

A Selective Bibliography 1997-1999

The following is a selective bibliography of publications based on the National Health and Nutrition Examination Surveys and published in the years 1997-1999. Surveys included in this search were the First National Health and Nutrition Examination Survey (NHANES I), the Second National Health and Nutrition Examination Survey (NHANES II), the Hispanic Health and Nutrition Examination Survey (HHANES), the NHANES I Epidemiologic Follow-Up Survey (NHEFS), and the Third National Health and Nutrition Examination Survey (NHANES III). Articles which used these survey titles or the acronyms in either the title, the abstract, or as a keyword were identified. Multiple databases were used since it was found that articles were sometimes referenced in only one database.

Citations to these publications were obtained by searching the following electronic databases:

AGRICOLA - produced by the National Agricultural Library

EMBASE - produced by Excerpta Medica

MEDLINE - produced by the National Library of Medicine

SCISEARCH - produced by the Institute for Scientific Information

Results and conclusions of published analyses are the responsibility of the individual authors, and not the National Center for Health Statistics. Data from these surveys have been released on public use computer data files. These and other NCHS data files, can be ordered from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161; they can also be requested through the NTIS homepage (<http://www.ntis.gov>). Users can obtain NHANES III data through two additional media: data may be downloaded for free from the Internet through the NCHS/CDC homepage (<http://www.cdc.gov/nchswww>), and CD-ROMs are available from NTIS.

Annual updates to this bibliography and copies of NCHS/CDC publications cited in the bibliography may be obtained from the Data Dissemination Branch, NCHS, 6525 Belcrest Road, Hyattsville, Maryland 20782; telephone number: (301) 458-4636.

The bibliography has three limitations. First, not all journals or publications are included in the computerized databases used. Second, unless one of the search words was included in the title, the abstract, or

the keywords, then the publication was not identified. Third, only English language publications were retrieved. Future authors using the data from these surveys and publishing the results are urged to use the survey acronym or the full survey name in the publication title, the abstract, or as a keyword to facilitate identification in electronic databases.

Updated 01/12/00

1999

Albandar JM; Brunelle JA; Kingman A (1999): Destructive periodontal disease in adults 30 years of age and older in the United States, 1988-1994. *J Periodontol* 70 (1, Jan), 13-29.

[ADULTS; AFRICAN AMERICANS; MEXICAN AMERICANS; NHANES III; PERIODONTAL DISEASE]

<BACKGROUND: Accurate information on the prevalence and extent of periodontal diseases in the United States adult population is lacking. This study estimated the prevalence and extent of periodontal disease in the United States using data from the third National Health and Nutrition Examination Survey (NHANES III). METHODS: A nationally representative sample was obtained during 1988 to 1994 by a stratified, multi-stage probability sampling design. A subsample of 9,689 dentate persons 30 to 90 years old who received a periodontal examination was used in this study, representing approximately 105.8 million civilian, non-institutionalized Americans in 1988 to 1994. Periodontal attachment loss, probing depth, and furcation involvement were assessed in 2 randomly selected quadrants per person. Attachment loss and probing depth were assessed at 2 sites per tooth, the mesiobuccal and mid-buccal surfaces. The periodontal status of each subject was assessed by criteria based on the extent and severity of probing depth and furcation involvement. These assessments were used to classify each subject as having a mild, moderate, or advanced form of the disease. In the analyses, weighted data were used to reflect the complex sampling method. RESULTS: Prevalence of attachment loss ≥ 3 mm was 53.1% for the population of dentate U.S. adults 30 to 90 years of age and, on average, 19.6% of teeth per person were affected. The prevalence of probing depth ≥ 3 mm was 63.9% and, on average, 19.6% of teeth were affected. Fourteen percent of these persons had furcation involvement in one or more teeth. We estimate that at least 35% of the dentate U.S. adults aged 30 to 90 have periodontitis, with 21.8% having a mild form and 12.6% having a moderate or severe form. The prevalence and extent of attachment loss and the prevalence of periodontitis increase considerably with age. However, the prevalence of moderate and advanced

periodontitis decreases in adults 80 years of age and older. This is most likely attributed to a combination of a high prevalence of tooth loss and gingival recession in the oldest age cohorts. Attachment loss and destructive periodontitis were consistently more prevalent in males than females, and more prevalent in blacks and Mexican Americans than whites. We estimate that in persons 30 years and older, there are approximately 56.2 and 67.6 million persons who, on average, have about a third of their remaining teeth affected by $>$ or $=$ 3 mm attachment loss and probing depth, respectively. We also estimate that about 21 million persons have at least one site with $>$ or $=$ 5 mm attachment loss, and 35.7 million persons have periodontitis. These are conservative estimates based on partial-mouth examinations, and the true prevalence and extent of periodontal disease may be significantly higher than what is reported here. CONCLUSIONS: Periodontitis is prevalent in the U.S. adult population. The results show that black and Mexican American males have poorer periodontal health than the rest of the U.S. adult population. Primary and secondary preventive measures should therefore be specifically targeted towards these groups.>

Albandar JM; Kingman A (1999): Gingival recession, gingival bleeding, and dental calculus in adults 30 years of age and older in the United States, 1988-1994. J Periodontol 70 (1, Jan), 30-43.

[ADULTS; DENTAL CALCULUS; GINGIVITIS; MEXICAN AMERICANS; NHANES III]

<BACKGROUND: The aim of this study was to assess the prevalence and extent of gingival recession, gingival bleeding, and dental calculus in United States adults, using data collected in the third National Health and Nutrition Examination Survey (NHANES III). METHODS: The study group consisted of 9,689 persons 30 to 90 years of age obtained by a stratified, multi-stage probability sampling method in 1988 to 1994. The weighted sample is representative of U.S. adults 30 years or older and represents approximately 105.8 million civilian, non-institutionalized Americans. Gingival recession, gingival bleeding, and dental calculus were assessed at the mesio-buccal and mid-buccal surfaces in 2 randomly selected quadrants, one maxillary and one mandibular. Data analysis accounted for the complex sampling design used. RESULTS: We estimate that 23.8 million persons have one or more tooth surfaces with $>$ or $=$ 3 mm gingival recession; 53.2 million have gingival bleeding; 97.1 million have calculus; and 58.3 million have subgingival calculus; and the corresponding percentages are 22.5%, 50.3%, 91.8%, and 55.1% of persons, respectively. The prevalence, extent, and severity of gingival recession increased with age, as did the prevalence of subgingival calculus and the extent of teeth with calculus and gingival bleeding. Males had significantly more gingival recession, gingival bleeding, subgingival calculus, and more teeth with total calculus than females. Of the 3 race/ethnic groups studied, non-Hispanic blacks had the highest

prevalence and extent of gingival recession and dental calculus, whereas Mexican Americans had the highest prevalence and extent of gingival bleeding. Mexican Americans had similar prevalence and extent of gingival recession compared with non-Hispanic whites. Gingival recession was much more prevalent and also more severe at the buccal than the mesial surfaces of teeth. Gingival bleeding also was more prevalent at the buccal than mesial surfaces, whereas calculus was most often present at the mesial than buccal surfaces. CONCLUSIONS: Dental calculus, gingival bleeding, and gingival recession are common in the U.S. adult population. In addition to their unfavorable effect on esthetics and self-esteem, these conditions also are associated with destructive periodontal diseases and root caries. Appropriate measures to prevent or control these conditions are desirable, and this may also be effective in improving the oral health of the U.S. adult population.>

Albert DA (1999): Sealant use in public and private insurance programs. N Y State Dent J 65 (2, Feb), 24-25.

[DENTAL SEALANTS; NHANES III]

<Dental sealants are a safe and efficacious method for preventing caries in pits and fissures. An increase in sealant use has been observed in the NHANES III survey. However this increase still accounts for less than one fifth of children aged 5-17 having sealants on their teeth. Reimbursement and coverage of sealants by public and private insurance programs have lagged behind the widespread acceptance of this methodology by the profession. Medicaid preventive services are poorly used by patients and the profession: and the inclusion of sealants in traditional, indemnity, fee-for-service commercial plans has been inconsistent. Managed care programs include dental sealants, but lack financial incentives to increase their use.>

Allison DB; Fontaine KR; Heo M; Mentore JL; Cappelleri JC; Chandler LP; Weiden PJ; Cheskin LJ (1999): The distribution of body mass index among individuals with and without schizophrenia. J Clin Psychiatry 60 (4, Apr), 215-220.

[BMI; NHANES III; NHIS; OBESITY; SCHIZOPHRENIA]

<OBJECTIVE: The objective of this study was to estimate and compare the distributions of body mass index (BMI: kg/m.2) among individuals with and without schizophrenia, and, thereby, place the weight gain-inducing effects of antipsychotic drugs into context. METHOD: Data sources were (1) the mental health supplement of the 1989 National Health Interview Survey (NHS; N = 80,130 nonschizophrenic and 150 self-reported schizophrenic individuals), (2) baseline BMI data from a drug trial of the anti-psychotic ziprasidone supplied by Pfizer Inc (420 noninstitutionalized individuals with chronic psychotic disorders [DSM-IV schizophrenia or schizoaffective disorder]) and (3) data from the

National Health and Nutrition Examination Survey III (NHANES III; N = 17,689 nonschizophrenic individuals) to act as a control group for the ziprasidone trial data. RESULTS: After age-adjusting BMI in each data set, the NHIS data revealed that men with schizophrenia have mean BMIs similar to those of men without schizophrenia (26.14 vs. 25.63, respectively). In contrast, women with schizophrenia in the NHIS data set had a significantly ($p < .001$) higher mean BMI than did women without schizophrenia (27.36 vs. 24.50, respectively). Moreover, each decile was higher for women with schizophrenia than for women without schizophrenia. Analysis of the ziprasidone and NHANES III data sets revealed that, on average, men with schizophrenia have mean BMIs comparable to those of men without schizophrenia (26.79 vs. 26.52, respectively). In these 2 data sets, women with schizophrenia also had a mean BMI similar to those of women without schizophrenia (27.29 vs. 27.39, respectively). CONCLUSION: Although there may be a small subpopulation of schizophrenic individuals who are underweight, individuals with schizophrenia were, on the whole, as obese as or more obese than individuals without schizophrenia, suggesting that weight gain induced by antipsychotic agents is an important concern for many individuals.>

Alter MJ; Kruszon-Moran D; Nainan OV; McQuillan GM; Gao F; Moyer LA; Kaslow RA; Margolis HS (1999): The prevalence of hepatitis C virus infection in the United States, 1988 through 1994. *N Engl J Med* 341 (8, 19 Aug), 556-562.

[DRUG USE; HCV; HEPATITIS C; NHANES III]

<BACKGROUND: Because many persons with chronic hepatitis C virus (HCV) infection are asymptomatic, population-based serologic studies are needed to estimate the prevalence of the infection and to develop and evaluate prevention efforts. METHODS: We performed tests for antibody to HCV (anti-HCV) on serum samples from 21,241 persons six years old or older who participated in the third National Health and Nutrition Examination Survey, conducted during 1988 through 1994. We determined the prevalence of HCV RNA by means of nucleic acid amplification and the genotype by means of sequencing. RESULTS: The overall prevalence of anti-HCV was 1.8 percent, corresponding to an estimated 3.9 million persons nationwide (95 percent confidence interval, 3.1 million to 4.8 million) with HCV infection. Sixty-five percent of the persons with HCV infection were 30 to 49 years old. Seventy-four percent were positive for HCV RNA, indicating that an estimated 2.7 million persons in the United States (95 percent confidence interval, 2.4 million to 3.0 million) were chronically infected, of whom 73.7 percent were infected with genotype 1 (56.7 percent with genotype 1a, and 17.0 percent with genotype 1b). Among subjects 17 to 59 years of age, the strongest factors independently associated with HCV infection were illegal drug use and high-risk sexual behavior. Other factors

independently associated with infection included poverty, having had 12 or fewer years of education, and having been divorced or separated. Neither sex nor racial-ethnic group was independently associated with HCV infection. CONCLUSIONS: In the United States, about 2.7 million persons are chronically infected with HCV. People who use illegal drugs or engage in high-risk sexual behavior account for most persons with HCV infection.>

Backer LC; Rubin CS; Marcus M; Kieszak SM; Schober SE (1999): Serum follicle-stimulating hormone and luteinizing hormone levels in women aged 35-60 in the U.S. population: the Third National Health and Nutrition Examination Survey (NHANES III, 1988-1994). 6 (1, Spring), 29-35.

[FSH; HORMONES; LH; MENOPAUSE; NHANES III; SMOKING]
<OBJECTIVE: The objective of this study was to examine age-specific population-based values for serum follicle-stimulating hormone (FSH) and luteinizing hormone (LH) levels in women in the U.S. population. DESIGN: Data were collected from a nationally representative cross-sectional health examination survey that included measurements of follicle-stimulating hormone and luteinizing hormone and information from a personal interview. A total of 3388 women aged 35 to 60 years were examined during the third National Health and Nutrition Examination Survey, 1988-1994. RESULTS: Among U.S. women aged 35-60 years, median FSH and LH levels began to increase for women in their late 40s and reached a plateau for women in their early 50s. This study supports the previously reported association between serum FSH and age (i.e., serum FSH and LH levels increase with age) and smoking (i.e., current smoking was associated with an increased level of serum FSH). At FSH levels of $> \text{ or } = 15 \text{ IU/L}$ or $> \text{ or } = 20 \text{ IU/L}$, 70 and 73% of women, respectively, were postmenopausal. Our study also found an interaction between age and oophorectomy. In addition, the present data suggest that women with only one ovary may have higher FSH levels than women with both of their ovaries. CONCLUSIONS: NHANES III provides population-based data that support previously reported associations between serum FSH level and age, smoking, and menopausal status.>

Ballew C; Khan LK; Kaufmann R; Mokdad A; Miller DT; Gunter EW (1999): Blood lead concentration and children's anthropometric dimensions in the Third National Health and Nutrition Examination Survey (NHANES III), 1988-1994. J Pediatr 134 (5, May), 623-630. [BLOOD LEAD LEVELS; BMI; CHILDREN; HEIGHT; MEXICAN AMERICANS; NHANES II; NHANES III; NON-HISPANIC BLACKS; NON-HISPANIC WHITES]

<OBJECTIVE: To assess the association between lead exposure and

children's physical growth. DESIGN: Cross-sectional analysis of data from the Third National Health and Nutrition Examination Survey, 1988-1994. PARTICIPANTS: A total of 4391 non-Hispanic white, non-Hispanic black, and Mexican-American children age 1 to 7 years. Measurements and Results: We investigated the association between blood lead concentration and stature, head circumference, weight, and body mass index with multiple regression analysis adjusting for sex, ethnic group, iron status, dietary intake, medical history, sociodemographic factors, and household characteristics. Blood lead concentration was significantly negatively associated with stature and head circumference. Regression models predicted reductions of 1.57 cm in stature and 0.52 cm in head circumference for each 0.48 micromol/L (10 micrograms/dL) increase in blood lead concentration. We did not find significant associations between blood lead concentration and weight or body mass index. CONCLUSIONS: The significant negative associations between blood lead concentration and stature and head circumference among children age 1 through 7 years, similar in magnitude to those reported for the Second National Health and Nutrition Examination Survey, 1976-1980, suggest that although mean blood lead concentrations of children have been declining in the United States for 2 decades, lead exposure may continue to affect the growth of some children.>

Barnard J; Meng XL (1999): Applications of multiple imputation in medical studies: from AIDS to NHANES. *Stat Methods Med Res* 8 (1, Mar), 17-36.

[AIDS; DATA SETS; MISSING DATA; NHANES]

<Rubin's multiple imputation is a three-step method for handling complex missing data, or more generally, incomplete-data problems, which arise frequently in medical studies. At the first step, m (> 1) completed-data sets are created by imputing the unobserved data m times using m independent draws from an imputation model, which is constructed to reasonably approximate the true distributional relationship between the unobserved data and the available information, and thus reduce potentially very serious nonresponse bias due to systematic difference between the observed data and the unobserved ones. At the second step, m complete-data analyses are performed by treating each completed-data set as a real complete-data set, and thus standard complete-data procedures and software can be utilized directly. At the third step, the results from the m complete-data analyses are combined in a simple, appropriate way to obtain the so-called repeated-imputation inference, which properly takes into account the uncertainty in the imputed values. This paper reviews three applications of Rubin's method that are directly relevant for medical studies. The first is about estimating the reporting delay in acquired immune deficiency syndrome (AIDS) surveillance systems for the purpose of estimating survival time after AIDS diagnosis.

The second focuses on the issue of missing data and noncompliance in randomized experiments, where a school choice experiment is used as an illustration. The third looks at handling nonresponse in United States National Health and Nutrition Examination Surveys (NHANES). The emphasis of our review is on the building of imputation models (i.e. the first step), which is the most fundamental aspect of the method.>

Breslow RA; Wideroff L; Graubard BI; Erwin D; Reichman ME; Ziegler RG; Ballard-Barbash R (1999): Alcohol and prostate cancer in the NHANES I epidemiologic follow-up study. First National Health and Nutrition Examination Survey of the United States. *Ann Epidemiol* 9 (4, May), 254-261.

[ALCOHOL; DRINKING; NHANES I; NHFES I; PROSTATE CANCER]

<PURPOSE: We prospectively investigated the association between alcohol consumption and prostate cancer in the Epidemiologic Follow-up Study (NHEFS) of the first National Health and Nutrition Examination Survey (NHANES I). METHODS: There were two cohorts: 1) Cohort I, followed from baseline (1971-75) through 1992, included 5766 men ages 25-74 years (median follow-up = 17 years); and 2) Cohort II, followed from the first follow-up round for Cohort I (1982-84) through 1992, included the 3868 men in Cohort I free of prostate cancer in 1982-84 (median follow-up = 9 years). Alcohol consumption was assessed at baseline as usual consumption, and at follow-up as usual consumption and as distant past consumption at the ages of 25, 35, 45, and 55. RESULTS: There were 252 incident cases of prostate cancer. Consistent with most previous studies, we found no significant associations between usual total alcohol consumption and prostate cancer in Cohorts I or II [p = non significant (NS)], except for a significant inverse association at the heaviest level of drinking in Cohort II [relative risk (RR) = 0.23, 95% confidence interval (CI) = 0.06-0.95]. Further study of heavy drinkers in Cohort II revealed significant inverse associations between distant past heavy drinking (defined as > 25 drinks/week) and prostate cancer at age 25 (RR = 0.20, 95% CI = 0.06-0.63), age 35 (RR = 0.30, 95% CI = 0.12-0.77), and age 45 (RR = 0.39, 95% CI = 0.17-0.93), but not at age 55 (RR = 0.43, 95% CI = 0.17-1.10). CONCLUSIONS: These results suggest that it may be important to consider distant past alcohol consumption in etiologic studies of prostate cancer. However, our results were based on small numbers of cases who were heavy drinkers and require replication.>

Brier KL; Tornow JJ; Ries AJ; Weber MP; Downs JR (1999): Forecasting patient outcomes in the management of hyperlipidemia. *Arch Intern Med* 159 (6, 22 Mar), 569-575.

[DRUG THERAPY; HYPERLIPIDEMIA; LDL; NHANES III]

<To forecast adult patient outcomes in the management of hyperlipidemia using adult National Health and Examination Survey III (NHANES III) population statistics and National Cholesterol Education Program (NCEP) guidelines for goals of therapy. Methods: Review of the hyperlipidemia drug therapy English-language medical literature with emphasis on randomized controlled trials of more than 6 weeks, duration published in the last 7 years, product package inserts, US Food and Drug Administration submission information, and NHANES III population statistics. Data were extracted from studies of lipid-lowering therapy to modify low-density lipoprotein (LDL) levels for primary and secondary prevention of coronary heart disease. The data that were evaluated included sample size, study design, therapeutic intervention, length of study, percentage change in LDL levels, and patient demographics. Results: Cumulative frequency curves of the LDL distribution among the US adult population were constructed. The mean efficacy of drug therapy from qualified studies was used to extrapolate the percentage of the population expected to respond to the intervention and to forecast the patient outcome. Conclusions: A useful tool for clinicians was constructed to approximate the percentage of patients, based on risk stratification, who would reach NCEP target goal after a given pharmacotherapeutic intervention to decrease LDL levels.>

Brown LJ; Wall TP; Lazar V (1999): Trends in untreated caries in permanent teeth of children 6 to 18 years old. J Am Dental Assoc 130 (11, Nov), 1637-44.

[ADOLESCENTS; CHILDREN; DENTAL; NHANES I; NHANES III]
<BACKGROUND: This article is the first in a series of three that focus on recent changes in the caries status of children and adolescents in the United States. METHODS: This study is based on analyses of data regarding untreated carious permanent teeth among children 6 to 18 years of age from the first and third National Health and Nutrition Examination Surveys, or NHANES I and NHANES III. The NHANES is periodically conducted by the National Center for Health Statistics of the Centers for Disease Control and Prevention. RESULTS: Overall, the number of carious permanent teeth among children 6 to 18 years old decreased from 1.43, as measured in NHANES I, to 0.33, as measured in NHANES III. The number of carious permanent teeth in children 6 to 18 years old also decreased across four demographic variables: age, sex, race and poverty level. CONCLUSIONS: The number of untreated carious permanent teeth among children has declined dramatically. Since the 1970s, the absolute difference in untreated caries between disadvantaged children and the rest of the child population has narrowed substantially. PRACTICE IMPLICATIONS: The reduction in untreated caries, the major oral disease among children, has been dramatic in all subgroups of children. This may reinforce the already apparent shift from restorative to preventive dental services.>

Chapin BL; Medina S; Le DK; Bussell N; Bussell K (1999): Prevalence of undiagnosed diabetes and abnormalities of carbohydrate metabolism in a U.S. Army population. *Diabetes Care* 22 (3, Mar), 426-9.

[BLACK AMERICANS; DIABETES; GLUCOSE TOLERANCE; NHANES III; U.S. ARMY; WHITE AMERICANS]

<OBJECTIVE: The Third National Health and Nutrition Examination Survey (NHANES III) reported that 4.3-6.3% of adult Americans have undiagnosed diabetes. 15.6% have impaired glucose tolerance, and 10.1% have impaired fasting glucose. By design, NHANES III excluded people in the U.S. military. The purpose of this study was to determine the prevalence of undiagnosed diabetes, impaired glucose tolerance, and impaired fasting glucose among U.S. Army soldiers. RESEARCH DESIGN AND METHODS: A 2-h, 75-g oral glucose tolerance test was performed on a prospective, consecutive sample of 625 asymptomatic soldiers presenting to a U.S. Army medical clinic for physical examinations. Age of subjects was 32 +/- 9 years (mean +/- SD), and 81.0% of subjects were male. BMI was 26.2 +/- 3.7 kg/m². Race/ethnicity categories included Caucasian (54.4%), African-American (24.4%), Hispanic (17.4%), and other (3.7%). A family history of diabetes was reported by 25.4% of the subjects, and the number of exercise sessions per week was 4.0 +/- 1.5. RESULTS: The prevalence of undiagnosed diabetes was 3 of 625 (0.5%) (95% CI, 0.1-1.4); impaired glucose tolerance, 11 of 598 (1.8%) (0.9-3.3); and impaired fasting glucose 6 of 585 (1.0%) (0.4-2.2). CONCLUSIONS: In this low-diabetes risk U.S. Army population, the prevalence of undiagnosed diabetes, impaired glucose tolerance, and impaired fasting glucose were 0.5, 1.8, and 1.0%, respectively. The prevalence rates found in this study are approximately one-tenth of those found in NHANES III.>

Crooks DL (1999): Child growth and nutritional status in a high-poverty community in eastern Kentucky. *Am J Phys Anthropol* 109 (1, May), 129-142.

[HEIGHT; KENTUCKY; NHANES; OBESITY; POVERTY; WEIGHT]

<The research reported in this paper examines the relationship between household socioeconomic measures, child growth, and nutritional status in a community in eastern Kentucky with a high rate of poverty. It is based on the premise that child growth and nutritional status reflect the social circumstances in which they occur. 21.6% of the children exhibited low height (<I 5th percentile of National Center for Health Statistics [NCHS] reference values), with 13% of the girls exhibiting stunting (<5th percentile). Thirty-three percent of the children exhibited overweight, and 13% exhibited obesity (>85th percentile and >95th percentile of National Health and Nutrition Examination Survey [NHANES] reference values, respectively); 21.4% of boys were obese,

compared to 8.7% of girls. Analysis of variance indicated that child stature is best explained by the father's education level interacting with employment status, and by the mother's employment status interacting with household poverty level. Weight is best explained by the mother's employment status. However, the relationships among socioeconomic measures and growth outcomes differed by gender of the child. These issues are discussed in light of the anthropology literature and the situation in Bridges County, Kentucky where the research took place.>

Davidson MB; Schriger DL; Peters AL; Lorber B (1999): Relationship between fasting plasma glucose and glycosylated hemoglobin: potential for false-positive diagnoses of type 2 diabetes using new diagnostic criteria. 281 (13, 7 Apr), 1203-10.

[DIABETES MELLITUS; GLYCATED HEMOGLOBIN; NHANES III]

<CONTEXT: New criteria for the diagnosis of type 2 diabetes mellitus have recently been introduced that lowered the diagnostic fasting plasma glucose (FPG) concentration from 7.8 to 7.0 mmol/L (140 to 126 mg/dL). OBJECTIVE: To determine if individuals with diabetes diagnosed by the new FPG concentration criterion would have excessive glycosylation (elevated hemoglobin [HbA1c] levels). DEFINITIONS: We determined the distribution of HbA1c levels in individuals using 4 classifications: (1) normal by the new criterion (FPG concentration <6.1 mmol/L [110 mg/dL]); (2) impaired fasting glucose by the new criterion (FPG concentration of 6.1-6.9 mmol/L [110-125 mg/dL]); (3) diabetes diagnosed solely by the new FPG concentration criterion of 7.0 through 7.7 mmol/L (126-139 mg/dL); and (4) diabetes diagnosed by the previous FPG concentration criterion of 7.8 mmol/L (140 mg/dL) or higher. DESIGN: Cross-sectional analysis of 2 large data sets (NHANES III and Meta-Analysis Research Group [MRG] on the Diagnosis of Diabetes Using Glycated Hemoglobin) that contained individuals in whom FPG concentrations, 2-hour glucose concentrations using an oral glucose tolerance test, and an HbA1c level were simultaneously measured. We cross-tabulated FPG concentrations (<6.1 mmol/L [110 mg/dL], 6.1-6.9 mmol/L [110-125 mg/dL], 7.0-7.7 mmol/L [126-139 mg/dL], and > or =7.8 mmol/L [140 mg/dL]) and HbA1c levels separated into 3 intervals: normal, less than the upper limit of normal (ULN); slightly elevated, ULN to ULN plus 1%; and high, higher than ULN plus 1%. RESULTS: Among subjects with normal FPG concentrations, HbA1c levels in the NHANES III (and the MRG) data sets were normal in 97.3% (96.2%), slightly elevated in 2.7% (3.6%), and high in 0.1% (0.2%). Among individuals with impaired fasting glucose, HbA1c concentrations were normal in 86.7% (81.4%), slightly elevated in 13.1% (16.4%), and high in 0.2% (2.2%). Among diabetic patients diagnosed by the new FPG criterion only, HbA1c levels were normal in 60.9% (59.6%), slightly elevated in 35.8% (32.8%), and high

in 3.4% (7.6%). In diabetic patients diagnosed by the former FPG criterion, HbA1c levels were normal in 18.6% (16.7%), slightly elevated in 32.5% (21.0%), and high in 48.9% (62.3%). CONCLUSIONS: About 60% of the new cohort of diabetic patients in both data sets have normal HbA1c levels. We believe that diabetes should not be diagnosed in those with FPG concentrations less than 7.8 mmol/L (140 mg/dL) unless excessive glycosylation is evident. Individuals without excessive glycosylation but with moderate elevations of FPG concentrations (6.1-7.7 mmol/L [110-139 mg/dL]) should be diagnosed as having impaired fasting glucose and treated with an appropriate diet and exercise. This diagnostic labeling achieves the goal of early intervention without subjecting these persons to the potentially negative insurance, employment, social, and psychological consequences of a diagnosis of diabetes mellitus.>

Elliott WJ; Toth SJ; Stemer A; Cadwalader JH (1999): Detection, treatment, and control of adult hypertension in northwest Indiana. Ispat Inland/United Steelworkers of America Health Care Network. Am J Hypertens 12 ((8 Pt 1), Aug), 830-834.

[HYPERTENSION; NHANES III]

<Recent data from the third National Health and Nutrition Examination Survey (NHANES-IIIB) suggest that detection and treatment of hypertension is improving, but only 27.4% of American hypertensives achieved controlled blood pressure ([BP] < 140 and < 90 mm Hg). Our objective was to assess the degree of BP control in a group of steelworkers and their families whose health care is financed by a large corporation. A random sample of 792 adults (age > 18 years, average 55 +/- 1 years, 50.4% male) was selected from a roster of patients who were known (from claims data) to have visited a physician in 1995 to 1996. Office charts were reviewed by trained nurses, who abstracted dates of 4095 visits, 3352 BP readings, and 3331 prescribed medications. Filled prescriptions were identified from 54,689 claims submitted for pharmacy services. Hypertension, defined (per NHANES) as more than one BP reading of 140/90 or higher, or taking antihypertensive medication, was found in 437 (55%). At least one antihypertensive medication was prescribed for 386 (88%) of the hypertensives; only 10 failed to have any prescription for antihypertensive medications filled. Controlled hypertension, as defined by Healthcare Employer Data Information Sheet (HEDIS) 3.0 (average BP < 140 and < 90 mm Hg in the office during a year-long period of observation), was observed in 189 patients (43% of total sample, or 50% of the 382 with at least one recorded BP measurement). These data suggest that in this population, insured by a jointly run employer-union health benefits plan, Healthy People 2000's BP goal-at least 50% of hypertensives having BP under control by the turn of the century-may be achieved ahead of schedule.>

Enstrom JE (1999): Smoking cessation and mortality trends among two United States populations. *J Clin Epidemiol* 52 (9, Sep), 813-825.

[MORTALITY; NHEFS; SMOKING]

<The long-term impact of smoking cessation on mortality is assessed among two U.S. populations: a large cohort of U.S. veterans aged 55-64 at entry and followed from 1954 through 1979 and the NHANES I Epidemiologic Followup Study (NHEFS) cohort of a national sample of U.S. adults aged 55-74 at entry and followed from 1971 through 1992. Direct and indirect survey data indicate that 50-70% of those who were current cigarette smokers at entry had quit smoking during the 19- to 26-year follow-up periods. The impact of smoking cessation on mortality among the cigarette smokers as a whole has been assessed by determining the time trend of the relative risk (RR) of death and 95% confidence interval (CI) for the cigarette smokers compared with never-smokers over the entire follow-up period in both cohorts. The total death rates for the 1954/57 U.S. veteran smokers as a whole (63,159 males) have converged only slightly toward those of never-smokers, from RR = 1.65 (1.58-1.72) during 1954-1959 to RR = 1.61 (1.58-1.63) during 1954-1979. The lung cancer death rates for 1954/57 smokers as a whole have not converged toward those of never-smokers, with RR = 10.89 (7.70-15.41) during 1954-1959 and RR = 11.10 (9.78-12.61) during 1954-1979. The total death rates for the 1971-1975 NHEFS smokers as a whole (694 males and 1116 females) have not converged toward those of never-smokers. For males, RR = 1.92 (1.46-2.52) during 1971-1982 and RR = 1.96 (1.63-2.36) during 1971-1992; for females, RR = 1.79 (1.31-2.46) during 1971-1982 and RR = 1.79 (1.47-2.17) during 1971-1992. The lung cancer death rates have diverged, based on small numbers of deaths. For males, RR = 15.76 (2.06-120.61) during 1971-1982 and RR = 22.20 (5.31-92.92) during 1971-1992; for females, RR = 2.92 (0.57-15.06) during 1971-1982 and RR = 4.74 (1.94-11.59) during 1971-1992. These trends are contrary to the substantial convergence predicted by the death rate trends among U.S. veterans who were former smokers at the beginning of follow-up. While these results confirm that those former smokers who survive for at least 5 years experience death rates that converge toward those of never-smokers, they also indicate that a cohort of cigarette smokers that undergoes substantial cessation experiences a death rate that does not converge toward the death rate of never-smokers. The fact that there has been no convergence for lung cancer is quite surprising, as this is the disease most strongly linked to smoking and smoking cessation and less likely to be influenced by other lifestyle factors. Further investigation is needed for a complete understanding of the impact of smoking cessation.>

Ervin RB; Wright JD; Kennedy-Stephenson J (1999): Use of dietary supplements in the United States, 1988-94. *Vital Health Stat* 2 244 (i-iii, Jun), 1-14.

[DIETARY SUPPLEMENTS; EDUCATION; HEALTH STATUS; INCOME; MEXICAN AMERICANS; NHANES III; NON-HISPANICS]

<OBJECTIVES: This report presents estimates of the prevalence of use of dietary supplements among the U.S. population by various demographic and descriptive characteristics, the number of products taken, and types of supplements taken by broad product-type categories. METHODS: The third National Health and Nutrition Examination Survey (NHANES III) is a nationally representative survey of the civilian, noninstitutionalized U.S. population, 2 months of age or over. Participants were asked about their use of vitamin and/or mineral supplements in the past month. Many also reported use of other dietary supplements. RESULTS: Approximately 40 percent of the population took dietary supplements during the month prior to the interview. Females (44 percent) were more likely to take a supplement than males (35 percent). Non-Hispanic white persons (43 percent) were more likely to take supplements than non-Hispanic black persons (30 percent) and Mexican American persons (29 percent). Children 1-5 years of age were major users of supplements. Among adults 20 years of age and older, there was a trend toward increasing use of dietary supplements with age. Higher levels of education, income, and self-reported health status were all positively related to supplement use. Sixty-seven percent of supplement users took only one supplement, with the majority of them taking a combination vitamin/mineral product (46 percent). CONCLUSIONS: A substantial proportion of the U.S. population takes vitamins, minerals, and/or other dietary supplements.>

Everhart JE; Khare M; Hill M; Maurer K (1999): Prevalence and ethnic differences in gallbladder disease in the United States. *Gastroenterology* 117 (3, Sep), 632-639.

[FEMALES; GALLBLADDER; MALES; MEXICAN AMERICANS; NHANES III; NON-HISPANICS BLACKS]

<BACKGROUND & AIMS: Gallbladder disease is one of the most common conditions in the United States, but its true prevalence is unknown. A national population-based survey was performed to determine the age, sex, and ethnic distribution of gallbladder disease in the United States. METHODS: The third National Health and Nutrition Examination Survey (NHANES III) conducted gallbladder ultrasonography among a representative U.S. sample of more than 14,000 persons. The diagnosis of gallbladder disease by detection of gallstones or cholecystectomy was made with excellent reproducibility. RESULTS: An estimated 6.3 million men and 14.2 million women aged 20-74 years had gallbladder disease. Age-standardized prevalence was similar for non-Hispanic white (8.6%) and Mexican American (8.9%) men, and both were higher than non-Hispanic black men (5.3%). These relationships persisted with multivariate adjustment. Among women, age-

adjusted prevalence was highest for Mexican Americans (26.7%) followed by non-Hispanic whites (16.6%) and non-Hispanic blacks (13.9%). Among women, multivariate adjustment reduced the risk of gallbladder disease for both Mexican Americans and non-Hispanic blacks compared with non-Hispanic whites. CONCLUSIONS: More than 20 million persons have gallbladder disease in the United States. Ethnic differences in gallbladder disease prevalence differed according to sex and were only partly explained by known risk factors.>

Ford ES; Bowman BA (1999): Serum and red blood cell folate concentrations, race, and education: findings from the third National Health and Nutrition Examination Survey. *Am J Clin Nutr* 69 (3, Mar), 476-481.

[AFRICAN AMERICANS; MEXICAN AMERICANS; NHANES III; NHEFS; RED BLOOD CELL FOLATE]

<BACKGROUND: Little is known about the relations between race or ethnicity, educational attainment, and serum and red blood cell folate concentrations. OBJECTIVE: We examined the relation between educational attainment and serum and red blood cell folate concentrations in 8457 white, African American, and Mexican American men and women aged > or = 17 y. DESIGN: We performed a cross-sectional analysis using data from Phase 1 of the third National Health and Nutrition Examination Survey (1988-1991). RESULTS: White men had significantly higher adjusted serum and red blood cell folate concentrations (16.9 and 502.6 nmol/L, respectively) than did African American men (15.6 and 423.3 nmol/L, respectively) or Mexican American men (16.0 and 457.0 nmol/L, respectively); white women had significantly higher concentrations (18.4 and 515.9 nmol/L, respectively) than did African American women (16.3 and 415.4 nmol/L, respectively) or Mexican American women (15.9 and 455.7 nmol/L, respectively). For the entire sample, rank correlation coefficients between educational attainment and serum and red blood cell folate were 0.11 and 0.12, respectively, and were larger in white participants than in other participants. No significant linear trends between adjusted serum or red blood cell folate and educational attainment were found. Among participants with > 12 y of education, the mean adjusted concentrations of serum folate were 15% and 18% lower and those of red blood cell were 18% and 22% lower in African American men and women than in white men and women, respectively. CONCLUSIONS: African Americans and Mexican Americans could benefit most from public health programs to boost folate intakes by encouraging increased intake of folate-rich foods and vitamin supplements.>

Ford ES; Sowell A (1999): Serum alpha-tocopherol status in the United States population: findings from the Third National Health and

Nutrition Examination Survey. Am J Epidemiol 150 (3, 1 Aug), 290-300. [AFRICAN AMERICANS; MEN; MEXICAN AMERICANS; NHANES III; SERUM ALPHA-TOCOPHEROL; VITAMIN E; WHITE AMERICANS; WOMEN]

<Despite the role vitamin E may have in protecting against various chronic conditions, little is known about vitamin E status in the US population. Using data from the Third National Health and Nutrition Examination Survey (1988-1994), the authors examined the distribution and correlates of serum alpha-tocopherol among 16,295 US adults aged 18 or more years. The mean concentration of alpha-tocopherol was 26.8 micromol/liter (geometric mean, 25.0 micromol/liter). The 25th, 50th, and 75th percentiles were 19.6, 24.1, and 30.4 micromol/liter, respectively. The mean alpha-tocopherol/cholesterol ratio was 5.1 (geometric mean, 4.9); the 25th, 50th, and 75th percentiles were 4.1, 4.7, and 5.5 (10(-3)), respectively. About 27% of the US population had a low alpha-tocopherol concentration (<20 micromol/liter). After age standardization, 29% of the men, 28% of the women, 26% of the whites (men, 27%, and women, 26%), 41% of the African Americans (men, 42%, and women, 40%), 28% of the Mexican Americans (men, 29%, and women, 27%), and 32% of the other participants (men, 36%, and women, 29%) had this low concentration. For all participants, age, educational attainment, serum cholesterol, and several serum vitamins and carotenoids were directly related to and high density lipoprotein cholesterol was inversely related to serum alpha-tocopherol concentration in multiple linear regression analysis. Men had a higher concentration than did women, and African Americans had the lowest concentration of any racial or ethnic group. These results show that important proportions of US adults have a low serum alpha-tocopherol concentration, which may increase their risk for chronic diseases in which low dietary intake or blood concentration of alpha-tocopherol have been implicated.>

Ford ES; Will JC; Bowman BA; Narayan KM (1999): Diabetes mellitus and serum carotenoids: findings from the Third National Health and Nutrition Examination Survey. Am J Epidemiol 149 (2, 15 Jan), 168-76. [ALCOHOL; BMI; CHOLESTEROL; DIABETES; GLUCOSE TOLERANCE; NHANES III; WHO]

<Little is known about carotenoids, a diverse group of plant compounds with antioxidant activity, and their association with diabetes, a condition characterized by oxidative stress. Data from phase I of the Third National Health and Nutrition Examination Survey (1988-1991) were used to examine concentrations of alpha-carotene, beta-carotene, cryptoxanthin, lutein/zeaxanthin, and lycopene in 40- to 74-year-old persons with a normal glucose tolerance (n = 1,010), impaired glucose tolerance (n = 277), newly diagnosed diabetes (n = 148), and previously diagnosed diabetes (n = 230) based on World Health Organization criteria. After

adjustment for age, sex, race, education, serum cotinine, serum cholesterol, body mass index, physical activity, alcohol consumption, vitamin use, and carotene and energy intake, geometric means of beta-carotene were 0.363, 0.316, and 0.290 micromol/liter for persons with a normal glucose tolerance, impaired glucose tolerance, and newly diagnosed diabetes, respectively ($p = 0.004$ for linear trend), and geometric means for serum lycopene were 0.277, 0.259, and 0.231 micromol/liter, respectively ($p = 0.044$ for linear trend). All serum carotenoids were inversely related to fasting serum insulin after adjustment for confounders ($p < 0.05$ for each carotenoid). If confirmed, these data suggest new opportunities for research that include exploring a possible role for carotenoids in the pathogenesis of insulin resistance and diabetes.>

Gotto AMJ (1999): Lipid management in patients at moderate risk for coronary heart disease: insights from the Air Force/Texas Coronary Atherosclerosis Prevention Study (AFCAPS/TexCAPS). *Am J Med* 107 ((2A), Suppl. 36S-39S, 23 Aug), 36S-39S.

[ATHEROSCLEROTIC DISEASE; DYSLIPIDEMIA; HDL; LDL; NHANES III]

<The results of AFCAPS/TexCAPS provide strong evidence for the benefits of primary prevention through lipid-regulating treatment across the spectrum of clinical coronary events that are often the first manifestations of atherosclerotic disease. These results reinforce current NCEP guidelines and demonstrate the need for the inclusion of HDL-C in clinical evaluations. The clear benefit observed in AFCAPS/TexCAPS reinforces the need to implement treatment in all individuals with average LDL-C and low HDL-C who may be at risk for CHD. According to estimates based on phase-2 NHANES III data (1991-1994), only 1.4 million (6.6%) of 21.1 million American adults eligible for cholesterol-lowering drug therapy by NCEP guidelines were receiving such therapy, including 14% of those eligible in secondary prevention and 4% of those eligible in primary prevention. Of diet- or drug-eligible adults, 65% received no therapy of any kind. Undertreatment of dyslipidemia continues to be a problem today. These statistics suggest that physicians must improve their efforts to reverse the toll of atherosclerotic disease through risk factor management.>

Gu K; Cowie CC; Harris MI (1999): Diabetes and decline in heart disease mortality in US adults. *JAMA* 28 (14, 14 Apr), 1291-1297.

[DIABETES; HEART DISEASE; MORTALITY; NHANES I; NHEFS]

<CONTEXT: Mortality from coronary heart disease has declined substantially in the United States during the past 30 years. However, it is unknown whether patients with diabetes have also experienced a decline in heart disease mortality. OBJECTIVE: To compare adults with

diabetes with those without diabetes for time trends in mortality from all causes, heart disease, and ischemic heart disease. DESIGN, SETTING, AND PARTICIPANTS: Representative cohorts of subjects with and without diabetes were derived from the First National Health and Nutrition Examination Survey (NHANES I) conducted between 1971 and 1975 (n = 9639) and the NHANES I Epidemiologic Follow-up Survey conducted between 1982 and 1984 (n = 8463). The cohorts were followed up prospectively for mortality for an average of 8 to 9 years. MAIN OUTCOME MEASURE: Changes in mortality rates per 1000 person-years for all causes, heart disease, and ischemic heart disease for the 1982-1984 cohort compared with the 1971-1975 cohort. RESULTS: For the 2 periods, nondiabetic men experienced a 36.4% decline in age-adjusted heart disease mortality compared with a 13.1 % decline for diabetic men. Age-adjusted heart disease mortality declined 27% in nondiabetic women but increased 23% in diabetic women. These patterns were also found for all-cause mortality and ischemic heart disease mortality. CONCLUSIONS: The decline in heart disease mortality in the general US population has been attributed to reduction in cardiovascular risk factors and improvement in treatment of heart disease. The smaller declines in mortality for diabetic subjects in the present study indicate that these changes may have been less effective for people with diabetes, particularly women.>

Hankinson JL; Odencrantz JR; Fedan KB (1999): Spirometric reference values from a sample of the general U.S. population. Am J Respir Crit Care Med 159 (1, Jan), 179-87.

