Effect of the ACGME 16-hour rule on internal medicine intern educational opportunities

D.G. Stover, C.N. Theobald, J. Hathaway, N.N. Choma, N.B. Peterson, J. Green, J. Denny, Internal Medicine, Vanderbilt University Medical Center, Nashville, TN;
CONTROL ID: 1329844

Background: The most recent regulations regarding resident duty hours became effective in July, 2011 and included restriction of shifts to a maximum of 16 hours for interns in all specialties. There is little objective data regarding the impact of these new duty hour limits on resident education. We hypothesized that the duty hour changes would not have a significant impact on intern educational opportunities.

Methods: Vanderbilt University Medical Center is a large tertiary care hospital in Nashville, TN with 47 interns in 2010 and 50 interns in 2011. We evaluated intern educational experience at our university hospital training site over the first six 4-week blocks of the 2010 and 2011 academic years. All inpatient services went from a 30-hour maximum shift length (2010) to a 16-hour maximum shift length (2011). Using KnowledgeMap Portfolio, a concept-based curriculum management program that captures all trainee-authored notes written in the electronic medical record, we evaluated several objective metrics: number of notes written (history and physical or daily progress note), number of unique patients seen, numbers of five common procedures (arterial line placement, central line placement, thoracentesis, paracentesis, and lumbar puncture), and attendance at two academic conferences. All analyses were limited to inpatient experiences and restricted to intern experiences. We also compared average weekly intern duty hours.

Results: When comparing the first six blocks of 2011 to 2010, interns cared for more unique patients (mean 140 vs. 118 patients per intern; p=0.005) and wrote more history and physicals (mean 87 vs. 73; p=0.005). There was no difference in the number of daily progress notes (289 vs. 286, p=0.92) and overall notes (376 vs. 360, p=0.51). There was no difference in the median number of procedures performed (4 vs. 3 per intern p=0.71) or exposure to any individual procedure. Attendance was higher at the weekly noon chief resident conference (68% vs. 60% p<0.0001), but unchanged at morning report conferences (79% vs. 78%, p=0.49). There was no difference in average weekly duty hours per intern (69.4 vs. 68.2 hours/week; p=0.293).

Conclusions: Using four objective metrics of educational opportunities – notes written, unique patients seen, procedures performed, and attendance at academic conferences – we demonstrate that educational opportunities for interns were not decreased after implementation of 16-hour shifts. In fact, our data suggests that interns cared for more unique patients, did more initial patient evaluations (history and physicals), and had higher attendance at a weekly educational conference. It will be important to evaluate the impact of these increased opportunities on medical knowledge and decision-making over the course of residency training. To our knowledge, this is the first study to objectively evaluate the impact of the 16-hour rule change on intern education.
Physician Anxiety due to Uncertainty and the Use of Race in Medical Decision Making

B. Cunningham, L.A. Cooper, General Internal Medicine, Johns Hopkins School of Medicine, Baltimore, MD; S.L. Sellers, Family Studies & Social Work, Miami University, Oxford, OH; V.L. Bonham, Social and Behavioral Research Branch, National Human Genome Research Institute, Bethesda, MD;

CONTROL ID: 1340393

Background: Physicians must manage uncertainty from ambiguous clinical presentations, incomplete information, multiple diagnosis and treatment possibilities, and poor communication between physicians and patients. Studies show that uncertainty leads to higher rates of repeat tests and healthcare costs. The 2003 Institute of Medicine report, Unequal Treatment, hypothesized that clinical uncertainty may promote the activation of prejudice and stereotypes. When there is uncertainty, a physician may treat the patient according to prior beliefs about the group to which the patient belongs, and by doing so, may poorly match care to the patient’s needs. This study evaluates whether anxiety due to clinical uncertainty is associated with a higher propensity, among general internists, to use race as a heuristic in clinical decision-making.

Methods: The Health Professionals’ Genetics Education Needs Exploration (HP GENE) survey is a national web and mail survey developed to describe physician knowledge and clinical application of genetics and genomics. The survey was sent to a random sample of 1,738 practicing general internists Apr-Dec 2010. We measured anxiety due to clinical uncertainty (ACU) using a previously validated 5-item Likert scale by Gerrity et al. (1990, 1995). Bonham and Sellers Racial Attributes in Clinical Evaluation scale (RACE) is a new 7-item Likert scale (Cronbach’s alpha 0.86). Two items relate to the use of race in determining genetic risk; 2 relate to medication choice and dose; and 3 relate to other aspects of clinical practice, such as initiating screening, how aggressive to be in treatment, and self-reported frequency of considering race. We used multivariate linear regression to assess the association of ACU with RACE, first coding ACU as a continuous predictor variable and then recoding it as a categorical variable (low, low-moderate, moderate, and high anxiety).

