Abstract Session C3: Health Disparities

Identifying Patients at Increased Risk for Not Completing Preventive Cancer Screening Tests Steven J. Atlas \(^1\); Jeffrey Ashburner \(^1\); Richard Grant \(^1\); Sanja Percac-Lima \(^1\); Adrian Zai \(^1\). \(^1\)Massachusetts General Hospital, Boston, Massachusetts . (Proposal ID # 9207)

BACKGROUND: Electronic clinical data sources may be useful for identifying patients at increased risk for not completing preventive cancer screening tests. As part of an effort to design a population-based, patient-centric approach to comprehensive cancer screening, we developed an algorithm to identify high-risk individuals who might benefit from tailored interventions by patient navigators.

METHODS: Using outpatient claims and scheduling system data, patient registration data, and information drawn from electronic health records, we identified all eligible female patients within one practice-based research network (PBRN) who were overdue for breast, cervical, and/or colorectal cancer screening as of December 31, 2008. We developed an algorithm to assign points representing increased risk for not completing a screening test using total number of overdue screening exams (1-3 exams, 1 risk point for each overdue exam), language spoken (1 risk point for non-English), appointment no-show history over the prior year (1 risk point for 1 no-show visit and 2 risk points for ≥ 2 no-show visits in the prior year), and prior screening history (1 risk point for each exam ≥ 5 years overdue). We categorized patients into low (≤ 2 risk points), moderate (3 risk points), and high (≥ 4 risk points) risk for cancer screening non-compliance. We then followed this patient cohort over the next year (1/1/2009 – 12/31/2009) and compared cancer screening test completion rates by risk category using linear trend tests.

RESULTS: Among 19,565 women overdue for breast, cervical, and/or colorectal cancer screening, 15,563 (79.6%) were overdue for one screening exam, 3366 (17.2%) were overdue for two screening exams and 636 (3.3%) were overdue for three screening exams (mean: 1.24, SD: 0.50); 1654 (8.5%) did not speak English, 1957 (10.0%) had at least 1 no-show appointment in the prior year, 764 (3.9%) had ≥ 2 no-show appointments in the prior year, 6720 (34.4%) had no prior screening history for 1 exam, and 622 (3.2%) had no prior screening history for 2 exams. Based on our algorithm, 15,138 (77.4%) were classified as low risk, 2736 (14.0%) were classified as moderate risk, and 1691 (8.6%) were classified as high risk for screening non-compliance. Screening test completion rates over the following year were 17.5% for low risk patients, 15.9% for moderate risk patients and 12.1% for high risk patients (test for trend, p

CONCLUSION: Our algorithm using variables commonly available in electronic data systems was modestly effective in prospectively identifying patients at increased risk for not completing cancer screening tests. Additional efforts are needed to identify patients within primary care networks at increased risk for non-compliance.

BACKGROUND: Coronary artery bypass grafting (CABG) has declined in frequency in the United States during the past decade. It is uncertain if this decline has been similar among white and black patients. Because hospitals may be unlikely to abandon their cardiac surgery programs despite declining surgical volumes, it is also unclear if declining CABG volumes have increased the proportion of whites and blacks receiving CABG at low-volume hospitals. Prior research indicates patients at hospitals with low CABG volumes (i.e., less than 150 cases/year) have worse surgical outcomes than patients at high-volume centers.

METHODS: Medicare claims from 2001 to 2008 for patients age 65 and older were analyzed to determine the number of white and black patients undergoing CABG in each year. Hospital identifiers on these claims were used to determine the annual number of U.S. hospitals providing CABG services. The total Medicare CABG volume at each hospital was calculated for both 2001 and 2008, and hospitals with fewer than 75 Medicare-reimbursed CABGs were designated as low-volume centers (Medicare CABGs constitute approximately 50% of all CABGs, thus hospitals with fewer than 75 Medicare CABGs were likely to be low-volume centers). The percentages of black and white patients undergoing CABG in low-volume hospitals in 2001 were compared to the corresponding percentages of black and white patients undergoing CABG at low-volume hospitals in 2008.