[BLACK AMERICANS; MEXICAN AMERICANS; NHANES III; SPIROMETRY; WHITE AMERICANS]

<Spirometric reference values for Caucasians, African-Americans, and Mexican-Americans 8 to 80 yr of age were developed from 7,429 asymptomatic, lifelong nonsmoking participants in the third National Health and Nutrition Examination Survey (NHANES III). Spirometry examinations followed the 1987 American Thoracic Society recommendations, and the quality of the data was continuously monitored and maintained. Caucasian subjects had higher mean FVC and FEV1 values than did Mexican-American and African-American subjects across the entire age range. However, Caucasian and Mexican-American subjects had similar FVC and FEV1 values with respect to height, and African-American subjects had lower values. These differences may be partially due to differences in body build: observed Mexican-Americans were shorter than Caucasian subjects of the same age, and African-Americans on average have a smaller trunk:leg ratio than do Caucasians. Reference values and lower limits of normal were derived using a piecewise polynomial model with age and height as predictors. These reference values encompass a wide age range for three race/ethnic groups and should prove useful for diagnostic and research purposes.>

Harris MI; Eastman RC; Cowie CC; Flegal KM; Eberhardt MS (1999): Racial and ethnic differences in glycemic control of adults with type 2 diabetes. *Diabetes Care* 22 (3, Mar), 403-408.

[DIABETES; GLYCEMIC; INSULIN; MEXICAN AMERICANS; NHANES III; NON-HISPANIC BLACKS; NON-HISPANIC WHITES]

<OBJECTIVE: To evaluate glycemic control in a representative sample of U.S. adults with type 2 diabetes. RESEARCH DESIGN AND METHODS: The Third National Health and Nutrition Examination Survey included national samples of non-Hispanic whites, non-Hispanic blacks, and Mexican Americans aged > or = 20 years. Information on medical history and treatment of diabetes was obtained to determine those who had been diagnosed with type 2 diabetes by a physician before the survey (n = 1,480). Fasting plasma glucose and HbA1c were measured, and the frequencies of sociodemographic and clinical variables related to glycemic control were determined. RESULTS: A higher proportion of non-Hispanic blacks were treated with insulin and a higher proportion of Mexican Americans were treated with oral agents compared with non-Hispanic whites, but the majority of adults in each racial or ethnic group (71-83%) used pharmacologic treatment for diabetes. Use of multiple daily insulin injections was more common in whites. Blood glucose self-monitoring was less common in Mexican Americans, but most patients had never self-monitored. HbA1c values in the nondiabetic range were found in 26% of non-Hispanic whites, 17% of non-Hispanic blacks, and 20% of Mexican Americans. Poor glycemic control (HbA1c > 8%) was more common in non-Hispanic black women (50%) and Mexican-American men (45%) compared with the other groups (35-38%), but HbA1c for both sexes and for all racial and ethnic groups was substantially higher than normal levels. Those with HbA1c > 8% included 52% of insulin-treated patients and 42% of those taking oral agents. There was no relationship of glycemic control to socioeconomic status or access to medical care in any racial or ethnic group. CONCLUSIONS: These data indicate that many patients with type 2 diabetes in the U.S. have poor glycemic control, placing them at high risk of diabetic complications. Non-Hispanic black women, Mexican-American men, and patients treated with insulin and oral agents were disproportionately represented among those in poor glycemic control. Clinical, public health, and research efforts should focus on more effective methods to control blood glucose in patients with diabetes.>

Hurwitz EL; Morgenstern H (1999): Cross-sectional associations of asthma, hay fever, and other allergies with major depression and low-back pain among adults aged 20-39 years in the United States. *Am J Epidemiol* 150 (10, 15 Nov), 1107-1116.

[ADULTS; ALLERGIES; BACK PAIN; NHANES III]

<Although low-back pain and depression are common comorbidities, the mechanisms responsible for their association remain unclear. The effects of proinflammatory cytokines on the hypothalamic-pituitary-adrenal (HPA) axis lead to the hypothesis that allergic reactions, as markers for inflammation-associated activation of the HPA axis, result in aberrant responses to subsequent stressors. Data from 6,836 US adults 20-39 years old from the Third National Health and Nutrition Examination Survey (1988-1994) were used. Subjects responded to questions regarding low-back pain in the past 12 months and history of asthma, hay fever, and other allergies. The history and onset of major depression were obtained from the Diagnostic Interview Schedule. Logistic regression modeling was used to estimate the associations between allergies and depression and low-back pain. Subjects with a history of any allergy were more likely to report low-back pain (odds ratio = 1.51; 95% confidence interval: 1.16, 1.96), to be diagnosed with major depression (odds ratio = 1.58; 95% confidence interval: 1.13, 2.21), and much more likely to have both major depression and low-back pain (odds ratio = 3.03; 95% confidence interval: 1.32, 6.92). Hypersensitivity reactions may prime the HPA axis to respond aberrantly to stressors, resulting in physical and behavioral consequences.>

Jacques PF (1999): Serum total homocysteine concentrations in adolescent and adult Americans: results from the third National Health and Nutrition Examination Survey. *Am J Clin Nutr* 69 (3, Mar), 482-489. [FEMALES; HOMOCYSTEINE CONCENTRATIONS; MALES; MEXICAN AMERICANS; NHANES III; NON-HISPANIC BLACKS] <BACKGROUND: The elevation of circulating total homocysteine concentrations in a fasting state is associated with an increased risk of occlusive vascular disease. OBJECTIVE: The primary goals of this study were to describe the distribution of serum total homocysteine concentrations in the United States and to test for differences in homocysteine concentrations among sex, age, and race-ethnicity categories. DESIGN: Using surplus sera from phase 2 of the third National Health and Nutrition Examination Survey, we measured serum total homocysteine concentrations for a nationally representative sample of 3766 males and 4819 females aged \geq 12 y. RESULTS: Age-adjusted geometric mean total homocysteine concentrations were 9.6 and 7.9 mmol/L in non-Hispanic white males and females, 9.8 and 8.2 mmol/L in non-Hispanic black males and females, and 9.4 and 7.4 mmol/L in Mexican American males and females, respectively. Age-adjusted geometric mean total homocysteine concentrations were significantly lower in females than in males in each race-ethnicity group ($P < 0.01$) and were significantly lower in Mexican American females than in non-Hispanic white and non-Hispanic black females ($P < 0.01$). There was a significant age-sex interaction ($P < 0.01$), reflecting the fact that homocysteine concentrations in females tended to diverge from

those in males at younger ages and converge with those in males at older ages. CONCLUSIONS: The first data on homocysteine concentrations in a nationally representative sample of Americans confirm the age and sex differences reported previously in nonrepresentative samples. These data also indicate that differences between Mexican American and non-Hispanic females may influence circulating homocysteine concentrations.>

Jenkins RA; Counts RW (1999): Personal exposure to environmental tobacco smoke: salivary cotinine, airborne nicotine, and nonsmoker misclassification. *J Expo Anal Environ Epidemiol* 9 (4, Jul-Aug), 352-363.

[COTININE; EPA; LUNG CANCER; NHANES III; SMOKING]

<A large study was conducted to assess exposure to environmental tobacco smoke (ETS) in a geographically dispersed study population using personal breathing zone air sampling and salivary cotinine levels. Approximately 100 self-reported nonsmoking subjects in each of 16 metropolitan areas were recruited for this investigation. Cumulative distributions of salivary cotinine levels for subjects in smoking and nonsmoking homes and workplaces exhibited a general trend of decreasing salivary cotinine levels with decreasing time spent in smoking environments. Median salivary cotinine levels for the four experimental cells in the study (product of smoking and nonsmoking home and workplaces) were comparable to those reported for a large national study of serum levels of cotinine (Third National Health and Nutrition Examination Survey, NHANES III), when the latter was corrected for expected differences between serum and saliva concentrations. However, the most highly exposed group in this study had a median salivary cotinine concentration approximately a factor of 2 greater than that of the comparable group in the NHANES III study. Misclassification rates, both simple (for self-reported nonsmokers) and complex (self-reported lifetime never smokers), were near the median of those reported for other studies. Estimated misclassification rates for self-reported lifetime never-smoking females are sufficiently high (2.95% using a discrimination level of 106 ng/ml) that, if used in the Environmental Protection Agency (EPA) risk assessment related to ETS and lung cancer, would place the lower 90% confidence interval (CI) for relative risk at nearly 1.00, i.e., no statistically significant increased risk. For the 263 most highly exposed subjects in the study whose self-reported nonsmoking status was accurate, the correlation between airborne exposure to nicotine and average salivary cotinine is so small, on an individual basis, that it makes the relationship useless for estimating exposure on a quantitative basis. When subjects are grouped according to likely categories of nicotine exposure, correlation between group median airborne nicotine exposure and salivary cotinine level increases dramatically. The comparison improves for the most highly exposed subjects, suggesting that such

quantitative comparisons are useful for only those subjects who are exposed to the higher levels of ETS. However, airborne nicotine exposure for most of the subjects does not account for estimated systemic levels of nicotine, based on salivary cotinine levels.>

John EM; Schwartz GG; Dreon DM; Koo J (1999): Vitamin D and breast cancer risk: the NHANES I Epidemiologic follow-up study, 1971-1975 to 1992. National Health and Nutrition Examination Survey. *Cancer Epidemiol Biomarkers* 8 (5, May), 399-406.

[BREAST CANCER; NHEFS; VITAMIN D]

<We analyzed data from the first National Health and Nutrition Examination Survey Epidemiologic Follow-up Study to test the hypothesis that vitamin D from sunlight exposure, diet, and supplements reduces the risk of breast cancer. We identified 190 women with incident breast cancer from a cohort of 5009 white women who completed the dermatological examination and 24-h dietary recall conducted from 1971-1974 and who were followed up to 1992. Using Cox proportional hazards regression, we estimated relative risks (RRs) for breast cancer and 95% confidence intervals, adjusting for age, education, age at menarche, age at menopause, body mass index, alcohol consumption, and physical activity. Several measures of sunlight exposure and dietary vitamin D intake were associated with reduced risk of breast cancer, with RRs ranging from 0.67-0.85. The associations with vitamin D exposures, however, varied by region of residence. The risk reductions were highest for women who lived in United States regions of high solar radiation, with RRs ranging from 0.35-0.75. No reductions in risk were found for women who lived in regions of low solar radiation. Although limited by the relatively small size of the case population, the protective effects of vitamin D observed in this prospective study are consistent for several independent measures of vitamin D. These data support the hypothesis that sunlight and dietary vitamin D reduce the risk of breast cancer.>

Klein R; Klein BE; Jensen SC; Mares-Perlman JA; Cruickshanks KJ; Palta M (1999): Age-related maculopathy in a multiracial United States population: the National Health and Nutrition Examination Survey III. *Ophthalmology* 106 (6, Jun), 1056-1065.

[MACULOPATHY; MEXICAN AMERICANS; NHANES III; NON-HISPANICS BLACKS; NON-HISPANICS WHITES]

<OBJECTIVE: To investigate the prevalence of and risk factors for age-related maculopathy (ARM) in three racial/ethnic groups: non-Hispanic whites, non-Hispanic blacks, and Mexican-Americans. DESIGN: A nationally representative population-based, cross-sectional study. PARTICIPANTS: A total of 8270 persons 40 years of age or older, a sample of the Third National Health and Nutrition Examination Survey. MAIN OUTCOME MEASURES: Age-related maculopathy was

determined by the grading of fundus photographs using a standardized protocol. RESULTS: The prevalence of any ARM in the civilian noninstitutionalized United States population including those 40 years of age or older was 9.4% (95% confidence interval [CI], 8.2, 10.6) as estimated from the sample. After adjusting for age, there was no difference in the prevalence of early ARM (defined largely by the presence of soft drusen) by ethnic/racial group. However, for the less frequent component lesions of early ARM (increased retinal pigment and retinal pigment epithelial depigmentation), the odds ratios (95% CIs) comparing non-Hispanic blacks to non-Hispanic whites were 0.47 (0.31, 0.74) and 0.59 (0.33, 1.04), respectively, and for comparing Mexican-Americans to non-Hispanic whites, they were 0.41 (0.21, 0.81) and 0.72 (0.44, 1.19), respectively. For late ARM, the odds ratio (95% CI) for non-Hispanic blacks compared to non-Hispanic whites was 0.34 (0.10, 1.18) and for Mexican-Americans compared to non-Hispanic whites, it was 0.25 (0.07, 0.90). Other than age, none of the personal, medical, or physiologic variables studied were statistically significantly associated with any of the ARM endpoints in any of the three races/ethnic groups. CONCLUSION: Overall, rates of any ARM (including all early and late lesions) are not significantly different among non-Hispanic blacks, Mexican-Americans, and non-Hispanic whites. However, the rates of individual lesions suggest that non-Hispanic whites and Mexican-Americans may be protected against retinal pigment abnormalities and lesions associated with late ARM. There appears to be little influence of personal, medical, and environmental factors studied on these results. Further studies in larger populations of older persons in these ethnic groups would likely clarify these relations.>

Loria CM; Sempos CT; Vuong C (1999): Plan and operation of the NHANES II Mortality Study, 1992. Vital Health Stat 1 38 (Jun), 1-16. [BLACK AMERICANS; MORTALITY; NHANES II; WHITE AMERICANS]

<OBJECTIVES: The NHANES II Mortality Study is a prospective study of adult participants examined in the second National Health and Nutrition Examination Survey (NHANES II) conducted between 1976 and 1980. It was designed to investigate the association between factors measured at baseline and mortality. The methods used in the study are described and assessed in this report. METHODS: The vital status of NHANES II participants who were 30-75 years of age at their examination was ascertained after 12-16 years. Vital status was assessed by searching the National Death Index and the Social Security Administration Death Master File for deaths occurring in the United States. Causes of death were obtained from the National Center for Health Statistics Multiple Cause of Death file or death certificates. To assess how well mortality was ascertained, the survival of the cohort after 5 and 10 years was compared to that of the U.S. population during the

same period. RESULTS: As of December 31, 1992, 23.2 percent of the 9,250 cohort members were found to be deceased. The remaining 76.8 percent that were not found to be deceased may be assumed to be alive for analytic purposes. Cumulative survival probabilities for the cohort were generally higher than probabilities calculated from U.S. life table data. Although some differences were expected, these data suggest that after 10 years of follow-up using passive methods, mortality may have been under ascertained for the cohort. Discrepancies between the survival patterns for NHANES II cohort and U.S. vital statistics were larger for black than for white participants, indicating that ascertainment of mortality was poorer among black participants. Researchers using the NHANES II Mortality Study, 1992 data should be aware of these study limitations.>

McQuillan G; Coleman PJ; Kruszon-Moran D; Moyer LA; Lambert SB; Margolis HS (1999): Prevalence of hepatitis B virus infection in the United States: the National Health and Nutrition Examination Surveys, 1976 through 1994. Am J Public Health 89 (1, Jan), 14-8.

[HEPATITIS B; NHANES II; NHANES III]

<Data from 2 National Health and Nutrition Examination Surveys (NHANES), NHANES II (1976-1980) and NHANES III (1988-1994), were analyzed to examine trends in the prevalence of hepatitis B infection in the United States. METHODS: Serum specimens were tested for markers of hepatitis B virus infection, and risk factors were determined from questionnaires. RESULTS: The overall age-adjusted prevalence of hepatitis B virus infection was 5.5% (95% confidence interval [CII = 4.8, 6.2) in NHANES II, as compared with 4.9% (95% CI = 4.3, 5.6) in NHANES III. In both surveys, Black participants had the highest prevalence of infection (NHANES II, 15.8%; NHANES III, 11.9%). No differences in infection were found in the major racial groups between surveys, except for a decrease among those older than 50 years. Black race, increasing number of lifetime sexual partners, and foreign birth had the strongest independent associations with hepatitis B virus infection. CONCLUSIONS: Testing of participants in 2 national surveys demonstrates no significant decrease in hepatitis B virus infection, despite the availability of hepatitis B vaccine.>

Monyeki KD; van Lenthe FJ; Steyn MP (1999): Obesity: does it occur in African children in a rural community in South Africa? Int J Epidemiol 28 (2, Apr), 287-292.

[AFRICAN CHILDREN; BMI; NHANES III; OBESITY; SOUTH AFRICA]

<BACKGROUND: Total body fatness and a centripetal fat patterning are recognized as risk indicators of cardiovascular disease in adulthood. In this study, the development of these risk factors in rural South African

children during the preschool years and first years of formal schooling is explored. **METHOD:** The initial cross-sectional data from the Ellisras Longitudinal Investigations in Rural Community Children Project, ongoing since 1996, were used, involving 684 boys and 652 girls, aged 3-10 years, in the Ellisras rural community. Overweight was measured using the body mass index (BMI) (kg/m²). Overfatness was based on the sum of the triceps and subscapular skinfold thicknesses. A centripetal fat patterning was measured by the sum of trunk skinfolds relative to limb skinfolds and the ratio of the subscapular to triceps skinfold. Further, the ratio of the subscapular to supraspinale skinfold was used as an indicator of lower body fat patterning. The 85th percentiles of the NHANES III were used as cutoff values for overweight, overfatness and a centripetal fat patterning. **RESULTS:** At ages 7 and 8 years, mean BMI was statistically significantly higher in males compared to females ($P < 0.05$). The log transformed supraspinale skinfold thickness was larger in females compared to males at ages 4-7 years; the log transformed subscapular skinfold was larger in girls compared to boys aged 7- 10 years. Less clear patterns were found for the extremity skinfolds and the skinfold ratios. Very few children (0-2.5% in males and 04.3% in females) had BNH values above the NHANES III 85th percentiles, indicating a very low prevalence of overweight children in the area. About 15% of the males showed overfatness at ages 34 years, while low prevalence was found at older ages. **CONCLUSION:** Few Ellisras rural children had above normal values for BMI, indicating a low prevalence of obesity in this population. In the 3- and 4-year-old group more subjects were found to have excessive fat, as indicated by the sum of the triceps and subscapular skinfold thicknesses.>

Moore AA; Hays RD; Greendale GA; Damesyn M; Reuben DB (1999): Drinking habits among older persons: findings from the NHANES I Epidemiologic Followup Study (1982-84). National Health and Nutrition Examination Survey. J Am Geriatr Soc 47 (4, Apr), 412-16. [ALCOHOL; NHEFS]

<**OBJECTIVES:** To describe alcohol use and its sociodemographic correlates among persons aged 65 years and older in a US probability sample. **DESIGN:** Cross-sectional analysis of a national probability sample-based cohort study. **SETTING:** Multiple sites throughout the United States. **PARTICIPANTS:** A total of 3448 persons aged 65 and older who participated in the first wave of the NHANES I Epidemiologic Followup Study (1982-84). **MEASUREMENTS:** We describe the alcohol use behaviors and demographic characteristics of 3448 persons aged 65 and older. Least squares regression models were used to assess associations between older persons' sociodemographic characteristics and alcohol use. **RESULTS:** Sixty percent of the sample reported having 12 or more drinks of alcohol in at least 1 year of their lives. Seventy-nine percent of these older drinkers were currently drinking. Twenty-five

percent of all drinkers drank daily (31% men, 19% women). Using gender-specific definitions (men >2 drinks/day; women >1 drink/day), 16% of men drinking alcohol and 15% of women drinking alcohol were heavy drinkers. Younger age, male gender, and higher income were associated with greater alcohol use. CONCLUSIONS: Most older persons who ever drank alcohol in their lifetimes were currently drinking. In addition, a substantial number of older persons were drinking currently at levels that may place them at risk of adverse health consequences.>

Morrison JA; Sprecher DL; Barton BA; Waclawiw MA; Daniels SR (1999): Overweight, fat patterning, and cardiovascular disease risk factors in black and white girls: The National Heart, Lung, and Blood Institute Growth and Health Study. *J Pediatr* 135 (4, Suppl. 135, Oct), 4584-64.

[CENTRAL ADIPOSITY; CVD; NHANES I; NHANES II; OBESITY]
<OBJECTIVE: To determine the association of overweight and central adiposity with cardiovascular disease risk factors in black and white 9- and 10-year-old girls. DESIGN: Cross-sectional analysis of baseline data collected from participants in the National Heart, Lung, and Blood Institute Growth and Health Study. Girls were classified as overweight or not with the use of the age- and sex-specific 85th percentiles of the body mass index (kilograms per square meter) distributions from the combined NHANES (I and II) data set. Mean indexes of central adiposity, blood pressure levels, and lipid concentrations and the clustering of risk factors based on published cut points were compared between weight groups by race and by central adiposity group within weight and race groups. RESULTS: Overweight was associated with increased risk factor levels and with increased clustering in both black and white girls. Among overweight girls greater central adiposity was associated with higher risk factor levels and increased clustering. CONCLUSIONS: Given the associations between cardiovascular disease risk factors and both overweight and central adiposity, the secular trends toward increased obesity in American youth portend a worsening of cardiovascular disease risk profiles.>

Mo-suwan L; Lebel L; Puetpaiboon A; Junjana C (1999): School performance and weight status of children and young adolescents in a transitional society in Thailand. *Int J Obes Relat Metab Disord* 23 (3, Mar), 272-77.

[BMI; NHANES I; THAILAND]

<OBJECTIVE: To study the association between current or previous weight status and school performance among children and young adolescents of Hat Yai municipality, southern Thailand. DESIGN: Cross-sectional and longitudinal study. SETTING: Primary and secondary schools of Hat Yai municipality, southern Thailand. SUBJECTS: 1207

grades 3-6 and 587 grades 7-9 students. MEASUREMENTS: Body mass index (BMI, kg/m²) calculated from weight and height measurement of subjects in 1992 and 1994; parental education level and occupation, and monthly income, by questionnaire performed in 1992; grade-point-average (GPA) and grades of mathematics and Thai language from the school records of final examinations in 1994. RESULTS: Overweight subjects (BMI value > 85th percentile of the NHANES-I data for age and gender) in grades 7-9 had a mean GPA 0.20 point (95% confidence interval (CI) = 0.04, 0.37) lower than that of the normal weight children after controlling for gender, age, school and grade. They were twice more likely to have low grades (lower than 2 on the scales of 0-4) of mathematics and Thai language than normal weight children. There were no associations between GPA or individual subject grades and previous BMI status in 1992. Children in grades 7-9 who became overweight over the two years, had a mean GPA of 0.48 point lower than those who did not become overweight (95% CI = 0.12, 0.84). In grades 3-6 subjects, however, becoming overweight had no effect on GPA and individual subject scores. CONCLUSIONS: Our study showed that being overweight and becoming overweight during adolescence (grades 7-9) was associated with poor school performance, whereas such an association did not exist in children (grades 3-6).>

Mueller PW; Caudill SP (1999): Urinary albumin excretion in children: factors related to elevated excretion in the United States population. Ren Fail 21 (3-4, May-July), 293-302.

[ADULTS; CHILDREN; NHANES III; URINARY ALBUMIN]

<Past population studies have indicated a higher prevalence of high albumin excretion in children than in adults. In this study, NHANES III United States population data was analyzed to study factors associated with elevated albumin excretion in children 8 to 18 years of age. The analysis confirmed a higher prevalence of albumin values > 30 mg/g creatinine and > 200 mg/g creatinine in children than in adults, and indicated that girls are two to three times more likely to have albumin excretion above these levels than boys. Neither hypertension nor reported diabetes--major factors influencing albumin excretion in adults--accounted for the higher excretion levels in children. The higher excretion levels were not associated with prescription medications or a poor rating of the child's overall health status by a physician. The higher prevalences is influenced by puberty stage and is more likely to occur in children with lower than average body mass index, independent of the relationship with urine creatinine excretion. The increased prevalence of high albumin excretion is probably associated with normal development in children, but an increased susceptibility to chronic diseases in the future among the children with high excretion cannot be ruled out.>

Must A; Spadano J; Coakley EH; Field AE; Colditz G; Dietz WH (1999): The disease burden associated with overweight and obesity. JAMA 282 (16, 27 Oct), 1523-1529.

[BMI; CHD; CHOLESTEROL; GALLBLADDER; HBP; NHANES III; OBESITY]

<CONTEXT: Overweight and obesity are increasing dramatically in the United States and most likely contribute substantially to the burden of chronic health conditions. OBJECTIVE: To describe the relationship between weight status and prevalence of health conditions by severity of overweight and obesity in the US population. DESIGN AND SETTING: Nationally representative cross-sectional survey using data from the Third National Health and Nutrition Examination Survey (NHANES III), which was conducted in 2 phases from 1988 to 1994. PARTICIPANTS: A total of 16884 adults, 25 years and older, classified as overweight and obese (body mass index [BMI] $>$ or $=25$ kg/m²) based on National Institutes of Health recommended guidelines. MAIN OUTCOME MEASURES: Prevalence of type 2 diabetes mellitus, gallbladder disease, coronary heart disease, high blood cholesterol level, high blood pressure, or osteoarthritis. RESULTS: Sixty-three percent of men and 55% of women had a body mass index of 25 kg/m² or greater. A graded increase in the prevalence ratio (PR) was observed with increasing severity of overweight and obesity for all of the health outcomes except for coronary heart disease in men and high blood cholesterol level in both men and women. With normal-weight individuals as the reference, for individuals with BMIs of at least 40 kg/m² and who were younger than 55 years, PRs were highest for type 2 diabetes for men (PR, 18.1; 95% confidence interval [CI], 6.7-46.8) and women (PR, 12.9; 95% CI, 5.7-28.1) and gallbladder disease for men (PR, 21.1; 95% CI, 4.1-84.2) and women (PR, 5.2; 95% CI, 2.9-8.9). Prevalence ratios generally were greater in younger than in older adults. The prevalence of having 2 or more health conditions increased with weight status category across all racial and ethnic subgroups. CONCLUSIONS: Based on these results, more than half of all US adults are considered overweight or obese. The prevalence of obesity-related comorbidities emphasizes the need for concerted efforts to prevent and treat obesity rather than just its associated comorbidities.>

Nelson RL; Persky V; Turyk M (1999): Determination of factors responsible for the declining incidence of colorectal cancer. Dis Colon Rectum 42 (6, Jun), 741-752.

[COLORECTAL CANCER; NHANES I; NHANES II; NHANES III]

<INTRODUCTION: After rising for 13 years in the United States, the incidence of colorectal cancer began to fall in 1986 and has continued to drop since then. This report contains an analysis of the pattern of declining colorectal cancer risk by colorectal subsite, race, and gender and a time trend investigation of suspected risk modifiers of colorectal

cancer. **METHOD:** Colorectal cancer incidence data were obtained from the Surveillance, Epidemiology, and End Results Public Use Files from 1973 to 1994. The following exposure variables were assessed, focussing principally on the period 1970 to 1980: dietary fat, fiber, ethanolic beverages, vitamin A, vitamin C, iron, calcium, estrogen, aspirin, energy intake, body mass index, serum cholesterol, body iron stores, cholecystectomy, constipation, cigarette use, physical activity, and colonoscopic polypectomy. Data sources used in these analyses were principally National Health and Nutrition Examination Surveys I, II, and III. **RESULTS:** After 1985 colorectal cancer incidence declined predominantly in the distal colorectum almost equally in both white males and white females. Some exposures remained unchanged or trended in the wrong direction (dietary fat, calcium, ethanol, energy intake, physical activity, overweight prevalence, and cholecystectomy). Others did not apply equally to both genders (estrogen, aspirin, ethanol, calcium, and cholecystectomy). Others may become significant in the future, such as aspirin, estrogen, or calcium, because their supplementation is now prevalent, but were not in 1970 to 1975. Of all the risk factors or interventions assessed, the one most consistent with the observed pattern of change is increased use of colonoscopic polypectomy. **CONCLUSION:** The best method to diminish the incidence of colorectal cancer today may be to increase the use of screening colonoscopy and polypectomy.>

Okosun IS; Prewitt TE; Liao Y; Cooper RS (1999): Association of waist circumference with ApoB to ApoAI ratio in black and white Americans. *Int J Obes Relat Metab Disord* 23 (5, May), 498-504.

[BMI; CHOLESTEROL; NHANES III; OBESITY]

<BACKGROUND: Although numerous studies have demonstrated obesity as an aspect of the insulin resistance syndrome in cardiovascular disease (CVD), the mechanism is not clear. Central adiposity, acting through many CVD risk factors, including, plasma glucose, insulin, total cholesterol, low density lipoprotein-cholesterol (LDL-C) and lipoprotein moieties-apolipoprotein B (ApoB), apolipoprotein A-I (ApoAI), by atherogenic and thrombotic mechanisms has been proposed as a possible mechanism. In this study, we examined the relationship between central fat distribution (defined by waist circumference) and the ratio of these lipoproteins (ApoB/ApoAI). **SUBJECTS AND METHODS:** Association between ApoB/ApoAI ratio and waist circumference was compared in Blacks (n = 854) and Whites (n = 2552) using the NHANES III population-based samples. Correlation analyses and multiple regression analyses were used to determine the association between ApoB/ApoAI and waist circumference, controlling for age, body mass index (BMI), race, gender, plasma glucose, insulin, serum triglyceride and total cholesterol. **RESULTS:** Adjusting for age, ApoB/ApoAI was significantly correlated with waist circumference (Black men: r = 0.38,

White men: $r = 0.26$, Black women: $r = 0.20$, White women: $r = 0.36$) (all $P < 0.01$). Adjusting for age and triglyceride or insulin, waist circumference was also positively correlated with CVD risk factors including, ApoB, LDL-C, plasma glucose and fasting insulin, and inversely correlated with ApoAI and HDL-C in Blacks and Whites ($P < 0.05$). Overall, triglyceride and total cholesterol were the strongest predictors of ApoB/ApoAI in Blacks and Whites adjusting for age, BMI and insulin, than waist girth ($P < 0.01$). CONCLUSIONS: The result of this study suggests the need to investigate ApoB/ApoAI as another possible facet in the insulin resistant syndrome.>

Perkins AJ; Hendrie HC; Callahan CM; Gao S; Unverzagt FW; Xu Y; Hall KS; Hui SL (1999): Association of antioxidants with memory in a multiethnic elderly sample using the Third National Health and Nutrition Examination Survey. *Am J Epidemiol* 150 (1, 1 Jul), 37-44. [ANTIOXIDANTS; ELDERLY POPULATION; MEXICAN AMERICANS; NHANES III; NON-HISPANIC BLACKS; NON-HISPANIC WHITES; VITAMINS]

<Oxidative stress has been implicated both in the aging process and in the pathological changes associated with Alzheimer's disease. Antioxidants, which have been shown to reduce oxidative stress in vitro, may represent a set of potentially modifiable protective factors for poor memory, which is a major component of the dementing disorders. The authors investigated the association between serum antioxidant (vitamins E, C, A, carotenoids, selenium) levels and poor memory performance in an elderly, multiethnic sample of the United States. The sample consisted of 4,809 non-Hispanic White, non-Hispanic Black, and Mexican-American elderly who visited the Mobile Examination Center during the Third National Health and Nutrition Examination Survey, a national cross-sectional survey conducted from 1988 to 1994. Memory is assessed using delayed recall (six points from a story and three words) with poor memory being defined as a combined score less than 4. Decreasing serum levels of vitamin E per unit of cholesterol were consistently associated with increasing levels of poor memory after adjustment for age, education, income, vascular risk factors, and other trace elements and minerals. Serum levels of vitamins A and C, beta-carotene, and selenium were not associated with poor memory performance in this study.>

Pesa JA; Shelton MM (1999): Health-enhancing behaviors correlated with breastfeeding among a national sample of mothers. *Public Health Nurs* 16 (2, April), 120-124.

[BREASTFEEDING; HEALTH-ENHANCING BEHAVIORS; NHANES III]

<Participation in health-enhancing behaviors not only influences the health of the mother, but of the newborn child as well. Characteristics

of the mother, especially with regard to the practice of health-enhancing behaviors, have typically been excluded from studies examining breastfeeding. The purpose of this study was to identify health-enhancing behaviors correlated with breastfeeding among a national sample of mothers. The third National Health and Nutrition Examination Survey (NHANES III) provided the sample for this study. All mothers between the ages of 17 and 45 (n = 578) with children aged 3 or younger at the time of the interview, who breastfed, were included. Seven health-enhancing behaviors served as the independent variables in a logistic regression analysis. Odds ratios and 95% confidence intervals were calculated from the estimated regression coefficients, and comparison of proportions were made using Pearson chi-square tests of homogeneity. Smoking less than 100 cigarettes in a lifetime, consuming five or more fruits and/or vegetables daily, and visiting a dentist annually were significantly associated with breastfeeding among the mothers in this sample. The results of this study point to a connection between the health-enhancing behaviors of the mother and breastfeeding. This information can be used to help professionals and practitioners gain a clearer picture of the breastfeeding mother. Multicomponent education programs targeted at new mothers can use this information to guide program development. Breastfeeding mothers may have better overall health as compared to mothers who do not breastfeed, therefore, they may serve as role models in peer-structured activities.>

Rose KM; Newman B; Bennett T; Tyroler HA (1999): The association between extent of employment and hypertension among women participants of the Second National Health and Nutrition Survey. *Women Health* 29 (3), 13-29.

[EMPLOYMENT GROUPS; HYPERTENSION; NHANES II; WOMEN]

<The association between extent of employment and hypertension was examined among 3,824 women participants of the Second National Health and Nutrition Examination Survey. Women in three employment groups (full-time, part-time, and short-term) were compared to homemakers. In covariate-adjusted, logistic regression models, women employed full-time had a somewhat lower, but not significantly different, prevalence of hypertension (OR = 0.8, 95% CI = 0.7, 1.1), whereas both part-time (OR = 0.6, 95% CI = 0.4, 0.7) and short-term (OR = 0.5, 95% CI = 0.4, 0.7) workers had significantly lower prevalences. Associations did not tend to vary by age, ethnicity, or occupation. Employment does not appear to increase the risk of hypertension in women; in fact, moderate levels were associated with lower risk.>

Ruhl CE; Everhart JE (1999): Overweight, but not high dietary fat intake, increases risk of gastroesophageal reflux disease hospitalization:

the NHANES I Epidemiologic Followup Study. First National Health and Nutrition Examination Survey. *Ann Epidemiol* 9 (7, Oct), 424-435. [DIETARY FAT INTAKE; HIATAL HERNIA; NHANES I; NHEFS I; OBESITY; REFLUX DISEASE]

<PURPOSE: Gastroesophageal reflux disease is an important and increasingly common condition. Both overweight and high fat food consumption have been implicated as causes of reflux disease. We examined the relationship of overweight, high dietary fat intake, and other factors with reflux disease hospitalization. METHODS: We studied participants in the first National Health and Nutrition Examination Survey, a population-based sample examined in 1971-75 and followed through 1992-93. Persons with a physician-diagnosed hiatal hernia at baseline or reflux disease hospitalization within the first five years of study were excluded. A second analysis included follow-up of 9851 participants free of reflux disease in 1982-84. Ninety-six percent of the baseline cohort were recontacted. Reflux disease cases were persons hospitalized with a diagnosis of esophagitis or uncomplicated hiatal hernia. Hazard rate ratios for reflux disease hospitalization according to body mass index (BMI) (kg/m²), total daily servings of high fat foods and other factors were calculated using Cox proportional hazards analysis. RESULTS: A total of 12,349 persons were followed for a median of 18.5 years (range 5.0-22.1). Cumulative incidence of reflux disease hospitalization was 5.2% at 20 years. Multivariate survival analysis revealed higher reflux disease hospitalization rates with higher BMI (5 kg/m²) [hazard ratio (HR) = 1.22, 95% confidence interval (CI) = 1.13-1.32]. No relationship was found between higher fat intake and reflux disease hospitalization. Other factors associated with reflux disease hospitalization included age, low recreational activity, and history of doctor-diagnosed arthritis. CONCLUSIONS: Overweight, but not high dietary fat intake, increases risk of gastroesophageal reflux disease hospitalization.>

Sahyoun NR; Brett KM; Hochberg MC; Pamuk ER (1999): Estrogen replacement therapy and incidence of self-reported physician-diagnosed arthritis. *Prev Med* 28 (5), 458-64.

[ARTHRITIS; ESTROGEN; HORMONES; NHEFS]

<BACKGROUND: This longitudinal study examined the association between use of estrogen replacement therapy and incidence of self-reported, physician-diagnosed arthritis. METHODS: Data of 2,416 postmenopausal women who participated in the National Health and Nutrition Examination Survey Epidemiological Follow-Up Study were used in this study. Women, free of self-reported arthritis at entry into study and for 3 years thereafter, were questioned about use of estrogen and physician-diagnosed arthritis at each of the follow-up waves of study. Proportional hazard regression models were used for the analysis. RESULTS: Use of ERT was found to be associated with higher risk of

incident arthritis, after adjusting for potential confounders (RR = 1.61, CI 1.37-1.89). Whenever use of ERT was replaced by duration of use in the regression model, ERT users for a year or less significantly increased their risk of incident arthritis (RR = 1.37, CI 1.07-1.74). The risk increased by 30 and 96% with hormone use for 1 to 4 and 4 to 10 years, respectively, and by 104% with hormone use for 10 or more years. CONCLUSION: Results suggest that users of ERT were at higher risk of developing arthritis and the longer the use of the hormone, the higher the risk. Copyright 1999 American Health Foundation and Academic Press.>

Sahyoun NR; Helmick CG; Harris T; Pamuk ER (1999): Body mass index, weight change, and incidence of self-reported physician-diagnosed arthritis among women. *Am J Public Health* 89 (3, Mar), 391-394.

[ARTHRITIS; BMI; NHEFS; OBESITY; WOMEN]

<OBJECTIVES: This study examined the relationship between body mass index (BMI), weight change, and arthritis in women. METHODS: Data were taken from the 1982-1984 National Health and Nutrition Examination Survey Epidemiologic Follow-Up Study of 3617 women, aged 25 to 74 years. RESULTS: Women with a BMI greater than 32 at initial interview were at significantly higher risk of developing arthritis than women with a BMI of 19 to 21.9. Compared with stable-weight women with a BMI of less than 25, women who were obese at initial interview (BMI > 29) and who subsequently maintained their weight or gained more than 10% of their body weight were at significantly higher risk of developing arthritis. CONCLUSIONS: Attaining and maintaining a healthy weight may reduce the risk of developing arthritis.>

Sahyoun NR; Hochberg MC; Helmick CG; Harris T; Pamuk ER (1999): Forecasting patient outcomes in the management of hyperlipidemia. *Am J Public Health* 89 (3, Mar), 391-94.

[ARTHRITIS; BMI; NHANES III; NHEFS I; WEIGHT]

<BACKGROUND: To forecast adult patient outcomes in the management of hyperlipidemia using adult National Health and Examination Survey III (NHANES III) population statistics and National Cholesterol Education Program (NCEP) guidelines for goals of therapy. METHODS: Review of the hyperlipidemia drug therapy English-language medical literature with emphasis on randomized controlled trials of more than 6 weeks' duration published in the last 7 years, product package inserts, US Food and Drug Administration submission information, and NHANES III population statistics. Data were extracted from studies of lipid-lowering therapy to modify low-density lipoprotein (LDL) levels for primary and secondary prevention of coronary heart disease. The data that were evaluated included sample size, study design, therapeutic intervention, length of study, percentage change in LDL

levels, and patient demographics. RESULTS: Cumulative frequency curves of the LDL distribution among the US adult population were constructed. The mean efficacy of drug therapy from qualified studies was used to extrapolate the percentage of the population expected to respond to the intervention and to forecast the patient outcome. CONCLUSIONS: A useful tool for clinicians was constructed to approximate the percentage of patients, based on risk stratification, who would reach NCEP target goal after a given pharmacotherapeutic intervention to decrease LDL levels.>

Sheps SG (1999): Overview of JNC VI: new directions in the management of hypertension and cardiovascular risk. *Am J Hypertens* 12 (8 Pt 2, Aug), 65S-72S.

[CARDIOVASCULAR DISEASE; HYPERTENSION; NHANES]
<Treatment recommendations for hypertension as outlined in the Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC VI) are constantly evolving and being refined as new information on the disease becomes evident. Uncontrolled hypertension is a major antecedent of stroke, heart failure, coronary heart disease, and end-stage renal disease. The increasing incidences of both cardiovascular and renal diseases fuel the need for improved control of hypertension. In fact, according to the National Health and Nutrition Examination Survey (NHANES), about 69% of Americans whose blood pressure is greater than 140/90 mm Hg are aware of it, about half are getting treatment for it, and only about one-quarter are adequately controlled. These observations fuel the need for improved patient management guidelines. JNC VI makes several changes from the previous JNC V to assist physicians in the diagnosis, treatment, and improved management of patients with hypertension. These changes include reporting adult blood pressure in two new ways, via staging and risk factor classification. A high-normal classification (systolic: 130 to 139 mm Hg, or diastolic: 85 to 89 mm Hg) is included in JNC VI because of the clinical importance of such blood pressure contributing to cardiovascular disease. Additionally, clinicians are advised to assign a patient to one of three risk categories that, in addition to hypertension stage, influence the decision to select antihypertensive drug therapy. Lifestyle modification is an important component at each stage. These and other changes and highlights of recent studies supporting the need for more intensive blood pressure control are discussed in this paper.>

Simon JA; Hudes ES (1999a): Relation of serum ascorbic acid to serum ferritin, and kidney stones in US adults. *Arch Intern Med* 156 (6, 22 Mar), 619-624.

[ASCORBIC ACID; IRON DEFICIENCY; KIDNEY STONES;

NHANES II; SERUM FERRITIN]

<Concern has been raised that high levels of ascorbic acid consumption may lead to potential adverse effects, such as vitamin B2 deficiency, iron overload kidney stones. Objective: To examine the relation of serum ascorbic acid level, which reflects intake, to serum vitamin B2 level, serum ferritin level, and kidney stones. Methods: We analyzed data collected on a random sample of the US population enrolled in the Second National Health Nutrition Examination Survey, 1976-1980. We analyzed data using linear and logistic regression models. Serum ascorbic acid, serum vitamin B1,2 hemoglobin, red blood cell mean corpuscular volume (MCV), and serum ferritin levels were measured using standardized protocols. History of kidney stones was determined by self-report. Results: After multivariate adjustment, serum ascorbic acid level was associated with higher serum vitamin B1,2 levels among women in regression models that assumed a linear relationship; each 57-mumol/L (1.0-mg/dL) increase in serum ascorbic acid level (range, 6-153 mumol/L [0.1 to 2.7 mg/dL]) was independently associated with a serum vitamin B1,2 level increase of 60 pmol/L (81 pg/mL) ($P < .001$). Among men, serum ascorbic acid level was marginally associated with higher serum vitamin B1,2 levels: each 57-mumol/L (1.0-mg/dL) increase in serum ascorbic acid level was associated with a serum vitamin B1,2 level increase of 27 pmol/L (36 pg/mL) ($P = .10$). In addition, serum ascorbic acid level was not associated with correlates of vitamin B1,2 deficiency, such as higher MCV levels, macrocytosis ($MCV > 100$), or lower hemoglobin concentrations. Serum ascorbic acid level was not independently associated with serum ferritin levels. However, among women only, serum ascorbic acid levels were associated in a nonlinear fashion with prevalence of elevated serum ferritin levels ($P = .02$). We found no association between serum ascorbic acid level and prevalence of kidney stones in women or men (both $P > .05$). Conclusions: Serum ascorbic acid levels were not associated with decreased serum vitamin B1,2 levels (or indicators of vitamin B1,2 deficiency), prevalence of kidney stones, serum ferritin levels, or - among men - prevalence of elevated serum ferritin levels. Serum ascorbic acid levels were associated with prevalence of elevated serum ferritin levels among women. Although the clinical relevance of these findings is uncertain, it seems prudent to suggest that women with a genetic susceptibility to iron overload should consider moderating their intake of ascorbic acid.>

Simon JA; Hudes ES (1999b): Serum ascorbic acid and other correlates of self-reported cataract among older Americans. *J Clin Epidemiol* 52 ((12), Dec), 1207-11.

[CATARACT; DIABETES MELLITUS; NHANES II; SERUM ASCORBIC ACID; SMOKING]

<The purpose of this study was to examine the correlates of self-reported cataract among older Americans, and specifically, to determine whether

serum ascorbic acid levels are associated with a decreased prevalence of cataract. A national probability survey of Americans, the Second National Health and Nutrition Examination Survey (NHANES II), was conducted between 1976 and 1980. A total of 4001 participants were included between the ages of 60 and 74 years with data on serum ascorbic acid level and other variables of interest. A total of 252 women (12%) and 164 men (9%) reported a history of cataract. Serum ascorbic acid level was inversely associated with prevalence of cataract in multiple logistic regression analyses; each 1 mg/dl increase was independently associated with a 26% decrease in cataract ($P = 0.03$). Other independent correlates of cataract included increasing age, female sex, smoking, and diabetes mellitus (all $P < 0.01$). We identified four correlates of cataract among older Americans: serum ascorbic acid level, increasing age, smoking, and diabetes mellitus. Ascorbic acid, a water-soluble antioxidant found in high concentrations in the lens, may be of importance for the prevention of cataract among older Americans.>

Strauss RS (1999a): Comparison of measured and self-reported weight and height in a cross-sectional sample of young adolescents. *Int J Obes Relat Metab Disord* 23 (8, Aug), 904-908.

