currently a covered benefit in many managed care organizations (MCOs); however, uncertainty exists about the value to members of the testing services. Also, little is known about the influence of the exposure to DTC-ads, perceived risk of breast cancer, and socio-economic factors on member valuations.

Objective: To employ "willingness-to-pay" (WTP) methodology to assess the value of genetic testing services for breast cancer risk assessment among female MCO members, and compare such values across markets exposed and not exposed to the Myriad DTC-ad. The primary hypothesis is that women exposed to the ad and those with a higher perceived breast cancer risk are likely to be willing to pay a positive amount for genetic testing.

Methods: Written surveys were mailed to a random sample of women aged 25-54 at Kaiser Permanente Colorado (KPCO) in Denver, where the DTC-ad took place, and at Henry Ford Health System (HFHS) in Detroit, where there was no DTC-ad. The survey included WTP questions that were varied both with respect to underlying 15-year breast cancer risk (60% vs 10%) as well as bidding algorithms (to test for starting point bias). Recipients were asked for their WTP directly for a genetic test for breast cancer risk, as well as for their willingness to increase their monthly insurance premium to cover the test. In addition to questions associated with knowledge, attitudes, and behavior towards genetic testing, several questions were included to measure the variation of socioeconomic status and ethnicity/race.

Results: The overall response rate was 47%. Sixty-three percent of respondents reported exposure to information regarding BRCA 1/2 genetic test; of those 45% report exposure to DTC campaign, 72% were KPCO members. No significant level of correlation was found across socioeconomic status variables including race/ethnicity, education levels, income levels, and marital and employment status. Controlling for SES and risk scenario, respondents exposed to information regarding BRCA 1/2 genetic test were 66% more likely than those not exposed to be willing to pay a positive amount out of pocket for the test, and those with high perceived level of risk were more than twice as likely. Although univariate models show those with higher perceived risk willing to pay for a higher insurance premium, the results did not hold for multivariate models. Of those willing to pay a positive amount, 60% were willing to pay \$200, and 24% were willing to pay \$500. Of those willing to pay an increased monthly insurance premium, 27% would pay \$15 more per month and 21% would pay \$5 more. Using chi-square tests of proportions and *t*-tests, no significant start point bias was found.

Conclusions: Preliminary analyses suggest that exposure to information regarding genetic testing along with a woman's perceived underlying cancer risk may positively influence her WTP for genetic testing services. Given that testing may only provide value for small percentage of the general population (est. 5%-10%), these results could support variation in co-pay and co-insurance by risk status.

Clinical and Financial Outcomes of a Medicaid Proton Pump Inhibitor Prior Authorization Program

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Background: Medicaid programs experienced double-digit increases in ambulatory prescription drug expenditures between fiscal years 1998 and 2001. Combined with increasing enrollment and health services costs and state budget shortfalls, Medicaid programs are taking assertive measures to manage drug expenditures.

Objective: To examine the clinical and financial outcomes associated with a proton pump inhibitor prior authorization policy in a Medicaid patient population.

Methods: Separate 6-month retrospective cohort analyses were conducted to estimate the clinical and financial impact of the policy. More than 1.2 million Medicaid enrollees with subgroup analyses of 5965 continuously eligible, potential anti-secretory drug users were included in the analyses. Interrupted time series analyses of anti-secretory prescription drug expenditures were performed. Anti-secretory drug expenditures, proportions of patients with at least 1 gastrointestinal diagnosis and gastrointestinal-related ambulatory and inpatient medical service visit, and subsequent gastrointestinal-related and total medical service expenditures were examined.

Results: There was a 91% decrease in proton pump inhibitor per member per month (PMPM) expenditures ($P < .001$) and 223% increase in histamine receptor antagonist PMPM expenditures ($P < .001$) in the month immediately following the implementation of the policy. A greater proportion of prior-authorization eligible enrollees who received a proton pump inhibitor (80.7%) had at least 1 diagnosis for a gastrointestinal condition than enrollees who received either an histamine receptor antagonist (64.1%; $P < .001$) or no antisecretory drugs (48.4%; $P < .001$). Two-part, finite mixture regression analyses indicated that the enrollees who received either an histamine receptor antagonist or no antisecretory drugs were no more likely to have had at least 1 gastrointestinal-related or any medical service visit or to have incurred greater visit expenditures than enrollees who received a proton pump inhibitor ($P > .05$).

Conclusions: Prior authorization for proton pump inhibitors had the effect of reducing utilization of high-cost proton pump inhibitors while encouraging utilization of lower-costing histamine receptor antagonists without evidence of adverse medical consequences.

