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Abstracts of Articles Authored or Coauthored by Permanente Clinicians

From Southern California:

Hand washing and physicians: how to get them together

Salemi C, Canola MT, Eck EK. *Infect Control Hosp Epidemiol* 2002 Jan;23(1):32-5

OBJECTIVE: To determine the motivating and behavioral factors responsible for improving compliance with hand washing among physicians.

DESIGN: Five unobtrusive, observational studies recording hand washing after direct patient contact, with study results reported to physicians.

SETTING: A 450-bed hospital in a health maintenance organization with an 18-bed medical-surgical intensive care unit (ICU) and a 12-bed cardiac care unit.

METHODS: An infectious disease physician met individually with participants to report study results and obtain a commitment to hand washing guidelines. Follow-up interviews were conducted to evaluate behavioral factors and educational programs. Hand washing study results were presented to all staff physicians by live and videotaped inservice presentations and electronic mail (e-mail) newsletters. The importance of influencing factors and the educational effectiveness of the hand washing program were evaluated.

RESULTS: Five observational hand washing studies were conducted in the ICU between April 1999 and September 2000. Rates of physician compliance with hand washing were 19%, 85%, 76%, 74%, and 68%, respectively. There were 71 initial encounters and 55 follow-up interviews with the same physicians. Physician interviews revealed that 73% remembered the initial encounter, 70% remembered the hand washing inservice presentations, and 18% remembered the e-mail newsletters. Personal commitment and meeting with an infectious disease physician had the most influence on hand washing behavior. Direct inservice presentations (either live or videotaped) had more influence than did e-mail information. Rates of ventilator-associated pneu-

monia did not significantly change before and during the study periods. A decrease in the rate of central-line-related bloodstream infections from 3.2 to 1.4 per 1000 central-line days was found, but could not be solely attributed to improved physician compliance with hand washing.

CONCLUSIONS: Physician compliance with hand washing can improve. Personal encounters, direct meetings with an infectious disease physician, and videotaped presentations had the greatest impact on physician compliance with hand washing at our medical center, compared with newsletters sent via e-mail. Local data on compliance with hand washing and physician involvement are factors to be considered for physician hand washing compliance programs in other medical centers.

CLINICAL IMPLICATION: On the basis of information in this article, the National Kaiser Permanente (KP) Hand Hygiene Program has been instituted. All KP Medical Centers are required to have a hand hygiene program with continuous education, assessment of hand washing compliance, and feedback to the physicians and health care workers. We show in our study that strong motivating factors to improve physician hand washing require local compliance data and a personalized approach. —TC

From the Northwest:

Association of asthma control with health care utilization: a prospective evaluation

Vollmer WM, Markson LE, O'Connor E, Frazier EA, Berger M, Buist AS. *Am J Respir Crit Care Med* 2002 Jan 15;165(2):195-9

Population-based disease management should be enhanced by good risk assessment models and instruments. We prospectively evaluated the ability of a simple measure of short-term asthma control (scored 0 to 4) to

predict asthma 12-month health care utilization (HCU). A total of 5172 adult asthma patients completed a brief questionnaire in fall 1997 to assess current level of asthma control. We then evaluated HCU for calendar year 1998. Ninety-three percent had health plan eligibility in 1998 and were included in this analysis. Both acute and routine asthma utilization increased with increasing numbers of asthma control problems. Rates of acute care episodes were 3.5 (95% confidence interval [CI] = 2.9, 4.3) times more likely for those with three to four control problems versus those with no control problems. Lesser, but statistically significant, increases were seen for those with two (relative risk [RR] = 1.7, 95% CI = 1.4, 2.2) or one (RR = 1.4, 95% CI = 1.1, 1.8) control problem. These patterns were similar for men and women, and diminished with increasing age. The asthma control index contributed significantly to prospective prediction models even after adjusting for administrative data such as medication use and prior HCU. These data reinforce the usefulness of measures of short-term asthma control both for the individual clinician and for those interested in population-based asthma management.

Official Journal of the American Thoracic Society. (c) American Thoracic Society.