[ADOLESCENTS; HEIGHT AND WEIGHT; NHANES III; OBESITY]

<AIM: To explore the relationship between self-reported weight and height to actual weight and height in a cross-sectional nationally representative sample of young adolescents. METHODS: Weights and heights were obtained on 1932 adolescents aged 12-16 y enrolled in the NHANES III study. Self-reported weights and heights were available on 1657 of the adolescents (86%). RESULTS: Correlation between self-reported weight and actual weight ranged between 0.87 and 0.94, depending on gender or race. However, self-reported weights were significantly lower than measured weights among girls, compared to boys ($P < 0.001$). Correlation between self-reported height and actual height ranged from 0.82-0.91. There were no differences in the accuracy of self-reported heights among boys and girls or racial groups. Differences between actual weight and self-reported weight were significantly greater for obese children compared with non-obese children ($P < 0.001$). Nevertheless, the use of self-reported weight and height resulted in the correct classification of weight status in 94% of children. As a result, small differences in self-reported weights and heights had no impact in assessing obesity related morbidities. CONCLUSION: Influences of gender and racial biases in reporting of weight and height were relatively small. Self-reported heights and weights were extremely reliable for the predicting obesity related morbidities and behaviours.>

Strauss RS (1999b): Comparison of serum concentrations of alpha-

tocopherol and beta-carotene in a cross-sectional sample of obese and nonobese children (NHANES III). National Health and Nutrition Examination Survey. *J Pediatr* 134 (2, Feb), 160-165.

[BETA-CAROTENE; CHILDREN; CHOLESTEROL; CVD; DIETARY RECALL; NHANES III; OBESITY; TRIGLYCERIDE LEVELS]

<INTRODUCTION: Low intake of the fat-soluble antioxidants alpha-tocopherol and beta-carotene has been linked to greater risks of cardiovascular disease in epidemiologic studies. Obesity in adults is associated with lower levels of alpha-tocopherol and beta-carotene, which may contribute to the increased risk of cardiovascular disease associated with obesity. AIM: To examine serum concentrations of fat-soluble antioxidants in a large, nationally representative sample of obese and nonobese children. METHODS: Serum levels of alpha-tocopherol and beta-carotene were measured in 6139 children between the ages of 6 and 19 years enrolled in the National Health and Examination Survey, cycle III. Serum alpha-tocopherol levels were adjusted for fasting cholesterol and triglyceride levels. Nutritional intake was assessed by 24-hour dietary recall and food frequency questionnaires. RESULTS: Serum levels of beta-carotene were significantly lower in obese children compared with those found in normal weight children (0.22 0.14 micromol/L vs 0.29 0.17 micromol/L, $P < .001$). After adjustment was done for serum triglyceride and cholesterol levels, alpha-tocopherol levels were also significantly lower in obese children (2.68 0.59 vs 3.17 0.60, $P < .001$). Approximately one half of obese children had serum levels of beta-carotene and adjusted alpha-tocopherol in the lowest quartile compared with approximately one quarter of normal weight children ($P < .001$). No significant differences were seen in reported intake of beta-carotene, alpha-tocopherol, fruit, or vegetables between obese and nonobese children. CONCLUSION: Reduced serum levels of fat-soluble antioxidants are present in obese children.>

Stroup-Benham CA; Markides KS; Espino DV; Goodwin JS (1999): Changes in blood pressure and risk factors for cardiovascular disease among older Mexican-Americans from 1982-1984 to 1993-1994. *J Am Geriatr Soc* 47 (7, Jul), 804-810.

[CVD; DIABETES; HHANES; MEXICAN AMERICANS; OBESITY; SMOKING; STROKE]

<OBJECTIVE: To determine the 10-year changes in blood pressure and cardiovascular risk factors among older Mexican-Americans. DESIGN: Comparative analyses of the Hispanic Health and Nutrition Examination Survey (HHANES) and the Hispanic EPESE (Established Populations for Epidemiologic Studies of the Elderly). Both of these were population-based studies using a multistage stratified probability sampling design of noninstitutionalized persons. SETTING: Five US states in the southwest: Arizona, California, Colorado, New Mexico, and

Texas. PARTICIPANTS: A total of 216 Mexican-Americans aged 65 to 74 from the 1982-1984 HHANES and 3050 Mexican-Americans aged 65+ from the 1993-1994 Hispanic EPESE. MEASUREMENTS: Mean systolic and diastolic blood pressure; cigarette smoking; high levels of alcohol use; body mass index and obesity; self-reported heart attack, stroke, and diabetes; hypertension. RESULTS: Among 65- to 74-year-old Mexican-Americans, there was a decrease over time in the percent of those who smoked cigarettes from 27.60% to 13.96% and a decrease in mean systolic blood pressure level. The percent of subjects categorized as obese or severely obese increased significantly, as did the prevalence of diagnosed diabetes, increasing from 20.06% in 1982-1984 to 29.82% in 1993-1994. Mean diastolic blood pressure increased from 77.15 mm Hg in 1982-1984 to 81.21 mm Hg in 1993-1994. CONCLUSIONS: Our findings suggest major changes in cardiovascular risk factors between 1982-1984 and 1993-1994 among older Mexican-Americans.>

Sundquist J; Winkleby MA (1999a): Cardiovascular risk factors in Mexican American adults: a transcultural analysis of 1988-94. *Am J Public Health* 89 (Suppl. 89, May), 723-730.

[ADULTS; BLOOD PRESSURE; BMI; CARDIOVASCULAR DISEASE; CHOLESTEROL; DIABETES; MEXICAN AMERICANS; NHANES III; SMOKING]

<OBJECTIVES: This study examined the extent to which cardiovascular disease risk factors differ among subgroups of Mexican Americans living in the United States. METHODS: Using data from a national sample (1988-1994) of 1387 Mexican American women and 1404 Mexican American men, aged 25 to 64 years, we examined an estimate of coronary heart disease mortality risk and 5 primary cardiovascular disease risk factors: systolic blood pressure, body mass index, cigarette smoking, non-high-density lipoprotein cholesterol, and type 2 diabetes mellitus. Differences in risk were evaluated by country of birth and primary language spoken. RESULTS: Estimated 10-year coronary heart disease mortality risk per 1000 persons, adjusted for age and education, was highest for US-born Spanish-speaking men and women (27.5 and 11.4, respectively), intermediate for US-born English-speaking men and women (22.5 and 7.0), and lowest for Mexican-born men and women (20.0 and 6.6). A similar pattern of higher risk among US-born Spanish-speaking men and women was demonstrated for each of the 5 cardiovascular disease risk factors. CONCLUSIONS: These findings illustrate the heterogeneity of the Mexican American population and identify a new group at substantial risk for cardiovascular disease and in need of effective heart disease prevention programs.>

Sundquist J; Winkleby MA (1999b): Cardiovascular risk factors in Mexican American adults: a transcultural analysis of NHANES III, 1988-

1994. *Am J Public Health* 89 (5, May), 723-730.

[BMI; CHOLESTEROL; CVD; DIABETES; MEXICAN AMERICANS; NHANES III]

<OBJECTIVES: This study examined the extent to which cardiovascular disease risk factors differ among subgroups of Mexican Americans living in the United States. METHODS: Using data from a national sample (1988-1994) of 1387 Mexican American women and 1404 Mexican American men, aged 25 to 64 years, we examined an estimate of coronary heart disease mortality risk and 5 primary cardiovascular disease risk factors: systolic blood pressure, body mass index, cigarette smoking, non-high-density lipoprotein cholesterol, and type 2 diabetes mellitus. Differences in risk were evaluated by country of birth and primary language spoken. RESULTS: Estimated 10-year coronary heart disease mortality risk per 1000 persons, adjusted for age and education, was highest for US-born Spanish-speaking men and women (27.5 and 11.4, respectively), intermediate for US-born English-speaking men and women (22.5 and 7.0), and lowest for Mexican-born men and women (20.0 and 6.6). A similar pattern of higher risk among US-born Spanish-speaking men and women was demonstrated for each of the 5 cardiovascular disease risk factors. CONCLUSIONS: These findings illustrate the heterogeneity of the Mexican American population and identify a new group at substantial risk for cardiovascular disease and in need of effective heart disease prevention programs.>

Thakur N; D'Amico F (1999): Relationship of nutrition knowledge and obesity in adolescence. *Fam Med* 31 (2, Feb), 122-127.

[ADOLESCENCE; NHANES II; OBESITY]

<BACKGROUND: The prevalence of obesity in adolescence is increasing. This study determined whether a lack of nutrition knowledge is correlated with obesity in adolescents. METHODS: We distributed a survey at three high schools to 292 9th-through 12th-grade students. The questionnaire examined the students' nutrition knowledge, food-related behaviors, and food preferences. The students' body mass indices (BMI) were calculated from self-reported weights and heights. Obesity was defined as a BMI greater than the 85th percentile, using criteria from the National Health and Nutrition Examination Survey II. RESULTS: Of 292 students contacted, 289 returned the survey. The population had a prevalence of obesity of 26%. There were no significant differences in nutrition knowledge between the obese and non-obese students with the exception that obese students were better able to identify high-fiber foods. In addition, obese students were more likely to report infrequent meals with their family. Otherwise, there were no significant differences in nutrition behaviors or food preferences. CONCLUSIONS: Overall nutrition knowledge did not differ between obese and non-obese adolescents.>

Troiano RP; Flegal KM (1999): Overweight prevalence among youth in the United States: Why so many different numbers? *Int J Obes Relat Metab Disord* 23 (Suppl. 2), S22-S27.

[ADOLESCENCE; BODY MASS INDEX; BODY WEIGHT; CHILDREN; HEALTH SURVEY; NHANES III; NUTRITION ASSESSMENT; REFERENCE VALUES]

<Several recent publications have presented different estimates for the prevalence of overweight among youth in the United States. Prevalence estimates range from 11-24%, despite describing the same results from the third National Health and Nutrition Examination Survey (NHANES 111). This paper discusses the variety and evolution of different overweight prevalence estimates. Issues of definition, measurements, criteria selection and comparison groups are considered and implications for estimates of the prevalence of overweight among youth are explored. Reference percentiles for body mass index (M) from several publications are compared. The differences in published estimates from NHANES M are noted and explained.>

Will JC; Ford ES; Bowman BA (1999): Serum vitamin C concentrations and diabetes: findings from the Third National Health and Nutrition Examination Survey, 1988-1994. *Am J Clin Nutr* 70 (1, Jul), 49-52.

[DIABETES; NHANES III; ORAL GLUCOSE TOLERANCE; VITAMIN C]

<BACKGROUND: Previous studies suggested that diabetes mellitus may lower serum vitamin C concentrations, but most of these studies used clinic-based populations with established diabetes of varying duration and did not adjust for important covariates. OBJECTIVE: Using a population-based sample and adjusting for important covariates, we asked whether serum vitamin C concentrations in persons with newly diagnosed diabetes differed from those in persons without diabetes. DESIGN: Data were obtained from the third National Health and Nutrition Examination Survey (1988-1994). Serum vitamin C was assayed by using reversed-phase HPLC with multiwavelength detection. Diabetes status (n = 237 persons with diabetes; n = 1803 persons without diabetes) was determined by oral-glucose-tolerance testing of the sample aged 40-74 y. RESULTS: After adjustment for age and sex, mean serum vitamin C concentrations were significantly lower in persons with newly diagnosed diabetes than in those without diabetes. After adjustment for dietary intake of vitamin C and other important covariates, however, mean concentrations did not differ according to diabetes status. CONCLUSION: When assessing serum vitamin C concentrations by diabetes status in the future, researchers should measure and account for all factors that influence serum vitamin C concentrations.>

Winkleby MA; Robinson TN; Sundquist J; Kraemer HC (1999): Ethnic

variation in cardiovascular disease risk factors among children and young adults: findings from the Third National Health and Nutrition Examination Survey, 1988-1994. JAMA 281 (11, 17 Mar), 1006-13. [ADOLESCENCE; ADULTS; BLOOD PRESSURE; BODY MASS INDEX; CARDIOVASCULAR DISEASE; GLYCOSYLATED HEMOGLOBIN; HEALTH SURVEY; HEMOGLOBIN A; LIPOPROTEINS; SMOKING]

<Knowledge about ethnic differences in cardiovascular disease (CVD) risk factors among children and young adults from national samples is limited. OBJECTIVE: To evaluate ethnic differences in CVD risk factors, the age at which differences were first apparent, and whether differences remained after accounting for socioeconomic status (SES). DESIGN: Third National Health and Nutrition Examination Survey, 1988-1994. SETTING: Eighty-nine mobile examination centers. PARTICIPANTS: A total of 2769 black, 2854 Mexican American, and 2063 white (non-Hispanic) children and young adults aged 6 to 24 years. MAIN OUTCOME MEASURES: Ethnicity and household level of education (SES) in relation to body mass index (BMI), percentage of energy from dietary fat, cigarette smoking, systolic blood pressure, glycosylated hemoglobin (HbA1c), and non-high-density lipoprotein cholesterol (non-HDL-C [the difference between total cholesterol and HDL-C]). RESULTS: The BMI levels were significantly higher for black and Mexican American girls than for white girls, with ethnic differences evident by the age of 6 to 9 years (a difference of approximately 0.5 BMI units) and widening thereafter (a difference of >2 BMI units among 18- to 24-year-olds). Percentages of energy from dietary fat paralleled these findings and were also significantly higher for black than for white boys. Blood pressure levels were higher for black girls than for white girls in every age group, and glycosylated hemoglobin levels were highest for black and Mexican American girls and boys in every age group. In contrast, smoking prevalence was highest for white girls and boys, especially for those from low-SES homes (77% of young men and 61% of young women, aged 18-24 years, from low-SES homes were current smokers). All ethnic differences remained significant after accounting for SES and age. CONCLUSION: These findings show strong ethnic differences in CVD risk factors among youths of comparable age and SES from a large national sample. The differences highlight the need for heart disease prevention programs to begin early in childhood and continue throughout young adulthood to reduce the risk of atherosclerosis.>

Woodring BC (1999): Relationship of physical activity and television watching with body weight and level of fatness among children: results from the Third National Health and Nutrition Examination Survey. J Child Fam Nurs 1 (2, Nov-Dec), 78-79.

[CHILDREN; NHANES III; OBESITY; PHYSICAL ACTIVITY; TV

WATCHING; WEIGHT]

Wu AHB; Contois JH; Cole TG (1999): Reflex testing I: Algorithm for lipid and lipoprotein measurement in coronary heart disease risk assessment. *Clinica Chimica Acta* 280 (1-2), 181-193.

[CHD; CHOLESTEROL; NHANES III; REFLEX TESTING]

<We reviewed the current literature in order to construct a reflex testing algorithm that maximizes clinical utility and cost-effectiveness of lipid and lipoprotein testing. The algorithm was based on the 2nd Report of the National Cholesterol Education Program Adult Treatment Panel guidelines for use of total cholesterol (TC), triglycerides (TG), HDL-C, and LDL-C, and published reports describing the clinical use of apolipoprotein B and lipoprotein (a). The success of this algorithm was tested in a low-risk general and a high-risk hyperlipidemic patient population. Lipid data and non-lipid risk factors were obtained from a national database and from patients seen at two lipid clinics. A total of 16,968 individuals from the National Health and Nutrition Examination Survey III database comprised the low-risk group, and 239 patients examined in the Hartford Hospital and Washington University Lipid Clinics comprised the high-risk group. We found a solid scientific base to support the NCEP guidelines and reasonable support for limited testing of apoB and Lp(a). According to the algorithm, the direct LDL-C assay was deemed unnecessary in 98% and 91% of low- and high-risk subjects, respectively, if one assumes that the Friedewald equation is adequate with $TG \leq 4.00$ g/l. With a more conservative cutoff of $TG \leq 2.50$ g/l, the algorithm canceled 92% and 81% of direct LDL tests, respectively. The algorithm also limited TG to 20 and 64%, apoB to 6 and 20%, and Lp(a) to 15 and 56%, of low- and high-risk groups, respectively. Use of a comprehensive, reflex algorithm for coronary heart disease risk assessment will substantially reduce the utilization of laboratory services without diminishing the clinical value of these tests. The algorithm will prevent the overuse of certain expensive tests (direct LDL) while promoting the limited use of underutilized tests [apoB and Lp(a)].>

1998

Alaimo K; Briefel RR; Frongillo EA Jr; Olson CM (1998): Food insufficiency exists in the United States: results from the third National Health and Nutrition Examination Survey (NHANES III). *Am J Public Health* 88 (3, Mar), 419-426.

[FOOD INSUFFICIENCY; LOW INCOME; MEXICAN

AMERICANS; NHANES III]

<OBJECTIVES: The purpose of this study was to estimate the prevalence of food insufficiency in the United States and to examine sociodemographic characteristics related to food insufficiency. METHODS: Data were analyzed from the third National Health and Nutrition Examination Survey, a cross-sectional representative sample of the civilian noninstitutionalized population living in households. Individuals were classified as "food insufficient" if a family respondent reported that the family sometimes or often did not get enough food to eat. RESULTS: From 1988 through 1994, the overall prevalence of food insufficiency was 4.1% and was primarily related to poverty status. In the low-income population, food insufficiency was positively associated with being Mexican American, being under the age of 60, having a family head who had not completed high school, participating in the Food Stamp Program, and not having health insurance. It was not related to family type or employment status of the family head. Over half of food-insufficient individuals lived in employed families. CONCLUSIONS: Food insufficiency is not limited to very low-income persons, specific racial/ethnic groups, family types, or the unemployed. Understanding food insufficiency is critical to formulating nutrition programs and policies.>

Alderman MH; Cohen HW; Madhavan S (1998a): Dietary sodium intake and mortality: NHANES - Reply (REPRINT). *Lancet* 352 (9132, 19 Sep), 988.

[NHANES; SODIUM INTAKE]

Alderman MH; Cohen H; Madhavan S (1998b): Dietary sodium intake and mortality: the National Health and Nutrition Examination Survey (NHANES I). *Lancet* 351 (9105, 14 Mar), 781-785.

[MORTALITY; NHANES I; SODIUM INTAKE]

<BACKGROUND: Population-wide restriction of dietary sodium has been recommended. However, little evidence directly links sodium intake to morbidity and mortality. The aim of this study was to assess the relation of sodium intake to subsequent all-cause and cardiovascular-disease (CVD) mortality in a general population. METHODS: The first National Health and Nutrition Examination Survey established baseline information during 1971-75 in a representative sample of 20729 US adults (aged 25-75). 11348 underwent medical examination and nutritional examination based on 24 h recall. Two had no data on sodium intake available. Vital status at June 30, 1992, was obtained for the 11346 participants through interview, tracing, and searches of the national death index. Mortality was examined in sex-specific quartiles of sodium intake, calorie intake, and sodium/calorie ratio. Multiple regression analyses were done to assess the relations with mortality.

FINDINGS: There were 3923 deaths, of which 1970 were due to CVD. All-cause mortality (per 1000 person-years; adjusted for age and sex) was inversely associated with sex-specific quartiles of sodium intake (lowest to highest quartile 23.18 to 19.01, $p < 0.0001$) and total calorie intake (25.03 to 18.40, $p < 0.0001$) and showed a weak positive association with quartiles of sodium/calorie ratio (20.27 to 21.71, $p = 0.14$). The pattern for CVD mortality was similar (sodium 11.80 to 9.60, $p < 0.0019$; calories 12.80 to 8.94, $p < 0.0002$; sodium/calorie ratio 9.73 to 11.35, $p = 0.017$). In Cox multiple regression analysis, sodium intake was inversely associated with all-cause ($p = 0.0069$) and CVD mortality ($p = 0.086$) and sodium/calorie ratio was directly associated with all-cause ($p = 0.0004$) and CVD mortality ($p = 0.0056$). By contrast, calorie intake in the presence of the two measures of sodium intake was not independently associated with mortality (all-cause $p = 0.86$; CVD $p = 0.74$). Analysis restricted to participants with no history of CVD at baseline gave similar results. **INTERPRETATION:** This observational study does not justify any particular dietary recommendation. Specifically, these results do not support current recommendations for routine reduction of sodium consumption, nor do they justify advice to increase salt intake or to decrease its concentration in the diet.>

Andersen RE; Crespo CJ; Bartlett SJ; Cheskin LJ; Pratt M (1998): Relationship of physical activity and television watching with body weight and level of fatness among children: results from the third National Health and Nutrition Examination Survey [see comments]. *JAMA* 279 (12, 25 Mar), 938-942.

[NHANES III; OBESITY; PHYSICAL ACTIVITY]

<**CONTEXT:** Physical inactivity contributes to weight gain in adults, but whether this relationship is true for children of different ethnic groups is not well established. **OBJECTIVE:** To assess participation in vigorous activity and television watching habits and their relationship to body weight and fatness in US children. **DESIGN:** Nationally representative cross-sectional survey with an in-person interview and medical examination. **SETTING and PARTICIPANTS:** Between 1988 and 1994, 4063 children aged 8 through 16 years were examined as part of the National Health and Nutrition Examination Survey III. Mexican Americans and non-Hispanic blacks were over sampled to produce reliable estimates for these groups. **MAIN OUTCOME MEASURES:** Episodes of weekly vigorous activity and daily hours of television watched, and their relationship to body mass index and body fatness. **RESULTS:** Eighty percent of US children reported performing 3 or more bouts of vigorous activity each week. This rate was lower in non-Hispanic black and Mexican American girls (69% and 73%, respectively). Twenty percent of US children participated in 2 or fewer bouts of vigorous activity per week, and the rate was higher in girls (26%) than in boys (17%). Overall, 26% of US children watched 4 or more hours of

television per day and 67% watched at least 2 hours per day. Non-Hispanic black children had the highest rates of watching 4 or more hours of television per day (42%). Boys and girls who watch 4 or more hours of television each day had greater body fat ($P<.001$) and had a greater body mass index ($P<.001$) than those who watched less than 2 hours per day. CONCLUSIONS: Many US children watch a great deal of television and are inadequately vigorously active. Vigorous activity levels are lowest among girls, non-Hispanic blacks, and Mexican Americans. Intervention strategies to promote lifelong physical activity among US children are needed to stem the adverse health consequences of inactivity.>

Anfield L (1998): Salt and hypertension: The seasoned debate continues. *British Journal of Cardiology* 5 (4), 196-199.

[ELDERLY POPULATION; HYPERTENSION; NHANES I; NHANES II; SODIUM INTAKE]

<With the announcement from the TONE trial 1 that sodium restriction significantly reduces blood pressure in the elderly and the conclusion from NHANES I and II that it does not support current recommendations for reducing sodium consumption, the salt battle lines are drawn once again.>

Arcia E (1998): Latino parents' perception of their children's health status. *Soc Sci Med* 46 (10, May), 1271-1274.

[CHILDREN; HEALTH STATUS; HHANES]

<Descriptive and multivariate analyses of the Hispanic Health and Nutrition Examination Survey were undertaken to describe Mexican American and Puerto Rican parents' perceptions of the health status of their young children, and to test a model of perceived health. Results suggest that ratings of poor health are substantially higher than reports for children from the general population and that the two ethnic groups differed from each other in the apparent basis for their ratings. Key predictors of health ratings for both populations were children's functional limitations, current and resolved medical conditions, and educational attainment of the head of household. Mexican-American ratings were also predicted by current and resolved developmental conditions, acculturation, and family income.>

Avins AL; Browner WS (1998): Improving the prediction of coronary heart disease to aid in the management of high cholesterol levels: what a difference a decade makes. *JAMA* 279 (6, 11 Feb), 445-449.

[CHD; CHOLESTEROL; NHANES II]

<CONTEXT: A patient's coronary heart disease (CHD) risk must be

correctly classified to successfully apply risk-based guidelines for treatment of hypercholesterolemia. OBJECTIVE: To determine the classification accuracy of the National Cholesterol Education Program (NCEP) CHD risk-stratification system and compare it with a simple revised system that gives greater weight to age as a CHD risk factor. DESIGN: Modeling of 10-year CHD risk, using equations from the Framingham Heart Study applied to a cross-sectional survey of the US population. SUBJECTS: The 3284 subjects aged 20 to 74 years surveyed in the second National Health and Nutrition Examination Survey (1978-1982) who had fasting lipid levels measured. MAIN OUTCOME MEASURES: The area under the receiver operating characteristic curve (AUC) for 10-year CHD risk for the NCEP and revised scales. RESULTS: Among all adults with a low-density lipoprotein cholesterol value of at least 4.1 mmol/L (160 mg/dL), the NCEP system showed fairly good discrimination (AUC=0.90), though there was a substantial decline among men 35 to 74 years old and women 55 to 74 years old (AUC=0.81). By contrast, the revised system showed superior performance in all hypercholesterolemic adults (AUC=0.94-0.97) as well as in the subgroup of men 35 to 74 years old and women 55 to 74 years old (AUC=0.94-0.96). CONCLUSIONS: Simple modifications of the NCEP treatment criteria result in a substantially improved ability to discriminate between higher and lower CHD risk groups. Unlike the NCEP system, this revised system retains its classification ability in all age groups studied.>

Bergmann MM; Byers T; Freedman DS; Mokdad A (1998): Validity of self-reported diagnoses leading to hospitalization: a comparison of self-reports with hospital records in a prospective study of American adults. *Am J Epidemiol* 147 (10, 15 May), 969-977.

[NHANES I; SELF-REPORTED DIAGNOSES]

<The authors compared interview reports with hospitalization records of participants in a nationally representative survey to determine the accuracy of self-reports of ischemic heart disease, stroke, gallbladder disease, ulcers, cataract, hip fracture, colon polyps, and cancers of the colon, breast, prostate, and lung. The study cohort consisted of 10,523 participants from the first National Health and Nutrition Examination Survey in 1971-1975 who were aged 25-74 years at the baseline examination and who completed a follow-up interview in 1982-1984. Self-reports of hospitalization for breast cancer were confirmed as accurate for 100% of cases where a hospital record was available. Self-report accuracy was also high for ischemic heart disease (84%), cataract (83%), and hip fracture (81%); it was moderate for lung cancer (78%), prostate cancer (75%), gallbladder disease (74%), colon cancer (71%), and stroke (67%); but it was low for ulcers (54%) and colon polyps (32%). Some of the self-reports of ulcers (20%), hip fracture (9%), ischemic heart disease (7%), and stroke (7%) were found to reflect

diagnoses of other conditions of anatomic proximity. Accuracy of self-reports improved with higher levels of education, but was not generally related to age, gender, race, alcohol use, or smoking. The results suggest that self-reports of some diseases can be taken as accurate, but self-reports of other conditions might require medical record verification in epidemiologic follow-up studies.>

Caraballo RS; Giovino GA; Pechacek TF; Mowery PD; Richter PA; Strauss WJ; Sharp DJ; Eriksen MP; Pirkle JL; Maurer KR (1998): Racial and ethnic differences in serum cotinine levels of cigarette smokers: Third National Health and Nutrition Examination Survey, 1988-1991 [see comments]. JAMA 280 (2, 8 Jul), 135-139.

[NHANES III; SERUM CREATININE; SMOKING]

<CONTEXT: Cotinine, a metabolite of nicotine, is a marker of exposure to tobacco smoke. Previous studies suggest that non-Hispanic blacks have higher levels of serum cotinine than non-Hispanic whites who report similar levels of cigarette smoking. OBJECTIVE: To investigate differences in levels of serum cotinine in black, white, and Mexican American cigarette smokers in the US adult population. DESIGN: Third National Health and Nutrition Examination Survey, 1988-1991. PARTICIPANTS: A nationally representative sample of persons aged 17 years or older who participated in the survey. OUTCOME MEASURES: Serum cotinine levels by reported number of cigarettes smoked per day and by race and ethnicity. RESULTS: A total of 7182 subjects were involved in the study; 2136 subjects reported smoking at least 1 cigarette in the last 5 days. Black smokers had cotinine concentrations substantially higher at all levels of cigarette smoking than did white or Mexican American smokers ($P < .001$). Serum cotinine levels for blacks were 125 nmol/L (22 ng/mL) (95% confidence interval [CI], 79-176 nmol/L [14-31 ng/mL]) to 539 nmol/L (95 ng/mL) (95% CI, 289-630 nmol/L [51-111 ng/mL]) higher than for whites and 136 nmol/L (24 ng/mL) (95% CI, 85-182 nmol/L [15-32 ng/mL]) to 641 nmol/L (113 ng/mL) (95% CI, 386-897 nmol/L [68-158 ng/mL]) higher than for Mexican Americans. These differences do not appear to be attributable to differences in environmental tobacco smoke exposure or in number of cigarettes smoked. CONCLUSIONS: To our knowledge, this study provides the first evidence from a national study that serum cotinine levels are higher among black smokers than among white or Mexican American smokers. If higher cotinine levels among blacks indicate higher nicotine intake or differential pharmacokinetics and possibly serve as a marker of higher exposure to cigarette carcinogenic components, they may help explain why blacks find it harder to quit and are more likely to experience higher rates of lung cancer than white smokers.>

Champagne CM; Baker NB; DeLany JP; Harsha DW; Bray GA (1998):

Assessment of energy intake underreporting by doubly labeled water and observations on reported nutrient intakes in children. *J Am Diet Assoc* 98 (4, Apr), 426-433.

[CHILDREN; NHANES III; NUTRIENT INTAKES; WATER]

<OBJECTIVE: To compare reported energy intake with energy expenditure using doubly labeled water (DLW). Additionally, we compared reported nutrient intakes of our subject population with national survey population data from the third National Health and Nutrition Examination Survey (NHANES III). DESIGN: This was a cross-sectional study of children, balanced by race and gender, primarily characterized by 4 body types: lean, obese, centrally fat, or peripherally fat. SUBJECTS/SETTING: Children (n=118; mean age=10 years) kept 8-day food records, with nutritionists recording weekday school lunch intakes. These subjects, assisted by their parents, recorded all breakfasts, dinners, snacks, and weekend lunches. STATISTICAL ANALYSES PERFORMED: Data were analyzed using least squares analysis of variance with the general linear models procedure. Tukey's test was used for multiple comparisons of predicted treatment means. RESULTS: Mean daily energy intake was underreported by 17% to 33% of energy expenditure. The tendency to underreport increased with age. Underreporting occurred in all groups and subgroups studied. Reported mean intakes of vitamin A, vitamin E, vitamin B-6, calcium, zinc, and copper were less than 70% of the Recommended Dietary Allowance (RDA) for African-American girls, whereas African-American boys reported similarly low intakes of copper. On average, white girls reported intakes less than 70% of the RDA for zinc and copper, whereas white boys reported low intakes of copper (60% of the RDA). Reported intakes in general were somewhat lower than those reported in NHANES III. APPLICATIONS/CONCLUSIONS: Dietetics professionals may modify the nutritional advice they give to patients/subjects based on food intake records and other data. For children, particularly, it is imperative that ethnic and gender differences be taken into consideration and that all foods eaten be accounted for as much as possible.>

Chong Y; Porter K; Looker A (1998): Unrecognized osteoporosis among estrogen deficient women, United States. *MMWR* 47, 969-972.
[ESTROGEN DEFICIENT; NHANES III; OSTEOPOROSIS]

Chumlea WC; Guo SS; Wholihan K; Cockram D; Kuczmarski RJ; Johnson CL (1998): Stature prediction equations for elderly non-Hispanic white, non-Hispanic black, and Mexican-American persons developed from NHANES III data. *J Am Diet Assoc* 98 (N2, Feb), 137-142.

[HEIGHT; MEXICAN AMERICANS; NHANES III; NON-HISPANICS]

<Objective: To develop new, nationally representative equations to predict stature for racial/ethnic groups of the elderly population in the United States. Design: Anthropometric data for stature, knee height, and sitting height for adults aged 60 years or older were collected from a sample of persons in the third National Health and Nutrition Examination Survey (1988-1994), a national probability sample of the US population. Subjects: A gender-and racial/ethnic-stratified sample of 4,750 persons from the US population (1,369 non-Hispanic white men, 1,472 non-Hispanic white women, 474 non-Hispanic black men, 481 non-Hispanic black women, 497 Mexican-American men, 457 Mexican-American women) aged 60 years or older participated in this study. Statistical analyses: Sampling weights were used to adjust the individual data to account for unequal probabilities of selection, nonresponse, and coverage errors so that all individual data used in these analyses represented national probability estimates. Regression analysis was performed to predict stature in each gender and ethnic group, and the results were cross-validated. Results Stature prediction models using knee height and age and sitting height and age were evaluated for each gender and racial/ethnic group. The equations with knee height and age were selected on the basis of root mean square error and pure errors in cross-validation and on the accuracy and validity of measures of knee height over sitting height. Results of these regressions, including regression coefficients, standard errors of the coefficients, multiple correlation coefficients, root mean square error, and the standard error for the individual for the final equations, are presented. Conclusions: New stature prediction equations using knee height and age are presented for non-Hispanic white, non-Hispanic black and Mexican-American elderly persons from current nationally representative data. These equations should be applied when a measure of stature cannot be obtained, for example, for persons with amputations of the leg, or with spinal curvature or who are confined to bed. Predicted stature values are acceptable surrogates in nutritional indexes.>

Coleman PJ; McQuillan GM; Moyer LA; Lambert SB; Margolis HS (1998): Incidence of hepatitis B virus infection in the United States, 1976-1994: estimates from the National Health and Nutrition Examination Surveys. *J Infect Dis* 178 (4, Oct;178(4):954-9, Oct), 954-959.

[HEPATITIS B; NHANES II; NHANES III]

<Precise estimates of the incidence of hepatitis B virus (HBV) infection are required to assess the impact of immunization and other prevention strategies in the United States. Race- and age-specific prevalence data obtained from the second and third National Health and Nutrition Examination Surveys (NHANES II, 1976-1980, and NHANES III, 1988-1994) were used to estimate the annual incidence of HBV infection by catalytic modeling. During the period covered by NHANES II, an

estimated 323,462 persons were infected annually, and 334,863 were infected annually during the period covered by NHANES III. No statistically significant declines in prevalence of HBV infection occurred between the two surveys, a period during which hepatitis B vaccination targeted only limited numbers of high-risk adults.>

Cooper GS; Sandler DP (1998): Age at natural menopause and mortality. *Ann Epidemiol* 8 (4, May), 229-235.

[MENOPAUSE; MORTALITY; NHANES I; NHEFS]

<PURPOSE: The purpose of this study was to examine the association between age at menopause and mortality in a population-based sample of women in the United States. METHODS: This study was based on data from the National Health and Examination Survey (NHANES) Epidemiologic Follow-up Study; 3191 women aged 50-86 years were included. There were 345 deaths over a mean follow-up time of 4.0 years. We used age-stratified and Poisson regression procedures to assess mortality risk by age at natural menopause, with adjustment for age, duration of follow-up, race, education, smoking, and use of hormone replacement therapy. We conducted a separate analysis for surgical menopause with bilateral oophorectomy. RESULTS: Compared with women who were menstruating to age 50 or later, the adjusted mortality rate ratios (RR) were 1.50 (95% confidence interval (CI), 0.97-2.34) for women with a natural menopause at age < 40, 1.04 (95% CI, 0.72-1.51) for those with menopause at age 40-44, and 0.96 (95% CI, 0.72-1.26) for those with menopause at age 45-49. Women with a natural menopause at age 40-44 years experienced an increased risk of cancer-related mortality (adjusted RR 2.34, 95% CI, 1.20-4.58). No age-related increased mortality risk was seen among women who had surgical menopause with bilateral oophorectomy. CONCLUSIONS: This study provides some support for the concept that age at natural menopause serves as a biological marker of health and aging, with potential implications extending beyond cardiovascular diseases.>

Davidson MB; Schriger DL; Peters AL; Lorber B (1998): Published erratum appears in *JAMA* 1999 Jun 16;281(23):2187 Relationship between fasting plasma glucose and glycosylated hemoglobin: potential for false-positive diagnoses of type 2 diabetes using new diagnostic criteria. *JAMA* 281 (23, 16 Jun), 2187.

[NHANES III; TYPE 2 DIABETES]

<CONTEXT: New criteria for the diagnosis of type 2 diabetes mellitus have recently been introduced that lowered the diagnostic fasting plasma glucose (FPG) concentration from 7.8 to 7.0 mmol/L (140 to 126 mg/dL). OBJECTIVE: To determine if individuals with diabetes diagnosed by the new FPG concentration criterion would have excessive glycosylation (elevated hemoglobin [HbA1c] levels). DEFINITIONS:

We determined the distribution of HbA1c levels in individuals using 4 classifications: (1) normal by the new criterion (FPG concentration <6.1 mmol/L [110 mg/dL]); (2) impaired fasting glucose by the new criterion (FPG concentration of 6.1-6.9 mmol/L [110-125 mg/dL]); (3) diabetes diagnosed solely by the new FPG concentration criterion of 7.0 through 7.7 mmol/L (126-139 mg/dL); and (4) diabetes diagnosed by the previous FPG concentration criterion of 7.8 mmol/L (140 mg/dL) or higher. DESIGN: Cross-sectional analysis of 2 large data sets (NHANES III and Meta-Analysis Research Group [MRG] on the Diagnosis of Diabetes Using Glycated Hemoglobin) that contained individuals in whom FPG concentrations, 2-hour glucose concentrations using an oral glucose tolerance test, and an HbA1c level were simultaneously measured. We cross-tabulated FPG concentrations (<6.1 mmol/L [110 mg/dL], 6.1-6.9 mmol/L [110-125 mg/dL], 7.0-7.7 mmol/L [126-139 mg/dL], and > or =7.8 mmol/L [140 mg/dL]) and HbA1c levels separated into 3 intervals: normal, less than the upper limit of normal (ULN); slightly elevated, ULN to ULN plus 1%; and high, higher than ULN plus 1%. RESULTS: Among subjects with normal FPG concentrations, HbA1c levels in the NHANES III (and the MRG) data sets were normal in 97.3% (96.2%), slightly elevated in 2.7% (3.6%), and high in 0.1% (0.2%). Among individuals with impaired fasting glucose, HbA1c concentrations were normal in 86.7% (81.4%), slightly elevated in 13.1% (16.4%), and high in 0.2% (2.2%). Among diabetic patients diagnosed by the new FPG criterion only, HbA1c levels were normal in 60.9% (59.6%), slightly elevated in 35.8% (32.8%), and high in 3.4% (7.6%). In diabetic patients diagnosed by the former FPG criterion, HbA1c levels were normal in 18.6% (16.7%), slightly elevated in 32.5% (21.0%), and high in 48.9% (62.3%). CONCLUSIONS: About 60% of the new cohort of diabetic patients in both data sets have normal HbA1c levels. We believe that diabetes should not be diagnosed in those with FPG concentrations less than 7.8 mmol/L (140 mg/dL) unless excessive glycosylation is evident. Individuals without excessive glycosylation but with moderate elevations of FPG concentrations (6.1-7.7 mmol/L [110-139 mg/dL]) should be diagnosed as having impaired fasting glucose and treated with an appropriate diet and exercise. This diagnostic labeling achieves the goal of early intervention without subjecting these persons to the potentially negative insurance, employment, social, and psychological consequences of a diagnosis of diabetes mellitus.>

Downs JR; Clearfield M; Weis S; Whitney E; Shapiro DR; Beere PA; Langendorfer A; Stein EA; Kruyer W; Gotto AM Jr (1998): Primary prevention of acute coronary events with lovastatin in men and women with average cholesterol levels: results of AFCAPS/TexCAPS. Air Force/Texas Coronary Atherosclerosis Prevention Study [see comments]. JAMA 279 (20, 27 May), 1615-1622.

[ATHEROSCLEROSIS; CHD; CHOLESTEROL; LOVASTATIN; NHANES III]

<CONTEXT: Although cholesterol-reducing treatment has been shown to reduce fatal and nonfatal coronary disease in patients with coronary heart disease (CHD), it is unknown whether benefit from the reduction of low-density lipoprotein cholesterol (LDL-C) in patients without CHD extends to individuals with average serum cholesterol levels, women, and older persons. OBJECTIVE: To compare lovastatin with placebo for prevention of the first acute major coronary event in men and women without clinically evident atherosclerotic cardiovascular disease with average total cholesterol (TC) and LDL-C levels and below-average high-density lipoprotein cholesterol (HDL-C) levels. DESIGN: A randomized, double-blind, placebo-controlled trial. SETTING: Outpatient clinics in Texas. PARTICIPANTS: A total of 5608 men and 997 women with average TC and LDL-C and below-average HDL-C (as characterized by lipid percentiles for an age- and sex-matched cohort without cardiovascular disease from the National Health and Nutrition Examination Survey [NHANES III]. Mean (SD) TC level was 5.71 (0.54) mmol/L (221 [21] mg/dL) (51 st percentile), mean (SD) LDL-C level was 3.89 (0.43) mmol/L (150 [17] mg/dL) (60th percentile), mean (SD) HDL-C level was 0.94 (0.14) mmol/L (36 [5] mg/dL) for men and 1.03 (0.14) mmol/L (40 [5] mg/dL) for women (25th and 16th percentiles, respectively), and median (SD) triglyceride levels were 1.78 (0.86) mmol/L (158 [76] mg/dL) (63rd percentile). INTERVENTION: Lovastatin (20-40 mg daily) or placebo in addition to a low-saturated fat, low-cholesterol diet. MAIN OUTCOME MEASURES: First acute major coronary event defined as fatal or nonfatal myocardial infarction, unstable angina, or sudden cardiac death. RESULTS: After an average follow-up of 5.2 years, lovastatin reduced the incidence of first acute major coronary events (1 83 vs 116 first events; relative risk [RR], 0.63; 95% confidence interval [CI], 0.50-0.79; $P < .001$), myocardial infarction (95 vs 57 myocardial infarctions; RR, 0.60; 95% CI, 0.43-0.83; $P = .002$), unstable angina (87 vs 60 first unstable angina events; RR, 0.68; 95% CI, 0.49-0.95; $P = .02$), coronary revascularization procedures (157 vs 106 procedures; RR, 0.67; 95% CI, 0.52-0.85; $P = .001$), coronary events (215 vs 163 coronary events; RR, 0.75; 95% CI, 0.61-0.92; $P = .006$), and cardiovascular events (255 vs 194 cardiovascular events; RR, 0.75; 95% CI, 0.62-0.91; $P = .003$). Lovastatin (20-40 mg daily) reduced LDL-C by 25% to 2.96 mmol/L (115 mg/dL) and increased HDL-C by 6% to 1.02 mmol/L (39 mg/dL). There were no clinically relevant differences in safety parameters between treatment groups. CONCLUSIONS: Lovastatin reduces the risk for the first acute major coronary event in men and women with average TC and LDL-C levels and below-average HDL-C levels. These findings support the inclusion of HDL-C in risk-factor assessment, confirm the benefit of LDL-C reduction to a target goal, and suggest the need for reassessment of the National Cholesterol Education Program guidelines regarding pharmacological intervention.>

Durazo-Arvizu RA; McGee DL; Cooper RS; Liao Y; Luke A (1998): Mortality and optimal body mass index in a sample of the US population. *Am J Epidemiol* 147 (8, 15 Apr), 739-749.

[BMI; MORTALITY; NHANES I; NHEFS]

<In this paper, the authors model the nonmonotonic relation between body mass index (BMI) (weight (kg)/height² (m²)) and mortality in 13,242 black and white participants in the NHANES I Epidemiologic Follow-up Study in order to estimate the BMI at which minimum mortality occurs. The BMI of minimum mortality was 27.1 for black men (95% confidence interval (CI) 24.8-29.4), 26.8 for black women (95% CI 24.7-28.9), 24.8 for white men (95% CI 23.8-25.9), and 24.3 for white women (95% CI 23.3-25.4). Each confidence interval included the group average. Analyses conducted by smoking status and after exclusion of persons with baseline illness and persons who died during the first 4 years of follow-up led to virtually identical estimates. The authors determined the range of values over which risk of all-cause mortality would increase no more than 20% in comparison with the minimum. This interval was nine BMI units wide, and it included 70% of the population. These results were confirmed by parallel analyses using quantiles. The model used allowed the estimation of parameters in the BMI-mortality relation. The resulting empirical findings from each of four race/sex groups, which are representative of the US population, demonstrate a wide range of BMIs consistent with minimum mortality and do not suggest that the optimal BMI is at the lower end of the distribution for any subgroup.>

Ebbesson SO; Schraer CD; Risica PM; Adler AI; Ebbesson L; Mayer AM; Shubnikof EV; Yeh J; Go OT; Robbins DC (1998): Diabetes and impaired glucose tolerance in three Alaskan Eskimo populations. The Alaska-Siberia Project. *Diabetes Care* 21 (4, Apr), 563-569.