Cluster-Randomized Controlled Trial of 3 Different Interventions to Improve Antihypertensive Prescribing in Primary Care

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Background: Academic detailing, also called educational outreach, has been shown to improve individual physicians' prescribing practices but is perceived to be costly and labor intensive and, as a result, is not widely used.

Objective: To compare traditional one-on-one individual academic detailing (IAD) with group academic detailing (GAD), and compare these methods with mailed guideline dissemination (MG) within 1 large managed care organization to improve the use of antihypertensive medications in primary care.

Methods: We conducted a cluster-randomized controlled trial, allocating 3 practice sites to IAD ($n = 235$ prescribers and 2478 patients), 3 to GAD ($n = 227$ and 2352), and 3 to MG ($n = 319$ and 3575). The goal of the intervention was to increase the use of diuretics and beta-blockers (DIUR-BB), the guideline-recommended first-line agents. The IAD intervention consisted of a single physician visit following established principles of academic detailing; the GAD intervention was a single group session incorporating those principles, also led by a trained physician.

Results: At baseline, sociodemographic characteristics and rates of prescribing DIUR-BB among newly diagnosed and treated patients with hypertension were almost identical in the 3 experimental groups: IAD = 57.6%, GAD = 59.1%, and MG = 57.6%. In the 9-month period following the intervention, rates of DIUR-BB use increased by 21.7% in IAD, 22.3% in GAD, and 10.8% in MG. Compared with MG patients, DIUR-BB use among patients with newly diagnosed hypertension was more likely in both IAD (OR 1.40; 95% CI, 1.07-1.84) and GAD (OR 1.30; 95% CI, 0.89-1.90), controlling for physician-level clustering. The effects of IAD and GAD were of similar magnitude. There was no apparent effect of the intervention on continued rates of switching patients previously treated with medications other than DIUR-BB to the guideline-recommended agents.

Conclusions: Both IAD and GAD improve antihypertensive prescribing over and above the dissemination of guidelines. If GAD is confirmed to be as effective and less expensive than IAD, it may represent a more attractive option for improving practice.

Results of a Randomized, Controlled Trial to Improve the Management of Osteoporosis After Fracture

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Background: Prior work found that 54% of women do not receive guideline-recommended bone mineral density (BMD) measurement or medication for osteoporosis after a fracture.

Objective: To report 6-month data from the Re-Fracture Intervention Trial (REFIT), which was designed to evaluate methods to increase the proportion of these patients who receive BMD measurement or a medication for osteoporosis.

Methods: The study enrolled 311 female Kaiser Permanente Northwest members aged 50-89 who had recently suffered an osteoporotic fracture but who had not received a BMD measurement or a medication for osteoporosis. The participants were randomly assigned to usual care or 1 of the 2 interventions: 1) patient-specific clinical guideline advice to the primary care provider (PCP) delivered through an electronic medical record (EMR) in-basket message (reminder); or 2) EMR reminder plus an advisory letter with educational materials mailed to the patient (patient reminder). We collected baseline and follow-up data from a questionnaire and our electronic databases. We used logistic regression to evaluate the response to the interventions. The primary outcome was BMD measurement or a medication for osteoporosis at 6 months.

Results: At 6 months, EMR reminder alone resulted in 51% of patients receiving a BMD measurement or an osteoporosis medication as compared with 6% in usual care ($P < .0001$). Electronic medical record reminder plus patient reminder resulted in 43% receiving a BMD measurement or an osteoporosis medication as compared with 6% in usual care ($P < .0001$). The effect of the EMR reminder alone was not significantly different from the EMR reminder plus patient reminder ($P = .23$). Fracture type, age, weight <127 lb, and diagnosis of osteoporosis were not significantly associated with response to the intervention. Participants with a higher Charlson comorbidity index were less likely to receive a BMD test measurement.

Conclusions: REFIT Phase I demonstrated that patient-specific clinical guideline advice to the PCP through an EMR in-basket message following a fracture is highly effective for increasing use of BMD measurement and osteoporosis medication. As EMRs become more widely adopted, this intervention could significantly improve the management of osteoporosis for many postfracture patients. The direct-to-patient intervention will need to be strengthened to improve outcomes.

Improving Osteoporosis Screening Among Elderly Women

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Background: The US Preventive Services Task Force and the National Osteoporosis Foundation recommend that women age 65 years or older be screened routinely for osteoporosis. Current estimates are that only 20% of this population has received a bone density test. Thus, a large number of elderly women are at risk of avoidable late-stage osteoporosis and its consequences.