Results: Responses were obtained from 787 (45%) of the sample. Mean age was 48.6 years. 65% were male; 67% white, 20% Asian, 6% black, 8% another race; 30% foreign-born; and 75% US medical graduates (USMGs). The mean score on the anxiety due to clinical uncertainty scale (ACU) was 19.9 (SD=5.6). Women (β=1.4, p = .002), Asians (β=2.7, p<.0001) and those who do more clinical work (β=0.59, p=0.005, for every additional day of clinic per week) reported higher levels of ACU. USMGs (β= -2.9, p<.0001) and those who have been out of residency longer (β=0.08, p=.002, for every additional year) had lower ACU. Mean score on the RACE scale was 20.5 (SD=5.6). After adjusting for race, sex, years since residency, location of medical school, genetics coursework in medical school, fellowship training, clinical days per week, and the racial make-up of patient panels, physicians with higher levels of ACU had higher levels of RACE ( β=0.08, p<.030, for each one-point increase in ACU). Using ACU categorically, those in the highest quartile of ACU scored 1.6 points higher (p=.010) on RACE than those in the lowest quartile of ACU.

Conclusions: This is the first study to our knowledge to empirically demonstrate an association between anxiety due to clinical uncertainty (ACU) and the use of race in clinical decision making. This suggests that more attention needs to be paid to the factors that contribute to physician ACU, such as poor patient-physician communication, and the potential impact of ACU on healthcare disparities.
A Novel Method To Teach Internal Medicine Residents Behavioral Counseling Skills: the Preventive Medicine Education Partnership (PEP) curriculum.

J. Rockfeld, J. Neuman, A. Dayal, J.J. Lin, Medicine, Mount Sinai School of Medicine, New York, NY; CONTROL ID: 1339067

Background: Most physicians understand the benefits of diet and exercise in the management of many chronic diseases, including obesity, hypertension and diabetes. Despite this awareness, many cite time constraints and lack of training as barriers to providing adequate patient guidance. To address this issue, we developed an evidence-based nutrition and exercise curriculum and created a group visit model for Internal Medicine residents to develop their behavioral counseling skills outside of the usual constraints of a clinic visit.

Methods: All third year Internal Medicine residents participated in the Preventive Medicine Education Partnership (PEP) curriculum as part of their ambulatory four-week block. Each month, three to six residents underwent a one-hour lecture based on the New York City Department of Health “Primary Care Nutrition 101” curriculum as well as three brief lessons on evidence-based exercise recommendations, small group teaching skills and health care literacy. The residents then developed a one-hour lesson plan for their patients focusing on a low salt diet, a low fat diet, or portion control. They were encouraged to make the session both interactive and appropriate for a low literacy audience. The residents recruited patients from their clinic to participate in three weekly sessions focusing on the topics above. A 30-minute walk and establishment of individual goals followed each session.

Residents’ attitudes toward and confidence in their ability to provide nutrition and exercise counseling were assessed before and after the intervention using an adaptation of a validated survey on a 4-point Likert scale. They also answered qualitative questions at the end of the block to assess whether the curriculum contributed to their education as a whole. All of the residents’ responses were anonymous, and student’s t-test was used to compare pre and post-intervention answers.

Results: Thirty-five third-year residents received the PEP curriculum. Of these, 31 (88%) and 27 (77%) completed the pre and post surveys, respectively. Before and after participation in the PEP program, all residents agreed that all overweight, hypertensive and diabetic patients should be counseled on diet and exercise. The vast majority agreed that it was their responsibility to counsel on diet (97% pre, 93% post) and exercise (94% pre, 93% post). Time constraints and other medical issues of higher priority were cited as barriers to providing adequate counseling. Following participation in the PEP curriculum, residents were more comfortable identifying what is important when providing dietary counseling (mean 2 vs 2.5, p<0.0046). They felt more prepared to follow evidence-based guidelines in counseling their patients about diet (mean 2.1 vs 2.8, p<0.0001) and exercise (mean 2.2 vs 2.6, p<0.0207) and also were more confident in their ability to improve patients’ diets (mean 2.3 vs 2.7, p<0.0054). All of the residents believed the curriculum should be continued as part of their ambulatory experience.