[ALASKAN ESKIMO; DIABETES; GLUCOSE TOLERANCE; NHANES II]

<OBJECTIVE: The objectives of this study were to determine the prevalence of diabetes and impaired glucose tolerance (IGT) in three Alaskan Eskimo populations, using standardized diagnostic criteria, and to evaluate family history and obesity as risk factors. RESEARCH DESIGN AND METHODS: This cross-sectional study involved men and women \geq 25 years of age from three Eskimo ethnic groups (Siberian Yupik, Central Yupik, and Inupiat) residing in northwestern Alaska. Glucose tolerance status was defined by World Health Organization criteria and was based on a 75-g oral glucose tolerance test. Data on age, family history of diabetes, and degree of Eskimo ancestry were obtained from a personal interview. Obesity was assessed using BMI. RESULTS: A total of 454 of 899 (50.5%) eligible participants were examined for diabetic status (239 Siberian Yupik, 106 Central Yupik, and 109 Inupiat

participants). The prevalence of diabetes was more than twice as high among the Siberian Yupik (9.6%) as among the Central Yupik (2.8%) and Inupiat participants (3.7%). Diabetes was more prevalent in women than men (8.8 vs. 4.2%). IGT was found in an additional 11.7% of the women and 4.7% of the men. The combined prevalence of diabetes and IGT in the population \geq 55 years of age was 30.4% (diabetes 12.0%, IGT 18.4%). Of the people identified with diabetes, 47% had not been previously diagnosed. Age-specific prevalences were similar to those found in U.S. whites in the National Health and Nutrition Examination Survey II. After adjustment for age, family history of diabetes was associated with diabetes in study participants with an odds ratio of 4.4, while obesity was associated with diabetes with an odds ratio of 2.6. CONCLUSIONS: These prevalences of diabetes are the highest yet reported among Eskimo populations. Obesity and family history of diabetes are associated with increased odds of developing diabetes. These data underscore the need to further examine risk factors and to design effective interventions.>

Ennis IL; Gende OA; Cingolani HE (1998): Prevalence of hypertension in 3154 young students (article in Spanish). *Medicina (B Aires)* 58 (5Pt 1), 483-91.

[BLOOD PRESSURE; BMI; CVD; NHANES II; NHANES III]

<Blood pressure (BP) levels were evaluated in 3154 students (mean age 21 years old) of La Plata University, School of Medicine. BP was registered three times in each student and the mean was used for all the analyses. Systolic (SBP) and diastolic pressure (DBP) were significantly higher in men. Mean SBP was 126 \pm 13 mm Hg for men and 115 \pm 11 mm Hg for women. Mean DBP was 77 \pm 10 mm Hg and 74 \pm 9 mmHg for men and women, respectively. The global prevalence of HBP (BP \geq 140 and/or 90 mm Hg) was 12% when both sexes were considered together, but it was significantly higher in men than in women (20% and 6% respectively; $p < 0.001$). Mean BP corresponding to the 95th percentile in each sex was also estimated. Taking these values to define high blood pressure (HBP) the cut-off point between normal and HBP will be different for each sex (148/93 mm Hg for men and 133/88 mm Hg for women). The prevalence of HBP in this survey is high if we compare with that of the NHANES III (1988-91, USA, 2%) for a group of the same age. However, it is very similar to that of NHANES II (1976-80, USA, 12%), before the intensification of educational and primary prevention programs took place. The global prevalence of optimal BP (BP $<$ 120/80 mm Hg) was just 44%. The relation between Body Mass Index (BMI) and BP levels was also studied, and the result was a positive correlation, statistically significant. Mean BP increased 1.16 mm Hg per unit of increase of BMI. When asking about family history (only mother or father) of HBP we could not find any significant difference between the students with HBP and the others. Cardiovascular

diseases are the first cause of death in our country and HBP is one of the most important risk factors. The high prevalence of HBP in this young population must be considered when planning health care programs.>

Everhart JG; Kruszon-Moran D; Perez-Perez G; Trakla T; McQuillan G (1998): Ethnicity and other risk factors for Helicobacter pylori (Hp) infection in adults in the United States: The third National Health and Nutrition Examination Survey (NHANES III) - abstract. American Journal of Epidemiology 147 (N11,S, 1 Jun), 308-308.
[ETHNICITY; HELICOBACTER PYLORI; NHANES III]

Fisher AI; Mares-Perman JA; Klein R; Klein BEC; Palta M (1998): Serum antioxidants and age-related maculopathy (ARM) in the third National Health and Nutrition Examination Survey (NHANES III) - meeting abstract. American Journal of Epidemiology 147 (N11,S, 1 Jun), 211-211.
[ARM; NHANES III]

Flegal KM; Carroll MD; Kuczmarski RJ; Johnson CL (1998): Overweight and obesity in the United States: prevalence and trends, 1960-1994. Int J Obes Relat Metab Disord 22 (1, Jan), 39-47.
[NHANES; NHANES I; NHANES II; NHANES III; OBESITY; OVERWEIGHT]

<OBJECTIVE: To describe the prevalence of, and trends in, overweight and obesity in the US population using standardized international definitions. DESIGN: Successive cross-sectional nationally representative surveys, including the National Health Examination Survey (NHES I; 1960-62) and the National Health and Nutrition Examination Surveys (NHANES I: 1971-1974; NHANES II: 1976-1980; NHANES III: 1988-94). Body mass index (BMI:kg/m²) was calculated from measured weight and height. Overweight and obesity were defined as follows: Overweight (BMI > or = 25.0); pre-obese (BMI 25.0-29.9), class I obesity (BMI 30.0-34.9), class II obesity (BMI 35.0-39.9), and class III obesity (BMI > or = 40.0). RESULTS: For men and women aged 20-74 y, the age-adjusted prevalence of BMI 25.0-29.9 showed little or no increase over time (NHES I: 30.5%, NHANES I: 32.0%, NHANES II: 31.5% and NHANES III: 32.0%) but the prevalence of obesity (BMI > or = 30.0) showed a large increase between NHANES II and NHANES III (NHES I: 12.8%; NHANES I, 14.1%; NHANES II, 14.5% and NHANES III, 22.5%). Trends were generally similar for all age, gender and race-ethnic groups. The crude prevalence of overweight and obesity (BMI >> 25.0) for age > or = 20 y was 59.4% for men, 50.7% for women and 54.9% overall. The prevalence of class III obesity (BMI > or = 40.0) exceeded 10% for non-Hispanic black women aged 40-59 y.

CONCLUSIONS: Between 1976-80 and 1988-94, the prevalence of obesity (BMI \geq 30.0) increased markedly in the US. These findings are in agreement with trends seen elsewhere in the world. Use of standardized definitions facilitates international comparisons.>

Ford ES (1998a): Characteristics of survey participants with and without a telephone: findings from the third National Health and Nutrition Examination Survey. *J Clin Epidemiol* 51 (1, Jan), 55-60.

[NHANES III; SURVEY PARTICIPANTS]

<This study examines the potential coverage bias in telephone surveys. Data were analyzed from the first phase of the third National Health and Nutrition and Examination Survey conducted from 1988 to 1991. In that survey, 10,120 persons 17 years and older were interviewed and 9034 were examined. About 2.7% of respondents reported not having a telephone. Differences in demographic and lifestyle variables, but not physiological or anthropometric variables, existed between persons with a telephone and those without one. Respondents without a telephone were more likely to report that an impairment or health problems limited their work or activities. Compared with respondents with a telephone, those without one were more likely to be current smokers, to be less physically active, to never have had their blood pressure checked or have had it checked more than 5 years ago, and to never have had their cholesterol checked. Based on data from a 24-hour dietary recall, persons without a telephone consumed less vitamin A, vitamin C, vitamin E, and carotene than did respondents with a telephone. However, prevalence estimates of health characteristics obtained from telephone surveys in populations with high telephone coverage are unlikely to be seriously affected by coverage bias nor are conclusions of comparisons involving populations with low telephone coverage.>

Ford ES (1998b): Race, education, and dietary cations: findings from the third National Health And Nutrition Examination Survey. *Ethn Dis* 8 (1, Winter), 10-20.

[DIETARY; NHANES III]

<Hypertension, which has been associated with high intake of sodium and low intake of calcium, magnesium, and potassium, is highly prevalent among African Americans. To examine differences in dietary intakes of calcium, magnesium, and potassium between whites and African Americans, and the effect of education on these differences, the author analyzed data from a nationally representative sample that participated in the first phase of the National Health and Examination Survey III from 1988-1991. The analytic sample included 6,046 white participants and 2,226 African-American participants with complete information for age, race, education, and diet. Dietary information was collected from a single 24-hour dietary recall. African Americans consumed less calcium,

magnesium, and potassium than whites regardless of educational achievement. Sodium intakes from diet were similar between the two groups. Among whites, intakes of calcium, magnesium, and potassium were positively related to educational attainment. Among African Americans, only magnesium intake was positively related to educational attainment. Because the prevalence of hypertension among African Americans exceeds that among whites, increases in the consumption of calcium, magnesium, and potassium could help to prevent and control excess hypertension among African Americans.>

Ford ES; Ballew C (1998): Dietary folate intake in US adults: findings from the third National Health and Nutrition Examination Survey. *Ethn Dis* 8 (3, Autumn), 299-305.

[AFRICAN AMERICANS; DIETARY FOLATE; DIETARY RECALL; MEXICAN AMERICANS; NHANES II; NHANES III]

<To estimate the dietary intake of folate in the US population, we used data from the first phase of the third National Health and Nutrition Examination Survey (NHANES III) conducted from 1988 through 1991. Using data from a single 24-hour dietary recall, the mean intake for the population aged 17 years and older was 283.4 microg/day (standard error [SE] 3.8). After correcting for a single 24-hour dietary recall, 70.0% (SE 1.1%) met the current recommended dietary allowance (RDA) for folate. Because data on intake of nutritional supplements were not available, it is likely that a higher proportion of the United States population met the RDA for folate. Folate intake was not uniform in the population: men had higher intakes than women, and African Americans had lower intakes than persons of other races. African-American men had lower absolute folate intakes than white men ($P=0.001$) or Mexican-American men ($P=0.002$). African-American women had the lowest folate intakes among women ($P<0.001$ for white women, $P=0.006$ for Mexican-American women, and $P=0.003$ for other women). When folate intakes were expressed as mg per 1,000 calories, the results were very similar. Because of methodologic differences in administering the 24-hour dietary recalls in NHANES II and NHANES III, it is unclear whether increases in dietary folate consumption have occurred since NHANES II, which was conducted during 1976-80, and the Continuing Survey of Food Intake by Individuals, which was conducted during 1985-86. The low dietary consumption of folate by African Americans, if confirmed, suggests the need for public health strategies to increase consumption of folate among this group.>

Ford ES; Byers TE; Giles WH (1998): Serum folate and chronic disease risk: findings from a cohort of United States adults. *Int J Epidemiol* 27 (N4), 592-598.

[MORTALITY; NHEFS; SERUM FOLATE]

<Background Previous studies have suggested that folate may provide protection against various chronic conditions. Methods We examined the effect of serum folate concentration on mortality and chronic disease incidence in a nationally representative sample of 3059 adults of the National Health and Nutrition Examination Survey Epidemiologic Follow-up Study who were first examined from 1971 through 1975 and who were followed for about 19 years through 1992. Proportional hazards regression was used to estimate hazard ratios for the lowest quintile of serum folate compared with the highest quintile for selected causes of death and disease incidence. Results: The hazards ratio for all-cause mortality was 1.18 (95% CI: 0.91-1.52); for mortality for diseases of the circulatory system, 1.31 (95% CI: 0.82-2.12]; and for cancer mortality 0.99 (95% CI: 0.46-2.11). The hazard ratio for incidence of diseases of the circulatory system was 1.04 (95% CI: 0.86-1.26): and for cancer incidence, 1.00 (95% CI: 0.61-1.66). The hazards ratio for all-cause mortality was 1.26 (95% CI: 1.01-1.57) for participants with a serum folate of <9.3 nmol/l compared with other participants. Conclusions: Low levels of serum folate may be associated with mortality from all-causes and cardiovascular disease. However, the study lacked power to adequately examine the association between folate and disease-specific endpoints. Additional studies, using serum and other measures of folate nutritional status, are needed to examine the relationship between folate nutrition and other more specifically defined health outcomes.>

Ford ES; Will JC; De Proost Ford MA; Mokdad AH (1998): Health insurance status and cardiovascular disease risk factors among 50-64-year-old U.S. women: findings from the Third National Health and Nutrition Examination Survey. *J Womens Health* 7 (8, Oct), 997-1006. [CARDIOVASCULAR HEALTH; HEALTH INSURANCE; NHANES III]

<To examine the cardiovascular disease risk factors profile and use of preventive health services for cardiovascular disease among uninsured women aged 50-64 years, we studied data from the National Health and Nutrition Examination Survey III (NHANES III), conducted from 1988 to 1994. Insured women (n = 1308) and uninsured women (n = 303) had similar levels of blood pressure and lipids, but uninsured women were more likely to be current smokers, sedentary, and overweight and to consume less fiber, vitamin C, folate, calcium, and potassium than insured women. Compared with insured women, uninsured women were less likely to have had their blood pressure checked during the previous 6 months, to have had their cholesterol level checked, and to be aware of hypercholesterolemia. Insured women (24.9%) were three times more likely to use estrogen replacement therapy than uninsured women (7.9%). NHANES III data suggest that women without health insurance have a worse cardiovascular disease risk factor profile and use healthcare

services less frequently than women with health insurance.>

Gartside PS; Wang P; Glueck CJ (1998a): Prospective assessment of cancer morbidity/mortality risk factors: The NHANES I 16 year Epidemiologic Followup Study - meeting abstract. J Investig Med 46 (N3, Mar), A212-A212.

[CANCER; CHD; NHANES I; NHEFS]

Gartside PS; Wang P; Glueck CJ (1998b): Prospective assessment of coronary heart disease risk factors: the NHANES I Epidemiologic Follow-up Study (NHEFS) 16-year follow-up. J Am Coll Nutr 17 (3, Jun), 263-269.

[CHD; NHANES I; NHEFS]

<OBJECTIVE: Our specific aim in the 16 year prospective NHANES I epidemiologic follow-up study (NHEFS) was to assess the important roles of modifiable dietary and behavioral factors in causation and prevention of deaths and hospitalizations for coronary heart disease (CHD). METHODS: Using NHEFS 16 year follow-up data (1971 to 1987), we studied 5811 subjects, 1958 with and 3853 without CHD events, using logistic regression. RESULTS: In age groups 40 to 49, 50 to 59, 60 to 69, and 70 to 74 years (at study entry in 1971-4), the numbers of men and women were respectively 597 and 1019, 570 and 619, 932 and 1042, and 486 and 546. The following factors were independently positively associated ($p < .05$) with CHD: age, serum cholesterol, body mass index, cigarette use, and region (Midwest, Northeast). The following factors were independently negatively associated ($p < .05$) with CHD: gender (female), race (black), fish intake, alcohol, high school education, moderate exercise, and moderate and heavy habitual physical activity. Subjects with serum cholesterol > 249 mg/dl benefitted less ($p = .04$) from fish intake than those with 209 to 249 or < 209 , and benefitted less ($p = .03$) from alcohol intake (CHD incidence [%]): [see text] CONCLUSIONS: These associations emphasize the important role of modifiable dietary and behavioral factors in the causation and prevention of CHD.>

Gergen PJ; Fowler JA; Maurer KR; Davis WW; Overpeck MD (1998): The burden of environmental tobacco smoke exposure on the respiratory health of children 2 months through 5 years of age in the United States: third National Health and Nutrition Examination Survey, 1988 to 1994. Pediatrics 101 (2, Feb), E8.

[ASTHMA; CHILDREN; NHANES III; SMOKING; TOBACCO]

<OBJECTIVE: To measure the effect of environmental tobacco smoke (ETS) on respiratory health in a national sample of young children. METHODS: The study evaluated children 2 months through 5 years of

age participating in the Third National Health and Nutrition Examination Survey, 1988 to 1994. The group was a representative sample of the US population (N = 7680). A parental report of household smoking or maternal smoking during pregnancy ascertained ETS exposure. Respiratory outcomes were based on parental report of wheezing, cough, upper respiratory infection, or pneumonia in the last 12 months and chronic bronchitis or physician-diagnosed asthma at any time. Logistic regression was used to adjust for age, sex, race/ethnicity, birth weight, day care, family history of allergy, breastfeeding, education level of head of household, and household size. RESULTS: Approximately 38% of children were presently exposed to ETS in the home, whereas 23.8% were exposed by maternal smoking during pregnancy. ETS exposure increased chronic bronchitis and three or more episodes of wheezing among children 2 months to 2 years old and asthma among children 2 months to 5 years old. For household exposure, a consistent effect was seen only at ≥ 20 cigarettes smoked per day. Adjusted odds ratios for increased risk (95% confidence interval) for household exposures (≥ 20 cigarettes smoked per day vs none smoked) and maternal prenatal exposure (prenatal smoking vs no smoking), respectively, for children 2 months to 2 years old were chronic bronchitis, 2.5 (1.6, 4.1); 2.2, (1.6, 3); three or more episodes of wheezing, 2.7 (1.7, 4.2), 2.1 (1.5, 2.9); and for children 2 months to 5 years old were asthma, 2.1 (1.4, 3.2); 1.8 (1.3, 2.6). Reported use within the past month of prescription medications for asthma (beta-agonists or inhaled steroids) was not different between those with asthma reporting ETS exposure and those reporting no exposure; percent of patients with asthma reporting use of medication by household exposure was 0, 25.7%; 1 to 19 cigarettes smoked per day, 32.9%; and ≥ 20 cigarettes smoked per day, 23.1%; percent of patients with asthma reporting use of medication by maternal smoking during pregnancy was no, 28.9%; yes, 22.7%. Among children 2 months to 2 years of age exposed to ETS, 40% to 60% of the cases of asthma, chronic bronchitis, and three or more episodes of wheezing were attributable to ETS exposure. For diagnosed asthma among children 2 months through 5 years old, there were 133 800 to 161 600 excess cases. Among exposed children 2 months through 2 years of age, there were 61 000 to 79 200 excess cases of chronic bronchitis and 126 700 to 172 000 excess cases of three or more episodes of wheezing. CONCLUSIONS: ETS exposure is common among children in the United States. The reported prevalence of asthma, wheezing, and chronic bronchitis was increased with ETS exposures. No statistically significant increase in the prevalence of upper respiratory infection, pneumonia, or cough was associated with ETS exposure. ETS exposure has little effect on the respiratory health of children between 3 and 5 years of age, with the exception of asthma. ETS appears to increase the prevalence of asthma rather than the severity as measured by medication use. These findings reinforce the need to reduce the exposure of young children to ETS.>

Gift HC; Atchison KA; Drury TF (1998): Perceptions of the natural dentition in the context of multiple variables. *J Dent Res* 77 (7, Jul), 1529-1538.

[NHANES III; ORAL HEALTH]

<Perceived oral health status has been shown to be associated with a variety of single clinical and self-reported indicators of oral health and oral health-related behaviors. A behavioral model is utilized which hypothesizes that perceived condition of natural teeth is predicted by multiple factors, including individual demographic and enabling characteristics, other health perceptions and orientations, actual levels of diseases and conditions, and self-defined need for treatment. The data are from the clinical examination and adult questionnaire of Phase 1 (1988-1991) of the Third National Health and Nutrition Examination Survey, which is based on a stratified multistage probability sample to produce nationally representative data for the civilian, non-institutionalized US population. Multivariate hierarchical regressions were used to assess perceived condition of natural teeth in two groups of dentate adults (those with a dental visit during the past 12 months, and those with a less recent dental visit). Self-defined treatment need made a significant, non-trivial contribution after other variables had been controlled. In both subpopulation models, the perception of general health and epidemiological indicators of oral health status were also significant factors. Socio-economic indicators did not contribute significantly in either regression. Understanding components of overall perceptions of oral health moves us closer to understanding oral health behaviors and oral-health-related quality of life.>

Giles WH; Croft JB; Greenlund KJ; Ford ES; Kittner SJ (1998): Total homocyst(e)ine concentration and the likelihood of nonfatal stroke: results from the Third National Health and Nutrition Examination Survey, 1988-1994. *Stroke* 29 (12, Dec), 2473-2477.

[DIABETES MELLITUS; HBP; NHANES III; SMOKING; STROKE]

<BACKGROUND and PURPOSE: Elevated serum total homocyst(e)ine [H(e)] is an independent risk factor for stroke. Few studies, however, have examined this association in blacks. METHODS: Data from the Third National Health and Nutrition Examination Survey (n=4534), a nationally representative sample of US adults, were used to examine the relationship between H(e) and a physician diagnosis of stroke (n=185) in both black and white adults. Multivariate-adjusted logistic regression analyses were used to examine this relationship. RESULTS: Serum vitamin B12 and folate concentrations were significantly lower among participants in the highest H(e) quartile (≥ 12.1 micromol/L) than among participants in the lowest quartile (≤ 7.4 micromol/L). Those in the highest quartile were older, had higher mean cholesterol and blood pressure levels, and were more likely to smoke and to have completed

<12 years of education. After adjustment for age, the odds ratio (OR) for stroke was 2.9 (95% confidence interval [CI], 1.4 to 5.7; highest versus lowest quartile). Adjustment for gender, race/ethnicity, education, systolic blood pressure, cholesterol, diabetes mellitus, and smoking reduced the magnitude of the association (OR, 2.3; 95% CI, 1.2 to 4.6). The association between H(e) and stroke did not differ by race [P=0.265 for race-H(e) interaction term]. The multivariate adjusted OR for the highest quartile versus the lowest was 2.5 (1.1 to 5.5) among whites and 1.4 (0.4 to 4.7) among blacks. CONCLUSIONS: In this nationally representative sample of US adults, H(e) concentration was independently associated with an increased likelihood of nonfatal stroke. This association was present in both black and white adults.>

Giles WH; Kittner SJ; Croft JB; Anda RF; Casper ML; Ford ES (1998): Serum folate and risk for coronary heart disease: results from a cohort of US adults. *Ann Epidemiol*

[ALCOHOL; BMI; CHD; CHOLESTEROL; NHANES I; SMOKING]

<PURPOSE: To assess the role of serum folate in the risk for coronary heart disease in a national cohort of US adults. METHODS: Data from the First National Health and Nutrition Examination Survey Epidemiologic Follow-up Study (N = 1921) were used to determine whether a low serum folate concentration was associated with an increased risk for incident coronary heart disease (N = 284). The Cox proportional hazards model adjusted for age, sex, race, education, serum cholesterol, systolic blood pressure, body mass index, cigarette smoking, and alcohol consumption. RESULTS: The association between folate and risk for coronary heart disease differed by age group (p = 0.03). Among persons aged 35-55 years, the relative risk for heart disease was 2.4 (95% confidence interval (CI), 1.1-5.2) for persons in the lowest quartile (< or = 9.9 nmol/L) when compared with those in the highest quartile (> or = 21.8 nmol/L). However, among persons > or = 55 years the relative risk was 0.5 (95% CI, 0.3-0.8) for comparisons of the lowest versus highest quartiles. CONCLUSIONS: If the age differences in the risk for heart disease are confirmed, randomized clinical trials assessing the role of folic acid for the prevention of heart disease may need to include young adults in order to demonstrate benefits related to folate supplementation.>

Gillum RF; Mussolino ME; Madans JH (1998a): Body fat distribution and hypertension incidence in women and men. The NHANES I Epidemiologic Follow-up Study. *Int J Obes Relat Metab Disord* 22 (2, Feb), 127-134.

[BODY FAT; HYPERTENSION; NHANES I; NHEFS]

<OBJECTIVE: To test the hypothesis that an elevated ratio of subscapular to triceps skinfold thickness (SFR), one measure of truncal

obesity, is associated with increased incidence of essential hypertension. DESIGN: Data from the NHANES I Epidemiologic Follow-up Study (NHEFS) were analyzed. SUBJECTS: A cohort of 4303 women and 2579 men with complete data who were normotensive at baseline in 1971-1975. MEASUREMENTS: Incidence of hypertension, blood pressure 160/95 mm Hg or greater or on blood pressure medication at follow-up in 1982-1984. RESULTS: There was a statistically significant increase in risk of hypertension over approximately 10 y follow-up in white women aged 25-74 y with SFR in the fifth compared to the first quintile independent of age and body mass index (BMI) (relative risk = 1.52, 95% confidence interval 1.13-2.06, P = 0.006). The association was somewhat diminished after controlling for baseline blood pressure, change in BMI and other risk variables. An even stronger association was seen for subscapular skinfold and hypertension incidence. In white men aged 25-74 y, a significant association of high SFR with age-, BMI-adjusted risk of hypertension was seen (RR = 1.41, 95% CI 1.01-1.96, P = 0.04). Data for black women or black men failed to reveal significant variation in hypertension risk among quintiles of SFR or subscapular skinfold except in black women with low baseline BMI. CONCLUSIONS: Data from NHEFS confirm the association of higher truncal obesity with increased incidence of hypertension in white women. Further studies are needed, especially in larger samples of black women.>

Gillum RF; Mussolino ME; Madans JH (1998b): Coronary heart disease risk factors and attributable risks in African-American women and men: NHANES I Epidemiologic Follow-up Study. *Am J Public Health* 88 (6, Jun), 913-917.

[AFRICAN AMERICANS; CHD; NHANES I; NHEFS]

<OBJECTIVES: This study assessed associations of risk factors with coronary heart disease incidence in African Americans. METHODS: The participants in the NHANES I Epidemiologic Follow-Up Study included in this analysis were 1641 Black and 9660 White persons who were aged 25 to 74 years when examined and who did not have a history of coronary heart disease. Average follow-up for survivors was 19 years. RESULTS: Significant, independent risk factors for coronary heart disease were age, systolic blood pressure, and smoking in Black women and age, systolic blood pressure, serum cholesterol, low education, and low family income in Black men. In this cohort, 19% of incident coronary heart disease in Black women and 34% in Black men might be prevented if systolic blood pressure were below 140 mm Hg. In Black men, attributable risk for low education (46%) was even higher than that for elevated blood pressure. CONCLUSIONS: Elevated systolic blood pressure and smoking were predictive of coronary heart disease incidence in African Americans. Estimates of population attributable risk were highest for elevated systolic blood pressure in women and education less than high school in men. Further studies of serum lipids, education, and

coronary heart disease in Black women are needed.>

Gillum RF; Mussolino ME; Sempos CT (1998): Baseline serum total cholesterol and coronary heart disease incidence in African-American women (the NHANES I Epidemiologic Follow-up Study). National Health and Nutrition Examination Survey. Am J Cardiol 81 (10, 15 May), 1246-1249.

[AFRICAN AMERICANS; CHD; CHOLESTEROL; NHANES I; NHEFS; WOMEN]

<Proportional-hazards analyses for African-American women aged 25 to 74 revealed a variable association of coronary heart disease risk with baseline serum total cholesterol (after adjusting for age fifth vs first quintile: RR = 1.62, 95% confidence interval [CI] 0.89 to 2.98, p = 0.12; after adjusting for age, systolic blood pressure, body mass index, smoking, history of diabetes, low education, and low family income: RR = 1.88, 95% CI 1.02 to 3.45, p = 0.04). Perhaps due to the relatively small number of events, the association of serum total cholesterol with coronary heart disease incidence in African-American women was not consistently significant.>

Gordeuk VR; McLaren CE; Looker AC; Hasselblad V; Brittenham GM (1998): Distribution of transferrin saturations in the African American population. Blood 91 (6), 2175-2179.

[AFRICAN AMERICANS; NHANES III; TRANSFERRIN SATURATION]

Grandinetti A; Chang HK; Mau MK; Curb JD; Kinney EK; Sagum R; Arakaki RF (1998): Prevalence of glucose intolerance among Native Hawaiians in two rural communities. Native Hawaiian Health Research (NHHR) Project. Diabetes Care 21 (4, Apr), 549-554.

[DIABETES; GLUCOSE INTOLERANCE; NATIVE HAWAIIANS; NHANES II]

<OBJECTIVE: To estimate prevalence of type 2 diabetes and impaired glucose tolerance (IGT) among a population of native Hawaiians in two rural communities. RESEARCH DESIGN AND METHODS: Prevalence of glucose intolerance was assessed in two rural communities by history (confirmed by record review) or with a 75-g oral glucose tolerance test according to World Health Organization criteria. Anthropometric and demographic data were also obtained. A short survey was used to estimate the prevalence of known diabetes among nonparticipants. Prevalence rates were adjusted using the standard world population of Segi. RESULTS: A total of 574 native Hawaiians age > or = 30 years participated. The crude prevalence of IGT and type 2 diabetes were 15.5 and 20.4%, respectively. Only IGT prevalence was significantly higher

($P = 0.03$) among women (18.7%) than among men (10.9%). Prevalence of glucose intolerance was significantly associated with BMI, waist circumference, and waist-to-hip ratio (WHR). After adjusting for age and BMI, waist circumference and WHR were significantly and independently associated with type 2 diabetes prevalence only among women. Prevalence of type 2 diabetes was not significantly associated with the percentage of Hawaiian ancestry after adjusting for age. CONCLUSIONS: This study observed a high prevalence of glucose intolerance associated with being overweight among native Hawaiians. Age-adjusted type 2 diabetes prevalence was four times higher than among the U.S. National Health and Nutrition Examination Survey (NHANES) II population. Prevalence was high despite high rates of admixture with other ethnic groups of Hawaii, suggesting that these other Asian and Pacific Island populations share similar susceptibility to type 2 diabetes risk.>

Grubber JM; Callahan LF; Helmick CG; Zack MM; Pollard RA (1998): Prevalence of radiographic hip and knee osteoarthritis by place of residence. *J Rheumatol* 25 (5, May), 959-963.

[NHANES I; OSTEOARTHRITIS]

<OBJECTIVE: To determine the associations between place of residence and sex-specific prevalence rates of radiographic hip and knee osteoarthritis (OA). METHODS: We used data from the first National Health and Nutrition Examination Survey (NHANES I), 1971-1975, to calculate and compare sex-specific prevalence rates for radiographic hip and knee OA in urban and rural areas; standard metropolitan statistical areas (SMSAs) and non-SMSAs; other urban-rural subtypes that we defined; and major geographic regions of the United States. We used logistic regression to estimate crude and adjusted odds ratios for the associations between place of residence and radiographic hip and knee OA. RESULTS: We found no significant differences in the prevalence rates of hip or knee OA by place of residence for either men or women. After adjusting for age, race, and body mass index, we found a nonsignificant 40-50% increase in the odds of radiographic hip OA among men living in rural areas and non-SMSAs; no such increase was seen among women. No increased odds of knee OA were noted for subjects of either sex living in rural areas or non-SMSAs. CONCLUSION: In the NHANES I population, rural and non-SMSAs residence may be modestly associated with radiographic hip OA for men. Place of residence does not appear to be associated with radiographic hip OA among women or with radiographic knee OA in either sex.>

Gu K; Cowie CC; Harris MI (1998): Mortality in adults with and without diabetes in a national cohort of the US population, 1971-1993. *Diabetes Care* 21 (N7), 1138-1145.

[DIABETES; MORTALITY; NHANES I]

<OBJECTIVE - To examine 22-year mortality (1971-1993), causes of death, life expectancy, and survival in a national sample of diabetic and nondiabetic adults according to age, sex, and race.>

Harris MI; Flegal KM; Cowie CC; Eberhardt MS; Goldstein DE; Little RR; Wiedmeyer HM; Byrd-Holt DD (1998): Incidence of hepatitis B virus infection in the United States, 1976-1994: estimates from the National Health and Nutrition Examination Surveys. *Diabetes Care* 21 (4, Apr);21(4):518-24, Apr, 518-524.

[DIABETES; GLUCOSE TOLERANCE; MEXICAN AMERICANS; NHANES; NHANES III; NON-HISPANIC BLACKS; NON-HISPANIC WHITES]

<OBJECTIVE: To evaluate the prevalence and time trends for diagnosed and undiagnosed diabetes, impaired fasting glucose, and impaired glucose tolerance in U.S. adults by age, sex, and race or ethnic group, based on data from the Third National Health and Nutrition Examination Survey, 1988-1994 (NHANES III) and prior Health and Nutrition Examination Surveys (HANESs). RESEARCH DESIGN AND METHODS: NHANES III contained a probability sample of 18,825 U.S. adults > or = 20 years of age who were interviewed to ascertain a medical history of diagnosed diabetes, a subsample of 6,587 adults for whom fasting plasma glucose values were obtained, and a subsample of 2,844 adults between 40 and 74 years of age who received an oral glucose tolerance test. The Second National Health and Nutrition Examination Survey, 1976-1980, and Hispanic HANES used similar procedures to ascertain diabetes. Prevalence was calculated using the 1997 American Diabetes Association fasting plasma glucose criteria and the 1980-1985 World Health Organization (WHO) oral glucose tolerance test criteria. RESULTS: Prevalence of diagnosed diabetes in 1988-1994 was estimated to be 5.1% for U.S. adults > or = 20 years of age (10.2 million people when extrapolated to the 1997 U.S. population). Using American Diabetes Association criteria, the prevalence of undiagnosed diabetes (fasting plasma glucose > or = 126 mg/dl) was 2.7% (5.4 million), and the prevalence of impaired fasting glucose (110 to < 126 mg/dl) was 6.9% (13.4 million). There were similar rates of diabetes for men and women, but the rates for non-Hispanic blacks and Mexican-Americans were 1.6 and 1.9 times the rate for non-Hispanic whites. Based on American Diabetes Association criteria, prevalence of diabetes (diagnosed plus undiagnosed) in the total population of people who were 40-74 years of age increased from 8.9% in the period 1976-1980 to 12.3% by 1988-1994. A similar increase was found when WHO criteria were applied (11.4 and 14.3%). CONCLUSIONS: The high rates of abnormal fasting and postchallenge glucose found in NHANES III, together with the increasing frequency of obesity and sedentary lifestyles in the population, make it likely that diabetes will continue to be a major health problem in

the U.S.>

Harris MI; Flegal KM; Cowie CC; Eberhardt MS; Golstein DE; Little RR; Weidmeyer HM; Bryd-Holt DD (1998): Prevalence of diabetes, impaired fasting glucose, and impaired glucose tolerance in US adults - The third National Health and Nutrition Examination Survey, 1988-1994. *Diabetes Care* 21 (N4, April), 518-524.

[DIABETES; GLUCOSE TOLERANCE; HHANES; NHANES III; WHO]

<OBJECTIVE - To evaluate the prevalence and time trends for diagnosed and undiagnosed diabetes, impaired fasting glucose, and impaired glucose tolerance in U.S. adults by age, sex, and race or ethnic group, based on data from the third National Health and Nutrition Examination Survey, 1988-1994 (NHANES III) and prior Health and Nutrition Examination Surveys (HANESs). RESEARCH DESIGN AND METHODS - NHANES III contained a probability sample of 18,825 U.S. adults greater than or equal to 20 years of age who were interviewed to ascertain a medical history of diagnosed diabetes, a subsample of 6,587 adults for whom fasting plasma glucose values were obtained, and a subsample of 2,844 adults between 40 and 74 years of age who received an oral glucose tolerance test. The second National Health and Nutrition Examination Survey, 1976-1980, and Hispanic HANES used similar procedures to ascertain diabetes. Prevalence was calculated using the 1997 American Diabetes Association fasting plasma glucose criteria and the 1980-1985 World Health Organization (WHO) oral glucose tolerance test criteria. RESULTS - Prevalence of diagnosed diabetes in 1988-1994 was estimated to be 5.1% for U.S. adults greater than or equal to 20 years of age (10.2 million people when extrapolated to the 1997 U.S. population). Using American Diabetes Association criteria, the prevalence of undiagnosed diabetes (fasting plasma glucose greater than or equal to 126 mg/dl) was 2.7% (5.4 million), and the prevalence of impaired fasting glucose (110 to <126 mg/dl) was 6.9% (13.4 million). There were similar rates of diabetes for men and women, but the rates for non-Hispanic blacks and Mexican-Americans were 1.6 and 1.9 times the rate for non-Hispanic whites. Based on American Diabetes Association criteria, prevalence of diabetes (diagnosed plus undiagnosed) in the total population of people who were 40-74 years of age increased from 8.9% in the period 1976-1980 to 12.3% by 1988-1994. A similar increase was found when WHO criteria were applied (11.4 and 14.3%). CONCLUSIONS - The high rates of abnormal fasting and postchallenge glucose found in NHANES III, together with the increasing frequency of obesity and sedentary lifestyles in the population, make it likely that diabetes will continue to be a major health problem in the U.S.>

Harris MI; Klein R; Cowie CC; Rowland M; Byrd-Holt DD (1998): Is the risk of diabetic retinopathy greater in non-Hispanic blacks and Mexican Americans than in non-Hispanic whites with type 2 diabetes? A US population study. *Diabetes Care* 21 (N8, Aug), 1230-1235.

[DIABETES; MEXICAN AMERICANS; NHANES III; NON-HISPANICS]

<To compare the risk for diabetic retinopathy in non-Hispanic white, non-Hispanic black, and Mexican-American adults with type 2 diabetes in the U.S. population. **RESEARCH DESIGN AND METHODS** - Representative population-based samples of people aged greater than or equal to 40 years in each of the three racial/ethnic groups were studied in the 1988-1994 third National Health and Nutrition Examination Survey (NHANES III). Diagnosed diabetes was ascertained by medical history interview and undiagnosed diabetes by measurement of fasting plasma glucose. A fundus photograph of a single eye was taken with a nonmydriatic camera, and a standardized protocol was used to grade diabetic retinopathy. Information on risk factors for retinopathy was obtained by interview and standard laboratory procedures. **RESULTS** - Prevalence of any lesions of diabetic retinopathy in people with diagnosed diabetes was 46% higher in non-Hispanic blacks and 84% higher in Mexican Americans, compared with non-Hispanic whites. Blacks and Mexican Americans also had higher rates of moderate and severe retinopathy and higher levels of many putative risk factors for retinopathy. Blacks had lower retinopathy prevalence among those with undiagnosed diabetes. In logistic regression, retinopathy in people with diagnosed diabetes was associated only with measures of diabetes severity (duration of diabetes, HbA(1c) level, treatment with insulin and oral agents) and systolic blood pressure. After adjustment for these factors, the risk of retinopathy in Mexican Americans was twice that of non-Hispanic whites, but non-Hispanic blacks were not at higher risk for retinopathy. These risks were similar when people with undiagnosed diabetes were included in the logistic regression models. **CONCLUSIONS** - The prevalence and severity of diabetic retinopathy is greater in non-Hispanic blacks and Mexican Americans with type 2 diabetes in the U.S. population than in non-Hispanic whites. For blacks, this can be attributed to their higher levels of risk factors for retinopathy, but the excess risk in Mexican Americans is unexplained.>

Hediger ML; Overpeck MD; Kuczmarowski RJ; McGlynn A; Maurer KR; Davis WW (1998): Muscularity and fatness of infants and young children born small- or large-for-gestational-age. *Pediatrics* 102 (5, Nov), E60. [BODY MASS INDEX; INFANTS; NHANES III]

<**OBJECTIVE:** There is growing interest in the extent to which body composition, both short- and long-term, differs in infants and children born at the extremes of birth weight. This is because a growing number of studies have linked low birth weight and fetal growth restriction to the

chronic diseases in adulthood that often are obesity-related, and there is also evidence to suggest that heavy infants may be at increased risk for obesity in later life, again with the attendant obesity-related chronic diseases. Our objective was to compare anthropometric indices of body composition of infants and young children born small-for-gestational-age (SGA, <10th percentile) or large-for-gestational age (LGA, \geq 90th percentile) with those of normal birth weight status (appropriate-for-gestational-age, AGA) in a US sample. DESIGN: National sample of US-born non-Hispanic white, non-Hispanic black, and Mexican-American infants and young children, 2 to 47 months of age, examined in the third National Health and Nutrition Examination Survey (NHANES III, 1988-1994), for whom birth certificates were obtained. The primary outcomes were normalized anthropometric indices (z scores or standard deviation units [SDU]) of nutritional status and body composition (mid-upper arm circumference, triceps and subscapular skinfolds, mid-upper arm muscle and mid-upper arm fat areas (UFA), and the arm fat index). The outcomes thus were scaled to permit comparison across chronologic ages. RESULTS: The prevalence of SGA was 8.6%, appropriate-for-gestational-age 80.9%, and LGA 10.5%. From ages 2 to 47 months, for infants and young children born SGA, there was a persistent overall deficit in muscularity (mid-upper arm circumference and mid-upper arm muscle area) of approximately -0.50 SDU, but less of a deficit in fatness, particularly at the youngest ages. For infants and young children born LGA, there was a surfeit in muscularity of approximately 0.45 SDU, with less of a surfeit in fatness, particularly at the youngest ages. Across all ages, the mean UFA showed a statistically significant deficit for SGA children (-0.27 \pm 0.10 SDU) and surfeit for LGA children (0.24 \pm 0.08 SDU). At individual ages for UFA and at individual and all ages combined for skinfold thicknesses, there were no significant differences in level of subcutaneous fatness in the three birth-weight-for-gestational-age groups. There was a tendency in the first year for the arm fat index (% arm fat) to be significantly higher for SGA infants, but the effect did not persist after the first year. CONCLUSION: SGA infants remain smaller and LGA infants larger in size through early childhood, but the discrepancies in weight are primarily attributable to differences in lean body mass (muscularity). Fatness is less affected. Thus, based on the fatness indicators used, at any given weight for infants and children 2 to 47 months of age, percent body fat appears to be relatively higher for children who were SGA at birth and lower in those who were LGA at birth. These differences in body composition for SGA infants support the evidence documenting a link between disturbances in intrauterine growth and chronic disease associated with subsequent adiposity in adulthood.>

Hediger ML; Overpeck MD; Maurer KR; Kuczmarski RJ; McGlynn A; Davis WW (1998a): Growth and fatness of infants and children born

small (SGA) or large-for-gestational-age (LGA): findings from the third National Health and Nutrition Examination Survey (NHANES III) - meeting abstract. *American Journal of Human Biology* 10 (N1), 128-128. [HEIGHT AND WEIGHT; NHANES III]

Hediger ML; Overpeck MD; Maurer KR; Kuczmarski RJ; McGlynn A; Davis WW (1998b): Growth of infants and young children born small or large for gestational age: findings from the Third National Health and Nutrition Examination Survey. *Arch Pediatr Adolesc Med* 152 (12, Dec), 1225-1231.

[CHILDREN; GROWTH CHARTS; NHANES III; WEIGHT]

<OBJECTIVES: To compare the growth profiles of infants and young children born small for gestational age (SGA, < 10th percentile birth weight for gestation) or large for gestational age (LGA, > or =90th percentile) with those appropriate for gestational age, and to document the expected growth patterns through early childhood based on national health examination survey data. SAMPLE: Infants and children, 2 to 47 months of age, who were born in the United States and examined using the Third National Health and Nutrition Examination Survey (1988-1994). MAIN OUTCOME MEASURES: Measurements of growth status based on normalized distributions (z scores or standard deviation units [SDUs] for weight, length, and head circumference. RESULTS: Prevalence rates were as follows: SGA infants, 8.6%; appropriate for gestational age infants, 80.9%; and LGA infants, 10.5%. Infants who were SGA appeared to catch up in weight in the first 6 months, but thereafter maintained a deficit of about -0.75 SDUs compared with infants who were appropriate for gestational age. The weight status of LGA infants remained at about +0.50 SDUs through 47 months of age. Length and head circumference were also associated with birth weight status, averaging over -0.60 SDUs for SGA infants and +0.43 SDUs for LGA infants. CONCLUSIONS: Birth weight status is related to growth rates in infancy and early childhood, which underscores the importance of considering child growth relative to birth status when using growth charts. Small for gestational age infants remain shorter and lighter and have smaller head circumferences, while LGA infants grow longer and heavier and have larger head circumferences.>

Herrington DM; Fong J; Sempos CT; Black DM; Schrott HG; Rautaharju P; Bachorik PS; Blumenthal R; Khan S; Wenger NK (1998): Comparison of the Heart and Estrogen/Progestin Replacement Study (HERS) cohort with women with coronary disease from the National Health and Nutrition Examination Survey III (NHANES III). *Am Heart J* 136 (1, Jul), 115-124.