CLINICAL IMPLICATION: The article shows that the Asthma Therapy Assessment Questionnaire (ATAQ) index of asthma control, which can be readily administered and scored in the clinic setting, can be used to identify asthma patients who are at increased risk for future hospital-based care due to acute exacerbation of their disease. We believe this simple index can be a useful clinical vital sign for patients with asthma and that those scoring three to four on the index should be evaluated closely concerning their medication regimen, inhaler use technique, possible adherence problems, and allergen avoidance. —BV

From the Northwest:

Helicobacter pylori eradication in dyspeptic primary care patients: a randomized controlled trial of a pharmacy intervention

Stevens VJ, Shneidman RJ, Johnson RE, Boles M, Steele PE, Lee NL. *West J Med* 2002 Mar;176(2):92-6

OBJECTIVE: To determine the effectiveness of structured adherence counseling by pharmacists on the eradication of *Helicobacter pylori* when using a standard drug treatment regimen.

DESIGN: Randomized controlled clinical trial.

SETTING: Nonprofit group-practice health maintenance organization (HMO).

PARTICIPANTS: HMO primary care providers referred 1393 adult dyspeptic patients for carbon 14 urea breath testing (UBT).

INTERVENTIONS: Those whose tests were positive for *H pylori* (23.3%) were provided a standard antibiotic regimen and randomly assigned to receive either usual-care counseling from a pharmacist or a longer adherence counseling session and a follow-up phone call from the pharmacist during drug treatment. All subjects were given the same seven-day course of omeprazole, bismuth subsalicylate, metronidazole, and tetracycline hydrochloride (OBMT). Dyspepsia symptoms were recorded at baseline and following therapy.

OUTCOMES: The main outcome was eradication of *H pylori* as measured by UBT at three-month follow-up. Secondary outcomes were patient satisfaction and dyspepsia symptoms at three-month follow-up.

RESULTS: Of the 333 participants randomly assigned to treatment, 90.7% completed the three-month follow-up UBT and questionnaires. Overall eradication rate with the OBMT regimen was 80.5% with no significant difference in eradication rates between the two groups ($p = 0.98$).

CONCLUSIONS: In this study, additional counseling by pharmacists did not affect self-reported adherence to the treatment regimen, eradication rates, or dyspepsia symptoms but did increase patient satisfaction.

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CLINICAL IMPLICATION: We found that *Helicobacter pylori* was not as prevalent in this sample of dyspeptic patients as recent studies would suggest. A good eradication rate was achieved with the use of pharmaceutical treatment (OBMT). Special added counseling by pharmacists did not affect medication adherence or eradication rates in this sample, but additional counseling did increase patient satisfaction with treatment. *H pylori* eradication did not affect symptoms of dyspepsia. —VS

From the Northwest:

Mortality of intrathoracic sarcoidosis in referral vs population-based settings: influence of stage, ethnicity, and corticosteroid therapy

Reich JM. *Chest* 2002 Jan;121(1):32-9

STUDY OBJECTIVES: To compare the sarcoidosis mortality in referral settings (RS) and population-based settings (PS), and to identify the contribution of stage, ethnicity, and corticosteroid therapy (CST) to their disparate outcomes.

DESIGN: All observational studies identified in a MEDLINE search and bibliographic review published in the English language since 1960 dealing with the course and prognosis of sarcoidosis in large, unsorted, adult, ambulatory RS and PS providing long-term follow-up were reviewed and subjected to meta-analysis.

MEASUREMENTS AND RESULTS: Sarcoidosis mortality in RS (4.8%), in which 17% of patients had the most unfavorable prognosis as judged by stage (stage III), was ten-fold that reported in PS (0.5%), in which 11% of patients were identified at this stage. The magnitude of this disparity could not be accounted for solely by adverse selection, as indicated by stage or by ethnicity. Patients in RS received CST with sevenfold the frequency of PS, and its provision was highly correlated with stage-normalized mortality.

CONCLUSION: The prognosis of patients with intrathoracic sarcoidosis in PS is far more favorable than that obtained in RS. Sarcoidosis mortality is largely independent of ethnicity. The possibility cannot be excluded that excessive employment of CST may unfavorably influence the long-term course of the disease in some individuals.