Conclusions: The PEP curriculum improved residents’ confidence in their ability to provide evidence based, effective nutrition and exercise counseling. Our findings suggest that a nutrition and exercise curriculum paired with a group visit model is an innovative and potentially successful method to teach residents relevant skills while minimizing the time constraints of the typical clinic environment.

T. Sugiyama, N. Steers, N. Wenger, O. Duru, C. Mangione, Division of General Internal Medicine and Health Services Research, University of California, Los Angeles, Los Angeles, CA; T. Sugiyama, Department of Public Health / Health Policy, University of Tokyo, Tokyo, JAPAN; CONTROL ID: 1328528

Background: Diabetes impairs both physical and mental health-related quality of life (HRQL). Programs grounded in empowerment theory improve glycemic control, but their effects on mental HRQL are unknown. We investigated the effect of a community-based group diabetes self-management program on mental well-being and explored whether the effect is direct or mediated by improved glycemic control and other concurrent physiological factors.

Methods: We performed a secondary data analysis of the Diabetes Self-Care Study, a randomized community-based intervention that improved glycemic control. Study participants (n = 516) were African Americans and Latinos 55 years or older with poorly controlled diabetes (HgbA1c ≥ 8) recruited from senior centers and churches in Los Angeles. Participants were randomly assigned to intervention and control groups. Control group participants received 6 lectures on geriatric topics. Intervention group participants received 6 small-group self-care sessions based on empowerment theory. For these analyses, our primary outcome was change in Mental Component Summary score from the SF-12 (MCS-12) between baseline and 6-month follow-up. HgbA1c, body mass index (BMI), low-density lipoprotein cholesterol (LDL), and systolic blood pressure (SBP) also were measured at baseline and 6-month follow-up. For these analyses, changes in those clinical variables were used as mediators. First, we compared baseline to 6-month change in MCS-12 between study groups using Student’s t-test. Second, we performed a causal mediation analysis with HgbA1c as a mediator in order to determine whether there was a direct effect of the diabetes empowerment program on mental well-being apart from the indirect effect mediated via HgbA1c change. Causal mediation analyses were repeated by inserting BMI, LDL and SBP as the potential mediator. In addition, we performed sensitivity analyses to assess the robustness of the results against the violation of no-confounder (between the mediator and the outcome) assumption. We performed causal mediation analysis and sensitivity analysis using the “mediation” package of software R.

Results: The 258 participants in each group had no significant differences in baseline characteristics and there was not a significant difference in follow-up between groups (follow-up data available for 79% intervention v 76% control participants). MCS-12 increased by a mean of 1.4 points in the intervention group and decreased by a mean of 0.2 points in the control group, for a difference in change of 1.6 points (95% CI: 0.1 to 3.1). In causal mediation analysis, the empowerment intervention was shown to have a direct effect on MCS-12 improvement (1.7, 95% CI: 0.2 to 3.2) separate from the indirect effect mediated via HgbA1c change (-0.1, 95% CI -0.4 to 0.1). We found no significant indirect effects of the other mediators. In sensitivity analyses, the causal mediation analyses were robust.

Conclusions: This Diabetes Self Care Study empowerment intervention had a positive impact on mental well-being not mediated by improvement in glycemic control or other physiological factors. The MCS-12 change of 1.6 points was equivalent to the difference of MCS-12 between people with and without type 2 diabetes found in prior studies. This favorable effect of DSME on mental well-being may confer a clinical advantage that is separate from benefits achieved by pharmacotherapy.
Do Insured Young Adults See Their Primary Care Doctor More? Insurance Coverage and Primary Care Access among Adults Ages 27-32

CONTROL ID: 1339516

Background: After maturing out of pediatrics, young adults face challenges of inadequate health insurance coverage and access to age-appropriate primary care. Prior to 2011, adults ages 18-26 were the age group most likely to be uninsured in the United States. Passage of the Affordable Care Act in 2010 allowed coverage under parents’ health insurance plans up to age 26. Surveys in early 2011 show that adults 27-35 are now the group most at risk of being uninsured in the United States. This study examines whether insured adults ages 27-32 in 2007-2008 were more likely to have routine check-ups compared to those without health insurance coverage.

Methods: Cross-sectional analysis of Wave IV of the National Longitudinal Study of Adolescent Health collected in 2007-2008 of 13,105 adults ages 27-32 in the United States. Primary predictor was health insurance coverage in the previous 12 months. 12 months of insurance was considered full coverage, 1-11 months as partial coverage, and 0 months as no coverage. Outcome variable of interest was having had a routine check-up in the previous 12 months. Chi-squared analysis examined covariate relationships of tobacco use, binge drinking, illicit drug use, low household income, contraception, having a sexually transmitted disease, exercise, diagnosis of mental illness, and diagnosis of a chronic health condition. Multivariable logistic regression was performed to analyze the association between health insurance coverage and having a routine check-up in the previous 12 months, adjusting for the above covariates.

