

• Effectiveness, Intervention Cost, and Health Care Utilization Associated with Group Medical Visits for Diabetes and Hypertension: A Randomized Controlled Trial

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Research Objective: Group medical visits (GMVs) are being widely implemented for diabetes management. We evaluated the effectiveness of GMVs as well as its cost and impact on health services utilization.

Study Design: Groups with the same 7-8 patients met with the same pharmacist and general internist each visit; there were different physicians and pharmacists across groups. Each session included group education and structured group interactions moderated by a registered nurse or certified diabetes educator. Additionally, individual medication adjustments were made by the pharmacist and physician to manage A1c and BP. Each group had an initial visit and then met every two months for a year. We estimated the cost of GMVs by summing labor costs (salary and fringe benefits) associated with the group sessions themselves, follow-up calls with patients, and 2 hours of nurse training. All patient-care related phone calls were logged throughout the study. We estimated base-case as well as minimum and maximum costs (provided in parentheses) using appropriate ranges of personnel salaries and call times. To assess intervention impact on health services utilization, we used VA-specific codes in administrative data to calculate primary care (exclusive of GMVs) and emergency department usage rates and hospitalizations that occurred between 1-13 months after enrollment.

Population Studied: 239 patients receiving primary care at the Durham, NC or Richmond, VA Veterans Affairs Medical Center (VAMC) with poorly controlled diabetes (A1c > 7.5%) and blood pressure (BP) (systolic BP > 140 or diastolic BP > 90) were randomized within VAMC to receive either GMVs or usual care.

Principal Findings: For patients in the GMV arm, BP improved from 153 mmHg at baseline to 139 mmHg at 12 months; for patients in usual care, BP was 153 mmHg at baseline and 147 mmHg at 12 months ($p=0.01$). GMVs did not have a differential effect on A1c compared to usual care. GMVs averaged 1.5 hours of physician time and 2 hours each of pharmacist and nurse time. Clinicians also placed 175 follow-up calls to the 133 intervention patients. We estimated that the cost of each GMV was \$504 (\$445-\$578); assuming 8 patients per group, the per-patient cost was \$63 (\$56-\$72). If patients attended all 7 GMV sessions, the annual per-patient cost would be \$441 (\$389-\$506); follow-up calls cost an additional \$19 (\$4-48), bringing the annual intervention cost per patient to \$460 (\$393-\$554). Patients in the intervention group had 0.9 fewer primary care visits (5.3 vs. 6.2 per patient-year, 95% CI -1.5,-0.2, $p=0.01$) and 0.44 fewer emergency care visits (0.9 vs. 1.3 visits per patient-year, 95% CI -0.70,-0.20, $p=0.0004$). For inpatient stays, 23 GMV patients (17%) had a total of 32 hospitalizations; 23 usual care patients (22%) had a total of 39 hospitalizations (OR 0.8, 95% CI 0.4, 1.4).

Conclusions: GMVs reduced primary care and emergency department visits and have the potential to reduce hospitalizations. These reductions at least partially offset the annual per patient cost of GMVs and could be cost-saving.

Implications for Policy, Delivery or Practice: Given their beneficial effect on BP, GMVs may be a cost-effective means for caring for patients with poorly controlled diabetes and hypertension.

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Measuring Physician Cultural Competence: Results from a National Survey

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Research Objective: Cultural competence (CC) training for current and future physicians has been widely endorsed as a means to reduce racial disparities in health care. Evidence-based curriculum development and evaluation, however, has been limited by the paucity of well-designed, validated tools measuring physician CC. We sought to develop and test the construct validity of an instrument measuring physician CC.

Study Design: We first conducted a systematic review of published articles describing physician CC and used qualitative analytic methods to develop a conceptual map of physician CC dimensions. For each dimension, we created a set of items that covered the breadth of its meaning as described in the literature. Eight national experts reviewed the items for content validity and suggested changes and additions. We revised our item pool and evaluated items for conceptual precision in cognitive interviews with 28 physicians from diverse racial/ethnic groups and specialties. After further revisions we included a final pool of 61 Likert-scale items in a questionnaire that also included items about demographics and prior formal training in CC and communication skills.