RESULTS: There was a 27% decrease in the annual volume of CABGs among white Medicare patients from 2001 (152,000 cases/year) to 2008 (111,400 cases/year), but the decline among black Medicare patients was only 14% between 2001 (7,242 cases/year) and 2008 (6,248 cases/year) (p<0.001 for the difference in slopes). The number of U.S. hospitals offering CABG increased by 11% from n=1,039 in 2001 to n=1,154 in 2008 (p<0.001). The percentage of white CABG patients undergoing surgery at hospitals with low CABG volumes increased from 8% in 2001 to 16% in 2008 (p<0.001). The percentage of black CABG patients undergoing surgery at low-CABG-volume hospitals increased from 13% in 2001 to 21% in 2008 (p<0.001).

CONCLUSION: The decline in CABG volume during 2001-2008 was more pronounced among white patients than among black patients, suggesting that over time, whites were more likely than blacks to receive alternative treatment for severe coronary artery disease. Despite the national decline in CABG volume, we observed a paradoxical increase in the number of U.S. hospitals performing CABG surgery. Hence, there was a substantial increase in the fraction of all CABGs performed at low-volume centers, but the proportion of black CABG patients at low-volume centers was substantially greater than the proportion of white CABG patients at low-volume centers. If low-volume hospitals persistently have worse CABG outcomes than high-volume centers, these findings portend increasing racial disparity in CABG outcomes over time.
Neighborhood Characteristics Associated with Access to Patient-Centered Medical Homes

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BACKGROUND: Patient-centered medical homes have gained prominence as models to promote high quality, cost-effective primary care. Evidence for significant racial/ethnic and geographic disparities in access to medical homes exist, however, the factors contributing to these disparities are not well established. Our study examined whether community characteristics, such as social cohesion, built environment, and perceived neighborhood safety are associated with access to patient-centered medical homes and are potential contributors to this disparity in access for children.

METHODS: We analyzed the 2007/2008 National Survey of Children’s Health (NSCH), a nationally representative cross-sectional survey of parents/guardians of children, ages 0-17, that assessed neighborhood characteristics and access to a medical home (n=84,474). Our main outcome was access to a patient-centered medical home, measured by a composite score constructed from a total of 19 NSCH survey questions based upon the American Academy of Pediatrics’ medical home definition. Our primary predictors were neighborhood cohesion, perceived community safety, the built environment measured by the number of neighborhood amenities (e.g. parks, sidewalks), and the number of neighborhood detractors (e.g. vandalism). For the predictors determined to be significantly associated with medical home access in unadjusted analyses, a multivariable logistic regression model including all predictors assessed access to a medical home, adjusting for age, gender, race, insurance type and status, poverty level, parental education level, primary language, family structure, household employment status, geographic region, and children with special health care needs. Analyses were conducted with SUDAAN software to account for the complex survey design.

RESULTS: Over 93% of all children had access to a personal provider and usual source of care. Access to medical homes was reported for 62% of all children and was more common among children who were Non-Hispanic white, privately insured, in higher income households, and without special health care needs. Adjusted analysis revealed three of our four predictors were independently associated with access to a medical home. Children living in communities perceived as unsafe were less likely to have access to a medical home as compared to children living in communities perceived as safe (adjusted OR 0.70; 95% CI: 0.69, 0.79). Children living in neighborhoods with one amenity as compared to those with four amenities, were also less likely to have access to a medical home (OR 0.72; 95% CI: 0.62, 0.84). Similarly, children living in less cohesive neighborhoods were less likely to have access to a medical home than those living in very cohesive neighborhoods (not cohesive: OR 0.54; 95% CI 0.48,0.61; somewhat cohesive: OR 0.72; 95% CI 0.65, 0.80; cohesive: OR 0.81; 95% CI 0.74, 0.89).

CONCLUSION: Our study suggests that several neighborhood characteristics are independently associated with access to a patient-centered medical home. Understanding the social and environmental factors that impede access to new models of health care delivery is essential to informing policies that reduce disparities in access to such models. Efforts to increase patient-centered medical homes in such at risk, disadvantaged communities should be a priority to improve primary care for children.
Social Disparities in Mail-Order Pharmacy Use: An Example of the Inverse Care Hypothesis
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BACKGROUND: A third of all chronic disease prescriptions in the US are filled by mail. Use of Mail-Order Pharmacy (MOP) has been associated with improved adherence, better LDL-C control, and cost savings for health plan operations when compared to community (walk-in) pharmacies. Tudor-Hart’s inverse care hypothesis posits lagging uptake of innovations by vulnerable populations due to resource and access barriers (resulting in more care for those who need less, and less care for those who need more). While we have reported ethnic disparities, there has not been formal evaluation of disparities in mail-order pharmacy across other social indicators, or studies of how incentives to increase use of MOP may affect existing disparities in MOP utilization.