From the Northwest:

Subjective assessment of usefulness and appropriate presentation mode of alerts and reminders in the outpatient setting

Krall MA, Sittig DF. *Proc AMIA Symp* 2001:334-8

There is very little known about the limits of alerting in the setting of the outpatient Electronic Medical Record (EMR). We are interested in how users value and prefer such alerts. One hundred Kaiser Permanente primary care clinicians were sent a four-page questionnaire. It contained questions related to the usability and usefulness of different approaches to presenting reminder and alert information. The survey also contained questions about the desirability of six categories of alerts. Forty-three of 100 questionnaires were returned. Users generally preferred an active, more intrusive interaction model for "alerts" and a passive, less intrusive model for order messages and other types of reminders and notifications. Drug related alerts were more highly rated than health maintenance or disease state reminders. Users indicated that more alerts would make the system "more useful" but "less easy to use." *Reprinted with permission from the American Medical Informatics Association.*

CLINICAL IMPLICATION: Mature Electronic Medical Records (EMR) deliver, in part, on their promise of decreasing medical errors and increasing the quality and cost-effectiveness of care via electronic alerts and reminders. Primary care clinicians indicate that alerts are not all "created equal." Specific characteristics contribute to user acceptance, and users have preferences for alert style and topic. EMR developers and implementers should seek to understand and encompass these important usability and usefulness lessons. —MK

From Colorado:

A comparison of clinical outcome studies among cholesterol-lowering agents

Lousberg TR, Denham AM, Rasmussen JR. *Ann Pharmacother* 2001 Dec;35(12):1599-1607

OBJECTIVE: To review and compare clinical trials of cholesterol-lowering agents that evaluated clinical end points as the primary

outcome measure; specifically, to determine whether all agents that decrease cholesterol impact clinical outcomes similarly.

DATA SOURCES: Primary articles were identified through a MEDLINE search (1966-February 2001) and through secondary sources.

STUDY SELECTION AND DATA EXTRACTION: All of the articles identified from the data sources were evaluated. Articles that included clinical end points as the primary outcome measure were included in this review.

DATA SYNTHESIS: Clinical trials were assessed according to study population (primary vs secondary prevention of coronary artery disease), baseline and follow-up lipid profiles, and clinical outcome data. Both cardiac and noncardiac morbidity and mortality were evaluated. The differences in study populations, study methods, and changes in lipid values were compared and contrasted between trials to evaluate their effect on outcomes.

CONCLUSIONS: Niacin and bile acid sequestrants should be considered as add-on therapy when therapeutic goals cannot be attained with a hydroxymethyl glutaryl-coenzyme A reductase inhibitor (statin). Estrogen therapy cannot be recommended solely for cardioprotection. Fibrates are most effective in patients with high baseline triglycerides, low baseline high-density lipoprotein cholesterol, and low to average low-density lipoprotein cholesterol (LDL). Statins are considered first line for the treatment of elevated LDL in both the primary and secondary prevention of coronary heart disease. They are well tolerated, have the strongest data to support their use, and have been shown to decrease total mortality.

From the Northwest:
Effects of hearing impairment on use of health services among the elderly

Green CA, Pope CR. J Aging Health 2001 Aug;13(3):315-28

OBJECTIVES: To assess the effects of hearing impairment on health-service use in an elderly population, controlling for factors associated with hearing difficulties known to affect utilization.

METHODS: Diagnoses of hearing impairment, depression, and chronic illnesses were used in hierarchical regression procedures to pre-

dict the volume and probability of any service use among 1436 randomly selected 65-year-old health maintenance organization members.

RESULTS: Hearing impairment substantially increased the likelihood of making at least one visit to a health care provider (OR = 3.31, 95%; CI = 1.55-7.06). Among those who made such visits, however, hearing impairment did not lead to use of additional services despite expectations to the contrary.

DISCUSSION: Further research should explore whether underutilization of services exists, and, if so, whether it stems from clinician or patient attitudes about the seriousness of hearing impairment, from a paucity of available treatment strategies, or from some combination of these and other factors.

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CLINICAL IMPLICATION: Our results suggest that elderly individuals who report hearing impairment to clinicians may not receive needed follow-up treatment. The negative functional consequences and potential harmful sequelae of such impairment (eg, depression) suggest that clinicians should pay particular attention to addressing, and following, hearing problems. —CG

From Southern California:
Vision loss among diabetics in a group model Health Maintenance Organization (HMO)

Fong DS, Sharza M, Chen W, Paschal JF, Ariyasu RG, Lee PP. Am J Ophthalmol 2002 Feb;133(2):236-41

PURPOSE: To report the management of diabetic retinopathy in one group model health maintenance organization and assess the quality of care.