Objective: To report preliminary findings of a randomized prospective study designed to evaluate strategies to enhance the quality of care for osteoporosis in this high-risk population.

Method: We identified women aged 65-89 who received their primary care from 15 ambulatory care clinics staffed by a large medical group in southeast Michigan between April 1, 2001, and March 31, 2003. The clinics were stratified by size and bone mineral densitometry (BMD) equipment availability, and randomized to 1 of 3 types of osteoporosis disease management strategies: (1) usual care; (2) mailed patient letters; and (3) mailed patient letters plus physician prompts. Women who received care from the clinics who had a BMD test, a diagnosis for osteoporosis, or a prescription drug claim for an osteoporosis-specific therapy (alendronate, risedronate, raloxifene, or calcitonin) were excluded. There were 10 565 eligible women included in the study, broken down as follows: Strategy 1 clinics (n = 3110); Strategy 2 clinics (n = 3368); and Strategy 3 clinics (n = 4087). Statistically significant differences in BMD testing rates were evaluated using generalized estimating equation approaches.

Results: Preliminary analyses indicate a BMD screening rate of 2% in the usual care group, compared to 2% in the mailed patient letter group and 9% in the mailed patient letter plus physician prompt group. Differences between usual care and patient mailed reminders alone were not statistically significant ($P = .67$). The use of patient mailed reminders plus physician prompts lead to significant improvements in BMD testing compared to both usual care and patient mailed reminders alone ($P < .001$). Results did not change with adjustments for clinic, race, or both.

Conclusions: Preliminary results indicate that the use of mailed patient reminders in combination with physician prompts can lead to significant increases in osteoporosis screening compared to usual care and the use of mailed patient reminders alone.

Effect of Changes in Medication Cost-Sharing on Oral Hypoglycemic Use Among Diabetes Patients

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Background: In recent years, health insurance plans have added pharmacy benefit options that substantially increase patient cost sharing. There are few current studies on how high levels of cost sharing might affect medication use by the chronically ill.

Objective: To compare change in oral hypoglycemic (OH) use among adults with diabetes mellitus (DM) who experienced increases in medication cost sharing compared with those who experienced constant medication cost sharing over a 12-month time period.

Methods: Quasi-experimental, time series with comparison group design. Adults with DM in 5 managed care organizations (MCOs) that experienced an increase in medication cost sharing (intervention, n = 13 407) were matched with those who had no increase (n = 13 407). All patients had sustained OH use in a 6-month pre-intervention period and a pharmacy benefit for the 12-month observation period. Patients were matched on pre-intervention benefit, type of OH use, and intervention year (1997-2000). The dependent variable was average daily dose (ADD) standardized to each patient's mean ADD in the 6-month pre-intervention period. The principal independent variable was change in patient cost per 30 days OH supply between the 6-month pre- and post-intervention periods. Effect of change in cost sharing on standardized ADD was estimated using both time series regression models and hierarchical linear models (to assess effects of patient covariates).

Results: At 6 months following an increase in cost sharing, patients with $> \$10$ increase (\$20 median increase) had 20% lower mean standardized ADD ($P < .05$) than that predicted from their pre-intervention trend in standardized ADD. Patients either with no change in cost sharing or with a \$1-\$5 (\$3 median) or a \$6-\$10 (\$6 median) increase did not experience a significant change between the pre- and post-intervention periods in the expected trend of increasing OH dose. 11.5% of those with $> \$10$ increase discontinued their pre-intervention OH medication compared with 6% of those with no increase ($P < .05$). Post-intervention mean standardized ADD among those with $> \$10$ increase remained significantly ($P < .05$) lower than that among those with no cost-sharing change after adjusting for patient age, gender, concurrent insulin use, and imputed household income.

Conclusions: Large increases in medication cost sharing ($> \$10$ increase per 30-days supply) were associated with significantly reduced OH use; more modest increases (\$1-\$10) were not. Whether these reductions in OH use are clinically important (eg, leading to worse glycemic control) remains to be investigated. (This paper has been submitted to Medical Care.)

Impact of Office Copayments on Office Visits in a Managed Care Environment

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Background: As healthcare costs continue to rise in the United States, cost sharing is becoming increasingly common even in prepaid integrated delivery sys-

tems (IDS). While patients are paying for a greater share of their healthcare costs, there is little data on how the cost sharing influences behavior in prepaid delivery settings.

Objective: To examine the effect of various levels of an office visit copayment on office visit rates.