Results: 11,243 subjects ages 27-32 were included in the analysis after excluding respondents with missing values. 71.7% had full health insurance coverage for the previous 12 months, 14.8% had partial coverage, and 13.5% had no coverage. 63.0% of respondents had a routine check-up within the previous 12 months and 37.0% had not had a check-up in over 12 months. 40.8% of respondents had one or more chronic health conditions. Chi-squared analysis demonstrated significant associations between insurance status and routine check-ups with the covariates described above in the methodology. Results of the multivariable logistic regression model are shown in the table.

Conclusions: This study demonstrates that before implementation of the Affordable Care Act, over one-quarter of adults ages 27-32 in this sample had partial or no insurance coverage in 2007-2008. Adults in this age group had greater odds of accessing routine check-ups if they had full or partial insurance coverage. With the passage of the Affordable Care Act, young adults may now be covered under their parents’ health insurance plan up to age 26. This study suggests that adults ages 27-32 are more likely to have routine check-ups if they have health insurance coverage, but this group remains at risk for insufficient health insurance coverage. Future studies performed after the implementation of the Affordable Care Act may reveal further information regarding insurance coverage and primary care access among this age group.
Impact of Intern Workload and Discontinuity of Care on 30-day Readmission

S. Mueller, J. Donze, R. Burke, J.L. Schnipper, , Brigham and Women's Hospital, Boston, MA; CONTROL ID: 1332280

Background: Recent modifications to Accreditation Council for Graduate Medical Education (ACGME) duty hour restrictions have resulted in greater variation of intern workload and increased transitions of care by housestaff. We evaluated the association between intern workload and discontinuity of patient care on probability of 30-day readmission.

Methods: We performed a retrospective cohort study at an academic medical center in Boston, MA. Data were obtained from administrative sources and electronic medical records. Patients were eligible for inclusion if discharged from the general medicine service to home or a rehabilitation facility between July, 2009 and June, 2010. The outcome of interest was 30-day readmission to any of three hospitals within the healthcare system. Intern workload predictors included: (1) Number of admissions completed by intern on day of patient discharge, dichotomized into >2 vs ≤ 2 to account for on-call vs non call days, (2) Number of discharges completed by intern on day of patient discharge, and (3) Intern census (i.e., total patients cared for) on day of patient discharge. Discontinuity of care predictor was defined as the number of different physicians writing orders on the patient during hospitalization, which was categorized into quartiles of < 8 physicians (reference), 8-11, 11-15, and > 15. We performed logistic regression to examine the association of predictors with 30-day readmission, accounting for clustering by intern, and controlling for patients’ demographics, healthcare utilization in past year, length of stay, comorbidities, source of admission, discharge destination, number of medications on discharge, weekday vs weekend discharge, and nurse workload on day of patient discharge (i.e., number of patients cared for on the nursing unit).

Results: Of the 10,731 patient discharges, 2398 (22%) were readmitted within 30 days. Intern workload predictors demonstrated a mean of 0.7 patient admissions, 1.7 patient discharges, and mean census of 4 patients on day of patient discharge. Of the 10,731 discharges, 1098 (10.2%) occurred on intern call days (admissions > 2). Discontinuity of care predictor showed the mean number of physicians writing orders on a patient during hospitalization was 12.2. Results of multivariate analysis demonstrated no association between number of intern admissions or intern census and odds of 30-day readmission. However, with every increase in number of intern discharges on day of patient discharge, the odds of 30-day readmission increased by 5% (adjusted OR 1.05 [1.00, 1.11], p<0.05). Increasing number of physicians writing orders on a patient during hospitalization was not significantly associated with increased odds of 30-day readmission on adjusted analysis.

Conclusions: We found that increased number of patients an intern discharges on day of patient discharge is associated with increased odds of 30-day readmission. We also found that only 10% of patients are discharged on intern call days, less than expected given a traditional 4-day call schedule. Our findings suggest that workload associated with multiple patient discharges may adversely impact patient outcomes, and that interns potentially self-regulate workload on call days by decreasing the number of patient discharges. Future research should further examine workload associated with patient discharge and potential mechanisms of mitigating negative consequences.