[CHD; ESTROGEN; NHANES III; PROGESTIN]

<BACKGROUND: The Heart and Estrogen/Progestin Replacement

Study (HERS) is the first large clinical trial designed to test the efficacy of postmenopausal estrogen/progestin therapy for secondary prevention of coronary heart disease (CHD). To examine the representativeness of the HERS cohort to the general population of postmenopausal women with CHD, we compared the baseline cardiovascular risk factor data from HERS with similar data from women presumed to have CHD from the National Health and Nutrition Examination Survey (NHANES) III. METHODS: Age, race, and cardiovascular disease risk factors were compared in the 2763 postmenopausal women younger than 80 years old, with a uterus, and with documented CHD in HERS versus 145 similarly aged women with clinical or electrocardiographic evidence of CHD from phase I of NHANES III. RESULTS: There were fewer current smokers in HERS (13%) than in the NHANES cohort (21.7%, $p = 0.05$). Similarly, a history of hypertension was less prevalent in HERS (58.6%) than in the NHANES cohort (69.3%, $p = 0.03$). Women with fasting triglyceride levels >3.39 mmol/L or fasting glucose levels >16.6 mmol/L were excluded from HERS, resulting in fewer diabetics (22.9% vs 29.5%, $p = 0.26$) and lower serum triglyceride levels (1.88 mmol/L vs 2.25 mmol/L, $p = 0.19$) in HERS versus the NHANES cohort. Systolic and diastolic blood pressure, body mass index, physical activity, and total LDL and HDL cholesterol were not significantly different between the two groups. CONCLUSIONS: The HERS cohort had fewer CHD risk factors than women with myocardial infarction or angina in NHANES III, although comparison is hindered by differences in selection criteria. The many women with diabetes and hypertriglyceridemia in the NHANES cohort emphasizes the importance of testing strategies for secondary prevention of CHD in this high-risk subgroup.>

Hickman TB; Briefel RR; Carroll MD; Rifkin BM; Cleeman JI; Maurer KR; Johnson CL (1998): Distributions and trends of serum lipid levels among United States children and adolescents ages 4-19 years: data from the Third National Health and Nutrition Examination Survey. *Prev Med* 27 (6, Nov-Dec), 879-890.

[ADOLESCENTS; CHILDREN; CHOLESTEROL; HIGH-DENSITY LIPOPROTEINS; LIPIDS; LIPOPROTEINS; LOW-DENSITY; NHANES I; NHANES III; NHANES III]

<Background. Atherosclerosis begins in childhood and progresses into adulthood. The reduction of cardiovascular risk factors, such as elevated serum total cholesterol and low density lipoprotein cholesterol (LDL-C) levels, in childhood may reduce cardiovascular morbidity and mortality in adulthood. Lipid distributions among children and adolescents were examined using the most recent nationally representative data. Methods. Data from 7,499 examinees in NHANES III (1988-1994) were used to estimate mean and percentile distributions of serum total cholesterol, LDL-C, HDL-C, and triglycerides in children and adolescents aged 4 to

19 years. The estimates were analyzed by age, sex, and race/ethnic groups. Trends in mean total cholesterol were examined for 12 to 17 year olds using data from NHES III (1966-1970), NHANES I (1971-1974), and NHANES III (1988-1994). Results. For children and adolescents 4 to 19 years of age, the 95th percentile for serum total cholesterol was 216 mg/dL and the 75th percentile was 181 mg/dL. Mean age-specific total cholesterol levels peaked at 171 mg/dL at 9-11 years of age and fell thereafter. Females had significantly higher mean total cholesterol and LDL-C levels than did males ($p < 0.005$). Non-Hispanic black children and adolescents had significantly higher mean total cholesterol, LDL-C, and HDL-C levels as compared to non-Hispanic white and Mexican American children and adolescents. The mean total cholesterol level among 12 to 17 year olds decreased by 7 mg/dL from 1966-1970 to 1988-1994 and is consistent with, but less than, observed trends in adults. Black females have experienced the smallest decline between surveys. Conclusions. The findings provide a picture of the lipid distribution among US children and adolescents, and indicate that, like adults, adolescents have experienced a fall in total cholesterol levels. Total cholesterol levels in US adolescents declined from the late 1960s to the early 1990s by an average of 7 mg/dL. This information is useful for planning programs targeting the prevention of cardiovascular disease beginning with the development of healthy lifestyles in childhood.>

Hoerger TJ; Bala MV; Bray JW; Wilcosky TC; LaRosa J (1998): Treatment patterns and distribution of low-density lipoprotein cholesterol levels in treatment-eligible United States adults. *Am J Cardiol* 82 (1, 1 Jul), 61-65.

[CHOLESTEROL; LIPOPROTEINS; NHANES III]

<To estimate the fraction of United States (U.S.) adults who are eligible for treatment to reduce elevated low-density lipoprotein (LDL) cholesterol levels based on Adult Treatment Panel II (ATP II) guidelines and the percent reduction in LDL cholesterol required by those who qualify for treatment, we analyzed data on 7,423 respondents to Phase 2 of the third National Health and Nutrition Examination Survey (NHANES III) administered between 1991 and 1994. Approximately 28% of the U.S. adult population aged ≥ 20 years is eligible for treatment based on ATP II guidelines. Eighty-two percent of adults with coronary heart disease are not at their target LDL cholesterol level of 100 mg/dl. Of those eligible for treatment, 65% report that they receive no treatment. Overall, 40% of people who qualify for drug therapy require an LDL cholesterol reduction of $> 30\%$ to meet their ATP II treatment goal. Approximately 75% of those with coronary heart disease who qualify for drug therapy require an LDL cholesterol reduction of $> 30\%$. Although elevated LDL cholesterol levels can be treated, prevalence rates in the U.S. adult population remain high. Several recent studies indicate that a considerable percentage of people treated with

drug therapy do not reach their treatment goals. The findings in this study provide at least a partial explanation for why many patients receiving therapy do not reach their treatment goals: they require a larger reduction in LDL cholesterol than many therapies can provide.>

Huang ZP; Himes JH (1998): Nutrition, bone mass, and subsequent risk of hip fracture in White women. *American Journal of Human Biology* 10 (N5), 661-667.

[BONE DENSITY; FRACTURES; HIP FRACTURE; NHANES I; NUTRITION; WOMEN]

<The interrelationships between nutritional status, concurrent bone density, bone dimensions, and risk of subsequent hip fracture were investigated using data from the first National Health and Nutrition Examination Survey and its three follow-up studies. A cohort of 890 White women aged 45 years or older who received nutritional and bone measurements in the baseline survey in 1971-75 were recontacted in 1982-84, 1986, and 1987. Height, weight, serum albumin, total energy intake, bone density, and bone dimensions were measured at baseline. Thirty-three incident hip fractures were identified during 12,190 person-years of follow-up. Total energy intake and serum albumin were little correlated with concurrent bone density and bone dimensions. Serum albumin, total energy intake, and weight tended to be inversely associated with risk of hip fracture. The multivariable relative risks were 0.75 (95% confidence interval [CI] = 0.57-0.98) for one standard deviation increment of serum albumin, 0.67 (95% CI = 0.42-1.07) for dietary energy intake, and 0.61 (95% CI = 0.38-0.97) for weight, respectively. Height was positively, but not significantly associated with risk of hip fracture. Nutritional effects on hip fracture were independent of concurrent bone density and bone dimensions. Higher bone density was protective of subsequent hip fracture (relative risk = 0.55, 95% CI = 0.36-0.83, for one standard deviation increment of bone density) independent of effects related to concurrent nutritional status. Thus, poor nutritional status and reduced bone density appeared to increase the risks of subsequent hip fracture independently.>

Ishii EK; MacTurk RH; Hoffman HJ; Reed GW (1998): Audiometric test-retest reliability for children in NHANES III - meeting abstract. *American Journal of Epidemiology* 147 (N11, Suppl. 1 Jun), 51-51.

[AUDIOMETRY; NHANES III]

Jacobson MS; Tomopoulos S; Williams CL; Arden MR; Deckelbaum RJ; Starc TJ (1998): Normal growth in high-risk hyperlipidemic children and adolescents with dietary intervention. *Prev Med* 27 (6, Nov-Dec), 775-80.

[ADOLESCENTS; CHILDREN; DIETARY INTAKES; HYPERLIPIDEMIC; NHANES III]

<OBJECTIVE: The aim of this study was to assess the safety and efficacy of lowering dietary intake of total fat, saturated fat, and cholesterol in growing children and adolescents with severe hyperlipidemia. STUDY DESIGN: This is a 3-year follow-up study conducted on a sample of convenience at three pediatric referral centers in New York City and its suburbs. Subjects were 138 children and adolescents 2 to 15 years of age (54% male), who had been referred with a diagnosis of hyperlipidemia. Those selected had total serum cholesterol values greater than the 95th percentile for age and had at least three visits over 3 years. They were placed on diets restricting total fat content to 30% of total calories and saturated fat to 10% of total calories (National Cholesterol Education Program Step I diet). Anthropometric measures, lipid profiles, and dietary assessment were obtained at each visit. Anthropometric data were analyzed by sex and age. Z scores for height and weight were calculated from NHANES II data and were compared by paired t tests (Hamill et al., 1979, Am J Clin Nutr 32:607-29). RESULTS: Total serum cholesterol dropped from 262 mg/dL at baseline to 249 mg/dL at 3-year follow-up (P = 0.003). There was no significant change in height or weight percentile, expressed as Z score, from baseline to 3-year follow up. CONCLUSIONS: In this population the supervised dietary interventions resulted in a sustained improvement of the lipid profile, with no demonstrable adverse effect on growth.>

Jones CA; McQuillan GM; Kusek JW; Eberhardt MS; Herman WH; Coresh J; Salive M; Jones CP; Agodoa LY (1998): Serum creatinine levels in the US population: third National Health and Nutrition Examination Survey. Am J Kidney Dis 32 (6, Am J Kidney Dis 1998 Dec;32(6):992-9, Dec), 992-999.

[CREATININE LEVELS; MEXICAN AMERICANS; NHANES III; NON-HISPANICS BLACKS]

<This report describes the distribution of serum creatinine levels by sex, age, and ethnic group in a representative sample of the US population. Serum creatinine level was evaluated in the third National Health and Nutrition Examination Survey (NHANES III) in 18,723 participants aged 12 years and older who were examined between 1988 and 1994. Differences in mean serum creatinine levels were compared for subgroups defined by sex, age, and ethnicity (non-Hispanic white, non-Hispanic black, and Mexican-American). The mean serum creatinine value was 0.96 mg/dL for women in the United States and 1.16 mg/dL for men. Overall mean creatinine levels were highest in non-Hispanic blacks (women, 1.01 mg/dL; men, 1.25 mg/dL), lower in non-Hispanic whites (women, 0.97 mg/dL; men, 1.16 mg/dL), and lowest in Mexican-Americans (women, 0.86 mg/dL; men, 1.07 mg/dL). Mean serum creatinine levels increased with age among both men and women in all

three ethnic groups, with total US mean levels ranging from 0.88 to 1.10 mg/dL in women and 1.00 to 1.29 mg/dL in men. The highest mean creatinine level was seen in non-Hispanic black men aged 60+ years. In the total US population, creatinine levels of 1.5 mg/dL or greater were seen in 9.74% of men and 1.78% of women. Overall, among the US noninstitutionalized population, 10.9 million people are estimated to have creatinine values of 1.5 mg/dL or greater, 3.0 million have values of 1.7 mg/dL or greater, and 0.8 million have serum creatinine levels of 2.0 mg/dL or greater. Mean serum creatinine values are higher in men, non-Hispanic blacks, and older persons and are lower in Mexican-Americans. In the absence of information on glomerular filtration rate (GFR) or lean body mass, it is not clear to what extent the variability by sex, ethnicity, and age reflects normal physiological differences rather than the presence of kidney disease. Until this information is known, the use of a single cutpoint to define elevated serum creatinine values may be misleading.>

Karon JM; Khare M; Rosenber PS (1998): The current status of methods for estimating the prevalence of human immunodeficiency virus in the United States. *Statistics in Medicine* 17, 127-142.
[IMMUNODEFICIENCY VIRUS; NHANES III]

Kingman A; Brunelle JA; Winn DM; Drury TF; Kleinman DV (1998): Evaluation NHANES III examiners' ability to assess oral health conditions - meeting abstract. *J Dent Res* 77 (A), 76-76. (1619 Duke Street, Alexandria, VA 22314)
[NHANES III; ORAL HEALTH]

Korn EL; Graubard BI (1998): Scatterplots with survey data. *American Statistician* 52 (N1, Feb), 58-69.
[NHANES I; NHANES II; NHEFS; SAMPLE SURVEY; WEIGHT]
<We suggest various modifications to make scatterplots more informative when used with data obtained from a sample survey. Aspects of survey data leading to the plot modifications include the sample weights associated with the observations, imputed data for item nonresponse, and large sample sizes. Examples are given using data from the 1988 National Maternal Infant and Health Survey, the second National Health and Nutrition Examination Survey, and the Epidemiologic Follow-up of the first National Health and Nutrition Examination Survey.>

Kuo J; Porter K (1998): Health status of Asian Americans, U.S. 1992-1994. *Advance Data*

[ASIAN AMERICANS; NHANES III]

Lawrence R; Arnett F; Callahan L; Dennis D; Deyo R; Felts W; Giannini E; Helmick C; Heyes S; Hirsch R; et al. (1998): Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States. *Arthritis and Rheumatism* 41, 778-799.

[ARTHRITIS; MUSCULOSKELETAL DISORDERS; NHANES III]

Lawrence RC; Helmick CG; Arnett FC; Deyo RA; Felson DT; Giannini EH; Heyse SP; Hirsch R; Hochberg MC; Hunder GG; Liang MH; Pillemer SR; Steen VD; Wolfe F (1998): Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States. *Arthritis Rheum* 41 (5, May), 778-799.

[ARTHRITIS; MUSCULOSKELETAL DISORDERS; NHANES; RHEUMATIC CONDITIONS]

<OBJECTIVE: To provide a single source for the best available estimates of the national prevalence of arthritis in general and of selected musculoskeletal disorders (osteoarthritis, rheumatoid arthritis, juvenile rheumatoid arthritis, the spondylarthropathies, systemic lupus erythematosus, scleroderma, polymyalgia rheumatica/giant cell arteritis, gout, fibromyalgia, and low back pain). METHODS: The National Arthritis Data Workgroup reviewed data from available surveys, such as the National Health and Nutrition Examination Survey series. For overall national estimates, we used surveys based on representative samples. Because data based on national population samples are unavailable for most specific musculoskeletal conditions, we derived data from various smaller survey samples from defined populations. Prevalence estimates from these surveys were linked to 1990 US Bureau of the Census population data to calculate national estimates. We also estimated the expected frequency of arthritis in the year 2020. RESULTS: Current national estimates are provided, with important caveats regarding their interpretation, for self-reported arthritis and selected conditions. An estimated 15% (40 million) of Americans had some form of arthritis in 1995. By the year 2020, an estimated 18.2% (59.4 million) will be affected. CONCLUSION: Given the limitations of the data on which they are based, this report provides the best available prevalence estimates for arthritis and other rheumatic conditions overall, and for selected musculoskeletal disorders, in the US population.>

Lee DJ; Gomez-Marin O; Lam BL (1998): Prevalence of uncorrected binocular distance visual acuity in Hispanic and non-Hispanic adults. Results from the HHANES and the NHANES I. *Ophthalmology* 105 (3, Mar), 552-560.

[HHANES; NHANES I; VISUAL ACUITY]

<OBJECTIVE: This study aimed to provide a comparative analysis of American population-based prevalence of uncorrected binocular distance visual acuity in Hispanics and non-Hispanics. DESIGN: The study design was a population-based survey. PARTICIPANTS: Data from the Hispanic Health and Nutrition Examination Survey between 1982 and 1984 and the National Health and Nutrition Examination Survey I from 1974 through 1975 were analyzed to investigate the epidemiology of uncorrected binocular distance visual acuity in adults 25 to 74 years of age in Cuban Americans (N = 391), Mexican Americans (N = 1350), Puerto Ricans (N = 504), African Americans (N = 245), and non-Hispanic white Americans (N = 2571). MAIN OUTCOME MEASURE: Uncorrected binocular distance visual acuity in both eyes was assessed using Sloan letters or Landolt rings. RESULTS: Prevalence rates of 20/50 or worse uncorrected binocular distance visual acuity were 22%, 24%, 19%, 18%, and 32% for African Americans, Cuban Americans, Mexican Americans, Puerto Ricans, and non-Hispanic whites, respectively. After adjustment for gender and age, the rates were significantly higher ($P < 0.05$) for non-Hispanic whites compared to each of the other ethnic groups. Significant increases in the prevalence of 20/50 or worse distance visual acuity were observed for increasing age groups (25-39, 40-59, and 60-74 years) within each gender-ethnic subgroup. Analysis of differences in prevalence by gender (controlling for age) indicated a slightly higher prevalence of 20/50 or worse distance visual acuity in women than in men (range of odds ratios, 1.1-2.1). Based on 1993 census population estimates in the United States, more than 42 million adults 25 to 74 years of age have an uncorrected binocular distance visual acuity of 20/50 or worse. Approximately 1.7 million of these adults are of Hispanic origin. CONCLUSION: The prevalence of impaired uncorrected binocular distance visual acuity generally is lower in Hispanics than in non-Hispanic whites.>

Lee DJ; Gomez-Marin O; Lee HM (1998): Prevalence of unilateral hearing loss in children: The National Health and Nutrition Examination Survey II and the Hispanic Health and Nutrition Examination Survey. *Ear and Hearing* 19 (4), 329-332.

[HEARING LOSS; HHANES; NHANES II]

<We compared population-based prevalence rates of unilateral hearing loss among African-American, Cuban-American, Mexican-American, Puerto Rican, and non-Hispanic White children 6 to 19 yr of age. The prevalence (per thousand) of overall hearing loss (average decibel HTL >30) ranged from 6.4 in Mexican-Americans to 12.3 in Cuban-Americans. The prevalence of moderate to profound unilateral hearing loss (average decibel HTL >50) ranged from 0.0 in Cuban-Americans to 5.2 in Puerto Ricans. No statistically significant age or gender differences were found within any of the ethnic groups. Among these five ethnic groups, it is estimated that approximately 391,000 school-aged children

in the United States have unilateral hearing loss.>

Leidy L (1998): Menarche, menopause, and migration: Implications for breast cancer research. *American Journal of Human Biology* 10 (N4), 451-457.

[CANCER; HHANES; MENARCHE; MENOPAUSE]

<A multigenerational delay in the rise of breast cancer incidence rates has been documented among immigrants to the United States. Prompted by this observation, this study examines three breast cancer risk factors, age at menarche, parity, and age at menopause, in relation to each other and in relation to migration status and language most often used in U.S. Hispanic populations. Mexican American (n = 1,502), Cuban American (n = 534), and Puerto Rican (n = 700) women, aged 30-74 years, were drawn from the Hispanic Health and Nutrition Examination Survey (HHANES), 1982-1984. Mean recalled age at menarche was significantly later among first generation compared to second generation immigrants in both Mexican Americans (13.3 vs 12.8 years) and Puerto Ricans (12.8 vs 11.9 years). Among Mexican Americans, more children were reported by first generation immigrants than women of the third or more generations (4.9 vs 4.0 children) and by Spanish speakers compared to women who used English more frequently (4.5 vs 3.3 children). Mean and median ages at menopause were later among second generation Mexican American women than first generation women. There was a small, significant, positive correlation between recalled ages at menarche and menopause within each of the first generation Hispanic subgroups. The unique positive correlation between ages at menarche and menopause among first generation immigrants may relate to having spent early years in the country of origin and later years in the United States.>

Looker AC; Gunter EW (1998): Hypovitaminosis D in medical inpatients. *N Engl J Med* 339 (5), 344-345.

[HYPOVITAMINOSIS D; NHANES III]

Looker AC; Johnson CL (1998): Prevalence of elevated transferrin saturation levels in adults in the United States. *Annals of Internal Medicine* 129, 940-945.

[ADULTS; NHANES III; TRANSFERRIN SATURATION]

Looker AC; Wahner HW; Dunn WL; Calvo MS; Harris TB; Heyse SP; Johnston CC; Lindsay R (1998): Updated data on proximal femur bone mineral levels of U.S. adults. *Osteoporos Int* 8, 468-489.

[ADULTS; FEMUR BONE; NHANES III]

Loria CM; Whelton PK; Caulfield LE; Szklo M; Klag MJ (1998): Agreement among indicators of vitamin C status. *Am J Epidemiol* 147 (6, 15 Mar), 587-596.

[NHANES II; VITAMIN C]

<Agreement among three indicators of vitamin C status--serum ascorbate level, a 24-hour recall, and the frequency of fruit and vegetable consumption--was examined using data from the Second National Health and Nutrition Examination Survey conducted between 1976 and 1980. Agreement between pairs of these indicators was good when assessed at the group level but inconsistent at the individual level. These indicators, when classified as continuous measures, had moderately good agreement ($r = 0.45-0.54$), whereas agreement was poor when classified as quartiles ($\kappa = 0.17-0.23$). Agreement between clinically based categories of serum ascorbate and total intake levels was poorer than expected ($\kappa = 0.25$) as was agreement between low or deficient levels of both of these indicators ($\kappa = 0.3$). Disagreement between low or deficient serum and intake levels was greater in participants who were younger, African American compared with white and other races, less educated, current smokers, nonsupplement users, and examined in the winter compared with in the summer or fall. These findings suggest that the indicators cannot be used interchangeably to assess vitamin C status because they distinguish between different aspects of status, intake level versus serum level, an indicator of available pool. Moreover, depending upon how these indicators are used in statistical analyses, they may classify individuals differently.>

Luft FC (1998): Salt and hypertension at the close of the millenium. *Wiener Klinische Wochenschrift*, 110 13-14, 459-466. (Franz Volhard Clinic, Wiltberg Strasse 50, D-13122 Berlin)

[HYPERTENSION; NHANES; SODIUM INTAKE]

<Can that which is unsavory be eaten without salt?' This question was directed at none other than God by Job, who also had other important problems to ponder. The question posed in this review is the notion that essential hypertension is induced and/or sustained by an unnecessarily high salt intake. If this is indeed the case, then a reduction of salt intake might prevent or effectively treat essential hypertension. A cross-sectional epidemiological study of salt intake in populations showed a positive association of sodium excretion with median blood pressure and the prevalence of hypertension; however, when four disparate populations were deleted, the associations disappeared. A Scottish report on a similarly large population minimized the importance of dietary sodium. A recently analysis of the National Health and Nutrition Examination Survey (NHANES) data base does not support the idea that lower salt intake improves all-cause or cardiovascular mortality; however, the analysis is not without weaknesses. Salt-sensitivity is based on the idea that some persons might be more susceptible to salt-induced

effects on blood pressure than others. Indeed, several monogenic syndromes exhibit marked salt-sensitivity and their clarification has facilitated our understanding of basic mechanisms. Allelic variants of several genes may be important in salt-sensitive patients with essential hypertension. Meta-analyses of intervention trials in patients with essential hypertension show about a 5 mm Hg decrease in blood pressure with salt restriction. Among the normotensive, this decrease is less than 2 mm Hg. In terms of efficacy, salt restriction has not been shown superior to weight loss or a 'vegetable' diet. Nonpharmacological approaches in hypertensive patients should be based on a comprehensive approach.>

Ma FC; Gomenz-Marin O; Lee DJ; Balkany T (1998): Diabetes and hearing impairment in Mexican American adults: a population-based study. *J Laryngol Otol* 112 (9, Sep), 835-839.

[DIABETES; HEARING IMPAIRMENT; MEXICAN AMERICANS]

<Reports on the relationship between diabetes and hearing loss have been controversial. The present study examined this relationship in 1,740 Mexican American adults using data from the Hispanic Health and Nutrition Examination Survey. Hearing threshold levels were obtained for each participant at the following frequencies: 500, 1000, 2000, and 4000 Hertz (Hz). The thresholds from the worse hearing ear were used in the analyses. Diabetes and insulin use were assessed by self-report. The mean crude hearing thresholds in diabetics were significantly higher than in non-diabetics at each of the four frequencies. However, after adjustment for age, gender, and socioeconomic status, diabetics had a significantly higher mean threshold than non-diabetics only at 500 Hz (mean difference +/- SE: 2.8 +/- 1.2, $p = 0.04$). Diabetics who were not using insulin had significantly higher thresholds than those who were using insulin at 2000 (mean difference +/- SE: 5.6 +/- 2.6, $p = 0.03$) and 4000 Hz (7.7 +/- 3.3, $p = 0.02$). Also, at 4000 Hz, insulin users had a significantly lower mean threshold than non-diabetics (mean difference +/- SE: -4.9 +/- 1.6, $p = 0.02$). Our data suggest that associations between diabetes and decreased hearing acuity in the higher frequencies are present only amongst diabetic Mexican-Americans who do not use insulin.>

Magni G; Rigatti-Luchini S; Fracca F; Merskey H (1998): Suicidality in chronic abdominal pain: An analysis of the Hispanic Health and Nutrition Examination Survey (HHANES). *Pain* 76 (1-2), 137-144.

[ABDOMINAL PAIN; HHANES; SUICIDE]

<The objective of this study was to explore the relationship between suicidal ideation, suicidal attempts, depression and chronic abdominal pain in data gathered during a systematic epidemiologic survey, the Hispanic Health and Nutrition Examination Survey of the United States

National Centre for Health Statistics. The material comprises data collected between 1982 and 1984 in samples of Hispanic groups in the United States. A sub-sample which initially comprised 5498 subjects had provided answers to questions concerning the thoughts about death, wishes to die, thoughts of committing suicide and suicide attempts, as well as information about complaints of chronic abdominal pain and responses to the Centre for Epidemiologic Studies Depression Scale (CES-D). Complete answers were available from 4964 subjects. The data were analyzed by tabulation, and logistic regression analyses. The lifetime prevalence of suicidality was much increased in subjects with pain compared with those without chronic abdominal pain. Rates for thoughts about death, wishing to die, suicidal ideation and suicide attempts were 2- to 3-times more frequent in those with chronic abdominal pain compared with those without. Logistic regression analyses and the calculation of odds ratios confirmed that the most powerful predictive factors for suicidality, were first, the presence of significant depressive ideation, and second, the presence of chronic abdominal pain. There is a strong relationship between chronic abdominal pain and suicidality in the Hispanic population in the United States. This was particularly evident in the Puerto Rican population of the United States where both rates were much increased compared with other Hispanic citizens. The present data are new, but no conclusion can be drawn concerning causality because they are cross-sectional. They indicate the importance of the link between chronic abdominal pain and depression in this population.>

Mannino DM; Petty TL (1998): Obstructive lung diseases and low lung function in the United States population, 1988-94: Results from NHANES III - meeting abstract. American Journal of Epidemiology 147 (N11,S, 1 Jun), 53-53. (111 Market Place, Ste 840, Baltimore, MD 21202-6709)
[LUNG DISEASES; NHANES III]

McDowell MA; Briefel RR (1998): Nutrient database development and management: An NHANES perspective - Conference Paper. Public Health Rev 26 (1), 49-53.

[FOOD FREQUENCY; HHANES; NHANES II]

<To study issues of diet and health among Hispanic adults living in the northeastern United States, the authors adapted a version of the National Cancer Institute (NCI)/Block food frequency questionnaire. Foods that contributed to nutrient intake of Puerto Rican adults in the Hispanic Health and Nutrition Examination Survey (HHANES) were ranked to identify items to be added to the food list. Portion sizes were compared across HHANES and the Second National Health and Nutrition Examination Survey (NHANES II) to assess the adequacy of the

assumed values. Within line items, frequencies of consumption of individual foods were ranked and these data were used to adjust the weighing factors within the database. To test the revised form, 24-hour recalls were collected from 90 elderly Hispanics and 35 elderly non-Hispanics whites. These data were coded into the original and revised food frequency forms and nutrient intake results were compared with recall results by paired t-test and by Pearson and intraclass correlations. Added foods include plantains, avocado, mango, cassava, empanadas, and custard. Portion sizes differed significantly between HHANES and NHANES II, and were left open-ended. Estimated mean nutrient intakes and correlations with recall data were lower with open-ended. Estimated mean nutrient intakes and correlations with recall data were lower with the original versus the revised form. The authors conclude that the use in minority populations of food frequency questionnaires developed for the general population is likely to result in biased estimates of intake unless modifications are made in the questionnaires.>

Mertz KJ; McQuillan GM; Levine WC; Candal DH; Bullard JC; Johnson RE; St. Louis ME; Black CM (1998): A pilot study of the prevalence of chlamydial infection in a national household survey [see comments]. *Sex Transm Dis* 25 (5, May), 225-228.

[CHLAMYDIAL INFECTION; NHANES III]

<BACKGROUND: The prevalence of *Chlamydia trachomatis* genital infection in the United States population is unknown. Using a new urine test for *C. trachomatis*, we conducted a pilot survey as part of the National Health and Nutrition Examination Survey III (NHANES III). GOAL: To determine whether the prevalence of chlamydial infection in a convenience sample of NHANES participants was high enough to justify testing for *C. trachomatis* in a national survey. STUDY DESIGN: NHANES III, conducted from 1988 to 1994, was based on a stratified multistage probability sample of the United States population. Non-Hispanic blacks and Mexican-Americans were oversampled. Using the ligase chain reaction assay for *C. trachomatis*, we tested urine from participants 12 to 39 years of age from 10 of the 89 sites of NHANES III. The prevalence of infection was calculated by racial or ethnic group. RESULTS: We tested 1,144 study participants, of whom 65% were female, 30% were non-Hispanic blacks, and 30% were Mexican-American. Prevalence was higher for non-Hispanic blacks (7%) than for Mexican-Americans (3%) and non-Hispanic whites (2%). Prevalence was higher for women than men in non-Hispanic blacks (7% vs. 6%), Mexican-Americans (5% vs. 2%), and non-Hispanic whites (2% vs. 1%). In 15- to 19-year-old women, prevalence was 13% in non-Hispanic blacks, 11% in Mexican-Americans, and 5% in non-Hispanic whites. CONCLUSION: The prevalence of *C. trachomatis* genital infection was high enough to suggest that a reliable national prevalence estimate could

be obtained in a national probability sample survey.>

Miller JE; Russell LB; Davis DM; Milan E; Carson JL; Taylor WC (1998): Biomedical risk factors for hospital admission in older adults. *Med Care* 36 (3, Mar), 411-421.

[BIOMEDICAL RISK FACTORS; HOSPITAL ADMISSION; NHANES I; NHEFS]

<OBJECTIVES: This study examines the influence of risk factors such as cigarette smoking, blood pressure, serum cholesterol, or chronic illness on frequency of hospital admission in a population-based sample. METHODS: Data from the National Health and Nutrition Examination Survey I Epidemiologic Followup Study for 6,461 adults aged 45 years and older were used to assess the influence of risk factors measured by interview, physical examination, and laboratory tests on frequency of hospital admission over a 12- to 16-year follow-up period. Cox proportional hazard regressions were estimated separately for men and women and for ages 45 to 64 years and 65 years and older. SUDAAN software was used to correct for clustering, stratification, unequal weighting, and multiple observations per respondent. RESULTS: Risk of hospitalization was higher for current but not former smokers (relative risk [RR] = 1.17-1.34 for different age-sex groups; $P < 0.01$), higher blood pressure (RR = 1.25-1.28 for ages 45-64; RR = 1.07-1.15 for ages 65 and older; $P < 0.01$), and lower serum albumin (RR = 1.08-1.14; $P < 0.01$). Diabetes, lung conditions, heart attack, and ulcer each were associated with higher risk in at least three of the four age-sex groups, as was arthritis among the middle-aged (45-64 years). Serum cholesterol was not associated with hospitalization. CONCLUSIONS: Chronic conditions with high morbidity as well as many factors associated with mortality are associated with a higher frequency of hospitalization.>

Miller NH (1998): Update on the management of hypertension: Is the goal of hypertension control so elusive? *Cardiovascular Reviews and Reports* 19 (5), 25-30.

[HYPERTENSION; NHANES III; OBESITY]

<Data from the National Health and Examination Survey (NHANES III) indicate that only 27.4% of all hypertensives have their blood pressures controlled to below 140/90 mm Hg. With an increase in obesity and physical inactivity in this country, the problem of uncontrolled hypertension may increase. End-stage renal disease and congestive heart failure are also rising. Efforts at better control of blood pressures may be supported by physicians and other healthcare professionals acknowledging a treatment goal, directing efforts at improving compliance, intensifying efforts aimed at the middle-aged and elderly populations in order to prevent congestive heart failure, and incorporating the use of interventions proven successful in the

management of chronic conditions, including the use of nonphysician healthcare professionals, home blood pressure monitors, and lower cost medications. While the era of managed care has placed increasing burdens on the healthcare system, attention should not be diverted from looking for ways to improve the quality of care for the large proportion of the population suffering from hypertension.>

Mulrow PJ (1998): Detection and control of hypertension in the population: the United States experience. *Am J Hypertens* 11 (6, Pt 1, Jun), 744-746.

[HYPERTENSION; NHANES III]

<Trends in prevalence, awareness, treatment, and control of hypertension in the adult US population are reported. The data are from the National Health and Nutrition Examination Surveys (NHANES), carried out in four separate surveys, the last being NHANES III, 1988-1991. The age-adjusted prevalence of hypertension at $\geq 160/95$ mm Hg declined from 20% to 14%, and at $\geq 140/90$ mm Hg it declined from 36.3% to 20.4% in NHANES III. Hypertension awareness increased significantly to as high as 89% for those with blood pressures $\geq 160/95$ mm Hg. For all people with blood pressure $\geq 160/95$ mm Hg, nearly 64% have it controlled below that level, but only 29% have their blood pressure controlled below 140/90 mm Hg. Although the data from these surveys are encouraging, there are still too many people in the United States with uncontrolled hypertension.>

Mussolino ME; Looker AC; Madans JH; Langlois JA; Orwoll ES (1998): Risk factors for hip fracture in white men: The NHANES I Epidemiologic Follow-up Study. *J Bone Miner Res* 13 (6), 918-924.

[HIP FRACTURE; MEN; NHANES I; NHEFS]

<This prospective population-based study assessed predictors of hip fracture risk in white men. Participants were members of the Epidemiologic Follow-up Study cohort of the first National Health and Nutrition Examination Survey, a nationally representative sample of noninstitutionalized civilians who were followed for a maximum of 22 years. A cohort of 2879 white men (2249 in the nutrition and weight-loss subsample, 1437 in the bone density subsample) aged 45-74 years at baseline (1971-1975) were observed through 1992. Ninety-four percent of the original cohort were successfully traced. Hospital records and death certificates were used to identify a total of 71 hip fracture cases (61 in the nutrition and weight-loss subsample, 26 in the bone-density subsample). Among the factors evaluated were age at baseline, previous fractures other than hip, body mass index, smoking status, alcohol consumption, nonrecreational physical activity, weight loss from maximum, calcium intake, number of calories, protein consumption, chronic disease prevalence, and phalangeal bone density. The risk

adjusted relative risk (RR) of hip fracture was significantly associated with presence of one or more chronic conditions (RR = 1.91, 95% confidence interval [CI] = 1.19-3.06), weight loss from maximum less than or equal to 10% (RR = 2.27, 95% CI 1.13-4.59), and 1 SD change in phalangeal bone density (RR = 1.73, 95% CI 1.11-2.68). No other variables were significantly related to hip fracture risk. Although based on a small number of cases, this is one of the first prospective studies to relate weight loss and bone density to hip fracture risk in men.>

Nash D; Silbergeld E; Magder L; Stolley P (1998): Menopause, hormone replacement therapy (HRT), and blood lead levels among adult women from NHANES III, 1988-1994 - abstract. *American Journal of Epidemiology* 147 (N11,S, 1 Jun), L7-L7.
[BLOOD LEAD LEVELS; NHANES III]

Neas LM; Schwartz J (1998a): Pulmonary function levels as predictors of mortality in a national sample of US adults. *Am J Epidemiol* 147 (11, 1 Jun), 1011-1018.

[MORTALITY; NHANES I; PULMONARY FUNCTION]

<Single breath pulmonary diffusing capacity for carbon monoxide (DL(CO)) was examined as a predictor of all-cause mortality among 4,333 subjects who were aged 25-74 years at baseline in the First National Health and Nutrition Examination Survey (NHANES I) conducted from 1971 to 1975. The relation of the percentage of predicted DL(CO) to all-cause mortality was examined in a Cox proportional hazard model that included age, sex, race, current smoking status, systolic blood pressure, serum cholesterol, alcohol consumption, body mass index, percentage of predicted forced vital capacity (FVC), and the ratio of forced expiratory volume at 1 second (FEV1) to FVC. Mortality had a linear association with the percentage of predicted FVC (rate ratio (RR) = 1.12, 95% confidence interval (CI) 1.08-1.17, for a 10% decrement) and a significantly nonlinear association with the percentage of predicted DL(CO) with an adverse effect that was clearly evident for levels below 85% of those predicted (RR = 1.24, 95% CI 1.12-1.37 for a 10% decrement). The relative hazard for the percentage of predicted DL(CO) below 85% was not modified by sex, smoking status, or exclusion of subjects with clinical respiratory disease on the initial examination. This association with the percentage of predicted DL(CO) was present among 3,005 subjects with FEV1 levels above 90% of those predicted. Thus, pulmonary diffusing capacity below 85% of predicted levels is a significant predictor of the all-cause mortality rate within the general US population independent of standard spirometry measures and even in the absence of apparent clinical respiratory

disease.>

Neas LM; Schwartz J (1998b): Pulmonary function levels as predictors of mortality in a national sample of US adults. *Am J Epidemiol* 147 (11, 1 Jun), 1011-1118.

[ALCOHOL; BMI; CHOLESTEROL; MORTALITY; NHANES I; PULMONARY FUNCTION; SMOKING; SYSTOLIC BLOOD PRESSURE]

<Single breath pulmonary diffusing capacity for carbon monoxide (DL(CO)) was examined as a predictor of all-cause mortality among 4,333 subjects who were aged 25-74 years at baseline in the First National Health and Nutrition Examination Survey (NHANES I) conducted from 1971 to 1975. The relation of the percentage of predicted DL(CO) to all-cause mortality was examined in a Cox proportional hazard model that included age, sex, race, current smoking status, systolic blood pressure, serum cholesterol, alcohol consumption, body mass index, percentage of predicted forced vital capacity (FVC), and the ratio of forced expiratory volume at 1 second (FEV1) to FVC. Mortality had a linear association with the percentage of predicted FVC (rate ratio (RR) = 1.12, 95% confidence interval (CI) 1.08-1.17, for a 10% decrement) and a significantly nonlinear association with the percentage of predicted DL(CO) with an adverse effect that was clearly evident for levels below 85% of those predicted (RR = 1.24, 95% CI 1.12-1.37 for a 10% decrement). The relative hazard for the percentage of predicted DL(CO) below 85% was not modified by sex, smoking status, or exclusion of subjects with clinical respiratory disease on the initial examination. This association with the percentage of predicted DL(CO) was present among 3,005 subjects with FEV1 levels above 90% of those predicted. Thus, pulmonary diffusing capacity below 85% of predicted levels is a significant predictor of the all-cause mortality rate within the general US population independent of standard spirometry measures and even in the absence of apparent clinical respiratory disease.>

Niederman MS; McCombs JS; Unger AN; Kumar A; Popovian R (1998): The cost of treating community-acquired pneumonia. *Clin Ther* 20 (N4, Jul-Aug), 820-837.

[MEDICARE; NHANES III; PNEUMONIA]

<Community-acquired pneumonia (CAP) is responsible for an average of 4.5 million visits annually to physicians' offices, emergency departments, and outpatient clinics. However, there have been few studies using national data on the costs of treating CAP. Without such data, it is difficult to assess whether new therapies and treatment strategies are needed to improve patient outcomes. We conducted a retrospective analysis based on national incidence data and paid claims

data for patients treated for CAP to assess the frequency of services rendered and costs to the health-care system. Records were selected for the study based on a primary diagnosis of CAP according to the International Classification of Diseases, 9th Revision. Incidence data were derived from the National Health and Nutrition Examination Survey III. Medicare was the primary source of data for patients aged greater than or equal to 65 years. Data from the National Health-care Cost and Utilization Project, the National Ambulatory Medical Care Survey, and the National Hospital Ambulatory Medical Care Survey were used to determine the cost of treating patients aged <65 years. We arrived at a total cost of \$4.8 billion for treating patients aged greater than or equal to 65 years and \$3.6 billion for treating patients aged <65 years. These calculations were based on the following: 1.1 million hospital discharges resulting in inpatient costs of \$4.4 billion (52.4% of the \$8.4 billion) for the 0.6 million patients aged greater than or equal to 65 years and \$3.1 billion (36.9% of the \$8.4 billion) for the 0.5 million patients aged <65 years. The average hospital length of stay was 7.8 days with an average cost of \$7166 for patients aged greater than or equal to 65 years and 5.8 days with an average cost of \$6042 for younger patients. Room and board represented the largest percentage of the average hospital bill for patients with CAP. Inpatient physician service costs were \$305 million and \$192 million for the greater than or equal to 65 and <65 groups, respectively. Based on 1.1 million outpatient office visits for those aged greater than or equal to 65 years and 3.3 million visits for those aged <65, total outpatient costs were \$119 million and \$266 million, respectively. Given the overwhelming cost burden for CAP in the hospital setting, any new therapy that allows patients to be treated in the outpatient setting could result in significant savings, especially for patients aged greater than or equal to 65 years.>

Niskar AS; Kieszak SM; Holmes A; Esteban E; Rubin C; Brody DJ (1998): Prevalence of hearing loss among children 6 to 19 years of age: the third National Health and Nutrition Examination Survey. *JAMA* 279 (14, 8 Apr), 1071-1075.

[CHILDREN; HEARING LOSS; NHANES III]

<CONTEXT: Hearing loss in children influences the development of communication and behavioral skills, but few studies in the United States have used pure-tone audiometry to derive hearing loss prevalence estimates for children. OBJECTIVE: To describe the prevalence of hearing loss among US children by sociodemographic characteristics, reported hearing loss, and audiometric screening factors. DESIGN: National population-based cross-sectional survey with an in-person interview and audiometric testing at 0.5 to 8 kHz. SETTING/PARTICIPANTS: A total of 6166 children aged 6 to 19 years completed audiometry in the mobile examination center of the third National Health and Nutrition Examination Survey conducted between

1988 and 1994. MAIN OUTCOME MEASURE: Hearing loss, defined as audiometric threshold values of at least 16-dB hearing level based on a low or high pure-tone average. RESULTS: A total of 14.9% of children had low-frequency or high-frequency hearing loss of at least 16-dB hearing level, 7.1% had low-frequency hearing loss of at least 16-dB hearing level, and 12.7% had high-frequency hearing loss of at least 16-dB hearing level. Most hearing loss was unilateral and slight in severity (16- to 25-dB hearing level). Of those with measured hearing loss, 10.8% were reported to have current hearing loss during the interview. CONCLUSIONS: This analysis indicates that 14.9% of US children have low-frequency or high-frequency hearing loss of at least 16-dB hearing level in 1 or both ears. Among children in elementary, middle, and high school, audiometric screening should include low-frequency and high-frequency testing to detect hearing loss.>

Niskar AS; Kieszak SM; Holmes A; Esteban E; Rubin C; Brody DJ; Kieszak SM (1998): The prevalence of noise-induced hearing loss among children 6-19 years of age: The third National Health and Nutrition Examination Survey, 1988-94 - United States - abstract. *American Journal of Epidemiology* 147 (N11,S, 1 Jun), 296-296.
[HEARING LOSS; NHANES III]

Nobmann ED; Ebbesson SO; White RG; Schraer CD; Lanier AP; Bulkow LR (1998): Dietary intakes among Siberian Yupiks of Alaska and implications for cardiovascular disease [see comments]. *Int J Circumpolar Health* 57 (1, Jan), 4-17.
[ALASKA; CVD; DIETARY INTAKES; NHANES III; SIBERIA]
<We describe dietary intake for 65 Siberian Yupik residents of Gambell, AK using 24-h recalls and annual food frequencies collected in October 1992. The objectives were to describe dietary characteristics important in risk of cardiovascular disease, determine the extent that their diet differs from the diet of general US and northern populations, assess how the diet met national guidelines for the prevention of cardiovascular disease, and propose dietary recommendations. Compared to US intakes in general (NHANES III), intakes of Siberian Yupiks expressed as percent of energy were: 8-10% higher in fat, 6% higher in protein, 5-7% higher in monounsaturated fats and 12-15% lower in carbohydrate. Energy from saturated and polyunsaturated fats was similar (11% and 8% respectively). Cholesterol intakes were not significantly different. Mean intakes of selenium, α -tocopherol, folacin (men), and vitamin C (men) met Recommended Dietary Allowances, which may contribute to cardiovascular health. Mean intake of n-3 fatty acids (7.0 g/d), twice the 3 g/d associated with favorable effects, was comparable with intake of Greenlandic Eskimos. Dietary risk factors included high intakes of % energy from fat and saturated fat, and low intakes of fiber. Native foods

were important sources of monounsaturated fats, n-3 fatty acids and selenium.>

Noel M; Hickner J; Ettenhofer T; Gauthier B (1998): The high prevalence of obesity in Michigan primary care practices. An UPRNet study. Upper Peninsula Research Network. J Fam Pract 47 (1, Jul), 39-43.