METHODS: We evaluated social disparities in prevalent use of MOP (defined by any mail order refills in year prior to baseline survey) in a sample of 17,758 Kaiser Permanente patients with diabetes who responded to a survey (62% response rate) from the Diabetes Study of Northern California (DISTANCE). Each subject had a pharmacy benefit and had filled a cardiometabolic medication (diabetes, anti-hypertensive, or lipid-lowering) in the year prior to baseline. We also evaluated new MOP use (i.e., incident use among subjects without previously recorded MOP use) during the 12 months after a new financial incentive was offered to promote MOP in specific subsets of pharmacy benefit beneficiaries. We used primarily unadjusted summary statistics (%), but also specified difference-in-difference models using modified Poisson regression models with robust standard errors to estimate relative risk.

RESULTS: There was markedly lower prevalent use of MOP among those with lower income (25% with incomes under $25K vs. 50% in $80K+), less education (27% in no degree vs. 43% in college grads), inadequate health literacy (32% vs. 43% in adequate HL), non-English speakers (23% vs. 38% in English speakers) and minority patients (25% in African Am and Latinos, 48% in Asians, 53% in Whites)(p<0.0001 for all). Adjustment for age, sex, self-reported difficulty navigating the phone refill system, depressive symptoms, and distance from home to pharmacy did not change patterns substantively. Among the subset of previous non-users, 36% became MOP users in the year after being offered a financial incentive compared to 9% among those not offered the incentive. Among non-users offered incentives, uptake was inversely related to income (see figure). Similarly, greater response to incentives was also observed for other social indicators of advantage (e.g., adequate health literacy).

CONCLUSION: We observed substantive social disparities in the prevalence of MOP use. Financial incentives to enroll greatly increased new MOP use among previous non-users overall, but paradoxically, poorer patients were less likely to initiate use despite offerings of reduced out-of-pocket costs. While our study did not examine adherence and health outcomes, it does suggest that health plans need to tailor and promote innovations such as MOP for vulnerable populations, in order to attenuate disparities that may be exacerbated by broadly applied quality improvement initiatives.
Geographic Variation in the Impact of Massachusetts Health Reform on Use of Referral-Sensitive Inpatient Procedures among Minorities and Low Income Populations Amresh D Hanchate 1; Karen Lasser 2; Danny McCormick 3; Meredith D Amore 4; Nancy Kressin 5. 1Boston University School of Medicine, Boston, Massachusetts; 2Boston University School of Medicine, Chestnut Hill, Massachusetts; 3Harvard Medical School, Cambridge, Massachusetts; 4Boston Medical Center, Boston, Massachusetts; 5Boston University School of Medicine, West Roxbury, Massachusetts. (Proposal ID # 11281)

BACKGROUND: While the landmark 2006 Massachusetts (MA) health reform sharply increased insurance coverage to near-universal levels, little is known about the extent to which it increased access to care, the variation in gains in access across the state and the mediating role of local physician availability. Specifically, few prior studies have examined the impact of the reform on use of inpatient surgical procedures whose receipt is sensitive to outpatient physician referral and to the presence of insurance coverage. Such procedures are typically underutilized by minority and low-income populations.

METHODS: Using discharge data from all non-federal MA hospitals from 2004-09 (N=5,177,087 discharges), we identified all non-obstetrical major therapeutic procedures for patients aged>=40 and for which >=70% of hospitalizations were initiated by outpatient physician referral (high-referral rate procedures). For pre- and post-reform periods, defined as the 21 months preceding and following implementation of health reform (7/1/2006 – 12/31/2007), we estimated county-level procedure rates, and their changes, for those aged 40-64. We adjusted for secular changes unrelated to health reform by capturing corresponding changes for those aged≥70, as they are covered by Medicare and unaffected by the health reform. We used the county-level Health Professional Shortage Area designation from the Department of Health and Human Services as the indicator of local primary care practitioner availability. Using procedure counts aggregated at the county-level, and stratified by sex, age, race/ethnicity or income and year (N=2,240), we estimated hierarchical Poisson regression models with a difference-in-difference specification treating those aged≥70 as the comparison cohort. Statistical significance was assessed at a p<0.05 level.