Methods: In a retrospective cohort study using automated clinical databases, we examined the effect of office copayment level on office visit rates in 2001. All subjects had commercial insurance and were members of the Kaiser Permanente Northern California (KPNC) health plan. We classified the copayment into 4 categories: no copayment, \$1-9, \$10-\$19, and \$20-\$30 per office visit. We compared relative rates of office visits by copayment level using a Poisson mixed-effects model applied to monthly utilization counts, adjusting for age, gender, comorbidity, and month. This cohort is part of a larger study on cost sharing.

Results: There were 1 755 519 subjects with commercial insurance in 2001. Of these subjects, 19% had no copayment, 39.7% had a \$1-\$9 copayment, 40.5% had a \$10-\$19 copayment, and 0.8% had a \$20-\$30 copayment per office visit; the unadjusted rates of office visits per person-year were 4.69, 4.30, 4.00, and 3.79 in these copayment groups, respectively. After adjustment, the relative rate of office visits decreased 7.3% with the \$1-\$9 copayment (RR = 0.927; 95% CI, 0.923-0.931), 11% with the \$10-\$19 copayment (RR = 0.890; 95% CI, 0.886-0.894), and 15.8% with the \$20-\$30 copayment (RR = 0.842; 95% CI 0.827-0.857).

Conclusions: These data suggest that moderate office copayment levels are associated with lower office visit rates. Less clear is whether the reduction stems primarily from decreases in necessary or unnecessary care. Further research is needed to assess the potential effects (ie, are copayments safe or do they lead to delayed care and unfavorable clinical outcomes?).

Income, Out-of-Pocket Drug Costs, and Medication Adherence among Medicare Enrollees

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Background: Many proposals for Medicare drug coverage involve cost sharing and other forms of managed care. There is limited data on the out-of-pocket drug costs of Medicare members facing such arrangements or on the impact of these costs on patient behavior.

Objective: To examine self-reported prescription drug costs and medication adherence of Medicare enrollees in a large, managed-care integrated delivery system (IDS).

Methods: We conducted telephone interviews with a random sample of IDS members. The survey collected information on patients' out-of-pocket prescription drug costs and adherence behaviors during the last 12 months.

Results: In this sample of 648 subjects, 61.1% of subjects were female; 70.2% did not graduate from college; 53.4% reported an annual income less than \$35,000 in 2002 ("low income"); and 40.3% reported their health to be "very good" or "excellent." All subjects had some form of prescription drug coverage: 98.2% of subjects had any copayment; 80.9% had a tiered copayment; and 44.8% had an annual drug benefit cap. In the multivariate analyses, higher levels of cost sharing were associated with larger out-of-pocket costs during the past year ($P < .01$). Furthermore, 32.9% of subjects who reported spending more than \$500 in the past 12 months on drugs also reported being nonadherent because of the amount they had to pay for drugs. After controlling for demographic, socioeconomic, and clinical factors, higher out-of-pocket drug costs were significantly associated with higher rates of nonadherence ($P < .05$). In patients with low income, out-of-pocket costs as low as \$50 were significantly associated with nonadherence. Among high income subjects, out-of-pocket costs of \$500 or more were significantly associated with nonadherence ($P < .01$).

Conclusions: These findings suggest that Medicare patients with high out-of-pocket costs may not be adherent to their drug treatment regimens. In particular, low-income patients appeared to be very sensitive to out-of-pocket costs as low as \$50 per year. Future analysis will investigate the impact of nonadherence on clinical outcomes.

Ambulatory Care Visits: Squeezing 22 Minutes Into A 19-Minute Visit?

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Background: Balancing patient and provider demands for time during an ambulatory visit represents a significant clinical and economic challenge.

Objective: To examine actual visit times, patient satisfaction with time spent with the physician, and time perceptions of patients and physicians.

Methods: We collected video and post-visit questionnaire data from a convenience sample of patients and primary care physicians. We examined the time perceptions of how long physicians were in the exam room, stratified by whether patients felt they had adequate time with the physician. Using a mixed linear model, we evaluated differences in time estimates between the patient, physician, and a researcher watching the video.

