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Title

Organizational characteristics predict processes of care.

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commitment required for this effort. The Group Clinic met monthly for ninety minutes for nine months each year, and a curriculum in health education was developed. Each session began with a brief introduction by a facilitator. Subsequently, a speaker from the medical center staff led a fifty minute discussion about a health topic; topics included orientation to the clinic, ways to obtain medication refills, home safety, nutrition, exercise programs, foot care, depression, and dental care. At the end of each session, all three facilitators (a physician, a nurse, and a social worker) were available for about twenty minutes to meet individually with participants. Frequent users of our urgent care clinic were identified by computer review as having had two or more visits to the urgent care clinic in the previous six months. Only participants who attended three or more sessions over the nine month period were included in the analysis, and record review was conducted for the last two years. Participants were asked to complete a written satisfaction survey on the final day of the Group Clinic.

RESULTS: About sixty patients were invited to participate each summer, and about fifteen chose to attend the initial meeting each September. During each of the past two years, about ten patients attended three or more clinics. The mean number of sessions attended by these twenty patients was 7.05. The mean number of urgent care visits in the nine months prior to the intervention was 5.95, which dropped to 1.85 visits in the nine months that the intervention was instituted ($p < 0.0001$). In addition, participants "agreed" or "strongly agreed" with the statements "I know how to contact the clinic staff if I have a question or problem," "I know what to do if I need to refill my medications," and "I would recommend participation in the Group Clinic to a friend."

CONCLUSION: Patients who participated in the Group Clinic had significantly fewer visits to the urgent care clinic during the intervention than they did before it. In addition, they learned about health promotion and disease prevention and developed a sense of community among one another. Patients who completed an evaluation form reported a high level of satisfaction with their participation. Although it may require a significant time investment, the establishment of the Group Clinic has ultimately reduce the usage of the urgent care clinic, thereby improving overall clinic efficiency.

RELATIONSHIPS BETWEEN PATIENT SATISFACTION AND PHYSICAL AND MENTAL DOMAINS OF HEALTH STATUS. C.K. Jaipaul¹, G.E. Rosenthal¹, ¹Iowa City VAMC & University of Iowa, Iowa City, IA (Tracking ID #51505)

BACKGROUND: While the positive association between health status and patient satisfaction has been repeatedly demonstrated, most studies have used single-item indicators of health status (i.e., poor to excellent) when examining this relationship. Moreover, the amount of variance in satisfaction explained by a single-item indicator is small. The goal of the current study was to examine quantitative relationships between patient satisfaction and individual physical and mental domains of health status.

METHODS: The study sample included 16,390 patients (mean age 62 years; 43% male; 86% white) in 31 hospitals in Northeast Ohio during 4/94–3/95 who completed a mailed survey 8 to 12 weeks after discharge. Satisfaction was measured by the Patient Judgment System, a validated 41 item survey. For this study, we selected 3 multi-item scales assessing physician care, nursing care, and coordination of care. Individual health status domains were measured using 6 subscales of the SF-36 (general health perceptions [GH], physical functioning [PF], bodily pain [BP], mental health [MH], social functioning [SF], and vitality [VY]). Analyses examined the variance (R square) in satisfaction explained by the 6 SF-36 subscales, as well as by a single-item indicator of health status.

RESULTS: For all measures of satisfaction, better health on the SF-36 subscales and on the single-item indicator was associated ($p < .001$) with greater satisfaction. For example, mean nursing satisfaction scores ranged from 66 in those with poor health to 81 in those with excellent health. The variance in the 3 satisfaction scales explained by the 6 SF-36 subscales is shown below. While the amount of explained variance was low for all SF-36 subscales, levels were slightly higher for the 3 domains of mental function (MH, SF, VY) than for the 3 domains of physical function. In a multiple regression model including all 6 subscales, the explained variance rose marginally (3.6%, 3.7%, and 3.6% respectively, for physician care, nursing care, and coordination of care). In contrast, the single-item indicator of health explained 2.8 to 3.0% of the variance in the 3 satisfaction measures.