[NHANES III; OBESITY]

<BACKGROUND: Obesity is a risk factor for several chronic diseases and some cancers. We suspected that patients in our primary care practices were, on the average, heavier than state and national norms. METHODS: Rates of overweight patients in primary care practices were compared with rates from the Michigan Behavioral Risk Factor Survey (MBRFS) of 1993 and the National Health and Nutrition Evaluation Survey (NHANES) III Phase I (1988-91), the most recent state and national surveys for which summarized data were available. The 19 family practice offices of the rural Upper Peninsula Research Network (UPRNet) and two urban clinics in the Lansing area participated. We measured heights and weights of 5267 consecutive patients 18 years of age and older who visited one of the offices or clinics during the study period in 1996. RESULTS: Fifty-three percent of the primary care patients were overweight, and 28.5% were severely overweight. The age-adjusted rates were 51.0% and 27.5%, respectively. These rates are much higher than rates reported from the MBRFS (29.1% for overweight), and NHANES III Phase I (33% overweight, 14% severely overweight). The age-adjusted prevalence of overweight and severely overweight was higher in the rural than the urban sample: 52.5% vs 47.2% for overweight and 33.7% vs 25.6% for severely overweight, respectively. CONCLUSIONS: Compared with data from the Michigan Behavioral Risk Factor Survey of 1993 and the National Health and Nutrition Evaluation Survey III Phase I, a much larger proportion of patients visiting our primary care practices are overweight and severely overweight. The prevalence of obesity in primary care practices may be much higher than rates estimated from population-based surveys.>

Nurko C; Aponte-Merced L; Bradley EL; Fox L (1998): Dental caries prevalence and dental health care of Mexican-American workers' children. ASDC J Dent Child 65 (1, Jan-Feb), 65-72.

[HHANES; MEXICAN AMERICANS; ORAL HEALTH]

<The purpose of this study was to determine the prevalence of dental caries and the use of dental services in a pediatric population of Mexican-American migrant workers. The results were compared with the Mexican-American child population from the Hispanic Health and Nutrition Examination Survey (HHANES). One hundred thirty three-to-sixteen-year-old children participated in the study. The children who

were born in Mexico and those who spoke Spanish had seen the dentist less often and had a higher incidence of decayed teeth than those who were born in the US and than those who spoke English ($p < 0.05$). The children from low-income families had visited the dentist less frequently and did so at an older age than those from high income families ($p < 0.05$). When compared with HHANES, the children in this study visited the dentist at an older age, had been to the dentist less often, were less likely to have dental insurance, and had a higher incidence of dental caries than the children from HHANES ($p > 0.05$). This study demonstrated a general lack of dental health knowledge, a disproportionate prevalence of decayed teeth and unmet dental need in the Mexican-American migrant workers' children.>

Obisesan TO; Hirsch R; Kosoko O; Carlson L; Parrott M (1998): Moderate wine consumption is associated with decreased odds of developing age-related macular degeneration in NHANES I [see comments]. *J Am Geriatr Soc* 46 (1, Jan), 1-7.

[AGE RELATED MACULAR DEGENERATION; NHANES I; WINE]
<OBJECTIVE: To determine the association between alcohol intake and the risk of developing age-related macular degeneration (AMD). DESIGN: Case control study. PARTICIPANTS: The sample consisted of 3072 adults 45 to 74 years of age with macular changes indicative of AMD who participated in a nationally representative sample of the first National Health Nutrition and Examination Survey (NHANES I) between 1971 and 1975: (a) the ophthalmology data set and (b) the medical history questionnaire. MAIN OUTCOME MEASURES: Alcohol intake and the risk of developing AMD were measured. AMD was determined by staff at the National Eye Institute by funduscopy examination using standardized protocol. RESULTS: Overall, 184 individuals (6%) had AMD. We observed a statistically significant but negative association between AMD and the type of alcohol consumed in a bivariate model (OR 0.86; 95% CI 0.73, 0.99). In the same model, age maintained a consistently strong association with AMD (OR 1.08; 95% CI 1.06-1.11; $P < .001$). Among the different types of alcohol consumed in NHANES I (beer, wine, and liquor), the effect of wine, either alone (OR 0.66; 95% CI 0.55-0.79) or in combination with beer (OR 0.66; 95% CI 0.55-0.79) or liquor (OR 0.74; 95% CI 0.63-0.86), dominated the negative association observed between AMD and alcohol type. Additionally, a statistically significant and negative association between wine and AMD was noted after adjusting for the effect of age, gender, income, history of congestive heart failure, and hypertension (OR 0.81; 95% CI 0.67-0.99). CONCLUSION: Moderate wine consumption is associated with decreased odds of developing AMD. Health promotion and disease prevention activities directed at cardiovascular disease may help reduce the rate of AMD-associated blindness among older people. The nature and pathophysiology of this association warrant further

investigation.>

Obisesan TO; Vargas CM; Gillum RF (1998): Regional and urbanization variations in hypertension prevalence among the elderly in the US: NHANES III - meeting abstract. *Circulation* 97 (N8, 3 Mar), P38-P38. [HYPERTENSION; NHANES III]

O'Loughlin J; Paradis G; Renaud L; Meshefedjian G; Gray-Donald K (1998): Prevalence and correlates of overweight among elementary schoolchildren in multiethnic, low income, inner-city neighbourhoods in Montreal, Canada. *Ann Epidemiol* 8 (7), 422-432.

[BMI; NHANES II; OBESITY]

<PURPOSE: Increased understanding of the early determinants of obesity is essential because of the increasing prevalence of obesity in many industrialized countries. METHOD: As part of the evaluation of a school-based heart health promotion intervention, we measured height, weight, and triceps skinfold thickness at baseline in 2108 students aged 9-12 years (80.5% of eligible students) in 24 inner-city elementary schools located in multiethnic, low income neighbourhoods in Montreal, Canada. Data on student's socio-demographic and lifestyle characteristics were collected in classroom-administered questionnaires, and parents completed an at-home self-administered questionnaire. RESULTS: Overall, 35.2% of boys and 33.0% of girls were overweight (less than or equal to 85(th) age and gender-specific percentiles from NHANES II, for body mass index and triceps skinfold thickness); 15.1% of boys and 13.3% of girls were obese (less than or equal to 95(th) age and gender-specific percentiles for body mass index and triceps skinfold thickness). Younger age, having lived all one's life in Canada, and being of European or Central American/Caribbean family origin were independent correlates of obesity in boys. Younger age, ever smoked, mother obese and father obese were independent correlates of obesity in girls. Girls of Asian family origin were protected. CONCLUSIONS: The very high prevalence of overweight students in this low income, multiethnic population suggests an important need for preventive intervention.>

Ostchega Y; Long LR; Goh GH; Hirsch R; Ma LD; Scott WW; Johnson W; Thoma GR (1998): Establishing the level of digitization for wrist and hand radiographs for the third National Health and Nutrition Examination Survey. *J Digital Imaging* 11 (N3, Aug), 116-120.

[NHANES III; RADIOGRAPHS]

<In the third National Health and Nutrition Examination Survey (NHANES III) conducted by the National Center for Health Statistics, Centers for Disease Control and Prevention, radiographs of the hands and knees were taken of participants 60 years and older as part of the

study of arthritis and musculoskeletal conditions. The purpose of the study was to decide the digitizing resolution to be used for these radiographs. A set of wrist and hand radiographs (N = 49) was graded by two radiologists for degree of bone erosions and served as a "gold standard." The radiographs were then digitized at three resolution levels; low-resolution 150 μ m (2001 x 1634 x 12 bit matrix); intermediate-resolution 100 μ m (3000 x 2400 x 12 bit matrix); and high-resolution 50 μ m (4900 x 3000 x 12 bit matrix). A comparison of the digital images versus the gold standard reading was made at the three resolutions by two radiologists. Kappa statistics suggested fair ($K > .4$) to excellent ($K > .75$) agreement between the gold standard and the images at all levels. Intraclass correlation coefficient suggested high agreement between readers ($ICC > .5$), with minimal individual reader effect. Variance component estimates showed that the major contribution (78-83%) to scoring came from variability in the images themselves, not from the readers. The 100 μ m resolution was selected over the 150 and 50 μ m on the basis of practical considerations such as storage requirements, display time, and easier manipulation of the digital images by the readers.>

Osunkoya AO; Obisesan TO; Gillum Z (1998): The association between age-related macular degeneration and hypertension in the US in NHANES III - abstract. J Am Geriatr Soc 46 (N9, Sep), 279-279.
[HYPERTENSION; MACULAR DEGENERATION; NHANES III]

Pirkle JL; Kaufmann RB; Brody DJ; Hickman T; Gunter EW; Paschal DC (1998): Exposure of the U.S. population to lead, 1991-1994. Environ Health Perspect 106(11):745-50 (11, Nov), 745-750.
[CHILDREN; LEAD; NHANES III]

<Blood lead measurements were obtained on 13,642 persons aged 1 year and older who participated in Phase 2 of the Third National Health and Nutrition Examination Survey (NHANES III) from 1991 through 1994. NHANES III is a national representative survey of the civilian, noninstitutionalized U.S. population. The overall mean blood lead level for the U.S. population aged 1 year and older was 2.3 microgram/dl, with 2.2% of the population having levels ≥ 10 microgram/dl, the level of health concern for children. Among U.S. children aged 1-5 years, the mean blood lead level was 2.7 microgram/dl, and 890,000 of these children (4.4%) had elevated blood lead levels. Sociodemographic factors associated with higher blood lead levels in children were non-Hispanic black race/ethnicity, low income, and residence in older housing. The prevalence of elevated blood lead levels was 21.9% among non-Hispanic black children living in homes built before 1946 and 16.4% among children in low-income families who lived in homes built before 1946.

Blood lead levels continue to decline in the U.S. population, but 890,000 children still have elevated levels. Public health efforts have been successful in removing lead from population-wide sources such as gasoline and lead-soldered food and drink cans, but new efforts must address the difficult problem of leaded paint, especially in older houses, as well as lead in dust and soil. Lead poisoning prevention programs should target high-risk persons, such as children who live in old homes, children of minority groups, and children living in families with low income.>

Popkin BM; Udry R (1998): Adolescent obesity increases significantly in second and third generation US immigrants: The National Longitudinal Study of Adolescent Health. *J Nutr* 128 (N4, Apr), 701-706.

[ADOLESCENTS; HEIGHT AND WEIGHT; NHANES I; NHANES III]

<Little is known concerning obesity patterns of ethnic subpopulations in the U.S. and the effects of acculturation on these patterns, adolescent obesity, a major public health problem, has important health, social and economic consequences for the adolescent. The National Longitudinal Study of Adolescent Health survey is unique in the size of the adolescent sample and in its ability to provide large representative samples of Anglo, African-American, Hispanic and Asian-American adolescents. A nationally representative sample of 13,783 adolescents was studied. Measurements of weight and height collected in the second wave of the survey were used to study adolescent obesity. Multivariate legit techniques were used to provide an understanding of the ethnic, age, gender and intergenerational patterns of adolescent obesity. Comparisons are presented between the NHANES III results and those from the Adolescent Health Survey. The smoothed version of the NHANES I 85th percentile cut-off was used for the measure of obesity in this paper. For the total sample, 26.5% were obese. The rates were as follows: white non-Hispanics, 24.2%; black non-Hispanics, 30.9%; all Hispanics, 30.4%; and all Asian-Americans, 20.6%. Important variations within the Hispanic and Asian-American subpopulations are presented. The Chinese (15.3%) and Filipino (18.5%) samples showed substantially lower obesity than non-Hispanic whites. All groups showed more obesity among males than among females, except for blacks (27.4% for males and 34.0% for females), Asian-American and Hispanic adolescents born in the U.S. are more than twice as likely to be obese as are first generation residents of the 50 states.>

Poulter NR; Alderman MH; Cohen MW; Madhavan S (1998): Dietary sodium intake and mortality: NHANES (multiple letters). *Lancet* 352 (9132), 987-988.

[MORTALITY; NHANES; SODIUM INTAKE]

Qureshi AI; Giles WH; Croft JB (1998): Impaired glucose tolerance and the likelihood for non-fatal stroke and myocardial infarction: The third National Health and Nutrition Examination Survey - meeting abstract. *Stroke* 29 (7), 1329-1332.

[GLUCOSE TOLERANCE; NHANES III; STROKE]

<BACKGROUND AND PURPOSE: Although diabetes mellitus (DM) is known to increase the risk of cardiovascular disease (CVD), the effect of impaired glucose tolerance (IGT) on the risk remains unclear. We determined whether IGT was associated with an increased likelihood for stroke and myocardial infarction in a nationally representative sample of US adults. METHODS: We evaluated the association between IGT (defined as a fasting glucose level of < 140 mg/dL and a plasma glucose level of between 140 and 200 mg/dL 2 hours after administration of 75 grams of an oral glucose load) and DM (defined as the current use of insulin or an oral hypoglycemic medication, a fasting plasma glucose level of > 140 mg/dL, or a plasma glucose level of > 200 mg/dL 2 hours after administration of an oral glucose load) with a self-reported physician diagnosis of stroke and myocardial infarction in 6547 adults aged 40 to 74 years participating in the third National Health and Nutrition Examination Survey. Multivariate logistic regression analyses were used to investigate these relationships. RESULTS: IGT and DM were observed in 1494 and 1532 adults, respectively. After adjustment for differences in age, gender, race/ethnicity, education, hypertension, cholesterol, body mass index, and cigarette smoking, IGT was not associated with stroke (odds ratio [OR], 0.9; 95% confidence interval [CI], 0.5 to 1.6) or myocardial infarction (OR, 1.1; 95% CI, 0.7 to 1.6). DM was associated with both stroke (OR, 1.6; 95% CI, 1.0 to 2.6) and myocardial infarction (OR, 1.9; 95% CI, 1.3 to 2.8). CONCLUSIONS: In contrast to DM, IGT was not associated with an increased likelihood of prevalent nonfatal stroke or myocardial infarction.>

Reuben DB; Walsh K; Moore AA; Damesyn M; Greendale GA (1998): Hearing loss in community-dwelling older persons: national prevalence data and identification using simple questions. *J Am Geriatr Soc* 46 (8, Aug), 1008-1011.

[ELDERLY POPULATION; HEARING LOSS; NHANES]

<OBJECTIVE: To estimate the prevalence of hearing loss among community-dwelling older persons according to clinical criteria and to develop a brief self-report screening instrument to detect hearing loss. DESIGN: Survey. SETTING: National probability sample of noninstitutionalized older persons. PARTICIPANTS: A total of 2506 persons aged 55 to 74 who participated in the National Health and Nutrition Examination Survey . MAIN OUTCOME MEASURES: Hearing loss as defined by Ventry and Weinstein (VW) criteria and by the High Frequency Pure-Tone Average (HFPTA) scale. RESULTS:

Hearing loss by VW criteria was present in 14.2% and by HFPTA criteria in 35.1% of those surveyed. The prevalence increased with advancing age and was higher among men and those with less education. A logistic regression model identified six independent factors for hearing loss by VW criteria: age \geq 70 years (adjusted odds-ratio (AOR) 2.7, 95% confidence interval (95% CI) 1.6, 4.4), male gender (AOR 3.0, 95% CI 1.9, 4.8), \leq 12th grade education (AOR 3.8, 95% CI 1.8, 7.7), having seen a doctor for deafness or hearing loss (AOR 8.9, 95% CI 5.3, 14.9), unable to hear a whisper across a room (AOR 3.2, 95% CI 2.0, 5.1), and unable to hear a normal voice across a room (AOR 6.2, 95% CI 2.6, 14.9). A clinical scale based on the logistic model had 80% sensitivity and 80% specificity in predicting hearing loss using VW criteria and 59% sensitivity and 88% specificity in predicting hearing loss using HFPTA criteria. CONCLUSIONS: Hearing loss, as defined by two clinical criteria, is common and can be screened for accurately using simple questions that assess sociodemographic and hearing-related characteristics.>

Rohlfing C; Little R; Wiedmeyer HM; Madsen R; Goldstein D (1998): Is glycohemoglobin useful for diabetes screening?: NHANES III data - meeting abstract. *Diabetes* 47 (1, May), 274-274. (1600 Duke Street, Alexandria, VA 22314)
[DIABETES; GLYCOHEMOGLOBIN; NHANES III]

Rosner B; Prineas R; Loggie J; Daniels SR (1998): Percentiles for body mass index in US children 5 to 17 years of age. *J Pediatr* 132 (N2, Feb), 211-222.

[BODY MASS INDEX; CHILDREN; NHANES I]

<Objectives: It has been recommended that body mass index (BMI) (weight in kilograms/height in meter²) be used routinely to evaluate obesity in children and adolescents. This report describes the distribution of BMI in children and adolescents in the United States. Methods: Standardized measurements of height and weight from 9 large epidemiologic studies including 66,772 children age 5 to 17 years were used to develop tables for the distributions of BMI that are age, race, and gender specific. Results: The mean BMI increases with age and is slightly higher for girls than boys. Mean BMI for black and Hispanic girls was noticeably higher than for white girls. The percentiles of BMI are consistently higher than those based on the NHANES I measures, particularly for the 95th percentile. The proportion of obese children compared with NHANES I standards is higher and is highest for Hispanic boys and black and Hispanic girls. Conclusion: The tables and figures will allow pediatricians to determine the relative ranking of BMI for patients compared with values derived from a large sample of healthy children and adolescents. The identified gender and ethnic differences

may be guides to understanding the cause and prevention of obesity.>

Russell LB; Carson JL; Taylor WC; Milan E; Dey A; Jagannathan R (1998): Modeling all-cause mortality: projections of the impact of smoking cessation based on the NHEFS. NHANES I Epidemiologic Follow-up Study. *Am J Public Health* 88 (4, Apr), 630-636.

[MORTALITY; NHANES I; NHEFS; SMOKING]

<OBJECTIVES: A model that relates clinical risk factors to subsequent mortality was used to simulate the impact of smoking cessation. METHODS: Survivor functions derived from multivariate hazard regressions fitted to data from the first National Health and Nutrition Examination Survey (NHANES I) Epidemiologic Followup Study, a longitudinal survey of a representative sample of US adults, were used to project deaths from all causes. RESULTS: Validation tests showed that the hazard regressions agreed with the risk relationships reported by others, that projected deaths for baseline risk factors closely matched observed mortality, and that the projections attributed deaths to the appropriate levels of important risk factors. Projections of the impact of smoking cessation showed that the number of cumulative deaths would be 15% lower after 5 years and 11% lower after 20 years. CONCLUSIONS: The model produced realistic projections of the effects of risk factor modification on subsequent mortality in adults, Comparison of the projections for smoking cessation with estimates of the risk attributable to smoking published by the Centers for Disease Control and Prevention suggests that cessation could capture most of the benefit possible from eliminating smoking.>

Scannapieco FA; Papandonatos GD; Dunford RG (1998): Associations between oral conditions and respiratory disease in a national sample survey population. *Ann Periodontol* 3 (1, Jul), 251-256.

[NHANES I; RESPIRATORY DISEASE]

<Respiratory infectious diseases such as bacterial pneumonia and bronchitis are common and costly, especially in institutionalized and elderly inpatients. Respiratory infection is thought to rely in part on the aspiration of oropharyngeal flora into the lower respiratory tract and failure of host defense mechanisms to eliminate the contaminating bacteria, which then multiply to cause infection. It has been suggested that dental plaque may act as a reservoir of respiratory pathogens, especially in patients with periodontal disease. However, the impact of poor oral health on oral respiratory pathogen colonization and lung infection is uncertain, especially in ambulatory, non-institutionalized populations. To begin to assess potential associations between respiratory diseases and oral health, data from the National Health and Nutrition Examination Survey I (NHANES I) were analyzed. This database contains information on the general health status of 23,808

individual Of these, 386 individuals reported a suspected respiratory condition that was further assessed by a physician. These subjects were categorized as having a confirmed chronic respiratory disease (chronic bronchitis or emphysema) or an acute respiratory disease (influenza, pneumonia, acute bronchitis). They were compared to those not having a respiratory disease. Initial non-parametric analysis noted that individuals with a confirmed chronic respiratory disease (n = 41) had significantly greater oral hygiene index scores than subjects without respiratory disease (n = 193; P = 0.0441). Logistic regression analysis of data from these subjects, which considered age, race, gender, smoking status, and simplified oral hygiene index (OHI), suggested that subjects having the median OHI value were 1.3 times more likely to have a chronic respiratory disease relative to those with an OHI of 0. Similarly, subjects with the maximum OHI value were 4.5 times more likely to have a chronic respiratory disease than those with an OHI of 0. No evidence was found to support an association between the periodontal index and any respiratory disease. These results suggest OHI to have a residual effect on chronic respiratory disease of both practical and statistical significance.>

Shick SM; Wing RR; Klem ML; McGuire MT; Hill JO; Seagle H (1998): Persons successful at long-term weight loss and maintenance continue to consume a low-energy, low-fat diet. *J Am Diet Assoc* 98 (4, Apr), 408-413.

[NHANES III; RDA; WEIGHT LOSS]

<OBJECTIVES: To describe the dietary intakes of persons who successfully maintained weight loss and to determine if differences exist between those who lost weight on their own vs those who received assistance with weight loss (eg, participated in a commercial or self-help program or were seen individually by a dietitian). Intakes of selected nutrients were also compared with data from the third National Health and Nutrition Examination Survey (NHANES III) and the 1989 Recommended Dietary Allowances (RDAs). SUBJECTS: Subjects were 355 women and 83 men, aged 18 years or older, primarily white, who had maintained a weight loss of at least 13.6 kg for at least 1 year, and were the initial enrollees in the ongoing National Weight Control Registry. On average, the participants had lost 30 kg and maintained the weight loss for 5.1 years. METHODS: A cross-sectional study in which subjects in the registry completed demographic and weight history questionnaires as well as the Health Habits and History Questionnaire developed by Block et al. Subjects' dietary intake data were compared with that of similarly aged men and women in the NHANES III cohort and to the RDAs. Adequacy of the diet was assessed by comparing the intake of selected nutrients (iron; calcium; and vitamins C, A, and E) in subjects who lost weight on their own or with assistance. RESULTS: Successful maintainers of weight loss reported continued consumption

of a low-energy and low-fat diet. Women in the registry reported eating an average of 1,306 kcal/day (24.3% of energy from fat); men reported consuming 1,685 kcal (23.5% of energy from fat). Subjects in the registry reported consuming less energy and a lower percentage of energy from fat than NHANES III subjects did. Subjects who lost weight on their own did not differ from those who lost weight with assistance in regards to energy intake, percent of energy from fat, or intake of selected nutrients (iron; calcium; and vitamins C, A, and E). In addition, subjects who lost weight on their own and those who lost weight with assistance met the RDAs for calcium and vitamins C, A, and E for persons aged 25 years or older. APPLICATIONS: Because continued consumption of a low-fat, low-energy diet may be necessary for long-term weight control, persons who have successfully lost weight should be encouraged to maintain such a diet.>

Shoff SM; Newcomb PA (1998): Diabetes, body size, and risk of endometrial cancer. *Am J Epidemiol* 148 (3, 1 Aug), 234-240.

[CANCER; DIABETES; NHANES II]

<Data from a population-based case-control study of Wisconsin women were used to evaluate the relation of diabetes to the risk of endometrial cancer on the basis of body mass index (BMI). Cases (n=723) were identified from a statewide tumor registry; controls (n=2,291) were selected randomly from population lists. Diabetes status, weight, height, and other factors were ascertained by telephone interview. Subjects were categorized as not overweight (BMI, <29.1), overweight (BMI, 29.1-31.9), or obese (BMI, >31.9) according to the BMI distribution of middle-aged white women in the second National Health and Nutrition Examination Survey. Joint associations between diabetes status, BMI, and endometrial cancer were evaluated using unconditional logistic regression models that controlled for age, parity, use of hormone replacement therapy, education, and smoking. Compared with persons without diabetes, those with diabetes had an adjusted odds ratio of 1.86 (95% confidence interval (CI) 1.37-2.52) for endometrial cancer. This association was modified by BMI (p interaction=0.04). Compared with nonoverweight nondiabetic subjects, nonoverweight and overweight women who reported diabetes had nonsignificant elevated risks of endometrial cancer (nonoverweight, odds ratio (OR)=1.10, CI 0.66-1.86; overweight, OR=1.58, CI 0.81-3.05). In contrast, elevated risk estimates were observed for obese diabetic women (OR=2.95, CI 1.60-5.46). These data contradict earlier reports and suggest that diabetes confers no additional risk of endometrial cancer in women who are neither overweight nor obese.>

Siao MS; Wing RR; Klem ML; McGuire MT; Hill JO; Seagle H (1998): Persons successful at long-term weight loss and maintenance continue to

consume a low-energy, low-fat diet. *J Am Diet Assoc* 98 (4), 408-413. [LOW-FAT DIET; NHANES III; WEIGHT]

<Objectives: To describe the dietary intakes of persons who successfully maintained weight loss and to determine if differences exist between those who lost weight on their own vs those who received assistance with weight loss (eg, participated in a commercial or self-help program or were seen individually by a dietitian). Intakes of selected nutrients were also compared with data from the third National Health and Nutrition Examination Survey (NHANES III) and the 1989 Recommended Dietary Allowances (RDAs). Subjects: Subjects were 355 women and 83 men, aged 18 years or older, primarily white, who had maintained a weight loss of at least 13.6 kg for at least 1 year, and were the initial enrollees in the ongoing National Weight Control Registry. On average, the participants had lost 30 kg and maintained the weight loss for 5.1 years. Methods: A cross-sectional study in which subjects in the registry completed demographic and weight history questionnaires as well as the Health Habits and History Questionnaire developed by Block et al. Subjects' dietary intake data were compared with that of similarly aged men and women in the NHANES III cohort and to the RDAs. Adequacy of the diet was assessed by comparing the intake of selected nutrients (iron, calcium, and vitamins C, A, and E) in subjects who lost weight on their own or with assistance. Results: Successful maintainers of weight loss reported continued consumption of a low-energy and low-fat diet. Women in the registry reported eating an average of 1,306 kcal/day (24.3% of energy from fat); men reported consuming 1,685 kcal (23.5% of energy from fat). Subjects in the registry reported consuming less energy and a lower percent-age of energy from fat than NHANES III subjects did. Subjects who lost weight on their own did not differ from those who lost weight with assistance in regards to energy intake, percent of energy from fat, or intake of selected nutrients (iron, calcium, and vitamins C, A, and E). In addition, subjects who lost weight on their own and those who lost weight with assistance met the RDAs for calcium and vitamins C, A, and E for persons aged 25 years or older. Applications: Because continued consumption of a low-fat, low-energy diet may be necessary for long-term weight control, persons who have successfully lost weight should be encouraged to maintain such a diet.>

Simon JA; Hudes ES (1998a): Relation of serum ascorbic acid to serum lipids and lipoproteins in US adults. *J Am Coll Nutr* 17 (3, Jun), 250-255. [ASCORBIC ACID; LIPOPROTEINS; NHANES III; SERUM LIPIDS] <OBJECTIVE: To examine the relation of serum ascorbic acid level to serum lipid and lipoprotein levels among a random sample of the US adult population. METHODS: Using linear regression, the relation of serum ascorbic acid level to serum lipid and lipoprotein levels was examined among 5,412 women and 5,116 men enrolled in the Second National Health and Nutrition Examination Survey (NHANES II), 1976-

1980. Age, race, body mass index, level of physical activity, level of education, alcohol intake, and dietary energy, cholesterol, and fat intakes, and other potential confounders were included in the multivariate models. RESULTS: Serum ascorbic acid level was independently associated with high-density lipoprotein cholesterol (HDL-C) among women; each 1 mg/dl increase in serum ascorbic acid level (range 0.1 to 2.7 mg/dl) was associated with a 2 mg/dl increase in HDL-C level ($p = 0.001$). Because other investigators have demonstrated an inverse relation between ascorbic acid intake or blood levels and total serum cholesterol in individuals with elevated total serum cholesterol levels, we analyzed four subgroups of NHANES II participants with total serum cholesterol levels > 200 mg/dl. Among women with total serum cholesterol levels $> \text{or} = 200$ mg/dl, each 1 mg/dl increase in serum ascorbic acid level was independently associated with an increase of 2 to 3 mg/dl in HDL-C level ($p < \text{or} = 0.05$). Serum ascorbic acid level was not significantly associated with other serum lipids or lipoproteins. CONCLUSIONS: If the observed associations are linked causally, they would suggest that ascorbic acid is a factor in cholesterol homeostasis among women and may be particularly important for women at increased risk for coronary heart disease.>

Simon JA; Hudes ES (1998b): Serum ascorbic acid and other correlates of gallbladder disease among US adults. *Am J Public Health* 88 (8, Aug), 1208-1212.

[ASCORBIC ACID; GALLBLADDER; NHANES II]

<OBJECTIVES: This study examined the correlates of clinical gallbladder disease among US adults and whether serum ascorbic acid levels are associated with a decreased prevalence of gallbladder disease. METHODS: Cross-sectional analyses of data from the Second National Health and Nutrition Examination Survey were conducted. RESULTS: A total of 384 women (8%) and 107 men (3%) reported a history of gallstone disease, and 347 women (7%) and 81 men (2%) reported a history of cholecystectomy. An inverted U-shaped relation was found between serum ascorbic acid level and clinical gallbladder disease among women but not among men. CONCLUSIONS: Ascorbic acid, which affects the catabolism of cholesterol to bile acids and, in turn, the development of gallbladder disease in experimental animals, may reduce the risk of clinical gallbladder disease in humans.>

Simon JA; Hudes ES; Browner WS (1998): Serum ascorbic acid and cardiovascular disease prevalence in U.S. adults. *Epidemiology* 9 (3, May), 316-321.

[ASCORBIC ACID; CHD; NHANES II; STROKE]

<To examine the relation between serum ascorbic acid level and the prevalence of cardiovascular disease, we analyzed data from 6,624 U.S.

men and women enrolled in the second National Health and Nutrition Examination Survey. We calculated odds ratios and 95% confidence intervals to estimate the relative prevalence of cardiovascular disease, defined as self-reported coronary heart disease or stroke, or a diagnosis of peripheral vascular disease based on physical examination. Serum ascorbic acid levels were independently associated with prevalence of coronary heart disease and stroke; a 0.5-mg per dl increase in serum ascorbic acid level was associated with an 11% reduction in coronary heart disease and stroke prevalence. We also analyzed the relation of ascorbic acid, grouped into low to marginal, normal, and saturation serum categories, to cardiovascular disease. Compared with participants with low to marginally low serum ascorbic acid levels, we found a 27% decreased prevalence of coronary heart disease (95% confidence interval = 10-41%) and a 26% decreased prevalence of stroke (95% confidence interval = 3-44%) among participants in the highest serum ascorbic acid category. Serum ascorbic acid levels were not consistently associated with prevalence of peripheral vascular disease. These results are consistent with the hypothesis that increased ascorbic acid intake may decrease the risk of coronary heart disease and stroke.>

Steenland K; Sieber K; Etzel RA; Pechacek T; Maurer K (1998): Exposure to environmental tobacco smoke and risk factors for heart disease among never smokers in the third National Health and Nutrition Examination Survey. *Am J Epidemiol* 147 (10, 15 May), 932-939.

[CHD; NHANES; SMOKING]

<The relative risk of coronary artery disease among never smokers exposed to environmental tobacco smoke (ETS) versus never smokers not exposed to ETS is approximately 1.2 based on more than a dozen epidemiologic studies. Most of these studies have controlled for the major heart disease risk factors, but residual or uncontrolled confounding remains a possible explanation for the epidemiologic findings. The authors studied 3,338 never-smoking adults aged 17 years or older, who are representative of all US never smokers, in the 1988-1991 third National Health and Nutrition Examination Survey (NHANES III) to determine whether selected risk factors for heart disease differ between ETS-exposed and nonexposed persons. Both self-reported ETS exposure (at home and at work) and serum cotinine levels were available, the latter reflecting recent ETS exposure. After adjustments were made for age, sex, race, and education among adults aged 17 years or older, no significant differences were found between the ETS exposed and the nonexposed for any of 13 cardiovascular risk factors with the exception of dietary carotene, which was lower among the exposed. On the other hand, significant positive linear trends were found between serum cotinine and two risk factors (body mass index and alcohol consumption), and significant inverse trends were found with dietary

carotene. There were also few differences between exposed and nonexposed never smokers among adults aged 40 years or older, who are most at risk of heart disease. In this group, however, there was an inverse linear trend between serum cotinine and high density lipoprotein cholesterol ($p < 0.001$). This finding could result from ETS exposure rather than be an indication of confounding; a similar inverse trend was found for children, confirming other results in the literature. Overall, these data suggest little potential for confounding by the heart disease risk factors studied here when ETS exposure is determined by self-report.>

Troiano RP; Flegal KM (1998): Overweight children and adolescents: Description, epidemiology, and demographics. *Pediatrics* 101/3 II SUPPL. (497-504 (3, Suppl. ii), 497-504.

[ADOLESCENTS; CHILDREN; CYCLES II; CYCLES III; NHANES I; NHANES III; NHES II; NHES III; OBESITY]

<We describe prevalence and trends in overweight among children and adolescents (6 to 17 years old) in the US population and variation in the prevalence by sex, age, race-ethnicity, income, and educational level. Height and weight were measured in nationally representative surveys conducted between 1963 and 1994: cycles II (1963 to 1965) and III (1966 to 1970) of the National Health Examination Survey (NHES) and the National Health and Nutrition Examination Surveys (NHANES I, 1971 to 1974; NHANES II, 1976 to 1980; and NHANES III, 1988 to 1994). Overweight was defined by the age- and sex-specific 95th percentile of body mass index (BMI) from NHES II and III. BMI values between the 85th and 95th percentiles were considered an area of concern, because at this level there is increased risk for becoming overweight. Approximately 11% of children and adolescents were overweight in 1988 to 1994, and an additional 14% had a BMI between the 85th and 95th percentiles. The prevalence of overweight did not vary systematically with race-ethnicity, income, or education. Overweight prevalence increased over time, with the largest increase between NHANES II and NHANES III. Examination of the entire BMI distribution showed that the heaviest children were markedly heavier in NHANES III than in NHES, but the rest of the distribution of BMI showed little change. Data are limited for assessing the causes of the rapid change in the prevalence of overweight. The increased overweight prevalence in US children and adolescents may be one manifestation of a more general set of societal effects. Childhood overweight should be addressed from a public health perspective.>

Trout D; Decker J; Mueller C; Bernert JT; Pirkle J (1998): Exposure of casino employees to environmental tobacco smoke. *J Occup Environ Med* 40 (3, Mar), 270-276.

[NHANES III; SMOKING]

<Environmental and medical evaluations were performed to evaluate occupational exposure to environmental tobacco smoke (ETS) among casino employees. Air concentrations of both nicotine and respirable dust were similar to those published in the literature for other non-industrial indoor environments. The geometric mean serum cotinine level of the 27 participants who provided serum samples was 1.34 nanograms per milliliter (ng/mL) (pre-shift) and 1.85 ng/mL (post-shift). Both measurements greatly exceeded the geometric mean value of 0.65 ng/mL for participants in the Third National Health and Nutrition Examination Survey (NHANES III) who reported exposure to ETS at work. This evaluation demonstrates that a sample of employees working in a casino gaming area were exposed to ETS at levels greater than those observed in a representative sample of the US population, and that the serum and urine cotinine of these employees increased during the workshift.>

Tseng M; Williams RC; Maurer KR; Schanfield MS; Knowler WC; Everhart JE (1998): Genetic admixture and gallbladder disease in Mexican Americans. *Am J Phys Anthropol* 106 (3), 361-371.

[GALLBLADDER DISEASE; HHANES; MEXICAN AMERICANS]

<Gallbladder disease is a common source of morbidity in the Mexican American population. Genetic heritage has been proposed as a possible contributor, but evidence for this is limited. Because gallbladder disease has been associated with Native American heritage, genetic admixture may serve as a useful proxy for genetic susceptibility to the disease in epidemiologic studies. The objective of our study was to examine the possibility that gallbladder disease is associated with greater Native American admixture in Mexican Americans. This study used data from the Hispanic Health and Nutrition Examination Survey and was based on 1,145 Mexican Americans who underwent gallbladder ultrasonography and provided usable phenotypic information. We used the GM and KM immunoglobulin antigen system to generate estimates of admixture proportions and compared these for individuals with and without gallbladder disease. Overall, the proportionate genetic contributions from European, Native American, and African ancestries in our sample were 0.575, 0.390, and 0.035, respectively. Admixture proportions did not differ between cases and noncases: Estimates of Native American admixture for the two groups were 0.359 and 0.396, respectively, but confidence intervals for estimates overlapped. This study found no evidence for the hypothesis that greater Native American admixture proportion is associated with higher prevalence of gallbladder disease in Mexican Americans. Reasons for the finding that Native American admixture proportions did not differ between cases and noncases are discussed. Improving our understanding of the measurement, use, and limitations of genetic admixture may increase its usefulness as an epidemiologic tool as well as its potential for

contributing to our understanding of disease distributions across populations.>

Tucker KL; Bianchi LA; Maras J; Bermudez OI (1998): Adaptation of a food frequency questionnaire to assess diets of Puerto Rican and non-Hispanic adults. *Am J Epidemiol* 148 (5, 1 Sep), 507-18.

[ADULTS; FOOD FREQUENCIES; HHANES; NHANES II; NON-HISPANICS; PUERTO RICANS]

<To study issues of diet and health among Hispanic adults living in the northeastern United States, the authors adapted a version of the National Cancer Institute (NCI)/Block food frequency questionnaire. Foods that contributed to nutrient intake of Puerto Rican adults in the Hispanic Health and Nutrition Examination Survey (HHANES) were ranked to identify items to be added to the food list. Portion sizes were compared across HHANES and the Second National Health and Nutrition Examination Survey (NHANES II) to assess the adequacy of the assumed values. Within line items, frequencies of consumption of individual foods were ranked and these data were used to adjust the weighting factors within the database. To test the revised form, 24-hour recalls were collected from 90 elderly Hispanics and 35 elderly non-Hispanic whites. These data were coded into the original and revised food frequency forms and nutrient intake results were compared with recall results by paired t-test, and by Pearson and intraclass correlations. Added foods include plantains, avocado, mango, cassava, empanadas, and custard. Portion sizes differed significantly between HHANES and NHANES II, and were left open-ended. Estimated mean nutrient intakes and correlations with recall data were lower with the original versus the revised form. The authors conclude that the use in minority populations of food frequency questionnaires developed for the general population is likely to result in biased estimates of intake unless modifications are made in the questionnaires.>

Ungemack JA; Guarnaccia PJ (1998): Suicidal ideation and suicide attempts among Mexican Americans, Puerto Ricans and Cuban Americans. *Transcultural Psychiatry* 35 (2), 307-327. (Community Med./Hlth. Care, Univ. of Connecticut Health Center, 263 Farmington Avenue, Farmington, CT 06030)

[HHANES; SUICIDE]

<This article compares the prevalence and sociodemographic correlates of suicidal ideation and suicide attempts in three Hispanic populations in the US: Mexican Americans, Cuban Americans, and Puerto Ricans. Lifetime reports of suicidal thought and behavior of adults participating in the 1982-1984 Hispanic Health and Examination Survey (HHANES) were analyzed. Puerto Ricans reported consistently higher rates of suicidal ideation and attempts than either Mexican Americans or Cuban

Americans. The correlates of suicidality varied by ethnicity. The differential suicide risks in these Hispanic populations point to the importance of the sociocultural context in understanding suicidality and the need for group-specific interventions.>

Vargas CM; Crall JJ; Schneider DA (1998): Sociodemographic distribution of pediatric dental caries: NHANES III, 1988-1994. *J Am Dental Assoc* 129 (N9), 1229-1238.

[AFRICAN AMERICANS; MEXICAN AMERICANS; NHANES III; NON-HISPANIC WHITES; PEDIATRIC DENTAL CARIES]

<This article examines the extent to which caries prevalence and untreated caries vary in children by ethnicity and household income level. Data from the third National Health and Nutrition Examination Survey, 1988-1994, for 10,332 children 2 to 18 years of age indicate that lower-income children and Mexican-American and African-American children are more likely to have a higher prevalence of caries and more unmet treatment needs than their higher-income and non-Hispanic white counterparts.>

Vargas CM; Obisesan T; Gillum RF (1998a): Association of serum albumin concentration, serum ionized calcium concentration, and blood pressure in the third National Health and Nutrition Examination Survey. *J Clin Epidemiol* 51 (N9), 739-746.

[AFRICAN AMERICANS; BLOOD PRESSURE; CALCIUM; MEXICAN AMERICANS; NHANES III; SERUM ALBUMIN]

<A few small studies of white persons have found a positive association between serum albumin and blood pressure. However, this association might be due to ionized calcium. No data on albumin or ionized calcium have appeared for African Americans or Hispanics, and few for women. To explore the association of serum albumin (g/L) and ionized calcium (mmol/L) with both systolic and diastolic blood pressure, data from the third National Health and Nutrition Examination Survey, 1988-94, were analyzed. Results from multiple regressions, controlling for age, overweight, alcohol intake, hematocrit, pulse, antihypertensive medication, and smoking indicate that serum albumin is positively correlated ($P < 0.01$) to systolic and diastolic blood pressure among non-Hispanic white men 25-59 and 60-89 years old. Ionized calcium was associated negatively with diastolic blood pressure among younger Mexican-American men. In this national sample, serum albumin was consistently associated with systolic and diastolic blood pressure only among non-Hispanic white men.>

Vargas CM; Obisesan TO; Gillum RF (1998b): Serum ionized calcium and blood pressure in the US elderly population in NHANES III -

ABSTRACT. J Am Geriatr Soc 46 (N9, Sep), 281-281.
[BLOOD PRESSURE; ELDERLY POPULATION; IONIZED
CALCIUM; NHANES III]

Victora CG; Gigante DP; Barros AJ; Monterio CA; de Onis M (1998):
[Estimating the prevalence of height for age deficits based on the
prevalence of weight for age deficits among Brazilian children]. Rev
Saude Publica 32 (4, Aug), 321-327. (Victora CG, Gigante DP, Barros
AJ, Monteiro CA, de Onis M)

[BRAZILIAN; CHILDREN; HEIGHT; NHANES; WEIGHT]

<INTRODUCTION: Anthropometry is frequently used for evaluating
nutritional status of individuals and populations. In recent years,
community surveys have been conducted by health professionals in
various regions of Brazil with the objective of complementing the data
obtained through nutritional surveillance programs. One important
difficulty in conducting these assessments has been measuring height
during visits to the homes of survey participants. METHODS: Thirty-
eight anthropometric surveys of Brazilian children aged up to 5 years
using the National Center for Health Statistics (NCHS) reference were
identified. The percentage of children with a Z-score below standard
deviations was used to define deficits of weight for age and height for
age. RESULTS: Correlation between prevalences of height for age and
weight for age deficits were examined. Due to the low prevalence of
deficits in weight for height in all surveys, there was a strong correlation
between weight for age and height for age at the population level.
Approximately 90% of the height for age (WA) variation was accounted
for by that of weight for age (W/A). CONCLUSIONS: Using the
equation, (Prevalence IVA) = 0.74 + 2.34 (Prevalence W/A) -0.03
(Prevalence W/A)² it is possible to estimate the prevalence of height
deficits on the basis of prevalence of weight deficits. These results
suggest that anthropometric surveys as conducted in Brazil, in the
context of health services, can be simplified by measuring weight only,
instead of both weight and height.>

Waitzman NJ; Smith KR (1998): Phantom of the area: poverty-area
residence and mortality in the United States. Am J Public Health 88 (6,
Jun), 973-976.