Results: There were 192 patient-subjects, who tended to be female (61%) and nonwhite (59%), and had a mean age of 63 years. The 61 physician-subjects were predominantly male (59%), and had ≥ 10 years experience in the health system. Overall, 84% of patients strongly felt that their physician spent enough time with them during their visit. On average, these patients estimated physicians spent 22 minutes in the exam room, while physicians estimated 19 minutes; and the actual mean time was 19 minutes. In visits where patients were less satisfied, on average

the patients estimated physicians spent 19 minutes in the exam-room, while physicians estimated 20 minutes; and the actual mean time was 18 minutes. After adjusting for age, gender, and clustering by physician, highly satisfied patients reported significantly more time spent with the physician on average, compared with physicians' estimates or with actual measured time (difference = 2.6 minutes and 2.4 minutes, respectively [$P < .01$]). There were no statistically significant differences in actual visit times by patient satisfaction or between physician estimates and actual times.

Conclusions: Patients who are highly satisfied perceive spending significantly more time with the physician than actually occurred. In contrast, less-satisfied patients' time estimates did not differ from actual times, nor did physician time estimates. Similarly, there were no detectable differences in actual time between visits with varying patient satisfaction. These preliminary results suggest that there may be methods to help patients feel that they have spent an adequate amount of time with their physician within the current visit times.

Qualitative Analysis of Patient Reactions to Genetic Testing for Hereditary Cancer Risk

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Background: In September, 2002, Myriad Genetics, Inc. initiated an intensive 5-month direct-to-consumer advertising (DTC-ad) campaign for genetic testing for the BRCA1 and BRCA2 genes, projected to reach more than 90% of women in the Denver and Atlanta Metropolitan Areas aged 25-54 an average of 16.5 times each.

Objective: To determine if perceptions or concerns about genetic testing varied by exposure to the DTC-ad.

Methods: A survey was sent to 1600 randomly selected female members of Kaiser Permanente Colorado (KPCO—test site) and Henry Ford Health System (HFHS—control site) aged 25-54 years. The survey instrument began with a brief description of genes and hereditary risk for cancer, and women were asked to write a word or phrase that came to mind when thinking about the phrase "genetic testing for breast or ovarian cancer risk." A codebook was developed to classify themes and perceptions between those exposed to the DTC-ad and those not exposed.

Results: The survey had a response rate of 40%, with 64% reporting being exposed to the ad and 36% not exposed. Of the unexposed, 53% were from HFHS. Overall, there was an even distribution of women reporting a positive feeling about testing ("this is great!") vs those who thought it was "scary," with an additional 14% stating simply the word "cancer." Many reported the phrase made them think about prevention or cure for cancer. A small number also mentioned specific fears of insurance or job discrimination. Significantly more women at KPCO had questions about testing such as, "is it for me?" "can I test?" or "am I at risk?" or simply mentioned their family history ("my mother had cancer") vs. women from HFHS.

Conclusions: The idea of genetic testing for breast cancer risk elicits both positive and negative feelings, including misconceptions ("curing cancer"). Such may be barriers to uptake of genetic services or negatively impact a woman's counseling experience. These concerns could be incorporated into educational materials as well as elicited and addressed in counseling sessions.

The Near Absence of Osteoporosis Treatment in Older Men with Fractures

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Background: The burden of osteoporotic fractures in older men is significant, and treatment rates for secondary prevention are low.

Objective: To 1) characterize older men with fractures associated with osteoporosis; 2) determine if treatment rates for osteoporosis are improving; and 3) identify patient, healthcare benefit and utilization, and clinician characteristics that are significantly associated with treatment.

Methods: Retrospective cohort study using multiple logistic regression to evaluate pre-fracture factors for their association with osteoporosis treatment set in a nonprofit health maintenance organization in the United States in the 6-month post-fracture period.

Participants: Men aged 65 or older with any new fracture associated with osteoporosis between January 1, 1998, and June 30, 2001 (n=1171).

Results: Average age was 76.7 years; 3.3% had a diagnosis of osteoporosis and 15.2% a diagnosis or medication associated with secondary osteoporosis. Only 7.1% of the study population received a medication for osteoporosis following the index fracture, and treatment rates did not improve over time. Seventy-two percent of the treated group had a vertebral fracture. In the multivariate model, a higher value on the Charlson Comorbidity Index (OR 1.26, 95% CI 1.05-1.51), having an osteoporosis diagnosis (OR 8.11, 95% CI 3.08-21.3), chronic steroid use (OR 5.37, 95% CI 2.37-12.2), and a vertebral fracture (OR 16.6, 95% CI 7.8-31.4) were significantly associated with drug treatment. Bone mineral density measurement was rare (n = 13, 1.1%).

Conclusions: There is under-ascertainment of osteoporosis and modifiable secondary causes in older men with fractures. Fracture does not prompt sufficient bone mineral density measurement or treatment. Information systems merging diagnostic and treatment information can help delineate gaps in patient management. Interventions showing promise in other conditions should be evaluated to improve care for osteoporosis.