METHODS: Cross-sectional study. A chart review of 1200 randomly identified patients with diabetes mellitus, continuously enrolled for three years in Kaiser Permanente (KP) Southern California, the largest provider of managed care in Southern California, was performed. A total of 1047 patients were included in the analyses. Patient characteristics as well as information from the last eye examination were abstracted. Charts from patients with visual acuity less than 20/200 in their better eye (legal blindness) were

selected for extensive chart review to determine the cause of visual loss and the antecedent process of care. T tests or the Wilcoxon rank sum test was used to compare continuous variables. The chi(2) test or the Fisher exact test was used to compare categorical variables. All analyses were performed on the Statistical Analyses System (SAS Institute, North Carolina).

RESULTS: Our study population of 1047 diabetic patients was 51.7% male, had a mean age of 60.4 years, a mean duration of diabetes of 9.6 years, and a mean hemoglobin A1c of 8.3%. During the study period, 77.5% of patients received a screening eye examination with examination by an ophthalmologist, an optometrist, or review of a retinal photograph. Of those with a visual acuity assessment (n = 687, 65.6% of 1047), 1.5% had visual acuity of 20/200 or worse (legally blind) in the better eye, while 8.2% had this level of visual acuity in the worse eye. Of eyes with new onset clinically significant macular edema and visual acuity < 20/40, 40% had documentation of focal laser performed within one month of diagnosis. Of eyes with vitreous hemorrhage and visual acuity < 20/40, 50% had documentation of vitrectomy. Among eyes that had vitrectomy, over 80% had this procedure within one year of diagnosis of vitreous hemorrhage.

CONCLUSIONS: The current report is the largest study of diabetic retinopathy outcomes among patients enrolled in a prepaid health plan. Further research is necessary to investigate the impact of managed care on health outcomes.

Reprinted from American Journal of Ophthalmology, Vol 133, Fong DS, Sharza M, Chen W, Paschal JF, Ariyasu RG, Lee PP, Vision loss among diabetics in a group model Health Maintenance Organization (HMO), 236-41. Copyright 2002, with permission from Elsevier Science.

From the Northwest:
Randomized trial of a brief dietary intervention to decrease consumption of fat and increase consumption of fruits and vegetables

Stevens VJ, Glasgow RE, Toobert DJ, Karanja N, Smith KS. Am J Health Promot 2002 Jan-Feb;16(3):129-34

PURPOSE: This study tested the efficacy of a computer-assisted counseling intervention to reduce diet-related cancer risk.

DESIGN: Randomized controlled trial.

SUBJECTS: Healthy women HMO members (n = 616) aged 40 to 70.

INTERVENTION: Participants were randomly assigned to nutrition intervention or an attention-control intervention unrelated to diet. Intervention consisted of two 45-minute counseling sessions plus two five- to ten-minute follow-up telephone contacts. Counseling sessions included a 20-minute, interactive, computer-based intervention using a touchscreen format. Intervention goals were reducing dietary fat and increasing consumption of fruit, vegetables, and whole grains.

MEASURES: Twenty-four hour diet recalls and the Fat and Fiber Behavior Questionnaire (FFB).

RESULTS: Four-month follow-up data were collected from 94% of the intervention participants and 91% of the controls. Testing with a multivariate general linear models analysis showed improvements on all dietary outcome variables. Compared to the control, intervention participants reported significantly less fat consumption (2.35 percentage points less for percentage of energy from fat), significantly greater consumption of fruit and vegetables combined (1.04 servings per day), and a significant reduction in a behavioral measure of fat consumption (.24 point change in the FFB).

CONCLUSIONS: These four-month results are comparable to several other moderate-intensity studies showing that, in the appropriate circumstances, moderate-intensity dietary interventions can be efficacious. Study limitations include the short follow-up period and the use of self-reported outcome measures.