RESULTS: We identified 22 high-referral rate procedures for which the outpatient referral proportion averaged 90%; these included musculoskeletal (joint replacement), cancer treatment (colorectal resection) and cardiovascular (heart valve) surgical procedures. Adjusted for secular changes unrelated to health reform, the post-reform statewide procedure rate for those aged 40-64 increased by 6.7%; the corresponding increase was larger among lower income populations (low income=12%; medium income=13%; high income=2%) and among Hispanics (Hispanics=19%; Blacks=5%; Whites=6%). Variation in post-reform changes in procedure rates across the counties was large, with an interquartile range of [2%,12%]. Corresponding post-reform procedure rate changes among subpopulations were also large: low income population (interquartile range=[8%,12%]); Hispanics (interquartile range=[11%,77%]); Blacks (interquartile range=[0%,18%]). Increase in procedure use was significantly greater among the 6 counties with greater primary care physician shortages than the remaining 8 counties (11.4% vs. 5.4%).

CONCLUSION: Following health reform, use of major inpatient surgical procedures that are primarily initiated by outpatient referral increased among those aged 40-64, including among minority and lower income subpopulations, indicating improved access to care. Variation in these gains by county was substantial. Counties with greater primary care provider shortages experienced larger increases in procedure rates. Further research is needed to better understand the causal processes underlying the geographic variations.
Ten-year Trends in the Quality of Care and Racial Disparities after the Veterans Affairs Organizational Transformation Amal Trivedi; Regina Grebla; Steven Wright; Donna Washington. Providence VA Medical Center, Providence, Rhode Island; VA Office of Quality and Performance, Providence, Rhode Island; Greater Los Angeles VA Medical Center, Los Angeles, California. (Proposal ID # 11456)

BACKGROUND: The quality of care in the VA improved following an organizational transformation in the 1990's, but it is not known whether this improved clinical performance was accompanied by narrowed or widened racial disparities. We assessed trends in overall quality and racial disparities in quality for white and black enrollees in the VA healthcare system from 2000-2009 and examined the role of geography, site of care, and socioeconomic status as contributors to racial disparity over time in the VA.

METHODS: We linked individual-level data from the VA's External Peer Review Program (EPRP) data on quality of care with Medical SAS datasets, which provided sociodemographic characteristics. We supplemented race data from Medical SAS with Medicare enrollment data, which reduced missing race data to <1%. For each quality indicator, we used generalized linear regression to assess the independent effect of race, year, and a race-year interaction on achievement of that indicator, adjusting for demographic characteristics, Census region, and a VAMC-level fixed effect. The sample included 918,327 white and 152,700 black VA enrollees.

RESULTS: Black enrollees were younger, more likely to be residing in the South, and had lower area-level income and education than white enrollees. With the exception of breast cancer screening, aggregate performance improved over time for all indicators. Absolute differences in performance rates between white and black enrollees were less than 2 percentage points for 5 of 6 process-of-care measures during each study year. However, disparities for the four intermediate outcomes indicators ranged from 5.5 percentage points for HbA1c control in diabetes to 8.0 percentage points for cholesterol control among persons with coronary artery disease (p<0.01 for white-black comparisons). There were modest declines in racial disparity for blood pressure control (7.7 to 4.9 percentage points; p<0.01 for race-year interaction) and cholesterol control among persons with coronary artery disease (9.5 to 7.4 percentage points; p<0.01 for race-year interaction). Racial disparities were statistically unchanged for HbA1c control and cholesterol control in diabetes. Adjustments for VAMC, Census region and area-level socioeconomic status produced minimal change in these disparities.

CONCLUSION: The quality of care improved and racial disparities were minimal for most measures of the process of care from 2000-2009. However, these improvements were not accompanied by meaningful reductions in racial disparity for important clinical outcomes. Disparities in outcomes measures were driven by different outcomes for white and black enrollees receiving care in the same VA medical center rather than concentration of black Veterans in lower performing VA facilities.