Electronic Data Collection from Patients on Breast Cancer Risk Factor Information in a Mammography Setting

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Background: Information on breast cancer risk factors is important to identifying high-risk groups who may be eligible for prevention activities, but the data collection process is time consuming. Data collection currently occurs at Group Health Cooperative (GHC) using a paper survey at the time of the mammogram.

Objective: To evaluate patient acceptance and feasibility of using an electronic data collection questionnaire that pre-fills some answers in an effort to reduce the amount of time spent completing the questionnaire and to improve the accuracy of data collected.

Methods: The Health Insurance Portability and Accountability Act compliant survey software was developed on a Fujitsu Tablet PC and incorporated pre-filled answers from each woman's previous survey. We piloted the prototype in one GHC clinic over a 3-month period. One hundred sixty women were randomized to use the electronic survey (n = 86) or the paper survey (n = 74 controls) and complete an evaluation form. We compared the distribution of Likert scale responses between the intervention and control groups, and between age groups (<60 vs ≥60 years old).

Results: Overall, 90% of women in the intervention group preferred using the electronic tablet compared to the paper questionnaire. Preference for the Tablet did not differ by age; however, women ≥60 years did not find the Tablet as easy to use as women <60 years. Every woman liked seeing her pre-filled answers; 97% stated that their pre-filled answers were accurate. The majority (65%) did not think that the Tablet was very easy to carry throughout their appointment.

Conclusions: Electronic questionnaires are feasible to use in a mammography setting and are preferred by nearly all women, even older women. Although the Tablet PC was feasible to use as a prototype, this configuration may not be suitable for full deployment in a setting where patient mobility and high volumes are necessary. Clinics elsewhere may have different technology requirements thus requiring further evaluation of different hardware and software options.

Exploring Racial Differences in Asthma Incidence and Age at Diagnosis

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Background: Researchers strive to identify definitive reasons for racial disparities in asthma morbidity and mortality. It is unclear as to when the disparity begins, as few studies have explored a racial divergence in asthma incidence. To do so would require a racially diverse population followed from birth.

Objective: To examine racial differences in the incidence and age of onset of asthma among children enrolled in a racially diverse managed care organization (MCO).

Methods: We obtained all inpatient/outpatient encounters for children born 1992-93, who were members of a large MCO, and who were continuously enrolled from birth through 12/31/98. Asthma was defined as any visit assigned the ICD-9 code 493.

Results: Over 6600 children met birth date criteria, and of those 3562 (53%) met enrollment criteria. The sample was 30% African American (AA), and 48% female. Overall cumulative incidence of asthma by age 6-7 years (yrs) of age, was 18.4% (95% CI = 17.1-19.7), with an overall mean age of diagnosis = 2.7 yrs (standard deviation = 1.7). Cumulative incidence of asthma for AA children was 22.9% (95% CI = 20.4-25.4) vs 16.5% (95% CI = 15.0-17.9) for non-AA children. A proportional hazards model revealed that AA were more than 30% more likely to have an asthma encounter by age 1-7 yrs when compared to non-AA children (hazard ratio[HR] = 1.36, 95% CI = 1.16-1.60, $P < .001$). Age at onset of asthma appeared similar by race; mean age for AA and non-AA was 2.8 yrs and 2.7 yrs, respectively. Adjusting for gender did not change the results (adjusted HR = 1.37, 95% CI = 1.17-1.61, $P = .0014$).

Conclusions: In summary, incidence of asthma by age 6-7 yrs was significantly higher for AA children vs non-AA children. Our results suggest that racial differences in asthma may begin very early in childhood. Racially diverse birth-cohort studies are needed to determine if differences observed in infancy drive the racial disparities in asthma prevalence and morbidity we observe later in childhood and adolescence. MCO pharmacy claims and encounter databases can be valuable tools in exploring these issues.

Hormone Replacement Therapy Utilization Pre- and Post- Women's Health Initiative HRT Trial Termination

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Background: In July 2002, the Women's Health Initiative (WHI) Study published their conclusions that led to the early termination of the hormone replacement therapy (HRT) trial of estrogen plus progestin in postmenopausal women with an intact uterus. In *JAMA*, they reported an increased risk of breast cancer, but also a decreased risk of osteoporosis. While the findings were headline news across the nation, it is not clear whether they impacted clinical practice or the health behavior of women.

Objective: To examine the impact of the WHI results on HRT usage.