From Northern California:

Discontinuing or switching selective serotonin-reuptake inhibitors

Bull SA, Hunkeler EM, Lee JY, et al. Ann Pharmacother 2002 Apr;36(4):578-84

OBJECTIVE: To describe reasons for discontinuing or switching selective serotonin-reuptake inhibitors (SSRIs) at three and six months after starting treatment, and to identify information provided to patients that may help prevent premature discontinuation of medication.

METHODS: Telephone surveys were conducted at three and six months after patients (n = 672) were started on an SSRI for a new or recurrent case of depression.

RESULTS: Significantly more patients discontinued or switched their SSRI because of an ad-

verse effect within the first three months of starting (43%) compared with the second three months (27%; p = 0.023). The adverse effect most frequently reported as the reason for early discontinuation or switching was drowsiness/fatigue (10.2%), followed by anxiety, headache, and nausea—all at just over 5%. The odds ratio for discontinuation was 61% less in patients who recalled being told to take the medication for at least six months compared with those who did not (OR 0.39; p < 0.001). Patients who recalled being informed of potential adverse effects increased their reported incidence of mild to moderate adverse effects by 55% (OR 1.55; p < 0.05) without affecting rates of premature discontinuation (OR 1.06; p = 0.77).

CONCLUSIONS: Adverse effects are the most frequent reason for discontinuing or switching SSRIs within the first three months of treatment. Patients are more likely to continue taking their antidepressant if they fully understand how long to take the medication. Informing patients of potential adverse effects does not appear to prevent premature discontinuation, but may increase the patient's awareness and reporting of mild to moderate adverse effects.

CLINICAL IMPLICATION: The study reinforces the knowledge that patients need a clear explanation of the fact that they are expected to continue with antidepressant treatment for a minimum of six months. Patients who understand the reasons for this expectation are more likely to stick it out and continue with treatment. —SB

From Colorado:

Preeclampsia in multiple gestation: the role of assisted reproductive technologies

Lynch A, McDuffie R Jr, Murphy J, Faber K, Orleans M. Obstet Gynecol 2002 Mar;99(3):445-51

OBJECTIVE: To estimate the relationship of assisted reproductive technologies and ovulation-inducing drugs with preeclampsia in multiple gestations.

METHODS: This historical cohort study was conducted on 528 multiple gestations from a Colorado health maintenance organization. Using univariate and logistic regression analysis, we

determined if women who conceived a multiple gestation as a result of assisted conception were at a greater risk of preeclampsia than those who conceived spontaneously.

RESULTS: Between January 1994 and November 2000, there were 330 unassisted and 198 assisted multiple gestations. Sixty-nine multiple gestations followed assisted reproductive technologies (in vitro fertilization and gamete intrafallopian transfer). Human menopausal gonadotropins and clomiphene citrate were associated with 38 and 91 of the multiple gestations, respectively. Compared with unassisted multiple gestations, the relative risk of mild or severe preeclampsia among mothers who received assisted reproductive technologies was 2.7 (95% confidence interval [CI] 1.7, 4.7) and 4.8 (CI 1.9, 11.6), respectively. Adjusted for maternal age and parity, women who received assisted reproductive technologies were two times more likely to develop preeclampsia (odds ratio 2.1, CI 1.1, 4.1) compared with those who conceived spontaneously. The adjusted odds ratios of nulliparity and maternal age for preeclampsia were 2.1 (CI 1.3, 3.4) and 1.1 (CI 1, 1.1), respectively. Although the incidence of preeclampsia was greater in mothers who received clomiphene citrate and human menopausal gonadotropins, this association did not reach statistical significance at the p < .05 level.

CONCLUSION: Women who conceive multiple gestations through assisted reproductive technologies have a 2.1-fold higher risk of preeclampsia than those who conceive spontaneously.

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CLINICAL IMPLICATION: This study, distinguished by careful definition of preeclampsia and adjustment for the confounding effect of other risk factors, found that assisted reproductive technologies, nulliparity, and advancing maternal age were independent risk factors for preeclampsia. Furthermore, the risk of severe preeclampsia was increased almost fivefold among mothers receiving assisted reproductive technologies compared with mothers having unassisted multiple births. The results suggest that women with multiple gestations resulting from assisted reproductive technologies should be carefully monitored for preeclampsia by their health care providers. —AL ❖