HARVARD MEDICAL SCHOOL

NURSES' HEALTH STUDY

PLEASE REPLY TO:
Channing Laboratory
180 Longwood Ave.
Boston, Mass. 02115
617-732-2279

Dear Colleague:

This note is to bring you up to date on the progress of the Nurses' Health Study and to ask for your continued assistance in the study.

We have now published a number of articles from information that you and others have provided. This information has made a valuable contribution to our understanding of several important diseases. Abstracts from some of these publications are printed on the back of this letter. We have also enclosed a reprint from the American Journal of Nursing to bring you up to date on the progress of the NHS and our future plans.

In addition, I hope you will take a few moments to complete the attached short questionnaire. I realize it is sometimes hard to find the time to complete our longer form. However, to maintain the validity of data in the NHS it is critical to have complete information on the health experience of all those who completed our original questionnaire in 1976. Therefore, completing and returning this form would be an important contribution for learning how common practices of daily life affect health in women. As always, your responses will be held strictly confidential and stored in our files by identification number only.

Thank you for your assistance.

Sincerely,

Frank E. Speizer

Frank E. Speizer, M.D.
Principal Investigator

EARLY MENOPAUSE AND THE RISK OF MYOCARDIAL INFARCTION

Lynn Rosenberg, Charles H. Hennekens, Bernard Rosner, Charlene Belanger, Kenneth J. Rothman, and Frank E. Speizer

We evaluated the relation between age at menopause and the risk of nonfatal myocardial infarction (MI) among 121,964 nurses who responded to a mail questionnaire. Of 279 women who reported having been hospitalized for MI, 123 (44%) were postmenopausal (i.e., no longer menstruating) at the time of hospitalization, compared with 1,859 (33%) of 5,580 age-matched control subjects. Among women who became menopausal because of bilateral oophorectomy, the estimated relative risk of MI increased with decreasing age at menopause, and women who underwent bilateral oophorectomy before age 35 were estimated to have a risk of hospitalization for MI approximately 7.2 times (95% confidence interval, 4.5 to 11.4) that of premenopausal women. Hysterectomy without the removal of both ovaries was only weakly associated with an increased risk. The data support the hypothesis that premature cessation of ovarian function increases the risk of nonfatal MI. (*Am J Obstet Gynecol* 1981; 139:47)

ORAL CONTRACEPTIVES AND RISK OF OVARIAN CANCER

Walter C. Willett, Christopher Bain, Charles H. Hennekens, Bernard Rosner, and Frank E. Speizer

Among a large cohort of married, female, registered nurses under 55 years of age, oral contraceptive (OC) use was examined in women with ovarian cancer and 470 age-matched controls. Use of OCs before the diagnosis of cancer was reported by 28% of the women with ovarian cancer and 33% of the controls, yielding a relative risk of 0.8 (95% confidence limits 0.4-1.5). This apparent inverse relationship was attributable to a large effect in women 35 years of age or younger (relative risk = 0.2, 95% confidence limits 0.1-1.0). Patients with ovarian cancer were 2.2 times more likely than controls to be nulliparous. These data provide reassurance that OC use is not likely to be associated with any major increase in risk of ovarian cancer, but suggest that future studies of this relationship need to consider the possible confounding effect of infertility. (*Cancer* 1981; 48:1684)

EARLY AGE AT FIRST BIRTH AND DECREASED RISK OF BREAST CANCER

Christopher Bain, Walter Willett, Bernard Rosner, Frank E. Speizer, Charlene Belanger and Charles H. Hennekens

The relationship between age at birth of a first child and breast cancer was evaluated for 1159 affected women and 11,590 women without cancer in data collected in 1976 among married female registered nurses residing in 11 states in the United States. A positive trend of increasing risk of breast cancer with later ages at first birth was found (χ^2_1 for trend in proportions = 30.9, $p < 0.01$). Adjustment for potential confounding variables by multiple logistic regression did not affect this trend. The presence of this relationship using non-hospitalized controls of similar social status to cases supports the reality of this association, which has recently been challenged as an artifact due to inappropriate choice of hospitalized controls. (*Am J Epidemiol* 1981; 114:705)

ORAL CONTRACEPTIVE USE IN RELATION TO NONFATAL MYOCARDIAL INFARCTION

Lynn Rosenberg, Charles H. Hennekens, Bernard Rosner, Charlene Belanger, Kenneth J. Rothman, and Frank E. Speizer

The relation of oral contraceptive (OC) use to the risk of hospitalization for myocardial infarction (MI) was evaluated among 121,964 US nurses who responded to a mail questionnaire. There were 156 women who reported having been hospitalized for MI before the menopause, and 23 (15%) were OC users at the time of the MI, Of 3120 controls matched to the cases for menopausal status at the time of the MI and for age, 304 (10%) were using OCs at the time of the MI. The apparent increase in the risk of MI for current OC users was not explained by cigarette smoking, hypertension, elevated cholesterol or other identified risk factors for MI. We estimated that OC use increased MI risk 1.8-fold overall and 2.8-fold among nonsmokers without other risk factors. The increase in risk attributes to the combined effect of current OC use, cigarette smoking and hypertension was considerably greater than what would be predicted from the sum of the separate effects of these factors. (*Am J Epidemiol* 1980; 111:59)

ORAL CONTRACEPTIVE USE AND MALIGNANT MELANOMA

Christopher Bain, Charles H. Hennekens, Frank E. Speizer, Bernard Rosner, Walter Willett, and Charlene Belanger