	GH	PF	BP	MH	SF	VY
Physician Care	1.9%	0.9%	1.0%	2.8%	2.1%	2.1%
Nursing Care	1.9%	1.4%	1.6%	2.5%	2.5%	2.4%
Coordination of Care	2.1%	1.5%	1.6%	2.6%	2.6%	2.3%

CONCLUSION: Patient satisfaction was higher in patients with better self-reported health. This finding was consistent across individual domains of mental and physical health. Nonetheless, the amount of variance in satisfaction explained by these domains was relatively small, and a single-item indicator of health status explained nearly as much variance as the 6 domains in aggregate. These findings suggest that single-item indicators may be adequate in adjusting patient satisfaction scores for differences in health status.

PREDICTORS OF WARFARIN USE AMONG OHIO MEDICAID PATIENTS. J.A. Johnston¹, R.J. Cluxton², P.C. Heaton², J.J. Guo², C.J. Moomaw³, M.H. Eckman¹; ¹University of Cincinnati Medical Center, Division of General Internal Medicine, Cincinnati, OH; ²University of Cincinnati College of Pharmacy, Cincinnati, OH; ³Institute for Health Policy and Health Services Research, University of Cincinnati, Cincinnati, OH (Tracking ID #50400)

BACKGROUND: Despite demonstrated efficacy in stroke prevention, warfarin is underutilized in patients with atrial fibrillation (AF). Reasons for warfarin nonuse are unclear.

METHODS: We performed a retrospective cohort analysis using Ohio Medicaid administrative billing data to ascertain determinants of warfarin use in patients with new-

onset nonvalvular AF. We included claims from all institutions, providers, and pharmacies providing services to Ohio Medicaid enrollees. The cohort included all 11,699 continuously enrolled fee-for-service recipients of Ohio Medicaid with a new diagnosis of nonvalvular AF between 1998 and 2000. We determined incident warfarin use and presence of risk factors for stroke and hemorrhage by searching claims records for corresponding ICD-9-CM and National Drug Codes. Univariate and multivariable analyses were performed to examine the association of risk factors with warfarin use.

RESULTS: Only 9.7% of all patients and 11.9% of those without apparent contraindications filled prescriptions for warfarin in the period from 7 days preceding to 30 days after the development of AF. Hypertension and congestive heart failure independently predicted increased warfarin use. Older age (≥ 85), younger age (< 55), prior intracranial hemorrhage, prior gastrointestinal hemorrhage, predisposition to falls, alcohol/drug abuse, renal impairment, and conditions perceived as barriers to compliance predicted decreased warfarin use.

CONCLUSION: Few in this cohort of Ohio Medicaid patients with incident AF filled prescriptions for warfarin within 30 days of diagnosis. A number of factors, including alcohol or drug abuse/dependence, psychiatric disease, homelessness or inadequate housing, and lack of a caregiver, were both highly prevalent and appeared to bias against warfarin prescription.

Multivariable Predictors of Warfarin Use

	OR (95% CI)		OR (95% CI)
Age <55	0.73 (0.60–0.90)	Prior GI hemorrhage	0.69 (0.55–0.88)
Age ≥ 85	0.41 (0.34–0.49)	Fall risk	0.61 (0.52–0.73)
Hypertension	1.40 (1.23–1.59)	Alcohol/drug abuse	0.59 (0.35–0.99)
CHF	1.37 (1.20–1.57)	Poor compliance	0.84 (0.73–0.97)
Prior ICH	0.52 (0.31–0.86)	Renal insufficiency	0.66 (0.52–0.84)

DISCRIMINATION OF ALTERNATIVE METHODS FOR ASSESSING COMORBIDITY USING ADMINISTRATIVE DATA. P.J. Kaboli¹, M.J. Barnett², G.E. Rosenthal¹; ¹Iowa City VAMC and University of Iowa, Iowa City, IO, ²Iowa City VAMC, Iowa City, IA (Tracking ID #52386)

BACKGROUND: The use of administrative databases to assess the effectiveness of health care delivery is dependent on the availability of valid methods of assessing comorbidity. However, relatively few methods exist. The goal of the current study was to compare the discrimination of a recently developed comorbidity measure for administrative data (Elixhauser) and a widely used measure (Charlson) in private sector and VA inpatient databases.

