

# Abstracts of Articles Authored or Coauthored by Permanente Clinicians

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*From the Northwest and Hawaii:*

## **Nulliparity and fracture risk in older women: the study of osteoporotic fractures**

Hillier TA, Rizzo JH, Pedula KL, et al.  
*J Bone Miner Res* 2003 May;18(5):893-9.

Whether nulliparity increases fracture risk is unclear from prior studies, which are limited by small samples or lack of measured bone mineral density. No study has evaluated whether the effect of parity differs by skeletal site. We prospectively analyzed the relationship of parity to the risk of incident nontraumatic hip, spine, and wrist fractures in 9704 women aged 65 years or older participating in the Study of Osteoporotic Fractures to determine if parity reduces postmenopausal fracture risk, and if so, if this risk reduction is 1) greater at weight-bearing skeletal sites and 2) independent of bone mineral density. Parity was ascertained by self-report. Incident hip and wrist fractures were determined by physician adjudication of radiology reports (mean follow-up, 9.8 years) and spine fractures by morphometric criteria on serial radiographs. The relationship of parity to hip and wrist fracture was assessed by proportional hazards models. Spine fracture risk was evaluated by logistic regression. Compared with parous women, nulliparous women (n = 1835, 19%) had an increased risk of hip and spine, but not wrist, fractures. In multivariate models, parity remained a significant predictor only for hip fracture. Nulliparous women had a 44% increased risk of hip fractures independent of hip bone mineral density (hazards ratio, 1.44; 95% CI, 1.17-1.78). Among parous women, each additional birth reduced hip fracture risk by 9% (p = 0.03). Additionally, there were no differences in mean total hip, spine, or radial bone mineral

density values between nulliparous and parous women after multivariate adjustment. In conclusion, childbearing reduces hip fracture risk by means that may be independent of hip bone mineral density.

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*From Southern California:*

## **Design and evaluation of interventions promoting periconceptional multivitamin use**

Lawrence JM, Watkins ML, Ershoff D, et al.  
*Am J Prev Med* 2003 Jul;25(1):17-24.

**BACKGROUND:** Periconceptional folic acid use reduces the risk of neural tube defects and possibly other birth defects. The effectiveness of two interventions to increase the use of multivitamins among women of childbearing ages was evaluated.

**METHODS:** Quasi-experimental interrupted time series design with a nonequivalent control group. Participants included female members of Kaiser Foundation Health Plan aged 18 to 39 years residing in the three geographic service areas of California under study from 1998 through 2000. The central component of the direct mail/pharmacy information intervention was the mailing of "starter kits" of 100 multivitamins, while the provider education intervention used primary care providers to deliver the study message. Main outcomes included the use of multivitamins containing folic acid at least four times per week ("regularly"), intention to use multivitamins regularly, and knowledge and attitudes about multivitamins. Outcomes were measured via telephone interviews of non-pregnant women of childbearing age.

**RESULTS:** A total of 3438 women were interviewed. There was a small but significant increase in the percentage of women using

multivitamins in the direct mail/pharmacy information intervention group at the beginning of the intervention period (p = 0.006), but this increase was not sustained after the interventions ended. No other significant change was observed.

**CONCLUSIONS:** Despite our ability to reach many women of childbearing age with multiple messages about regularly using multivitamins, only a small temporary increase was found in the percentage of women using multivitamins who received the messages in the mail. Other interventions and further evaluation of the impact of food fortification with folic acid should be considered.

Reprinted from *The American Journal of Preventive Medicine*, Volume 25, Lawrence JM, Watkins ML, Ershoff D, Pettiti DB, Chiu V, Postlethwaite D, Erickson JD, Design and evaluation of interventions promoting periconceptional multivitamin use, p 17-24, Copyright 2003, with permission from *The American Journal of Preventive Medicine*.

**CLINICAL IMPLICATION:** Although approximately 75% of neural tube defects (NTDs) are preventable by consuming 400 mcg of folic acid (FA) daily during the periconceptional period, the proportion of childbearing-age women taking these vitamins has increased only slightly in the past ten years. Our direct mail campaign was only marginally successful in increasing the proportion of women using multivitamins and education by physicians and other health care providers showed no effect. However, our postimplementation survey showed that only a small proportion of providers implemented the educational intervention in the context of their clinical visits. Women of childbearing age should be encouraged to take a vitamin containing FA every day and to consume foods rich in FA, including foods fortified with FA (cereals, pasta, bread, etc).