Population Studied: We mailed the questionnaire to a random sample of 1800 internists and family physicians in zip codes with at least a 25% nonwhite population. We oversampled African American and Latino physicians. Respondents could complete the questionnaire online or on paper. Using responses to the 61-item pool, we conducted factor analysis to derive discrete scales and labeled the scales based on item content. We then used linear regression to test the hypotheses that minority physicians and those who had completed prior CC training would have higher CC scores as measured by these scales, after adjusting for physician age, sex, and prior communication skills training.

Principal Findings: Among 1516 potentially eligible physicians, 795 (52%) responded. Respondents included mostly white (55%) or Asian (21%) physicians, with 12% being African American and 9% Latino. Most were male (65%), and most reported having had past training in CC (62%) and communication skills (78%). Our analysis generated 7 factors: cultural awareness (8 items, alpha 0.87), cultural self-efficacy (5 items, alpha 0.79), awareness of racial disparities (5 items, alpha 0.81), valuing diverse perspectives (6 items, alpha 0.77), support for “culturally and linguistically appropriate services” (CLAS) standards (6 items, alpha 0.80), biomedical orientation (negative scale, 2 items, alpha 0.67), and relationship-centered orientation (13 items, alpha 0.88). In regression analyses, nonwhite physicians had higher scores than whites ($p < .005$) on all dimensions except biomedical orientation. Women had higher scores than men for awareness of racial disparities, valuing diverse perspectives, support for CLAS standards, and relationship centered orientation ($p \leq .001$). Physicians reporting prior CC training had higher scores in all dimensions ($p \leq .002$) except biomedical orientation and valuing diverse perspectives, whereas prior communication skills training was not associated with any CC dimension.

Conclusions: We developed a theoretically based, novel instrument spanning multiple dimensions of physician CC that appears to have reasonable construct validity.

Implications for Policy, Delivery or Practice: If further validated as a predictor of better and more equitable patient care, dimensions in this instrument could inform the content and objectives of future CC training, and validated scales could be used as evidence-based evaluation tools.

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• **Cost-Related Medication Adherence and Patients’ Experience with the Chronic Care Model**

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Research Objective: Medication adherence is a significant problem for patients with diabetes, one frequently exacerbated by financial considerations. Fortunately, provider and organizational factors (e.g., improved therapeutic alliance or clinical microsystem performance) can mitigate medication cost burdens. Research suggests that patients who are highly engaged in their care have better adherence, significantly improving clinical outcomes. Implementation of the Chronic Care Model in primary care should result in more activated patients who participate in their treatment. This study examines the relationship between patients’ experience of the CCM and its relationship with cost-related medication adherence burden.

Study Design: Cross-sectional surveys from a large randomized trial in progress were administered as part of a study aim regarding how practice facilitation efforts influence better implementation of the chronic care model (CCM). Cost-related adherence burden (CRAB) was measured with a 5-item scale developed and validated by Piette and colleagues, where higher scores reflect more cost-related medication restrictions. The CCM was measured by the well-validated Patient Assessment of Chronic Illness Care (PACIC) survey, a 20-item instrument assessing perceptions of the primary care treatment environment. Each item was scored on a 1-5 Likert scale, with higher PACIC values indicating that patients experienced care delivery that was more consistent with the CCM. Random effects models controlling for nesting of patients within clinics analyzed the association between CRAB and perceived elements of the chronic care model. **Population Studied:** Patients with diabetes or other chronic medical illness presenting for care in 18 small, autonomous primary care offices in South Texas.

Principal Findings: To date, 1377 patients with a chronic health condition completed both baseline surveys. The mean study population age was 50.1 years, with 65% women and approximately 50% of Hispanic ethnicity; while overall self-reported health status was good, 45% acknowledged poor medication adherence behavior, with nearly 30% claiming some cost-related problems. The CRAB scale mean was 1.50 (SD 0.82), with an overall PACIC mean of 3.02 (SD 1.25). In multivariable models also adjusting for age, sex, education and ethnicity, CRAB was inversely associated with the total PACIC score (OR=1.17). Higher subscales scores for patient activation (OR=1.26), problem solving (OR=1.16), and practice design (OR=1.26) were also associated with fewer cost-related problems pertaining to medication adherence.