METHODS: The sample included consecutive discharges from VA ($n = 228,356$) and private sector ($n = 10,903,990$) hospitals over a 4-year period (1996–1999) with 4 high-volume diagnoses: congestive heart failure (CHF); chronic obstructive pulmonary disease (COPD); pneumonia; and gastrointestinal hemorrhage (GIH). VA administrative data were obtained from the Patient Treatment File. Private sector data were obtained from the National Hospital Discharge Survey, a nationally representative database of patients in non-federal hospitals. For each patient, comorbidity scores for the two methods were determined based on ICD-9 codes available in the administrative databases. The Elixhauser method assesses 30 comorbidities that are unlikely to be hospital complications or related to the admission diagnosis. The Charlson method assesses 11 comorbidities. Discrimination of the two methods for in-hospital mortality was compared using receiver operating characteristic (ROC) curve analysis.

RESULTS: VA patients were younger than private sector patients (mean ages, 68 vs. 71 years; $P < .001$), more likely to be male (98% vs. 44%; $P < .001$), and had higher mortality (4.9% vs. 3.9%; $P < .001$). For the 4 conditions, ROC curve areas in VA patients were higher ($P < .001$) for the Elixhauser method than the Charlson method: CHF (0.68 vs. 0.59); COPD (0.67 vs. 0.56); pneumonia (0.69 vs. 0.64); GIH (0.73 vs. 0.64). ROC curve areas were also higher for the Elixhauser method in private sector patients: CHF (0.67 vs. 0.61); COPD (0.69 vs. 0.56); pneumonia (0.67 vs. 0.62); GIH (0.76 vs. 0.65). However, ROC curve areas for the Elixhauser method were similar in VA and private sector patients: CHF (0.68 vs. 0.67); COPD (0.67 vs. 0.69); pneumonia (0.69 vs. 0.67); GIH (0.73 vs. 0.76).

CONCLUSION: A recently proposed measure of comorbidity for use in administrative data—Elixhauser—had higher discrimination than the previously developed and widely used Charlson method. The Elixhauser method had similar discrimination in VA and private sector databases. The higher discrimination of the Elixhauser method is likely due to its consideration of a greater number of comorbidities. Use of the Elixhauser method may improve the attributional validity of outcomes studies based on administrative data and may allow for wider use of administrative data in assessing the quality and efficiency of hospital care.

ORGANIZATIONAL CHARACTERISTICS PREDICT PROCESSES OF CARE. K.L. Kahn¹, H.H. Liu¹, J. Adams², W.P. Chen¹, D. Tisnado¹, D. Carlisle¹, M. Spar¹, C.M. Mangione¹, C. Damberg³; ¹UCLA Department of Medicine, Los Angeles, CA; ²RAND, Santa Monica, CA; ³PBGH, San Francisco, CA (Tracking ID #51525)

BACKGROUND: Medical care, particularly on the West Coast, has evolved to vary according to the intensity of structural support for the patient-provider dyad. We hypothesized that both the intensity of clinical structure and also medical organization type (MOT) defined as medical group (MG) or independent practice organization (IPA) would significantly predict processes of care after adjustment for baseline health status.

METHODS: We merged patient self-report data from 1998 for respondents ($n = 24,891$) with surveys of medical directors of 53 medical organizations (29 MG and 24 IPAs) from 3 west coast states to evaluate patient self-report process of care and patient and organizational predictors of those rates. We used ordinary least squares regression adjusted for intra-organization clustering of patients within medical organizations to estimate process using two explicit and two implicit measures of process as a function of: patient demographic and comorbid characteristics; care within a MG or IPA; care within an organization categorized according to the intensity of structural support for patient care, the degree to which decision

making was centralized, and/or the degree of homogeneity of implementation of structure across offices within organization, as reported by clinical directors. Explicit measures were assessed as rates of adherence for 16 Cognitive Process measures assessed as patient report of whether or not clinical topics pertinent to the patient were addressed by the provider (e.g., smoking, evaluation of symptoms, discussion of medication side effects) and as 6 Non-Cognitive Process measures assessed as whether or not indicated screening (e.g., for colorectal cancer) or diagnostic (e.g., diabetic foot exam) procedures were implemented. Implicit measures were patient reports of satisfaction with mental health care and overall provider care. RESULTS: Structure influenced process differently for patients associated with MGs and IPAs. After adjustment for patient characteristics, within IPAs more intense structure is associated with better Cognitive ($p < .01$), Non-cognitive ($p < .001$), and Provider Rating scores ($p < .05$). Within MGs more intense structure is associated with lower Cognitive Process ($p = .09$), Mental Health Care rating ($p \leq .05$), and Provider Rating scores ($p < .05$). For example, across 4 quartiles of increasing structure, adjusted means for Cognitive Process scores varied in MGs (.38, .37, .37, .36,) and in IPAs (.37, .38, .38, .39). CONCLUSION: Structure is a significant predictor of four dimensions of measured ambulatory process, though structure influences process differently for patients in MGs vs IPAs. Within IPAs more intense, centralized, and or homogeneous structure is associated with better process scores, while within MGs more structure is associated with lower process scores.