Methods: Using claims data from 15 493 women aged 50-79 continuously enrolled in the Health Alliance Plan HMO from January 2001 through November 2003, we examined the counts of HRT prescriptions filled by this fixed cohort in the 18 months before and after the WHI results were published. Using the claims data, we were not able to determine whether each woman had an intact uterus or their exact menopausal status.

Results: Overall, the number of HRT prescriptions filled decreased over time. However, in the months immediately after July 2002, there was a steep drop in the number HRT prescriptions filled by the fixed cohort. In January 2001, 2320 HRT scripts were filled, 1973 in June 2002, 1837 in July 2002, 1617 in August 2002, 1467 in September 2002, and 742 in November 2003. The number of new HRT users increased through the first half of 2002 and dropped continuously after peaking in June 2002. The patterns observed were similar for the most commonly filled prescription, Premarin (estrogen plus progesterone/Wyeth-Ayerst), and all other HRT medications.

Conclusions: It appears that the publication of the WHI results and their subsequent discussion in the press affected the use of HRT in our study population. It is not clear whether the women, their clinicians, or both were the driving forces behind this reaction. The symptoms of menopause, such as hot flashes, sleeplessness, and bone loss can be disabling; however, some women have no symptoms. Future research should study the appropriateness of HRT given the different circumstances women may encounter with menopause.

Women and Hormone Use in the Light of New Evidence

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Background: Prior to the findings of the Women's Health Initiative (WHI), it was believed that hormone therapy (HT) provided numerous health benefits. With WHI, however, considerable doubt was raised regarding prior assumptions. We conducted a survey to better understand what women who were using HT are doing and thinking in the light of recent findings.

Objective: To assess HT usage (maintenance, discontinuation, or change), health behaviors, symptom control, and overall concerns among women at a large Midwestern health plan.

Subjects: Women who had a prescription for HT (PremPro or FemHRT) between January 1, 2002 and June 30, 2002.

Methods: Participants were identified through pharmacy records and stratified by duration of hormone use (recent users <1 year), women with 1-5 years of use, and long-term users (>5 years). A random sample of 10% from each stratum was selected for a total of 1200 subjects. Surveys were mailed with questions on hormone use, awareness of study findings, changes in medication use or health behaviors, what influenced changes, symptoms, use of alternative medications, and overall concerns.

Results: The response rate was 70%. Of these, 69% claimed they discontinued HT. The main reasons stated for starting HT were symptom relief (70%), and bone health (46%). Many women (35%) did not consider how long they would take hormones. Of those that did, however, only 21% thought it would be short term. Most assumed they would continue on HT "as long as they felt okay." When asked how they learned of the new study findings, twice as many cited television and magazines than their health plan. Only 19% claimed to make no changes, others discontinued, stopped then restarted, or changed their HT. Minimal change was reported in use of alternative medications or in life style.

Conclusions: Women appear to be heeding the warnings and taking initiative for changes regarding HT, rather than being encouraged at the initiation of their providers. They are concerned about current symptom control and also if past usage puts them at risk for future health problems.

Feasibility of Screening for Peripheral Arterial Disease in Populations Not Known to Have Cardiovascular Disease

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Objective: Peripheral arterial disease (PAD) is a coronary artery disease equivalent in the risk of future cardiovascular events. We assessed the feasibility of routine screening for PAD in patients not known to have coronary heart disease (CHD) in primary care settings.

Methods: We identified patients 50 years and older using administrative databases of a managed care organization in central Massachusetts. Patients were eligible for inclusion in the study if they were 70 years and older, or if they were aged 50 through 69 years with a diagnosis of diabetes mellitus, hyperlipidemia, hypertension, and/or cigarette smoking as documented in the administrative databases. Participants completed a telephone questionnaire to ascertain their medical history. We excluded patients with a diagnosis of CHD and/or PAD. Measurements of the ankle-brachial index (ABI) on persons at risk were taken; PAD was diagnosed if one or both legs had an ABI of 0.90 or less.

Results: ABI testing was performed on 717 subjects. PAD was diagnosed in 54 (7.5%, [95% CI, 5.6%-9.4%]) of the participants. Age was significantly associated with a diagnosis of PAD ($\chi^2 = 35.6, P < .0001$). Persons 70 years and older had about a 6 times greater risk of having PAD compared to those aged between 50 and 69 years (12.5%, vs 2.5%; unadjusted OR: 5.6; 95% CI, 2.7-11.6; $P < .0001$). In the population studied, a history of smoking cigarettes (OR: 2.1; 95% CI, 1.2-3.9, $P = .01$) was also a significant predictor of having PAD.