There was no overall relationship between a prior history of oral contraceptive (OC) use and the development of melanoma among 141 cases of nonfatal malignant melanoma and 2,820 age-matched controls drawn from repondents to a large postal survey of registered U.S. nurses; crude relative risk (RR) was 0.93 and 95% confidence limits (CL) were between 0.64 and 1.36. Adjustment for a number of additional variables did not alter this estimate materially. Duration of OC use and interval since first use were similarly unrelated to the occurrence of melanoma. For women diagnosed before age 40, there was a crude positive association of ''ever'' use of OC and melanoma (RR = 1.78;95% CL, 1.11-2.86). However, adjustment for geography and other variables diminished this association and rendered it statistically not significant (RR = 1.43; 95% CL, 0.83-2.46). These data do not support the hypothesis that OC use is an independent risk ractor for melanoma.—(*JNCI* 1982; 68:537)

CIGARETTE SMOKING AND NON-FATAL MYOCARDIAL INFARCTION IN WOMEN

Walter C. Willett, Charles H. Hennekens, Christopher Bain, Bernard Rosner and Frank E. Speizer

The relationship between smoking and the risk of hospitalization for acute myocardial infraction (MI) was evaluated among 121,964 nurses aged 30-55 years who resided in 11 of the larger US states and who responded to a mail questionnaire. Among 249 women who experienced an MI, 159 (64%) were smokers at the time of hospitalization. Of 4977 controls matched to the cases on the basis of age, 1850 (37%) were smoking at the corresponding time. Smokers experienced a three-fold increase in risk of MI relative to individuals who never smoked, which was not explained by history of hypertension, diabetes, high cholesterol or familial MI. Women who had stopped smoking experienced a risk of MI no greater than women who had never smoked. (*Am J Epidemiol* 1981; 113:575)

(1) 1 (9) (11) (16)

HARVARD MEDICAL SCHOOL — 'NURSES' HEALTH QUESTIONNAIRE

Please answer all questions by filling in the appropriate box or writing in the information requested. All information will be regarded as **strictly confidential** and will be used only for medical research purposes.

1. What is your date of birth? _____ /_____ /_____
month (17) day (19) year (21)

2. Have your menstrual periods ceased permanently? ☐ no or don't know ☐ yes (23)

3. Do you **currently** use female hormone pills (e.g. Premarin)? ☐ no ☐ **yes** (24)

4. Do you **currently** smoke cigarettes? ☐ no ☐ yes (25)

5. Since June 1976 have you been diagnosed to have any of the following conditions? If yes, please specify date of diagnosis.

	PLEASE MARK IF DIAGNOSED	MONTH	YEAR
(26)	☐ HIGH BLOOD PRESSURE (EXCEPT WHILE PREGNANT)		19
(31)	☐ DIABETES MELLITUS		19
(36)	☐ ELEVATED CHOLESTEROL		19
(41)	☐ MYOCARDIAL INFARCTION (HEART ATTACK)		19
(46)	WERE YOU HOSPITALIZED FOR THIS HEART ATTACK? → ☐ No		Yes ☐
(47)	☐ ANGINA PECTORIS		19
(52)	☐ PERIPHERAL VENOUS THROMBOSIS		19
(57)	☐ FIBROCYSTIC BREAST DISEASE		19
(62)	WAS THIS CONFIRMED BY A BREAST BIOPSY? → ☐ No		Yes ☐
(63)	☐ OTHER BENIGN BREAST DISEASE		19
(68)	WAS THIS CONFIRMED BY A BREAST BIOPSY? → ☐ No		Yes ☐
(69)	☐ BREAST CANCER		19
2 (9) (74)	☐ CANCER OF THE CERVIX – IN SITU ONLY		19
(15)	☐ CANCER OF THE CERVIX – ALL OTHER		19
(20)	☐ CANCER OF THE UTERUS (ENDOMETRIUM)		19
(25)	☐ CANCER OF THE OVARY		19
(30)	☐ CANCER OF THE COLON OR RECTUM (LARGE BOWEL)		19
(35)	☐ CANCER OF THE LUNG		19
(40)	☐ MELANOMA		19
(45)	☐ OTHER CANCER (SPECIFY)		19
(55)	☐ OTHER MAJOR ILLNESS		19

6. Have you ever had any of the following conditions?

	PLEASE MARK IF DIAGNOSED	YEAR OF DIAGNOSIS
(65)	☐ RHEUMATOID ARTHRITIS	19
(68)	☐ GOUT	19
(71)	☐ OTHER ARTHRITIS	19
3 (9) (74)	☐ SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)	19
(15)	☐ CHOLECYSTECTOMY (GALL BLADDER REMOVAL)	19
(18)	☐ GALL STONES, NOT REMOVED	19
(21)	☐ STROKE (CVA)	19
(24)	☐ PULMONARY EMBOLUS	19
(27)	☐ OSTEOPOROSIS	19
(30)	☐ FRACTURE OF HIP OR FOREARM	19
(33)	☐ GASTRIC OR DUODENAL UCLER	19
(36)	☐ ULCERATIVE COLITIS	19

THANK YOU.

Please return completed questionnaire in the pre-paid envelope to:

NURSES HEALTH STUDY
Frank E. Speizer, M.D.
Harvard Medical School
180 Longwood Avenue
Boston, Massachusetts 02115