EFFECT OF A TRIAGE-BASED EMAIL SYSTEM ON CLINIC RESOURCE USE IN PRIMARY CARE. S.J. Katz¹, D.T. Stern¹, K. Dobias¹, C.A. Moyer¹, D. Cox¹; ¹University of Michigan, Ann Arbor, MI (Tracking ID #51427)

BACKGROUND: Although electronic communication in general has grown dramatically, structured email and web-based communication between patients and their providers has diffused very slowly in clinical practice. Provider and payer groups are greatly concerned about the cost implications of employing these new technologies in clinical practice. To address these concerns, we performed a randomized controlled trial of a triage-based email system in primary care: Does a triage-based email system substitute for phone calls or reduce clinic no-shows?

METHODS: The setting was two large academic primary care centers employing 24 clinical faculty and 74 residents. Patients of "study" physicians (N = 50) were encouraged to communicate with providers and staff via a triage-based email system managed by nurses. Physicians were cc'd on all messages. Patients of "control" physicians (N = 48) were not given access to the system. We collected data on email, phone and visit volume by physician over 5 time periods during a 9 month period.

RESULTS: The table shows email and phone volume (number of messages per week per 100 scheduled visits) and visit no shows (per 100 scheduled visits) over 5 time periods during the study. Email volume was significantly greater in the study vs control group ($p < .01$) but phone and no show rates did not differ between groups.

CONCLUSION: A triage-based email communication system between patients and their providers significantly increased email messaging but did not offset phone volume nor reduce visit no show rates. Initial diffusion of email based communication appears to increase communication workload rather than substitute for more traditional modes of communication such as phone calls and visits.

Email, Phone and Visit No Show Rates by Group

Time Period	Study			Control		
	Email	Phone	No shows	Email	Phone	No shows
1	8	68	6	6	78	6
2	21	61	8	6	55	8
3	46	67	5	9	55	5
4	27	65	6	7	57	7
5	27	90	7	10	79	7

PHYSICIAN PERSPECTIVES ABOUT THE EFFECT OF A TRIAGE-BASED EMAIL SYSTEM ON PATIENT PROVIDER COMMUNICATION. S.J. Katz¹, D.T. Stern¹, C.A. Moyer², K. Dobias¹, D. Cox¹; ¹University of Michigan, Ann Arbor, MI; ²University of Michigan Medical Center, Ann Arbor, MI (Tracking ID #51452)

BACKGROUND: Though electronic communication in general has grown dramatically, structured email and web-based communication between patients and their providers has diffused very slowly in clinical practice. To address provider and payer concerns about the use of these technologies, we performed a randomized controlled trial of a triage-based email system in primary care. Did this system affect physician attitudes towards electronic communication or clinic communication in general?

METHODS: The setting was two large academic primary care centers employing 24 clinical faculty and 74 residents. Patients of "study" physicians (N = 50) were encouraged to communicate with physicians and staff via a triage-based email system managed by staff. Patients of "control" physicians (N = 48) were not given access to the system. We assessed physician attitudes about electronic communication and communication in general with patients and staff after a 9 month study period (response rate 91%).

RESULTS: The table shows attitudes scale scores (the percentage of respondents who fell in each score group) by study group. Scores on the affinity scale (measuring attitudes towards the benefits of email with higher scores indicating greater affinity, 8 items, alpha 0.89) were higher in the study vs control group physicians ($p < .01$). The scores on the "bother" scale (attitudes towards how bothered physicians are with patient email with higher scores indicating less bother, 8 items, alpha .95) were higher for study vs control groups ($p .01$). However scores on the "gencom" scale (attitudes towards general communication with patients and staff, 8 items, alpha .82) were the same between groups.

CONCLUSION: A triage-based email system improved physician attitudes towards the benefits and use of email in the clinical setting but did not change attitudes towards general communication with patients and staff.