[MORTALITY; NHANES; NHANES I; POVERTY]

<OBJECTIVES: The purpose of the study was to conduct a national
multivariate analysis on poverty-area residence and mortality in the
United States. METHODS: Proportional hazards analyses were
performed of the effect of poverty-area residence on the risk of mortality
among adult examinees in the 1971 through 1974 National Health and
Nutrition Examination Survey who were followed through 1987.
RESULTS: Poverty-area residence was associated with significantly

elevated risk of all-cause mortality (rate ratio = 1.78, 95% confidence interval = 1.33, 2.38) and some cause-specific mortality among those aged 25 through 54 years, but not among those aged 55 through 74 years, at baseline after adjustment for several individual and household characteristics. CONCLUSIONS: Residence in poverty areas contributes to socioeconomic gradients in mortality among nonelderly adults in the United States.>

Wallace S (1998): The continued salience of race in long-term care. *Journals of Gerontology: Social Sciences* 53B (2, (S104-S112)), .
[NHANES III; RACE]

Winkleby MA; Kraemer HC; Ahn DK; Varady AN (1998): Ethnic and socioeconomic differences in cardiovascular disease risk factors: findings for women from the third National Health and Nutrition Examination Survey, 1988-1994. *JAMA* 280 (4, 22-29 Jul), 356-362.
[CARDIOVASCULAR DISEASE; NHANES III; SOCIOECONOMIC; WOMEN]

<CONTEXT: Cardiovascular disease (CVD) risk factors are higher among ethnic minority women than among white women in the United States. However, because ethnic minority women are disproportionately poor, socioeconomic status (SES) may substantially explain these risk factor differences. OBJECTIVE: To determine whether differences in CVD risk factors by ethnicity could be attributed to differences in SES. DESIGN: Third National Health and Nutrition Examination Survey conducted between 1988 and 1994. SETTING: Eighty-nine mobile examination centers. PARTICIPANTS: A total of 1762 black, 1481 Mexican American, and 2023 white women, aged 25 to 64 years, who completed both the home questionnaire and medical examination. MAIN OUTCOME MEASURES: Ethnicity and years of education (SES) in relation to systolic blood pressure, cigarette smoking, body mass index (BMI, a measure of weight in kilograms divided by the square of height in meters), physical inactivity, non-high-density lipoprotein cholesterol (non-HDL-C [the difference between total cholesterol and HDL-C]), and non-insulin-dependent diabetes mellitus. RESULTS: As expected, most CVD risk factors were higher among ethnic minority women than among white women. After adjusting for years of education, highly significant differences in blood pressure, BMI, physical inactivity, and diabetes remained for both black and Mexican American women compared with white women ($P < .001$). In addition, women of lower SES from each of the 3 ethnic groups had significantly higher prevalences of smoking and physical inactivity and higher levels of BMI and non-HDL-C than women of higher SES ($P < .001$). CONCLUSIONS: These findings provide the greatest evidence to date of higher CVD risk factors among black and Mexican American women than among white women of comparable

SES. The striking differences by both ethnicity and SES underscore the critical need to improve screening, early detection, and treatment of CVD-related conditions for black and Mexican American women, as well as for women of lower SES in all ethnic groups.>

Wright JD; Bialostosky K; Gunter EW; Carroll NW; Najjar MF; Bowman BA; Johnson CL (1998): Blood folate and vitamin B12: United States, 1988-94. Vital Health Stat 2

[BLOOD CELLS; FOLATE; NHANES III; VITAMIN B12]

<OBJECTIVES: This report presents national estimates of serum and red blood cell (RBC) folate and serum vitamin B12 distributions for persons 4 years and over, by sociodemographic variables. METHODS: The third National Health and Nutrition Examination Survey (NHANES III) (1988-94), provides information on the health and nutritional status of the civilian noninstitutionalized U.S. population. The analytic sample included 23,378 participants with serum folate data, 23,082 with RBC folate data, and 11,851 with serum vitamin B12 data. RESULTS: The mean serum and RBC folate concentrations are 7.2 and 196 nanograms per milliliter (ng/mL), respectively, and the mean serum vitamin B12 concentration is 518 picograms per milliliter (pg/mL). non-Hispanic white people have higher mean serum and RBC folate concentrations than non-Hispanic black or Mexican American people. Serum vitamin B12 concentrations are lowest for older adults, and non-Hispanic black people have higher serum B12 concentrations than non-Hispanic white individuals. Only approximately 3 percent of the population has a serum B12 concentration less than 200 pg/mL. CONCLUSIONS: Inadequate folate status may be more prevalent among non-Hispanic black and Mexican American people. Data also suggest a modest prevalence of low serum B12 concentrations. Future assessments of folate and vitamin B12 status will be important to evaluate the impact of a recently enacted fortification policy.>

Wright J; McDowell MA; Briefel R (1998): Dietary surveys of food intake in groups and individuals. Academic Press, London. (Encyclopedia of Human Nutrition)

[FOOD INTAKE; NHANES III]

Wu TJ; Trevisan M; Genco RJ; Falkner KL; Dorn JP (1998): Possible biological pathways linking periodontal infection to cardiovascular disease: The third National Health and Nutrition Examination Survey (NHANES III) - meeting abstract. American Journal of Epidemiology 147 (N11,S, 1 Jun), 264-264.

[CARDIOVASCULAR DISEASE; NHANES III]

Yanek LR; Moy TF; Blumenthal RS; Requeno JV; Yook RM; Hill MN; Becker LC; Becker DM (1998): Hypertension among siblings of persons with premature coronary heart disease. *Hypertension* 32, 123-128.

[CHD; HYPERTENSION; NHANES III]

<determine the extent to which the Fifth Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC-V) guidelines were implemented in high-risk families with premature coronary heart disease, we examined the prevalence of hypertension and associated coronary risk factors in asymptomatic siblings of persons with documented premature coronary disease (<60 years of age). A total of 859 apparently healthy siblings (51% male, 19% African American) were screened for coronary risk factors. Siblings were classified as normotensive or hypertensive (BP > or = 140/90 and/or current antihypertensive pharmacotherapy). The prevalence of hypertension, awareness, treatment, and control among siblings was compared with published national estimates from the third National Health and Nutrition Examination Survey. The prevalence of hypertension in siblings was 44%. Among all hypertensives, only 60% were aware of being hypertensive, 45% were being treated, and 16% were under control. A high prevalence of other coronary risk factors was found among hypertensive siblings: 72% were hypercholesterolemic; 61% were obese; 29% were current smokers; 82% were consuming >30% of calories from fat; and only 14% were participating in vigorous physical activity three or more times per week. Comparisons with the national reference population revealed siblings to have a significantly higher prevalence of hypertension, along with significantly lower levels of awareness, treatment, and control. These findings demonstrate the intersection of multiple risk factors among hypertensive siblings and emphasize the need for more aggressive screening and treatment in this easily identifiable high-risk population.>>

Yusuf HR; Giles WH; Croft JB; Anda RF; Casper ML (1998): Impact of multiple risk factor profiles on determining cardiovascular disease risk. *Prev Med* 27 (1, Jan-Feb), 1-9.

[CHOLESTEROL; DIABETES; NHANES I; OBESITY; SMOKING]

<BACKGROUND: We examined the association between clustering of risk factors and the risk for coronary heart disease, stroke, and all-cause mortality. METHODS: Data from the first National Health and Nutrition Examination Survey Epidemiologic Follow-Up Study (N = 12,932) were used to estimate the relative risk for coronary heart disease (N = 2,255), stroke (N = 929), and death from any cause (N = 4,506) by the number of cardiovascular disease risk factors present. Risk factors included current smoking, overweight, hypertension, high blood cholesterol, and diabetes. RESULTS: The proportions of respondents with 0, 1, 2, 3, or > or = 4 risk factors were 25.0, 32.8, 27.8, 12.3, and 2.1%, respectively. Relative risks for coronary heart disease associated with having 1, 2, 3,

and ≥ 4 risk factors were 1.6 (95% confidence interval [CI] 1.4, 1.9), 2.2 (95% CI 1.9, 2.6), 3.1 (95% CI 2.6, 3.6), and 5.0 (95% CI 3.9, 6.3), respectively. Relative risks for stroke associated with the same risk levels were 1.4 (95% CI 1.1, 1.8), 1.9 (95% CI 1.5, 2.4), 2.3 (95% CI 1.7, 3.0), and 4.3 (95% CI 3.0, 6.3), respectively. Similar results were observed for all-cause mortality. CONCLUSIONS: Risk for cardiovascular disease and all-cause mortality increased substantially with each additional risk factor. This supports the continued need for primary prevention of cardiovascular disease risk factors.>

1997

Abrahamsen B; Hansen TB; Jensen LB; Hermann AP; Eiken P (1997): Site of osteodensitometry in perimenopausal women: correlation and limits of agreement between anatomic regions. *J Bone Miner Res* 12, 1471-1479.

[BMD; MENOPAUSE; NHANES]

<Because the bone mineral density (BMD) in different anatomic regions is heterogenous the number of women who fulfill the World Health Organization definition of osteopenia or osteoporosis increases with the number of regions examined. The purpose of this study was to investigate the agreement between measurements of the spine, femur, forearm, and whole body following menopause. Two thousand and five healthy, perimenopausal women, mean age 50.6 years, were studied using Hologic QDR-1000/W and QDR-2000 densitometers. Though the BMD of different anatomic regions were correlated ($r = 0.40-0.77$, $p < 0.01$), the variability in each patient regarding T and Z scores between regions was considerable. For example, despite a high correlation ($r = 0.67$, $p < 0.01$) and no systematic difference between the T scores for total femoral and lumbar BMD, the limits of agreement (mean difference ± 2 SD) for the comparison were -1.89 to 1.87. Femoral neck T scores were 0.5 SD lower than those of the other regions, confirming reports that the young adult reference for this measurement is disproportionately high. The prevalence of osteoporosis was 1.2% when femur total BMD was considered alone and 5.9% when lumbar and ultradistal forearm results were included. However, as many as 7.9% showed osteoporosis of the femoral neck when the Hologic T score was used, compared with 0.7% using National Health and Nutrition Examination Survey (NHANES) values. The choice of anatomic region and availability of appropriate young adult reference data has considerable impact on the

apparent prevalence of osteoporosis. Given the heterogeneity between regions, a combination of spinal and femoral densitometry should be used in diagnosing osteoporosis, though this increases the prevalence of osteoporosis by 50% or more in perimenopausal women.>

Alemu T; Lindtjorn B (1997): Nutritional assessment of two famine prone Ethiopian communities. *J Epidemiol Community Health* 51, 278-282.

[BMI; ETHIOPIAN; NHANES]

<STUDY OBJECTIVES: To compare two ethnically distinct Ethiopian populations (Oromo Arsi in Elka in the Rift Valley and Anyuak in Punjido in Gambella) for two widely used anthropometric indices of protein-energy malnutrition: body mass index < 18.5 and arm muscle circumference < 80% of the median of the US NHANES reference data. DESIGN: Anthropometric measurements were made in two cross sectional community surveys. SETTING: The Elka village in the central Rift Valley and the Punjido village in western Ethiopia. PARTICIPANTS: 1170 and 560 people from all age groups in Elka and Punjido, respectively. MAIN RESULTS: Estimates of the prevalence of malnutrition in each group differed considerably when defined from the body mass index, but were quite similar when the arm muscle circumference was used. Data for children indicated that the boys and girls in one group (Punjido) were taller but had about the same weights for age as those in the other group (Elka), suggesting that the low body mass indices among the Punjido might have a genetic basis. CONCLUSIONS: Body mass index systematically overestimates the prevalence of malnutrition among the Anyuaks in Punjido. Local reference data from a well nourished Anyuak sample or from an ethnically related population is needed to evaluate appropriately malnutrition using the body mass index. This study shows that care must be taken when assessing different ethnic groups using existing international anthropometric references.>

Bachorik PS; Lovejoy KL; Carroll MD; Johnson CL (1997): Apolipoprotein B and AI distributions in the United States, 1988-1991: results of the National Health and Nutrition Examination Survey III (NHANES III). *Clin Chem* 43, 2364-2378. [APOLIPOPROTEIN; MEXICAN AMERICANS; NHANES III; NON-HISPANICS]

<Serum apolipoproteins (apo) B and AI were measured in a probability sample of the noninstitutionalized US civilian population, ages greater than or equal to 4 years, which included non-Hispanic whites, non-Hispanic blacks, and Mexican-Americans. Apo B concentrations were the same in males and females, lower in black males than in other males, low in childhood (similar to 0.80 g/L) and increasing to similar to 1.2 g/L in adults, and higher in younger women on hormones. Apo AI

was higher in females than males, higher in blacks than in others, remained constant from childhood to adulthood (similar to 1.35 g/L) in males, but increased with age (similar to 1.30 g/L to similar to 1.55 g/L) in females, and was higher in women taking hormones. These are the first national probability estimates of apo B and apo AI in the US and are referable to the WHO-IFCC First International Reference Materials for apo AI and B.>

Bao W; Srinivasan SR; Valdez R; Greenlund KJ; Wattigney WA; Berenson GS (1997): Longitudinal changes in cardiovascular risk from childhood to young adulthood in offspring of parents with coronary artery disease: the Bogalusa Heart Study [see comments]. JAMA 278, 1749-1754.

[BMI; BOGALUSA HEART STUDY; CHD; NHANES I]

<CONTEXT: Although the association between parental coronary artery disease (CAD) and its risk factors in the offspring is known, the timing and the course of development of risk factors from childhood to adulthood in the offspring is not known. OBJECTIVE: To examine the association between parental CAD and longitudinal changes in risk factor profile from childhood to young adulthood in offspring. DESIGN: Cohort study. SETTING: Bogalusa, La, a semirural, biracial community. PARTICIPANTS: Individuals with clinically verified parental history of CAD (n=271) vs those without such a history (n = 1253) Mean age at first CAD event was 50 years for fathers and 52 years for mothers. MAIN OUTCOME MEASURES: Body mass index, subscapular skinfolds, blood pressure, and triglyceride, cholesterol (total, very low-density lipoprotein [VLDL-C], low-density lipoprotein [LDL-C], and high-density lipoprotein [HDL-C] cholesterol), glucose, and insulin levels. RESULTS: The offspring of parents with CAD were consistently overweight beginning in childhood. Their levels of total serum cholesterol, LDL-C, plasma glucose, and insulin became significantly higher at older ages, because of a higher rate of increase in these risk factors over time. In adulthood, the offspring with a positive parental history had a higher prevalence of obesity (body mass index >85th percentile in the National Health and Nutrition Examination Survey I, 35% vs 26%, P=.01), elevated total cholesterol (>6.2 mmol/L [240 mg/dL], 8.4% vs 4.8%, P=.05) and LDL-C levels (>4.1 mmol/L [160 mg/dL], 12.4% vs 4.7%, P=.05), and hyperglycemia (glucose, >6.6 mmol/L, 2.7% vs 0.4%, P<.001), as well as a higher coexistence of these conditions (P=.01). Further, the prevalence of dyslipidemia, either involving only LDL-C or LDL-C in combination with HDL-C or triglycerides or both, was significantly higher in the adult offspring with parental CAD. CONCLUSIONS: Offspring of parents with early CAD were overweight beginning in childhood and developed an adverse cardiovascular risk factor profile at an increased rate. These observations have important implications for prevention and intervention.>

Bauer UE; Mayne ST (1997): Do ethnic differences in dietary cation intake explain ethnic differences in hypertension prevalence? Results from a cross-sectional analysis. *Ann Epidemiol* 7, 479-485.

[AFRICAN AMERICANS; DIETARY INAKE; EUROPEAN AMERICANS; HHANES]

<PURPOSE: To better understand how the magnitude of the association between ethnicity and hypertension is affected by ethnic differences in dietary cation intake, we describe differences in dietary cation intakes and prevalence of hypertension across four ethnic groups (African-Americans, European-Americans, Mexican-Americans, and Puerto Ricans). We also assess the cross-sectional association between: (i) hypertension and self-reported dietary intakes of sodium, potassium, and calcium for each ethnic group; and (ii) ethnicity and hypertension before and after adjustment for dietary cation intakes. METHODS: Data from the second National Health and Nutrition Examination Survey (1976-1980) and the Hispanic Health and Nutrition Examination Survey (1982-1984) were analyzed. Multiple logistic regression was used to estimate odds ratio (OR) for hypertension for each ethnic group, with adjustment for age, body mass index (BMI), and diabetes status. Comparisons were made to assess whether the magnitude for the ethnicity ORs changed when the three nutrient variables were entered into the model. RESULTS: Mexican-American and Puerto Rican men and women showed clinically and statistically significantly higher mean intakes of the three cations than did African-American men and women, who reported clinically and statistically significantly lower mean intakes of sodium, potassium, and calcium than did European-American men and women. Mean dietary intakes of potassium and calcium were higher for normotensives than for hypertensives among all ethnic groups, except African-American and Mexican-American women. In multivariate modeling, stark differences in ORs for hypertension persisted across ethnic groups despite inclusion of the nutrient variables. CONCLUSION: In this cross-sectional study, adjustment for dietary cation intakes did not alter the magnitude of the ethnic differences in prevalence of hypertension.>

Bermudez OI; Cohen NL (1997): Dietary quality and acculturation of elderly Puerto Ricans in the Hispanic Health and Nutrition Examination Survey - meeting abstract. *Am J Clin Nutr* 65, S1356-S1356.

[DIETARY; HHANES; PUERTO RICANS]

Bernert JT Jr; Turner WE; Pirkle JL; Sosnoff CS; Akins JR; Waldrep MK; Ann Q; Covey TR; Whitfield WE; Gunter EW; Miller BB; Patterson DG Jr; Needham LL; Hannon WH; Sampson EJ (1997): Development and validation of sensitive method for determination of serum cotinine in smokers and nonsmokers by liquid chromatography/atmospheric pressure

ionization tandem mass spectrometry. Clin Chem 43, 2281-2291.
[NHANES III; SERUM COTININE; SMOKING]

<We describe a sensitive and specific method for measuring cotinine in serum by HPLC coupled to an atmospheric pressure chemical ionization tandem mass spectrometer. This method can analyze 100 samples/day on a routine basis, and its limit of detection of 50 ng/L makes it applicable to the analysis of samples from nonsmokers potentially exposed to environmental tobacco smoke. Analytical accuracy has been demonstrated from the analysis of NIST cotinine standards and from comparative analyses by both the current method and gas chromatography/high-resolution mass spectrometry. Precision has been examined through the repetitive analysis of a series of bench and blind QC materials. This method has been applied to the analysis of cotinine in serum samples collected as part of the Third National Health and Nutrition Examination Survey (NHANES III).>

Birkett NJ (1997): The effect of alternative criteria for hypertension on estimates of prevalence and control. J Hypertens 15, 237-244.
[HYPERTENSION; NHANES III]

<OBJECTIVES: To assess the impact of various criteria used to define hypertension in community surveys on estimates of prevalence, treatment and control. In particular, this paper examines the effect of using mean versus minimum values; one, two or three examinations; and three different blood pressure levels. DESIGN: A cross-sectional community survey. METHODS: A multistage area sample of households in Hamilton, Canada was selected, yielding 2770 potential interviewees. Data were obtained from 2140 people (77.2%). About 25% of the sample satisfied the criteria for either one or two follow-up visits (95% completion rate). Estimates of the prevalence of hypertension and its control were computed using 28 different criteria to define hypertension. Estimation methods employed analyses that adjusted for each individual respondent's sampling probability and the effect of area sampling on variance estimates. RESULTS: The selection of mean or minimum readings had little impact on the estimates. Prevalence estimates decreased by up to 20% when follow-up information was included but were similar under all three of the studied blood pressure cut-off points. Inclusion of the follow-up information reduced the proportion of hypertensives estimated to be 'unaware' of their condition by over 60% while raising the proportion 'under control' by around 18%. Application of the third National Health and Nutrition Examination Survey analysis criteria to the present study demonstrated that alterations in criteria can have profound effects on estimates, the prevalence increasing by about 100% and the proportion 'unaware' by 500%. The proportion 'under control' dropped from 69.0 to 21.5%. CONCLUSIONS: Different criteria to define hypertension can have important effects on the estimates

of prevalence and control. Authors need to be explicit concerning the criteria used. Readers should be aware of the risk of overinterpreting results based on criteria that do not reflect their objectives (e.g. using a single visit estimate to determine control of clinically relevant hypertension).>

Brett KM; Madans JH (1997a): Differences in use of postmenopausal hormone replacement therapy by black and white women. *Menopause-The Journal of the North American Menopause Society* 4, 66-70.

[HORMONE REPLACEMENT; NHANES I; NHEFS]

<The purpose of this study is to investigate differential use of hormone replacement therapy (HRT) by race after controlling for family income and education, Data from the Epidemiologic Followup to the first National Health and Nutrition Examination Survey (NHEFS), a nationally representative cohort followed from the mid-1970s until 1992, were analyzed to address this question. Included in the analysis are women who became menopausal during the year of their baseline examination or during followup, had answered questions about their HRT use, and were either black or white. After controlling for education, body mass index, and history of bilateral oophorectomy or hysterectomy, black women were 60% less likely to have ever taken HRT than white women (odds ratio [OR] = 0.41, 95% confidence interval [CI] = 0.30-0.55). Furthermore, even among the women who did take HRT at some point, black women were less than half as likely as white women to have continued use of the therapy for five or more years (OR = 0.44, 95% CI = 0.29-0.68). These data suggest that black women, regardless of educational level, are less likely to use HRT, and those that do are less likely to continue long enough to affect their probability of these diseases.>

Brett KM; Madans JH (1997b): Use of postmenopausal hormone replacement therapy: estimates from a nationally representative cohort study. *Am J Epidemiol* 145, 536-545.

[HORMONE REPLACEMENT; HYPERTENSION; MENOPAUSE; NHANES I; NHEFS]

<The objective of this study was to describe trends in the use of hormone replacement therapy (HRT) in the United States by demographic, life-style, and heart disease risk factors. Data were obtained from the Epidemiologic Followup Study to the first National Health and Nutrition Examination Survey, a nationally representative cohort followed from the mid-1970s until 1992. A total of 5,602 women who had become menopausal by their last follow-up interview were included. An estimated 45% of the cohort of menopausal US women 25-74 years of age in the

early 1970s used HRT for at least one month and 20% continued use for 5 or more years. Between 1987 and 1992, as the younger members of the cohort became menopausal, the proportion of this cohort who had ever used HRT and used it for 5 or more years increased by 32% and 54%, respectively. A higher probability of HRT use was found among women who were white, who were more highly educated, and who lived in the West, or who had experienced a surgical menopause. Women who were overweight or who abstained from alcohol were less likely to use HRT. These data support the hypothesis that HRT use is associated with sociodemographic factors, and that women tend to discontinue use within several years.>

Brett KM; Marsh JV; Madans JH (1997): Epidemiology of hysterectomy in the United States: demographic and reproductive factors in a nationally representative sample. *J Womens Health* 6, 309-316.

[HYSTERECTOMY; NHANES I]

<We describe the epidemiology of hysterectomy, overall as well as for specific indications. Data were obtained from the Epidemiologic Follow-up to the first National Health and Nutrition Examination Survey, a nationally representative cohort followed prospectively from the mid-1970s through 1992. Black and white women 25-49 years of age, interviewed during follow-up, were included in the analyses. The probability of undergoing a hysterectomy was estimated by demographic and reproductive factors. Hysterectomy as confirmed by hospital records was our main outcome measure. We found that women who had completed 9-11 years of education were more likely to have undergone a hysterectomy than were women with either more or less education. Women who had completed 9-11 years of education were also more likely to have had a hysterectomy because of menstrual problems. Three or more miscarriages, especially if caused by uterine prolapse, increased the probability of hysterectomy. Having had no live births decreased the probability of hysterectomy for menstrual disorders and uterine prolapse, but women who had their first child before age 20 were at increased risk of hysterectomy because of endometriosis. Hysterectomy appears to be associated with low education, high parity, and a history of multiple miscarriages. The influence of these factors varies depending on the primary indication for the hysterectomy.>

Briefel RR; Sempos CT; McDowell MA; Chien S; Alaimo K (1997): Dietary methods research in the third National Health and Nutrition Examination Survey: underreporting of energy intake. *Am J Clin Nutr* 65(4, Suppl), 1203S-1209S. [DIETARY; NHANES III]

<Assessment of diet is a critical component of the third National Health and Nutrition Examination Survey (NHANES III), which was designed to describe the health and nutritional status of the US population. We analyzed data collected with the primary dietary assessment instrument used in NHANES III, the 24-h recall, for 7769 nonpregnant adults aged

> or = 20 y to investigate underreporting of total energy intake. Underreporting was addressed by computing a ratio of energy intake (EI) to estimated basal metabolic rate (BMR_{Rest}). EI:BMR_{Rest} was 1.47 for men and 1.26 for nonpregnant women; a population level of 1.55 is expected for a sedentary population. About 18% of the men and 28% of the women were classified as underreporters. Underreporting of energy intake was highest in women and persons who were older, overweight, or trying to lose weight. Underreporting varied according to smoking status, level of education, physical activity, and the day of the week the 24-h recall covered. Additionally, underreporting was associated with diets lower in fat ($P < 0.01$) and alcohol ($P < 0.01$ in women) when expressed as a percentage of total energy intake.>

Briefel RR; Stamler J; Milas C; Grandits GA; Caggiula AW (1997): Relation of changes in dietary lipids and weight, trial years 1-6, to changes in blood lipids in the special intervention and usual care groups in the multiple risk factor intervention trial. The American Society for Clinical Nutrition 65.

[BLOOD LIPIDS; NHANES III]

Buckley TJ; Liddle J; Ashley DL; Paschal DC; Burse VW; Needham LL; Akland G (1997): Environmental and biomarker measurements in nine homes in the Lower Rio Grande Valley: Multimedia results for pesticides, metals, pahs, and vocs. Environment International 23, 705-732.

[ENVIRONMENTAL BIOMARKER; NHANES III]

<Residential environmental and biomarker measurements were made of multiple pollutants during two seasons (spring and summer, 1993) in order to assess human exposure for a purposeful sample of 18 nonsmoking adults residing within nine homes (a primary and secondary subject in each home) in the Lower Rio Grande Valley (LRGV) near Brownsville, TX. Pesticides, metals, PAHs, VOCs, and PCBs were measured in drinking water, food, air, soil, end house dust over a one- to two-day period in each season. Biomarker measurements were made in blood, breath, and urine. A total of 375 measurements across five pollutant classes (227 pesticides, 44 trace elements, 78 VOCs, 18 PAHs, and 8 PCBs) was possible for each home in one or more media. A large percentage of the measurements was below the method limit of detection ranging from 0-37% for pesticides, 22-61% for metals, 6% and 90% for VOCs in water and air, respectively, and 0-74% for PAHs. The total number of analytes measurable in blood, urine, or breath was considerably less, i.e., 58 (21 pesticides, 1 PCB, 4 metals, 31 VOCs, and 1 PAH) with the percentage above the method limit of detection for pesticides and metals ranging from 40 to 100%, while for VOCs, PAHs, and PCBs, this percentage ranged from 2 to 33%. A significant seasonal difference (p less than or equal to 0.10) was found in the biomarker levels

of two of seven nonpersistent pesticides (3,5,6- trichloro-2-pyridinol and 2,5-dichlorophenol) and 3 of 3 metals (arsenic, cadmium, and mercury) and the pyrene metabolite, 1-hydroxypyrene, measured in urine. In all cases, levels were higher in the summer relative to the spring. For the persistent pesticides and PCBs in blood serum, a seasonal effect could be evaluated for 5 of 10 analytes; a significant difference (p less than or equal to 0.10) was observed only for hexachlorobenzene, which like the urine biomarkers, was higher in the summer. In contrast to the urine metals, blood-Pb concentrations did not change significantly (p less than or equal to 0.05) from spring to summer. Biological results from the current study are compared to the reference range furnished by the Third National Health and Nutrition Examination Survey (NHANES III). Comparisons are only suggestive due to limitations in comparability between the two studies. Based on the percentage of measurements above the detection limit, a significant elevation (p less than or equal to 0.10) in 2 of 12 nonpersistent pesticides (4-nitrophenol and 2,4-D) was observed for the LRGV study subjects. The VOC carbon tetrachloride was found in the blood (monitored only in spring) with greater prevalence (p less than or equal to 0.10) than would be expected from NHANES III results. Blood serum levels of two persistent pesticides (4,4'-DDE, and trans-nonachlor) and PCB exceeded median and/or 95th percentile reference levels as did arsenic in urine. Where seasonal differences were identified or for compounds exceeding reference levels, environmental monitoring results were investigated to identify potential contributing pathways and sources of exposure. However, because environmental sampling did not always coincide with the biological sampling and because of the high frequency of analytes measured below the limit of detection, sources and pathways of exposure in many cases could not be explained. Chlorpyrifos was an exception where urine metabolite (3,5,6-TCP) levels were found to be significantly correlated with air ($R^2=0.55$; p less than or equal to 0.01) and dust ($R^2=0.46$; p less than or equal to 0.01) concentrations. Based on the results of biomarkers and residential environmental measurements over two seasons, this seeping study shows a seasonal effect for some analytes and suggests where exposures may be high for others. This information may be useful in considering future studies in the region.>

Burmaster DE; Crouch EA (1997): Lognormal distributions for body weight as a function of age for males and females in the United States, 1976-1980. Risk Anal 17, 499-505.
[BODY WEIGHT; NHANES II]

<Based on results reported from the NHANES II Survey (the National Health and Nutrition Examination Survey II) for people living in the United States during 1976-1980, we use exploratory data analysis, probability plots, and the method of maximum likelihood to fit lognormal

distributions to percentiles of body weight for males and females as a function of age from 6 months through 74 years. The results are immediately useful in probabilistic (and deterministic) risk assessments.>

Cameron N; Getz B (1997): Sex differences in the prevalence of obesity in rural African adolescents. *Int J Obes Relat Metab Disord* 21, 775-782. [AFRICAN ADOLESCENTS; NHANES III; OBESITY]

<OBJECTIVE: To investigate the prevalence and gender differences in obesity in rural African adolescents. DESIGN: Cross-sectional analysis of a mixed-longitudinal study. SUBJECTS: Four hundred and forty-seven rural African adolescents (190 females; 257 males) aged 7.0-18.9 y. MEASUREMENTS: Anthropometric measurements of height, weight, and skinfolds at the bicep (BCP), tricep (TRCP), subscapular (SSCP) and suprailiac (SPIL) sites and derived ratios of fat distribution including trunk:limb ratios ($SSTB = (SSCP + SPIL)/(TRCP + BCP)$ and $ST = SSCP/TRCP$), and the upper:lower truncal ratio ($TRUNK = SSCP/SPIL$). Obesity was defined as (1) a BMI greater than the NHANES III 85% centile or (2) the sum of TRCP and SSCP skinfolds greater than the NHANES III 85% centile. RESULTS: Skinfold measures were significantly greater in females throughout the age range but remarkably greater divergence was apparent after mean menarcheal age of 14.03 y (s.d. = 1.25). Centralization of body fat was consistently greater in males but only significantly so after 14 y of age for the ST ratio. Obesity, defined by BMI or sum of skinfolds, was greatest in females following menarche reaching a maximum of 16.7% by BMI and 11.1% by sum of skinfolds, and almost non-existent in males. CONCLUSIONS: Increased prevalence of obesity in African females did not occur throughout adolescence but was linked to the timing of menarche. Increased fatness and obesity appears to be a post-menarcheal phenomenon probably caused by the hormonal changes leading to and following first menstruation.>

Cary DJ; Petty KJ; Liss C; Melton ME; Lindsay RE (1997): Prevalence of low bone mass using the NHANES III database in women on estrogen therapy screened for a clinical trial of osteoporosis - meeting abstract. *J Bone Miner Res* 12, S519-S519. [ESTROGEN THERAPY; NHANES III; OSTEOPOROSIS]

CDC (1997a): Update: blood lead levels--United States, 1991-1994 [published erratum appears in *MMWR Morb Mortal Wkly Rep* 1997 Jul 4;46(26):607]. *MMWR* 46, 141-146. [BLOOD LEAD LEVELS; NHANES III]

<Lead is an environmental toxicant that may deleteriously affect the nervous, hematopoietic, endocrine, renal, and reproductive systems. Lead exposure in young children is a particular hazard because children absorb lead more readily than do adults and because the developing nervous systems of children are more susceptible to the effects of lead. Blood lead levels (BLLs) at least as low as 10 micrograms/dL can adversely affect the behavior and development of children. CDC's National Health and Nutrition Examination surveys (NHANES), an ongoing series of national examinations of the health and nutritional status of the civilian noninstitutionalized population, have been the primary source for monitoring BLLs in the U.S. population. From NHANES II (conducted during 1976-1980) to Phase 1 of NHANES III (conducted during October 1988-September 1991), the geometric mean (GM) BLL for persons aged 1-74 years declined from 12.8 micrograms/dL, and the prevalence of elevated BLLs (BLLs \geq 10 micrograms/dL) decreased from 77.8% to 4.4%. This report updates national BLL estimated with data from Phase 2 of NHANES III (conducted during October 1991-September 1994), which indicate that BLLs in the U.S. population aged \geq 1 year continued to decrease and that BLLs among children aged 1-5 years were more likely to be elevated among those who were poor, non-Hispanic black, living in large metropolitan areas, or living in older housing.>

CDC (1997b): Update: Blood lead levels - United States, 1991-1994 (Reprinted from MMWR, vol 46, pg 141-146, 1997). JAMA 277, 1031-1032.

[BLOOD LEAD LEVELS; NHANES]

CDC (1997c): Use of unvented residential heating appliances--United States, 1988-1994. MMWR 46, 1221-1224.

[HEATING; NHANES III]

<Many heating appliances rely on combustion of carbon-based fuels and therefore are potential sources of health-threatening indoor air pollution. Most combustion heating appliances are vented to the outside of buildings to facilitate removal of the products of combustion, which include carbon monoxide (CO), carbon dioxide, nitrogen dioxide, and water vapor. However, some combustion heating devices may be unvented (e.g., kerosene- and propane-fueled space heaters, some gas-fueled log sets, and cooking devices used improperly for heating), and the use of such unvented devices in closed settings may be associated with risks for exposure to toxic gases and other emissions. This report presents an analysis of data from the Third National Health and Nutrition Examination Survey (NHANES III) to estimate the number and regional distribution of adults using unvented residential heating appliances and

stoves or ovens misused as heating devices in the United States during 1988-1994. The findings indicate that the percentage of adults using these devices was higher in the South, among low-income groups, among blacks, and among rural residents, and underscore the need for public education about the health risks associated with exposure to elevated levels of combustion by-products. NHANES III collected data from approximately 20,000 adults about household characteristics, including the prevalence of various types of residential heating appliances, the use of unvented combustion space heaters, and use of stoves or ovens specifically for heating during the previous year. NHANES weights were used to obtain national estimates based on these responses. Because responses by race/ethnicity other than for whites and blacks were too small for reliable estimates, responses from all others were combined.>

Commenges D; Letenneur L; Joly P (1997): Re: "Serum transferrin saturation, stroke incidence, and mortality in women and men. The NHANES I Epidemiologic Followup Study" [letter]. *Am J Epidemiol* 146, 683-684.

[MORTALITY; NHANES I; NHEFS; STROKE]

Commenges D; Letenneur L; Joly P (1997): Serum transferrin saturation, stroke incidence, and mortality in women and men. The NHANES I Epidemiologic Followup Study. *American Journal of Epidemiology* 146, 683-684.

[LETTER; NHEFS; SERUM TRANSFERRIN; STROKE]

Cox CS; Mussolino ME; Rothwell ST; Lane MA; Golden CD; Madans JH; Feldman JJ (1997): Plan and operation of the NHANES I Epidemiologic Followup Study, 1992. *Vital Health Stat* 2 35, 1-231.

[NHANES I; NHEFS]

Dunn LB; Damesyn M; Moore AA; Reuben DB; Greendale GA (1997): Does estrogen prevent skin aging? Results from the first National Health and Nutrition Examination Survey (NHANES I). *Arch Dermatol* 133, 339-342.

[ESTROGEN; NHANES I]

<OBJECTIVE: To evaluate the relation between noncontraceptive estrogen use and skin wrinkling, dryness, and atrophy. DESIGN: Cross-sectional analysis of a national probability sample-based cohort study. SETTING: Multiple community sites throughout the United States. PARTICIPANTS: Postmenopausal women (n = 3875) aged 40 years and older at baseline. MEASUREMENTS: Skin conditions (wrinkling, dryness, and atrophy) were ascertained using a uniform clinical examination by trained dermatology resident physicians. Self-reported use of estrogen before the baseline examination, sunlight

exposure, and smoking history were obtained by standardized interview. Body mass index, a measure of weight in kilograms divided by the square of the height in meters, was evaluated in uniform examination clothing. RESULTS: Mean (+/-SD) age of the participants was 61.6 (+/-9.0) years and mean (+/-SD) number of years since menopause was 15.6 (+/-9.4). Most were white (83.7%), the remainder being African American (15.9%) or another race (0.4%). Atrophy was present in 499 (16.2%), dry skin in 1132 (36.2%), and wrinkled skin in 880 women (28.2%). The prevalence of all 3 skin conditions was lower in African American women compared with white women. Information on hormone use was available for 3403 participants (88%). Among all women, after adjustment for age, body mass index, and sunlight exposure, estrogen use was associated with a statistically significant decrease in the likelihood of senile dry skin (odds ratio, 0.76; 95% confidence interval, 0.60-0.97). The odds of wrinkling were substantially lower in estrogen users, adjusted for age, body mass index, and sun exposure (odds ratio, 0.68; 95% confidence interval, 0.52-0.89) and additionally for smoking (odds ratio, 0.67; 95% confidence interval, 0.44-1.01). In multivariable models, estrogen use was not associated with skin atrophy. CONCLUSION: These results strongly suggest that estrogen use prevents dry skin and skin wrinkling, thus extending the potential benefits of postmenopausal estrogen therapy to include protection against selected age- and menopause-associated dermatologic conditions.>

Durazo-Arvizu R; Cooper RS; Luke A; Prewitt TE; Liao Y; McGee DL (1997): Relative weight and mortality in U.S. blacks and whites: findings from representative national population samples. *Ann Epidemiol* 7, 383-395.

[BMI; MORTALITY; NHANES I; NHEFS]

<PURPOSE: To examine the impact of relative weight on mortality in black and white men and women. METHODS: Two representative national populations samples were used: the NHANES -I Epidemiologic Follow-up Study (NHEFS), and the National Health Interview Survey (NHIS). The principal analysis focused on 13,242 participants in the NHEFS and 114,954 in the NHIS. Minimum mortality was estimated from both categorical analysis and a logistic model. RESULTS: Minimum mortality ranged from a body mass index (BMI) of 25 to 32 kg/m². The model-estimated BMI of minimum mortality for NHEFS was 27.1 (24.8-29.4, 95% CI), 26.8 (24.7-28.9, 95% CI), 24.8 (23.8-25.9, 95% CI) and 24.3 (23.2-25.4, 95% CI); for black men, black women, white men and white women, respectively, whereas for NHIS the corresponding values were 30.2 (24.8-35.6, 95% CI) 26.4 (24.2-28.7, 95% CI), 27.1 (25.5-28.7, 95% CI), and 25.6 (24.2-27.0, 95% CI). In all groups the shape of the relative risk curve was virtually identical and a broad range of BMI values in the middle of the distribution was

associated with low relative mortality risk. Averaging the results from both surveys, the observed BMI of minimum risk was 3.1 kg/m² higher in black men and 1.5 kg/m² higher in black women than in their white counterparts; when adjusted for covariates these differences were only of borderline statistical significance, however. CONCLUSIONS: Because of the wide range of BMI values associated with low risk, and the consistency of the point of the up-turn in risk, group specific definitions of optimal values do not appear to be warranted.>

Durazo-Arvizu R; McGee D; Li ZH; Cooper R (1997): Establishing the Nadir of the body mass index mortality relationship: A case study. *Journal of the American Statistical Association* 92, 1312-1319.
[BMI; MORTALITY; NHANES I]

<Many studies have demonstrated a nonmonotonic relationship between mortality and body mass index (BMI), with excess mortality occurring at both low and high levels. Although much discussion and many different analyses have appeared, to our knowledge no attempt has been made to quantitatively establish the BMI at which minimum mortality (BMI_{min}) occurs or to establish confidence intervals for this BMI, accounting for the asymmetry of the relationship. We model the nonmonotonic relationship between BMI and mortality in 13,242 black and white participants of the NHANES I Epidemiologic Follow-up Study to estimate the BMI at which minimum mortality occurs. In our analyses we consider the joint relationship of age, smoking status, and BMI to mortality. We present two methodologies for estimating BMI_{min}: a logistic regression model with a transformation of BMI to accommodate asymmetry and a change point model as suggested by Goetghebeur and Pocock. We establish confidence intervals for BMI_{min} using the delta method and bootstrap sampling for the logistic and the profile likelihood and bootstrap sampling for the change point model. We also present formal tests for the heterogeneity of BMI_{min} by smoking status, sex, race, and age. Only the interaction between race and BMI is significant; the BMI_{min} is somewhat higher for blacks than whites. Finally, we discuss the problem of goodness-of-fit statistics when the relationship between the characteristic and the outcome is nonmonotonic.>

Ernst N; Obarzanek E; Clark MB; Briefel R; Brown C; Donato K (1997): Cardiovascular health risks related to overweight. *J Am Dietet Assoc.*
[CARDIOVASCULAR HEALTH; NHANES III; WEIGHT]

Ernst ND; Sempos CT; Briefel RR; Clark MB (1997): Consistency between US dietary fat intake and serum total cholesterol concentrations: the National Health and Nutrition Examination Surveys. *Am J Clin Nutr* 66(4, Suppl), 965S-972S.
[DIETARY INTAKES; NHANES; NHANES I; NHANES II; NHANES

III; SERUM TOTAL CHOLSTEROL]

<The National Health and Nutrition Examination Surveys (NHANESs) are conducted periodically to assess the health and nutritional status of the US population by means of standardized interviews and physical examinations. Since the early 1970s there have been three national cross-sectional surveys: NHANES I, 1971-1974; NHANES II, 1976-1980; and NHANES III, phase 1, 1988-1991. During the 18 y between the midpoint of NHANES I (1972) and the midpoint of phase 1 of NHANES III (1990), the age-adjusted mean percentage of energy from fat declined from 36.4% to 34.1% for adults aged 20-74 y. Trend data are shown for dietary fat and cholesterol as well as for serum cholesterol from NHANES I (1971-1975) to NHANES III (1988-1991) by age, sex, and race-ethnicity. The results document a decline in dietary fat, saturated fat, dietary cholesterol, and serum cholesterol. The observed changes reflect those that are predicted by the classic Keys and Hegsted formulas. Changes in reported intake are matched by similar shifts in the food supply for sources of these nutrients. These changes suggest that the Healthy People 2000 goal of reducing the mean serum cholesterol concentration of US adults to $< \text{or} = 200 \text{ mg/dL}$ (5.17 mmol/L) is attainable. The changes in diet are promising, yet we are challenged to achieve greater reductions in the intake of total fat and saturated fatty acids.>

Farmer MM; Ferraro KF (1997): Distress and perceived health: mechanisms of health decline. *J Health Soc Behav* 38, 298-311.
[MENTAL HEALTH; NHANES I; PHYSICAL HEALTH; STRESS]

<Stress is a common experience in modern society, and it can affect both physical and mental health. Recognizing that not all stress is detrimental to health, this research examines the relationship between perceptions of distress and perceived health within a longitudinal framework. Using two waves of a nationally representative panel study, the National Health and Nutrition Examination Survey I (NHANES I), structural equation modeling revealed that distress leads to more negative health perceptions. In addition, perceived health was found to impact distress levels at the following wave suggesting a cycle of decline between distress and perceived health. Finally, perceived health was found to have predictive validity in determining future functional disability even when considering distress.>

Ferraro KF; Farmer MM; Wybraniec JA (1997): Health trajectories: long-term dynamics among black and white adults. *J Health Soc Behav* 38, 38-54. [DISABILITIES; HEALTH TRAJECTORIES; NHANES I; NHEFS]

<Disability has long been identified as a predictor of self-assessed health,

but some studies suggest the opposite causal direction. The aim of this study is to examine the dynamic relationships between physical disability and assessments of health among Black and White adults while simultaneously considering changing morbidity. Research questions include: Do more negative health assessments lead to greater morbidity and physical disability? Do negative health assessments lead to a cycle of health decline over time? These questions were addressed for Black and White respondents over 15 years using data from three waves of the National Health and Nutrition Examination Survey I: Epidemiologic Follow-Up Study. Results from structural equation modeling reveal that self-assessed health predicts subsequent change in health, suggesting a cycle between health problems and negative health assessments for both White and Black adults. In addition, self-assessed health among African Americans declined at a faster rate than was the case for White adults.>

Fiscella K; Franks P (1997): Does psychological distress contribute to racial and socioeconomic disparities in mortality? *Soc Sci Med* 45, 1805-1809.