—JL

*From the Northwest:*

**Fetal fibronectin: the impact of a rapid test on the treatment of women with preterm labor symptoms**

*Plaut MM, Smith W, Kennedy K. Am J Obstet Gynecol 2003 Jun;188(6):1588-93; discussion 1593-5.*

**OBJECTIVE:** The purpose of this study was to determine whether knowledge of the results of a rapid fetal fibronectin test affects treatment decisions during the evaluation and treatment of possible preterm labor. Previous observational studies have suggested that a negative test might help to avoid unnecessary intervention.

**STUDY DESIGN:** This was a randomized study of women who were between 24 weeks and 34 weeks six days of gestation with symptoms of preterm labor and who were seen in three community hospitals. A rapid fetal fibronectin test was performed on all subjects. Patients were assigned randomly to a group whose results were known to physician or to a group whose results were not known. Treatment decisions were at the discretion of the physician.

**RESULTS:** One hundred eight samples were collected between September 2000 and December 2001. There were ten positive fetal fibronectin tests. The overall prevalence of delivery within two weeks for the study population was 2.8%. For women who had negative fetal fibronectin test results, the hospital stay was not significantly shorter when the result was known (6.8 hours) than when it was not known (8.1 hours,  $p = .35$ ). However, when the physician knew the fetal fibronectin status of women with a negative test result who were observed for >6 hours, the hospital stay was shortened 40%, to 22.7 hours from 37.8 hours ( $p = .04$ ).

**CONCLUSION:** Fetal fibronectin testing may be able to supplement clinical judgment in the evaluation of the condition of patients with symptoms of preterm labor. The greatest benefit of fetal fibronectin testing might be for the patient whom the physician judges to be at high risk for imminent delivery. In such patients, the knowledge of

a negative fetal fibronectin may shorten the hospital stay.

*Reprinted from the American Journal of Obstetrics and Gynecology, Volume 188, Plaut MM, Smith W, Kennedy K, Fetal fibronectin: the impact of a rapid test on the treatment of women with preterm labor symptoms, p1588-93, Copyright 2003, with permission from Elsevier.*

**CLINICAL IMPLICATION:** Fetal fibronectin testing cannot definitely determine whether a patient with preterm labor symptoms will deliver within the next one to two weeks, but the possibility is moderately increased by a positive test. Prior studies showing a very low likelihood (<2%) of imminent delivery in patients with a negative test were biased by the already low prevalence of imminent delivery in those populations (3%-4%). Our study suggests that testing is probably not needed in most patients presenting with symptoms of preterm labor. For the subgroup of patients whom we now treat aggressively, testing might be helpful in shortening hospital stays. —MP

*From Colorado:*

**Femoral endarteritis associated with percutaneous suture closure: new technology, challenging complications**

*Whitton Hollis H Jr, Rehring TF. J Vasc Surg 2003 Jul;38(1):83-7.*

**OBJECTIVE:** Use of percutaneous suture closure devices after catheter-based interventions is increasing. We recently have seen several severe femoral arterial wall infections after use of such devices. The purpose of this study was to examine the incidence, comorbid associations, and management of femoral arterial infections associated with percutaneous suture closure devices.

**METHODS:** We retrospectively reviewed all infectious complications that occurred after 2223 consecutive cardiac catheterization procedures performed over 12 months in a university-affiliated community teaching hospital. Outcome variables included demographics, procedural details, infection, type of arterial reconstruc-

tion required, mortality, and limb loss.

**RESULTS:** During this study, 822 patients received percutaneous suture devices. Infection developed in six patients (0.7%). The incidence of diabetes in the population undergoing percutaneous suture closure was 219 of 822 patients (26.6%). Three comorbid conditions, noted in multiple patients with infectious complications, included diabetes mellitus, obesity, and placement of a percutaneous suture closure device within the past six months. Invasive femoral endarteritis developed in four patients. Gram-positive cocci predominated in four patients. In one patient with polymicrobial infection catastrophic complications developed, including multiple anastomotic ruptures and hemorrhage. A new method of repair that incorporated double-thickness everted saphenous vein was used in two patients, and safe arterial closure was achieved. There was one late fatality on postoperative day 36. Limb salvage was achieved in all patients.