Email Affinity, Bother and General Communication Scores by Group

Score	Study			Control		
	Affinity	Bother	GenCom	Affinity	Bother	GenCom
1	5	8	13	16	24	11
2	9	27	22	18	27	25
3	17	27	28	24	31	25
4	42	38	23	24	18	25
5	27	N/A	14	18	N/A	14
Total	100	100	100	100	100	100

PATIENT PERSPECTIVES ABOUT THE EFFECT OF A TRIAGE-BASED EMAIL SYSTEM ON PATIENT PROVIDER COMMUNICATION. S.J. Katz¹, D.T. Stern¹, C. Moyer², K. Dobias¹, D. Cox¹; ¹University of Michigan, Ann Arbor, MI; ²University of Michigan Medical Center, Ann Arbor, MI (Tracking ID #51488)

BACKGROUND: Though electronic communication in general has exploded, structured email and web-based communication between patients and their providers have diffused very slowly in clinical practice. To address provider and payer concerns about the use of these technologies, we performed a randomized controlled trial of a triage-based email system in primary care. Did this system change patient attitudes towards electronic communication or clinic communication in general?

METHODS: The setting was two large academic primary care centers employing 24 clinical faculty and 74 residents. Patients of "study" physicians (N = 50) were encouraged to communicate with physicians and staff via a triage-based email system managed by staff. Patients of "control" physicians (N = 48) were not given access to the system. We assessed patient attitudes about electronic communication and communication in general with physicians and staff after a 9 month study period (N = 750, response rate 65%).

RESULTS: The table shows attitudes scale scores (the percentage of respondents who fell in each score group) by study groups. Scores on the barriers scale (attitudes towards barriers to using email with physicians and staff with higher scores indicating more barriers, 7 items, alpha .76) were somewhat lower in the study vs control group physicians ($p = .04$). Scores on the benefits scale (attitudes towards the benefits of using email with physicians with higher scores indicating more benefits, 5 items, alpha .84) were somewhat higher for study vs control groups ($p = .03$). However, scores on the "gencom" scale (attitudes towards general communication with physicians and staff, 7 items, alpha .87) were the similar for both groups.

CONCLUSION: A triage-based email system decreased patient perceived barriers to and increased benefits of email use with physicians and staff in primary care but it did not affect attitudes towards general communication with the clinic staff.

Patient Attitudes Towards Email and General Communication With Physicians and Staff

Score	Study			Control		
	Barriers	Benefits	Gencom	Barriers	Benefits	Gencom
1	33	8	5	26	9	8
2	25	15	14	20	22	12
3	25	21	29	27	16	33
4	13	36	32	17	38	28
5	6	20	20	15	15	19
Total	100	100	100	100	100	100

TREATMENT DECISION MAKING IN EARLY-STAGE BREAST CANCER—SHOULD PHYSICIANS MATCH PATIENTS' DESIRED LEVEL OF INVOLVEMENT? N.L. Keating¹, E. Guadagnoli², M.B. Landrum², J.C. Weeks³; ¹Brigham and Women's Hospital and Harvard Medical School, Boston, MA; ²Harvard Medical School, Boston, MA; ³Dana Farber Cancer Institute, Boston, MA (Tracking ID #51849)

BACKGROUND: Patients' preferences for participation in treatment decisions vary, and little is known about how often patients' actual roles in decision making match their desired roles or whether patients benefit when such a match occurs. We sought to describe desired and actual roles in treatment decision making among patients with early-stage breast cancer, identify how often patients' actual roles matched their desired roles, and examine whether matching of actual and desired roles was associated with type of treatment received and satisfaction.

METHODS: We identified all women with newly diagnosed early-stage breast cancer at 47 participating hospitals in Massachusetts or Minnesota during 1993–1995. We abstracted medical records and surveyed patients after primary treatment for their breast cancer. We asked women about their desired and actual roles in treatment decision making with their surgeon and used logistic regression to assess whether matching of actual to desired roles was associated with type of surgery and satisfaction, adjusting for other patient, surgeon, and hospital characteristics.

RESULTS: 1081 women participated in the survey (response 70%). Most patients (64%) desired a collaborative role in decision making, but only 33% reported actually having such a collaborative role when they discussed treatments with their surgeons. Overall, 49% of