Conclusions: Patients experiencing care more consistent with elements of the chronic care model had a lower cost-related adherence burden, up to a 25% reduction per incremental increase in treatment delivered via the CCM. Specifically, this finding was true for individuals who reported that their treatment team actively involves them in clinical decision-making and provided information that enhances understanding of their care.

Implications for Policy, Delivery or Practice: Although the prevalence of poor medication adherence in chronic illness patients is widely understood, the specific role of cost-related problems is less appreciated. Clinical efforts to develop highly activated and involved patients can successfully mitigate the ramifications of financial pressures. Community providers should better recognize and openly discuss the burden of medication cost problems while focusing treatment efforts in accordance with proven chronic care treatment delivery.

Physician Views on the Use of Comparative Effectiveness Research

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Research Objective: Comparative effectiveness research has been promoted as a vehicle to improve health care quality and decrease costs. However, there is no provision in current health care reform legislation to use this information to establish guidelines that govern physician practice in part because of the concern that this research could be used to ration care and restrict physician practice. Physician support for comparative effectiveness research will play an important role in how this research is used and implemented; however, their views have never been elicited. We conducted a national physician survey and examined physician's views on the use and importance of data generated from comparative effectiveness research.

Study Design: We conducted a national, mailed survey of physicians between June and October, 2009 to assess physicians' views on healthcare reform. Survey content was developed through expert consensus and questions were refined through cognitive interviews with 16 physicians from multiple specialties and practice backgrounds. Four items were developed to address comparative effectiveness research: 1) "National guidelines should be developed to guide physician practice"; 2) "If national guidelines are established, comparative effectiveness data should be used in their development" 3) "Comparative effectiveness data will be used to restrict my freedom to choose treatments for my patients" and 4) "The availability of comparative effectiveness data would improve the quality of care provided to patients". We calculated the response rate using standard methods. To assess potential non-response

bias, we compared the characteristics of respondents and non-respondents using data available in the AMA Master file. Agreement with the four statements was measured on a 5-point Likert scale ranging from strongly agrees to strongly disagree. We report the percentage of physicians that agree with each statement. We also examine differences in agreement with the four items by specialty using chi square statistics.

Population Studied: From the American Medical Association Physician Masterfile, we randomly selected equal numbers of physicians within four groups: generalists (585), medical specialists (620), surgeons (618), and other specialties (593). Physicians in training and from U.S. territories were excluded from the analysis.

Principal Findings: The response rate was 50.8%. Survey respondents were slightly older than non-respondents (52.0 vs. 50.4 years, $p < .001$). There were no significant differences by gender, geographic location, specialty category, or type of practice. More than half (57.2%) of physicians believed that national guidelines should be developed to guide physician practice and 77% of physicians believed that comparative effectiveness data should be used in the development of these guidelines. Almost two thirds (65.5%) of physicians agreed with the statement that comparative effectiveness data will be used to restrict physician practice. At the same time, over half of physicians (55.5%) believed that this data will improve the quality of care provided to patients and only 16% disagreed with this statement. There were no statistically significant differences across specialties across these four items. A majority of generalists (56.8%), medical subspecialists (56.9%), surgical subspecialists (52.3%) and other specialists (55.1%) ($p = 0.47$) agreed that this data can be used to improve the quality of care.

Conclusions: A majority of physicians support the establishment of national guidelines and support the use of comparative effectiveness research in the development of these guidelines. Furthermore, while physicians believe that this data can be used to limit their autonomy, they also recognize that comparative effectiveness data can improve the quality of care delivered to patients.

Implications for Policy, Delivery or Practice: Even though current legislation does not include provisions for guideline establishment from comparative effectiveness research and restricts its use for Medicare coverage decisions, there appears to be majority support among physicians for the establishment of guidelines using this data. This support will play an important role in ensuring that comparative effectiveness research can live up to its promise of improving the quality of care and reducing costs.

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