**CONCLUSIONS:** Femoral endarteritis complicating percutaneous suture closure is a challenging new problem for vascular surgeons and can result in catastrophic complications. Customary techniques that use saphenous vein patch or interposition grafting are not adequate in all circumstances. Successful outcome requires operative exploration in patients with suspected infection. Removal of the percutaneous suture closure device and debridement to normal arterial wall is recommended in all patients with suspected femoral endarteritis, based on positive intraoperative Gram stains or abnormal appearance of the adjacent femoral artery. Early success with an autologous bolstered repair is reported. Caution is advised when considering the use of a percutaneous suture closure device in patients with comorbid conditions including diabetes, obesity, and previously implanted devices.

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*From Northern California:*

**Use of antibiotics is not associated with decreased risk of myocardial infarction among patients with diabetes**

*Karter AJ, Thom DH, Liu J, Moffet HH, Ferrara A, Selby JV. Diabetes Care 2003 Jul;26(7):2100-6.*

**OBJECTIVE:** To study the relationship between exposure to antibiotic treatment and risk of subsequent myocardial infarction (MI) in patients with diabetes.

**RESEARCH AND DESIGN METHODS:** A case-control design was used to assess the effect of previous antibiotic exposure in diabetes patients with acute, nonfatal or fatal MI (case subjects) and individually matched control subjects (four control subjects to one case subject, matched on sex, age, and index date). Subjects were sampled from the Northern California Kaiser Permanente Diabetes Registry, a well-characterized, ethnically diverse diabetic population from Kaiser Permanente Medical Care Program, Northern California Region. MI events were ascertained during a two-year observation period (1998-1999). Separate conditional logistic regression models were specified to assess antibiotic exposure history (cephalosporins only, penicillins only, macrolides only, quinolones only, sulfonamides only, tetracyclines only, as well as more than one, any, or no antibiotic) for three nested windows before the index date (0-6 months, 0-12 months, 0-24 months), facilitating assessment of whether the potential effect was dependent on the timing of the exposure.

**RESULTS:** A total of 1401 MI case subjects were observed. Odds ratios were calculated in models adjusted for age, sex, race, education attain-

ment, time since diabetes diagnosis, diabetes type and treatment, use of diet and exercise, total cholesterol, HDL cholesterol, triglyceride levels, hypertension, elevated urinary albumin excretion, serum creatinine, BMI, and smoking. We found no evidence of a protective effect of any of these therapeutic classes of antibiotics during any of the three time frames.

**CONCLUSIONS:** Our study does not support the hypothesis that use of antibiotics has a protective effect for prevention of coronary heart disease in diabetic patients.

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**CLINICAL IMPLICATION:** Some studies suggest potential benefit of antibiotic use for CHD, but this has not been investigated among diabetics. This case-control study assessed the effect of previous antibiotic exposure among 1401 diabetics with acute, non-fatal or fatal myocardial infarction, with four individually age-sex-matched controls for each case. After adjusting for age, sex, race, and 11 other factors, we found no evidence of a protective effect of any therapeutic antibiotic class during any of three time frames. Our study does not support the hypothesis that use of antibiotics reduces CHD risk in diabetic patients. —AK

*From Northern California:*

**Psychiatric symptoms, impaired function, and medical care costs in an HMO setting**

*Hunkeler EM, Spector WD, Fireman B, Rice DP, Weisner C. Gen Hosp Psychiatry 2003 May-Jun;25(3):178-84.*

More information is needed regarding the medical care utilization and costs of indi-

viduals who report depressed mood, persistent anxiety, brief anxiety, panic, and trouble controlling violent behavior. We present findings from a one-year prospective follow-up study of a stratified random sample of adult HMO enrollees (n = 10,377) originally interviewed by telephone. A strong association was observed between these psychiatric symptoms, associated impaired function, and general medical care costs during the year following the interview. After controlling for age, gender, race, medical conditions, and smoking, the mean costs of general medical care were \$1948 for respondents who reported none of the psychiatric symptoms or impaired function; \$3006 for respondents with all five symptoms but no impaired function; and \$3906 for those with all five symptoms and pervasive functional impairment. Persistent anxiety and depressed mood had the greatest impact on total general medical costs, while impaired function was associated with increased likelihood of hospital admission and emergency room use. We conclude that depressed mood, persistent anxiety, and related impaired function are associated with substantial increases in the use and cost of general medical care. ♦

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**The Truth**

When you have eliminated the impossible, whatever remains, however improbable, must be the truth.

*Sir Arthur Conan Doyle, MD, 1859-1930, author*