Conclusions: Undiagnosed PAD is common among older persons not known to have CHD, but screening for PAD should target only persons at high risk. More research is required to better define the role of routine ABI testing in primary care settings, especially among younger patient populations.

Colorectal Cancer Screening in Primary Care

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Background: Despite evidence-based recommendations for colorectal cancer (CRC) screening, reported screening rates remain low and the factors associated with them are not well understood.

Objective: To estimate 5-year CRC screening procedure use and associated factors among insured, primary care patients.

Methods: Retrospective cohort analysis using automated clinical and administrative data. Eligible patients were aged 55-70 with a visit to a primary care (PC) clinic in 2002; had no history of CRC or related disease; and were continuously enrolled in an affiliated health plan for the 5-year period ending December 31, 2002 (n = 8256). Per evidence-based guidelines, CRC screeners were defined as those receiving at least 1 sigmoidoscopy, colonoscopy, or barium enema, or 3 or more fecal occult blood tests (FOBTs) within the prior 5 years. Generalized estimating equation approaches were used to test for adjusted and unadjusted associations with screening receipt.

Results: Average age of the cohort was 61 years; 59% were female, 34% African American, and 72% married. In 2002, 48% of the cohort met the criteria for CRC screening receipt. Of those, 6.4% had a colonoscopy, 17.1% a sigmoidoscopy, 1.9% a barium enema, 8.4% 3 FOBTs, and 14.2% a combination of these services. Although FOBT receipt increased over time (1998, 16.8%; 2002, 23.2%), on average individuals received <1 test and only 19.0% received 3 or more FOBTs during this period. In models that accounted for the nonindependence of patients receiving care from the same physician and that adjusted for age, sex, race, marital status, income, PC visit frequency, Charlson comorbidity index, and clinic, we found CRC screening was significantly ($P < .05$) associated with increasing age (OR = 1.03), being married (OR = 1.15), income (OR = 1.07 per \$10 000), PC visits (OR = 1.06), decreasing Charlson score (OR = 0.98), and clinic affiliation.

Conclusions: Even among an insured population, less than half of patients presenting in a PC clinic had been screened for CRC. Specifically, younger, unmarried persons with relatively more comorbidities and fewer PC visits were less likely to have been screened. Also, those residing in low-income neighborhoods were less likely to have been screened. Addressing the CRC screening needs of both individuals with potentially competing comorbidities and those with relatively limited PC contact presents a challenge, particularly without overwhelming already busy PC practices.

Documentation of Tobacco Services in the Medical Record: Promoting Treatment and Quality of Care

Quinn VP, Stevens VJ, Smith KS, Ritzwoller D, on behalf of the HIT study investigators

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Background: The US Public Health Service clinical practice guideline for treatment of tobacco use calls for health systems and clinicians to identify, document, and treat every smoker seen in a healthcare setting. Health maintenance organizations can play an important role in addressing the substantial health and economic burdens associated with smoking. Documentation of the recommended "5 A" tobacco services (ask, advise, assess, assist, and arrange) in the medical record facilitates identification and treatment of smokers, and is essential for continuity of care.

Objective: To assess clinician compliance with national and health plan tobacco control policies through review of the outpatient medical records of smokers.

Methods: The HMOs Investigating Tobacco (HIT) study was conducted in 9 nonprofit HMOs participating in the National Cancer Institute-funded Cancer Research Network. Together these health plans serve more than 8 million Americans and have a 30% minority enrollment. The HIT study reviewed the medical records of 2644 smokers identified in a mailed survey.

Results: In notations from 12 months of primary care utilization among smokers who reported making at least 1 visit, we found documentation that 89% of smokers were asked about smoking, 47% were advised to quit, 18% were assessed for their willingness to quit, 22% were assisted with self-help, behavioral, or pharmacotherapy treatments, and 1% had a follow-up contact arranged. These rates are substantially lower than those reported by the smokers. For example, we only found documentation of advice among half of the smokers who told us they were advised, and for assistance only among 26% who reported receiving treatment. Results from plans with electronic medical records were similar to results from plans with traditional paper charts.

Conclusions: All plans in the HIT study have clinical practice guidelines that call for the identification and treatment of tobacco use. Reports from smokers and evidence from the medical record reveal there is substantial room for improvement in delivery of the "5As." Documentation of tobacco services in the medical record remains a missed opportunity to improve tobacco control efforts and quality of care.