[MORTALITY; NHANES I; NHEFS; PSYCHOLOGICAL DISTRESS]

<Being black or poor are powerful predictors of mortality. Although psychological distress has been proposed as mediating the effects of race and socioeconomic status on mortality, this hypothesis has not been previously directly tested. We used data from the National Health and Nutrition Examination I (NHANES I), a nationally representative sample from the U.S, and the NHANES I Epidemiological Follow-up Survey (NHEFS) of subsequent mortality to test this hypothesis. Both black race and lower family income were associated with significantly higher psychological distress as measured at the time of the initial survey by reports of hopelessness, depression, and life dissatisfaction. Black race and low income in addition to each of the measures of psychological distress were associated with higher mortality at follow-up. In a series of Cox proportional hazards models that controlled for the effects of age and gender, additional adjustment for hopelessness, depression, or life dissatisfaction had little effect on the relationship between either African American race or family income and subsequent all-cause mortality. We conclude that the effects of both race and income on mortality are largely independent of psychological distress. These findings do not support the hypothesis that psychological distress is a significant mediator of the effects of race or class on health.>

Fleming DT; McQuillan GM; Johnson RE; Nahmias AJ; Aral SO; Lee FK; St. Louis ME (1997): Herpes simplex virus type 2 in the United States, 1976 to 1994 [see comments]. *N Engl J Med* 337, 1105-1111.

[HERPES; NHANES II; NHANES III]

<BACKGROUND: Herpes simplex virus type 2 (HSV-2) infection is

usually transmitted sexually and can cause recurrent, painful genital ulcers. In neonates the infection is potentially lethal. We investigated the seroprevalence and correlates of HSV-2 infection in the United States and identified changes in HSV-2 seroprevalence since the late 1970s. METHODS: Serum samples and questionnaire data were collected during the National Health and Nutrition Examination Surveys (NHANES) II (1976 to 1980) and III (1988 to 1994). HSV-2 antibody was assessed with an immunodot assay specific for glycoprotein gG-2 of HSV-2. RESULTS: From 1988 to 1994, the seroprevalence of HSV-2 in persons 12 years of age or older in the United States was 21.9 percent (95 percent confidence interval, 20.2 to 23.6 percent), corresponding to 45 million infected people in the noninstitutionalized civilian population. The seroprevalence was higher among women (25.6 percent) than men (17.8 percent) and higher among blacks (45.9 percent) than whites (17.6 percent). Less than 10 percent of all those who were seropositive reported a history of genital herpes infection. In a multivariate model, the independent predictors of HSV-2 seropositivity were female sex, black race or Mexican-American ethnic background, older age, less education, poverty, cocaine use, and a greater lifetime number of sexual partners. As compared with the period from 1976 to 1980, the age-adjusted seroprevalence of HSV-2 rose 30 percent (95 percent confidence interval, 15.8 to 45.8 percent). The seroprevalence quintupled among white teenagers and doubled among whites in their twenties. Among blacks and older whites, the increases were smaller. CONCLUSIONS: Since the late 1970s, the prevalence of HSV-2 infection has increased by 30 percent, and HSV-2 is now detectable in roughly one of five persons 12 years of age or older nationwide. Improvements in the prevention of HSV-2 infection are needed, particularly since genital ulcers may facilitate the transmission of the human immunodeficiency virus.>

Ford ES; Williamson DF; Liu S (1997): Weight change and diabetes incidence: findings from a national cohort of US adults. *Am J Epidemiol* 146, 214-222.

[BMI; DIABETES; NHANES I; NHEFS]

<To examine how long-term patterns of weight change affect the risk for diabetes, especially non-insulin-dependent diabetes mellitus, the authors examined the relation of weight change over a period of about 10 years (from the baseline examination in 1971-1975 until the first follow-up examination in 1982-1984) to the 9-year incidence of diabetes mellitus (1984-1992) in a national cohort of 8,545 US adults from the National Health and Nutrition Examination Survey Epidemiologic Followup Study. Diabetes incidence was identified from death certificates, hospitalization and nursing home records, and self-report. In this cohort, 487 participants developed diabetes. The hazard ratios were 2.11 (95% confidence interval (CI) 1.40-3.18) for participants who gained 5- < 8 kg, 1.19 (95% CI 0.75-1.89) for participants who gained 8- < 11 kg, 2.57

(95% CI 1.84-3.85) for participants who gained 11- < 20 kg, and 3.85 (95% CI 2.04-7.22) for participants who gained 20 kg or more compared with participants whose weights remained relatively stable. The authors found no evidence that the results differed by age, sex, or race. They estimated that the population attributable risk was 27% for weight increases of 5 kg or more. Results from this study and other recent studies suggest that the increase in body mass index in the United States that occurred during the 1980s may portend an increase in the incidence of non-insulin-dependent diabetes mellitus with important public health consequences in future years.>

Frongillo EA Jr; Rauschenbach BS; Olson CM; Kendall A; Colmenares AG (1997): Questionnaire-based measures are valid for the identification of rural households with hunger and food insecurity. *J Nutr* 127, 699-705.

[NHANES III; RURAL HOUSEHOLDS]

<This study assessed the validity of questionnaire-based measures for the identification of rural households with hunger and food insecurity. Data used were from a 1993 survey of 193 households with women and children living at home in a rural county. Two interviews provided data on demographics, factors contributing to food insecurity, coping strategies, fruit and vegetable consumption, disordered eating behaviors, height, weight, dietary recall and household food-stores inventory. This information was used to develop a definitive criterion measure for hunger and food insecurity to compare with hunger and food insecurity items from Radimer/Cornell, the Community Childhood Hunger Identification Project (CCHIP) and the Third National Health and Nutrition Examination Survey (NHANES III). The Radimer/Cornell and CCHIP questionnaire-based measures had good specificity (i.e., percentage of truly food secure correctly classified; 63-71%) and excellent sensitivity (i.e., percentage of truly food insecure correctly classified; 84-89%) when compared with the criterion measure. Estimates of the prevalence of household food insecurity from the criterion, Radimer/Cornell and CCHIP measures were almost identical. The overall agreement of the Radimer/Cornell and CCHIP measures was very good. These measures can be validly used to screen for hunger and food insecurity among rural households similar to those studied and to target subpopulations for food programs. The NHANES III item alone had excellent specificity but poor sensitivity, and underestimated prevalence.>

Gardiner GB; Khoury M; Williams RR; Johnson CL; Carroll MD (1997): Familial Hypercholesterolemia (FH) diagnostic criteria: Application to the 1988-94 National Health and Nutritional Examination Survey (NHANES) III data - meeting abstract. *Am J Hum Genet* 61, 2255-2255. (7272 Greenville Avenue, Dallas, Texas 75231-4596)
[HYPERCHOLESTEROLEMIA; NHANES III]

Gillum RF; Mussolino ME; Madans JH (1997): Coronary heart disease incidence and survival in African-American women and men. The NHANES I Epidemiologic Follow-up Study. *Ann Intern Med* 127, 111-118.

[AFRICAN AMERICANS; CHD; NHANES I; NHEFS]

<BACKGROUND: Relatively few data are available on risk for or survival with coronary heart disease in African-American persons. OBJECTIVE: To determine whether incidence of coronary heart disease, rate of survival with the disease, and rate of coronary surgery differ between ethnic groups. DESIGN: Prospective cohort study. SETTING: United States. PARTICIPANTS: Persons who responded to the National Health and Nutrition Examination Survey (NHANES) I Epidemiologic Follow-up Study. Included in this analysis were 11406 white persons and African-American persons aged 25 to 74 years who had no history of coronary heart disease. Average follow-up for survivors was 19 years (maximum, 22 years). MEASUREMENTS: Incident coronary heart disease. RESULTS: Compared with that in white persons, the age-adjusted risk for coronary heart disease was higher in African-American women aged 25 to 54 years (relative risk, 1.76 [95% CI, 1.36 to 2.29]) but was lower in African-American men within each age subgroup. The age-adjusted risk was lower in African-American men for all ages combined (25 to 74 years) (relative risk, 0.78 [CI, 0.65 to 0.93] for coronary heart disease and 0.62 [CI, 0.42 to 0.92] for acute myocardial infarction). The higher rate in African-American women aged 25 to 54 years could be explained statistically by the higher risk factor levels in these women. Ethnic groups did not significantly differ in survival after the first hospitalization for coronary heart disease. However, the incidence of coronary procedures after hospitalization for coronary heart disease was markedly lower in African-American persons than in white persons (age- and sex-adjusted relative risk, 0.40 [CI, 0.16 to 0.99]). CONCLUSIONS: Total incidence of coronary heart disease is higher in African-American women aged 25 to 54 years than in white women of the same ages and is lower in African-American men aged 25 to 74 years than in white men of the same ages.>

Gillum RF; Sempos CT (1997): Erythrocyte sedimentation rate and stroke incidence in the NHANES I Epidemiologic Follow-up Study [letter; comment]. *Stroke* 28, 873-874.

[NHANES I; NHEFS; STROKE]

Glueck CJ; Kelley W; Gupta A; Fontaine RN; Wang P; Gartside PS (1997): Prospective 10-year evaluation of hypobetalipoproteinemia in a cohort of 772 firefighters and cross-sectional evaluation of hypocholesterolemia in 1,479 men in the National Health and Nutrition

Examination Survey I. Metabolism 46, 625-633.

[ALCOHOL; FIREMEN; HYPOCHOLESTEROLEMIA; NHANES I] <Our specific aim in a 10-year prospective study of 772 Cincinnati firemen (predominantly aged 26 to 46 years) was to determine the prevalence, attributes, and etiology of persistent hypobetalipoproteinemia, defined by entry low-density lipoprotein cholesterol (LDLC) less than 75 mg/dL. A second specific aim was to cross-sectionally assess hypocholesterolemia (defined by total serum cholesterol [TC] < 130 mg/dL) in 1,314 white and 165 black men aged 26 to 46 years in the National Health and Nutrition Examination Survey (NHANES I). The 141 black and 631 white firemen had 4,973 person-years of follow-up time (median, 7.1 yr/man). Of 772 men, 44 (5.7%) had entry LDL levels less than 75 mg/dL; they had a mean follow-up time of 7.3 yr/man. Of these 44 men, there were 12 (1.8% of the cohort) with entry LDLC less than 75 mg/dL, and at least 67% of their follow-up LDLC levels were less than 75. Their mean entry TC and LDLC levels were low (130 and 58 mg/dL), mean triglyceride (TG) was low (63 mg/dL), and mean high-density lipoprotein cholesterol (HDL) was high (60 mg/dL), LDLC remained at less than 75 mg/dL in 81% of their follow-up samples. Their mean entry and follow-up cholesterol and LDLC did not differ ($P > .1$, 130 v 133 mg/dL and 58 v 63 mg/dL). Compared with 32 men with entry LDLC less than 75 mg/dL but with less than 87% of follow-up LDLC less than 75 mg/dL, the 12 men with persistently low LDLC had lower mean Quetelet indices and diastolic blood pressure at entry (2.36 v 2.58, $P = .056$; 73 v 80 mm Hg, $P = .03$) and on follow-up study (2.45 v 2.69, $P = .04$; 72 v 79 mm Hg, $P = .05$). Of 12 men with persistently low LDLC, two had truncated apolipoprotein (apo) B (familial hypobetalipoproteinemia, two had the apo E genotype 2/3, and two had acquired hypobetalipoproteinemia that antedated mortality from melanoma by 9 years and from alcoholism by 2 years. Comparable to white and black firemen aged 26 to 46 years, 2.9% and 3.6% of whom had entry serum TC less than 130 mg/dL, of 1,314 white and 165 black men in the NHANES I study (aged 26 to 46), 1.8% and 3.6% had hypocholesterolemia (entry TC < 130 mg/dL). Daily mean calorie, fat, and protein intake (grams per day) did not differ ($P > .05$) in men with entry TC less than 130 mg/dL compared with those with TC 130 to 230 or greater than 230 mg/dL. Hypocholesterolemia in white and black men in NHANES I could not be attributed to hypocaloric intake or to protein, fat, or carbohydrate undernutrition. There appear to be racial differences in the prevalence of hypocholesterolemia. Blacks comprised 18% of the firemen's cohort but 42% of those with persistent hypobetalipoproteinemia; among NHANES I subjects, 3.6% of blacks were hypocholesterolemic versus 1.8% of whites. Unless persistent hypobetalipoproteinemia reflects an underlying disease, alcoholism, etc., it is often heritable, and may be associated with a reduced likelihood of coronary heart disease (CHD) and with increased longevity.>

Goslar PW; Macera CA; Castellanos LG; Hussey JR; Sy FS; Sharpe PA (1997): Blood pressure in Hispanic women: the role of diet, acculturation, and physical activity. *Ethn Dis* 7, 106-113.
[DIETARY INTAKES; HHANES; PHYSICAL ACTIVITY]

<The role of diet, acculturation, and physical activity on systolic and diastolic blood pressure was examined among 1,420 Mexican American, 388 Cuban American, and 542 Puerto Rican women who responded to the Hispanic Health and Nutrition Examination Survey collected in 1982-4. Dietary intake measures included sodium, potassium, calcium, magnesium, fiber, ethanol, and total kilocalories as estimated from 24-hour recall data. Serum sodium/potassium ratio was included as a measure of metabolic function. Acculturation was measured using language preference, speaking, reading and writing. Physical activity included recreational and non-recreational activities. Other correlates included age, education, and body composition. Final models indicated that age and body composition were significantly associated with blood pressure across all three Hispanic subgroups. Among Mexican-American women, acculturation had an impact on both systolic and diastolic blood pressure that was independent of diet, body composition, and physical activity. Furthermore, the dietary intake of specific nutrients such as sodium and potassium did not appear to be as important as the way the individual metabolized those nutrients, as indicated by the serum sodium/potassium ratio. The strong association of body mass index with both systolic and diastolic blood pressure among all three ethnic groups reinforces the need to maintain an appropriate body weight.>

Gu K; Harris M; Flegal K; Cowie C; Eberhardt M (1997): Distribution of fasting insulin and C-peptide by sex and race ethnic group for adults in the US population, NHANES III 1988-94 - meeting abstract. *Diabetes* 46, 286-286.
[C-PEPTIDE; ETHNIC GROUP; INSULIN; NHANES III]

Gunter EW (1997): Biological and environmental specimen banking at the Centers for Disease Control and Prevention. *Chemosphere* 34, 1945-1953.
[BIOLOGICAL SPECIMEN BANKING; NHANES]

<Scientific programs at the Centers for Disease Control and Prevention encompass diverse public health interests. These programs include investigations of newly emerging infectious diseases, assessments of chronic disease risk factors, and evaluations of environmental health hazards. Since the early 1960s, CDC has maintained a specimen bank to retain aliquots of biological specimens collected from a variety of epidemiologic investigations as well as from the National Health and Nutrition Examination Surveys (NHANES). CDC's National Institute of Occupational Safety and Health (NIOSH) also maintains a repository of

environmental materials from its investigations. To extend its repository capabilities more effectively, CDC has begun developing a new facility that, when finished, will meet CDC's storage needs for both biological and environmental specimens. A highly complex but very flexible information management system for this project, enabling the storage of data related to studies for which these specimens were originally collected, has already been completed. Proper specimen collection, archiving, and short- or long-term storage of specimens for environmental health-related analyses is critical for the work of the staff of the Division of Environmental Health Laboratory Sciences, National Center for Environmental Health, who perform a variety of biochemical analyses on biological specimens, including quantitation of dioxins, furans, coplanar PCBs, pesticides, volatile organic compounds, metabolites, essential and toxic trace elements, vitamins, and lipids, and also conduct genetic screening. Information regarding these analytes is an essential part of the CDC Repository Database.>

Hahn RA; Eaker E; Rolka H (1997): Reliability of reported age at menopause. *Am J Epidemiol* 146, 771-775.
[HYSTERECTOMY; MENOPAUSE; NHANES I; NHEFS]

<Age at menopause is an important epidemiologic characteristic whose reliability of reporting in the US population is not known. The authors examined four hypotheses about the reliability of reported age at menopause in the United States: 1) women with hysterectomy-induced menopause more reliably report their age at menopause than women who have undergone natural menopause; 2) reliability declines with time since menopause; 3) reliability declines with age; and 4) women with higher educational levels report their age at menopause more reliably than women with less education. The authors used linear regression models among 2,545 women in the First National Health and Nutrition Examination Survey and Followup Study (1971-1984) and compared responses at first and follow-up interviews. Among women who had undergone a natural menopause, 44% reported their age at menopause within one year from the first to second interviews; among women who had undergone a hysterectomy-induced menopause, 59% reported their age at menopause within one year from first to follow-up interviews. Only hysterectomy status and years from menopause to follow-up interview were significantly associated with the absolute difference between age at menopause reported at first and follow-up interviews. The authors conclude that caution in studies involving age at menopause may enhance our understanding of this critical event in the lives of women.>

Harris MI; Eastman RC; Cowie CC; Flegal KM; Eberhardt MS (1997): Comparison of diabetes diagnostic categories in the US population according to 1997 American Diabetes Association and 1980-1985 World

Health Organization diagnostic criteria. *Diabetes Care* 20, 1859-1862.
[DIABETES; NHANES III; WHO]

<OBJECTIVE - To compare the 1997 American Diabetes Association (ADA) and the 1980-1985 World Health Organization (WHO) diagnostic criteria in categorization of the diabetes diagnostic status of adults in the U.S. RESEARCH DESIGN AND METHODS - Analyses are based on a probability sample of the U.S. population age 40-74 years in the 1988-1994 third National Health and Nutrition Examination Survey (NHANES III). People with diabetes diagnosed before the survey were identified by questionnaire. For 2,844 people without diagnosed diabetes, fasting plasma glucose was obtained after an overnight 9 to <24-h fast, HbA(1c) was measured, and a 2-h oral glucose tolerance test was administered. RESULTS - Prevalence of diagnosed diabetes in this age-group is 7.9%. Prevalence of undiagnosed diabetes is 4.4% by ADA criteria and 6.4% by WHO criteria. The net change of -2.0% occurs because 1.0% are classified as having undiagnosed diabetes by ADA criteria but have impaired or normal glucose tolerance by WHO criteria, and 3.0% are classified as having impaired lasting glucose or normal fasting glucose by ADA criteria but have undiagnosed diabetes by WHO criteria. Prevalence of impaired fasting glucose is 10.1% (ADA), compared with 15.6% for impaired glucose tolerance (WHO). For those with undiagnosed diabetes by ADA criteria, 62.1% are above the normal range for HbA(1c) compared with 47.1% by WHO criteria. Mean HbA(1c) is 7.07% for undiagnosed diabetes by ADA criteria and 6.58% by WHO criteria. CONCLUSIONS - The number of people with undiagnosed diabetes by ADA criteria is lower than that by WHO criteria. However, those individuals classified by ADA criteria are more hyperglycemic, with higher HbA(1c) values and a greater proportion of values above the normal range. This fact, together with the simplicity of obtaining a fasting plasma glucose value, may result in the detection of a greater proportion of people with undiagnosed diabetes in clinical practice using the new ADA diagnostic criteria.>

Harris TB; Launer LJ; Madans J; Feldman JJ (1997): Cohort study of effect of being overweight and change in weight on risk of coronary heart disease in old age. *Br Med J* 314, 1791-1794.
[CHD; ELDERLY POPULATION; NHANES I; OBESITY]

<OBJECTIVE: To evaluate risk of late life coronary heart disease associated with being overweight in late middle or old age and to assess whether weight change modifies this risk. DESIGN: Longitudinal study of subjects in the epidemiological follow up study of the National Health and Nutrition Examination Survey I. SETTING: United States. SUBJECTS: 621 men and 960 women free of coronary heart disease in 1982-84 (mean age 77 years). MAIN OUTCOME MEASURE:

Incidence of coronary heart disease. **RESULTS:** Body mass index of 27 or more in late middle age was associated with increased risk of coronary heart disease in late life (relative risk = 1.7 (95% confidence interval 1.3 to 2.1)) while body mass index of 27 or more in old age was not (1.1 (0.8 to 1.5)). This difference in risk was due largely to weight loss between middle and old age. Exclusion of those with weight loss of 10% or more increased risk associated with heavier weight in old age (1.4 (1.0 to 1.9)). Thinner older people who lost weight and heavier people who had gained weight showed increased risk of coronary heart disease compared with thinner people with stable weight. **CONCLUSIONS:** Heavier weight in late middle age was a risk factor for coronary heart disease in late life. Heavier weight in old age was associated with an increased risk once those with substantial weight loss were excluded. The contribution of weight to risk of coronary heart disease in older people may be underestimated if weight history is neglected.>

Heck KE; Pamuk ER (1997): Explaining the relation between education and postmenopausal breast cancer. *Am J Epidemiol* 145, 366-372.
[CANCER; MENOPAUSE; NHANES I; NHEFS]

<The authors examined the relation between socioeconomic status, as defined by education level, and postmenopausal breast cancer incidence using data from the National Health and Nutrition Examination Survey I Epidemiologic Followup Study. Female participants in the study were followed from 1971-1974 to 1992-1993. Cox proportional hazards modeling was used to determine the relation between breast cancer incidence and education level. There was a direct dose-response association between education level and postmenopausal breast cancer risk. Several breast cancer risk factors, including height and reproductive-related risks such as nulliparity, were found to mediate this relation. Adjustment for these factors reduced, but did not eliminate, the positive relation between education level and risk of postmenopausal breast cancer; however, the association was no longer statistically significant. The association between higher education and increased risk of breast cancer appears to be largely explained by differences in the known risk factors for breast cancer.>

Heini AF; Weinsier RL (1997): Divergent trends in obesity and fat intake patterns: the American paradox. *Am J Med* 102, 259-264.
[NHANES II; NHANES III; OBESITY]

<**PURPOSE:** To compare recent changes in diet and physical activity with trends in body weight and obesity prevalence, using large survey studies representative of the US population. **MATERIALS AND METHODS:** Secular-trends survey studies were made from databases of NHANES II and III, USDA Nationwide Food Consumption Survey,

Behavioral Risk Factor Survey System, and Calorie Control Council Report providing data on obesity prevalence, body mass index, calorie and fat intake, exercise-related physical activity, and consumption of low-calorie food extracted from surveys for the adult US population and specific subgroups. RESULTS: In the adult US population the prevalence of overweight rose from 25.4% from 1976 to 1980 to 33.3% from 1988 to 1991, a 31% increase. During the same period, average fat intake, adjusted for total calories, dropped from 41.0% to 36.6%, an 11% decrease. Average total daily calorie intake also tended to decrease, from 1,854 kcal to 1,785 kcal (-4%). Men and women had similar trends. Concurrently, there was a dramatic rise in the percentage of the US population consuming low-calorie products, from 19% of the population in 1978 to 76% in 1991. From 1986 to 1991 the prevalence of sedentary lifestyle represented almost 60% of the US population, with no change over time. CONCLUSIONS: Reduced fat and calorie intake and frequent use of low-calorie food products have been associated with a paradoxical increase in the prevalence of obesity. These diverging trends suggest that there has been a dramatic decrease in total physical activity related energy expenditure. Efforts to increase the average American's total exercise- and nonexercise-related physical activities may be essential for the prevention of obesity.>

Huang Z; Himes JH (1997): Bone mass and subsequent risk of hip fracture. *Epidemiology* 8, 192-195.

[BONE DENSITY; HIP FRACTURE; NHANES I]

<We examined prospectively the associations of bone density and bone dimensions with risk of hip fracture using data from the first National Health and Nutrition Examination Survey and its three follow-up studies. A cohort of 1,489 white women age 45 years or older who received detailed medical examinations in the baseline survey in 1971-1975 were subsequently contacted in 1982-1984, 1986, and 1987. Bone density and hand bone dimensions at several sites were measured at baseline. Fifty incident hip fractures were identified during the follow-up studies. Using Cox regression analyses, we found a relative risk of 11 for women with bone density below the 5th percentile, compared with those above the 75th percentile (95% confidence interval = 2.2-58). Women with smaller external bone dimensions also faced increased risk of hip fracture (relative risk = 4.6 for dimensions below the 5th percentile vs above the 75th percentile; 95% confidence interval = 1.5-14). On the other hand, internal bone dimensions were not associated materially with hip fracture.>

Ingram DD; Makuc DM (1997): Serum transferrin saturation, stroke incidence, and mortality in women and men. The NHANES I Epidemiologic Followup Study - Reply. *American Journal of Epidemiology* 146, 684-684.

[NHANES I; NHEFS; SERUM TRANSFERRIN; STROKE]

Jacobson TA (1997): Preventing coronary heart disease in the managed care era: Improving the cost effectiveness of lipid-lowering therapy with HMG-CoA reductase inhibitors. *Am J Manag Care* 3, S29-S41.
[CHD; CHOLESTEROL; NHANES III]

<More than \$259 billion is spent each year on cardiovascular disease in the United States. Given the burgeoning cost awareness in the managed care era, appropriate clinical decisions must increasingly be predicated on cost effectiveness. Treatment expenditures of under \$40,000 per year of life saved are widely accepted as cost effective, and lipid-lowering therapy, particularly for patients with coronary artery disease or its risk factors, is considered a solid investment of health care resources. Data from the National Health and Nutrition Examination Survey III (NHANES III) offer specific insight into disease management strategies for lipid management in managed care patients. Specifically, NHANES III suggests that the majority of patients with elevated cholesterol can obtain the goals outlined by the National Cholesterol Education Program with only moderate (20% to 30%) reductions in low-density lipoprotein cholesterol (LDL-C). Thus, in the pharmacologic management of patients with moderate primary hypercholesterolemia, the synthetic HMG-CoA reductase inhibitor, fluvastatin, is considered the preferred initial agent because its clinical efficacy is similar to that of other drugs in its class, but its acquisition costs are substantially lower, resulting in greater cost effectiveness.>

Johnson-Down L; O'Loughlin J; Koski KG; Gray-Donald K (1997): High prevalence of obesity in low income and multiethnic schoolchildren: a diet and physical activity assessment. *J Nutr* 127, 2310-2315.
[DIETARY; NHANES II; OBESITY; PHYSICAL ACTIVITY]

<The objective of the study was to assess the prevalence of obesity and/or undernutrition and evaluate diet and activity patterns among schoolchildren from an ethnically diverse low income urban population. A cross-sectional survey of 498 children aged 9-12 y from 24 schools in low income multiethnic neighborhoods in Montreal, Canada was undertaken. Height, weight, dietary intake, physical activity record, and lifestyle and demographic characteristics were measured. There was no evidence of undernutrition because linear growth was appropriate for age, but 39.4% of children were overweight (>85th percentile NHANES II). Dietary fat intake was higher in children from single-parent families ($P < 0.001$) and those with mothers born in Canada. Intake of vitamins A, C, iron and folate was directly related to income sufficiency. Children who did more physical activity had significantly higher intakes of energy, calcium, iron, zinc and fiber but were not heavier. Dietary intake was systematically underreported among overweight children, i.e., their reported intakes did not meet calculated energy needs. This underreporting makes it difficult to attribute the accumulated energy

imbalance to either energy intake or expenditure.>

Jonas BS; Franks P; Ingram DD (1997): Are symptoms of anxiety and depression risk factors for hypertension? Longitudinal evidence from the National Health and Nutrition Examination Survey I Epidemiologic Follow-up Study. Arch Fam Med 6, 43-49.
[HYPERTENSION; NHANES I; NHEFS]

<OBJECTIVE: To test the hypothesis that symptoms of anxiety and depression increase the risk of experiencing hypertension, using the National Health and Nutrition Examination I Epidemiologic Follow-up Study. DESIGN: A cohort of men and women without evidence of hypertension at baseline were followed up for 7 to 16 years. The association between 2 outcome measures (hypertension and treated hypertension) and baseline anxiety and depression was analyzed using Cox proportional hazards regression adjusting for hypertension risk factors (age; sex; education; cigarette smoking; body mass index; alcohol use; history of diabetes, stroke, or coronary heart disease; and baseline systolic blood pressure). Analyses were stratified by race and age (white persons aged 25-44 years and 45-64 years and black persons aged 25-64 years). SETTING: General community. PARTICIPANTS: A population-based sample of 2992 initially normotensive persons. MAIN OUTCOME MEASURES: Incident hypertension was defined as blood pressure of 160/95 mm Hg or more, or prescription of antihypertensive medications. Treated hypertension was defined as prescription of antihypertensive medications. RESULTS: In the multivariate models for whites aged 45 to 64 years, high anxiety (relative risk [RR], 1.82; 95% confidence interval [CI], 1.30-2.53) and high depression (RR, 1.80; 95% CI, 1.16-2.78) remained independent predictors of incident hypertension. The risks associated with treated hypertension were also increased for high anxiety (RR, 2.36; 95% CI, 1.73-3.23) and high depression (RR, 1.89; 95% CI, 1.25-2.85). For blacks aged 25 to 64 years, high anxiety (RR, 2.74; 95% CI, 1.35-5.53) and high depression (RR, 2.99; 95% CI, 1.41-6.33) remained independent predictors of incident hypertension. The risks associated with treated hypertension were also increased for high anxiety (RR, 3.24; 95% CI, 1.59-6.61) and high depression (RR, 2.92; 95% CI, 1.37-6.22). For whites aged 25 to 44 years, intermediate anxiety (RR, 1.62; 95% CI, 1.18-2.22) and intermediate depression (RR, 1.60; 95% CI, 1.17-2.17) remained independent predictors of treated hypertension only. CONCLUSION: Anxiety and depression are predictive of later incidence of hypertension and prescription treatment for hypertension.>

Julius S (1997): Current trends in the treatment of hypertension: a mixed picture. Am J Hypertens 10(12, Pt 2), 300S-305S.

[HYPERTENSION; NHANES]

<It has been calculated that hypertension ranks as the fourth largest mortality risk factor in the world, predicting 6% of all deaths. Mild hypertension accounts for the largest proportion of cardiovascular deaths in the United States because of its high prevalence. Thus, mild hypertension should be the focus of treatment efforts. In addition, to achieve better results in the next century, we will have to refocus the treatment from the global goal of blood pressure lowering to exploration of specific effects of drugs on the diverse pathophysiologic aspects of hypertension including the complex metabolic and hemodynamic aberrations associated with human hypertension, as well as trophic factors. Another disconcerting feature of current hypertension management is the inadequate lowering of the blood pressure in those patients treated for hypertension. The National Health and Nutrition Examination Study (NHANES) survey in United States shows that patients treated for hypertension have blood pressure values that are only slightly lower than in untreated hypertensives and remain higher than in normotensive subjects. Patient compliance with treatment is one major problem. The development of better tolerated drugs ought to bring improvement. Overall, an educational effort aimed at physicians, the general public, and health care providers is necessary to improve the treatment of hypertension and reverse the negative trends in cardiovascular mortality.>

Kant AK; Schatzkin A; Ballard-Barbash R (1997): Evening eating and subsequent long-term weight change in a national cohort. *Int J Obes Relat Metab Disord* 21, 407-412.

[NHANES I; NHEFS; WEIGHT]

<OBJECTIVE: To examine the association of proportion of daily energy consumed in the evening with weight change over 10 y of follow-up. DESIGN: The data used were from the First National Health and Nutrition Examination Survey (NHANES I, 1971-75) Epidemiologic Follow-up Study (NHEFS, 1982-84). The analytic cohort included 2580 men and 4567 women aged 25-74 y at baseline (NHANES I, 1971-75). The proportion of energy consumed in the evening (after 5 pm) was estimated from a 24 h dietary recall obtained a baseline. Weight change was defined as the difference between the follow-up and baseline weights. RESULTS: Mean +/- s.e. of percent energy from evening food intake was 46 +/- 0.29 in the analytic cohort. After adjustment for multiple covariates, percent energy from evening food intake and weight change were unrelated in both men and women. CONCLUSION: Extent of evening eating was not a significant predictor of 10 y weight change in the NHEFS cohort.>

Khan LK; Martorell R (1997): Diet diversity in Mexican Americans,

Cuban Americans and Puerto Ricans. *Ecol Food Nutr* 36, 401-415.
[DIETARY; HHANES]

<The focus is on dietary diversity among United States (US) Hispanics, with attention given to differences by socioeconomic status (SES) and level of acculturation. The subjects of study were 18 to 74 years of age Mexican Americans (n = 3201), Cuban Americans (n = 831), and Puerto Ricans (n = 1224) included in the 1982-84 Hispanic Health and Nutrition Examination Survey (HHANES). Dietary diversity was assessed as 'food group' and 'portion' scores derived from single 24 hour recalls. Less than 10% of Hispanic men and 5% of women satisfy diversity recommendations (17 or more portions out of a possible 20) and patterns are as found in the general US population. Multivariate analysis suggest that among Mexican Americans and Puerto Ricans diversity is related to education and level of acculturation. Income is not related to diversity in any group. Generation of residency in the US is associated with less variety among Mexican Americans and Puerto Rican men. Socioeconomic status and acculturation are not significantly related to diversity among Cuban Americans. In conclusion, the diets of US Hispanics lack variety and this places these populations at long-term health risk. While interventions need to consider the educational level and cultural differences among Hispanics, income levels are unrelated to diversity in all groups, and therefore, not an apparent limitation to change.>

Khan LK; Sobal J; Martorell R (1997): Acculturation, socioeconomic status, and obesity in Mexican Americans, Cuban Americans, and Puerto Ricans. *Int J Obes Relat Metab Disord* 21, 91-96.
[ACCULTURATION; HHANES; HISPANIC AMERICANS; OBESITY]

<OBJECTIVES: This study examined the relationship between acculturation and obesity in United States (US) Hispanics, controlling for socioeconomic status (SES). METHODS: The sample included 3141 Mexican American, 828 Cuban American, and 1211 Puerto Rican adults 18-74 y of age in the 1982-84 Hispanic Health and Nutrition Examination Survey (HHANES). Acculturation was measured by language preference and generation; SES by income and education; and obesity by body mass index (BMI). RESULTS: Mean and standard deviations of BMI (kg/m²) were 25.9 +/- 4.4, 26.0 +/- 4.2, and 25.5 +/- 4.3 in men of Mexican American, Cuban American, and Puerto Rican origin, respectively. For women, the corresponding values were 26.6 +/- 5.8, 25.9 +/- 5.0, and 26.2 +/- 5.9. Linear regression models of BMI which included acculturation, income, education, and other covariates were carried out. Income and education were not associated consistently with BMI. Acculturation, but only among Mexican Americans, was associated with BMI. Specifically, greater preference for English was

associated with reduced BMI among women ($P < 0.01$). Also, men and women of the second ($P < 0.001$ in both sexes) and third ($P < 0.01$ in men $P < 0.001$ in women) generation had greater BMIs. Relative to the first generation, the increase in BMI units was 1.15 ± 0.34 in men and 1.76 ± 0.39 in women in the second generation and 0.83 ± 0.31 in men and 1.83 ± 0.37 in women of the third generation. CONCLUSIONS: BMI was not associated with SES, an unexpected finding since the relationship is generally negative in women from developed countries. The relationship between BMI and acculturation was weak and conditional. BMI in Mexican Americans appeared to be somewhat more sensitive to the process of acculturation than among Cubans or Puerto Ricans.>

Kimmel CA; Neumann DA (1997): Accounting for susceptibility in risk assessment: Current practice and new directions. *Environmental Toxicology and Pharmacology* 4, 189-194.

[CHEMICAL EXPOSURES; NHANES; RISK ASSESSMENTS]

<Differences in susceptibility between individuals can lead to variability in response to chemical exposures which in turn modify the risk of illness. As a means of exploring the basis for such differences in susceptibility, a project was undertaken to determine what data were available on the range of response variability for several health effects: neurotoxicity, reproductive/developmental toxicity, pulmonary toxicity, and cancer. In addition, modeling approaches for characterizing response variability were examined and evaluated. The main goal of this effort was to determine whether human response variability was adequately accounted for in the current risk assessment procedures for human health effects. The conclusions of the project were that few data are available, both because variability has rarely been the primary focus of study, and because data are not usually reported in such a way that response variability can be determined. Several recommendations were made to facilitate better characterization of interindividual variability, including the study of variability in available human data (e.g. the NHANES database) and allowing greater access to raw data from epidemiologic studies. In addition, the identification of relevant biomarkers, improved understanding of sources of variability, interaction of chemical effects with other exposures or pre-existing disease, and retrospective evaluations of risk assessments were recommended. It is hoped that these recommendations will stimulate research on susceptibility and response variability and encourage the reporting of data in a way that facilitates analysis of interindividual variability in response.>

Kohlmeier L; Mendez M; McDuffie J; Miller M (1997): Computer-assisted self-interviewing: a multimedia approach to dietary assessment. *Am J Clin Nutr* 65(4, Suppl), 1275S-1281S.

[DIETARY ASSESSMENT; NHANES]

<Currently available dietary assessment tools have limited ability to obtain valid data within the resource constraints of large-scale studies. Many obstacles to gathering data can be overcome with computer-assisted self-interviewing (CASI). Computers can conduct personalized, in-depth interviews without interviewers; provide standardized data collection with appropriate levels of probing; automate data entry; encourage subjects to review and correct inconsistent data; and ensure that responses are complete. Interactive multimedia tools can motivate subjects and improve participation. Visual and aural cues may stimulate recall and improve data quality. CASI is appropriate for use in populations in which literacy is low and in multiple ethnic groups. A prototype CASI diet-history program was developed for use in the United States. The diet-history approach was selected to improve cognitive support and capture information on usual diet. Scripts were based on recorded interviews with dietitians and interviewers from the National Health and Nutrition Examination Survey . At the end of the interview, participants are given information on how their reported nutrient intakes compare with current recommendations for their age and sex. The prototype was tested in focus groups of mixed age, sex, ethnicity, and education, with encouraging results. The development of multimedia-based dietary assessment tools seems a logical next step in improving dietary assessment methods.>

Korn EL; Graubard BI; Midthune D (1997): Time-to-event analysis of longitudinal follow-up of a survey: choice of the time-scale [see comments]. *Am J Epidemiol* 145, 72-80.

[HEALTH SURVEY; NHANES I; NHEFS]

<Following individuals sampled in a large-scale health survey for the development of diseases and/or death offers the opportunity to assess the prognostic significance of various risk factors. The proportional hazards regression model, which allows for the control of covariates, is frequently used for the analysis of such data. The authors discuss the appropriate time-scale for such regression models, and they recommend that age rather than time since the baseline survey (time-on-study) be used. Additionally, with age as the time-scale, control for calendar-period and/or birth cohort effects can be achieved by stratifying the model on birth cohort. Because, as discussed by the authors, many published analyses have used regression models with time-on-study as the time-scale, it is important to assess the magnitude of the error incurred from this type of incorrect modeling. The authors provide simple conditions for when incorrect use of time-on-study as the time-scale will nevertheless yield approximately unbiased proportional hazards regression coefficients. Examples are given using data from the first National Health and Nutrition Examination Survey (NHANES I) Epidemiologic Followup Study. Additional issues concerning the analysis of longitudinal follow-up of survey data are briefly discussed.>

Kuczmarski RJ; Carroll MD; Flegal KM; Troiano RP (1997): Varying body mass index cutoff points to describe overweight prevalence among US Adults: NHANES III (1988 to 1994). *Obes Res* 5, 542-548.
[BODY MASS INDEX; NHANES III; OBESITY]

<Body mass index (BMI; kg/m²) distributions are commonly reported in the scientific literature to describe weight for stature. These data are collected for various groups of subjects in local health and body composition studies, and comparisons with national distributions are often desirable. Tabular data for population prevalence estimates from the third National Health and Nutrition Examination Survey (NHANES III, 1988 to 1994) at selected gender- and age-specific BMI levels ranging from <18.0 to >45.0 are presented and compared with various examples of BMI criteria reported in the scientific literature. NHANES III was a statistically representative national probability sample of the civilian, noninstitutionalized population of the United States in which height and weight were measured as part of a more comprehensive health examination. The implications of varying population prevalence estimates based on varying BMI cutoff points are briefly discussed for selected examples including World Health Organization overweight/obesity criteria and the U.S. Dietary Guidelines for Americans. The median BMI for U.S. adults aged 20 years and older is 25.5 kg/m². Median stature and weight for men are 175.5 cm and 80.0 kg and for women are 161.6 cm and 65.6 kg, respectively. The percentage of the population with BMI <19.0 is 1.6% for men, 5.7% for women; BMI greater than or equal to 19.0 to <25.0 is 39.0% for men, 43.6% for women; BMI greater than or equal to 25.0 is 59.4% for men, 50.7% for women. An estimated 97.1 million adults have a BMI greater than or equal to 25.0. Additional prevalence estimates based on other BMI cutoff points and ages are presented.>

Kuczmarski RJ; Ogden CL; Briefel RR; Johnson CL; Troiano RP; Galuska DA (1997): Update: prevalence of overweight among children, adolescents, and adults--United States, 1988-1994. *MMWR* 46, 198-202.
[CHRONIC CONDITIONS; NHANES III; OBESITY]

<Overweight and obese adults are at increased risk for morbidity and mortality associated with many acute and chronic medical conditions, including hypertension, dyslipidemia, coronary heart disease, diabetes mellitus, gallbladder disease, respiratory disease, some types of cancer, gout, and arthritis. In addition, overweight during childhood and adolescence is associated with overweight during adulthood, and previous reports have documented an increase in the prevalence of overweight among children, adolescents, and adults from 1976-1980 to 1988-1991. This report presents data from CDC's Third National Health and Nutrition Examination Survey (NHANES III) (1988-1994) to

provide the most recent national estimates of overweight among children (ages 6-11 years), adolescents (aged 12-17 years), and adults (aged > or = 20 years) in the United States. The findings indicate that the prevalence of overweight in the United States has continued to increase.>

Kurtin D; Therrell BL Jr; Patterson P (1997): Demographic risk factors associated with elevated lead levels in Texas children covered by Medicaid. *Environ Health Perspect* 105, 66-68.
[LEAD LEVELS; NHANES II; NHANES III]

<This is the first large population-based study of demographic risk factors for elevated lead in Texas children. It summarizes data on 92,900 children covered by Medicaid screened for blood lead during the first 6 months of 1993 in Texas. The highest percentage of elevated lead levels (14.3%) was in children 25-36 months of age, with slightly lower percentages in those younger (13% of 19-24 months) and older (12% of 37-48 months) with blood lead levels greater than 10 micrograms/dl. The group with the highest percentage of elevated blood lead levels was 2-4-year-old African American males (17.3%) making this subgroup 3.5 times higher than the group with the lowest percentage-white girls over age 4 (4.8%). Males had higher blood lead levels for all ages and ethnic groups. Three principal risk factors were found for excessive blood lead in children: ethnicity, gender, and age; this is consistent with the second National Health and Nutrition Examination Survey (NHANES II) and Phase I of the NHANES III results demonstrating ethnicity and income association with lead in children in the United States.>

Lando J; Heck K; Brett K (1997): Hormone replacement therapy use and postmenopausal breast cancer risk in the National Health and Nutrition Examination Survey I. Epidemiologic Follow-up Study (NHEFS), 1971-1992 - meeting abstract. *American Journal of Epidemiology* 145, 205-205.
[BREAST CANCER; HORMONE REPLACEMENT; NHANES I; NHEFS]

Lee DJ; Gomez-Marin O (1997): Major depressive disorder, depressive symptoms, and bilateral hearing loss in Hispanic adults. *J Affect Disord* 44, 189-195. [DEPRESSION; HEARING LOSS; HHANES]
<Studies in non-Hispanic whites have documented higher rates of hearing loss in adults with depression versus those without depression. Data from the Hispanic Health and Nutrition Examination Survey were used to investigate associations between depression and bilateral hearing loss in Cuban-American, Mexican-American, and Puerto Rican adults 20-74 years of age. Pure tone thresholds were calculated by averaging thresholds obtained at 500, 1000, and 2000 Hz separately for each ear. Hearing loss was defined as bilateral pure tone average threshold levels greater than 25 db. Lifetime history of a major depressive episode was

assessed by the Diagnostic Interview Schedule, and depressive symptoms were assessed by the Center for Epidemiologic Studies Depression Schedule. Prevalence of overall hearing loss was consistently lower in Hispanics with a history of major depressive disorder than among those without such a history. Odds of hearing impairment was significantly greater among Puerto-Ricans reporting more depressive symptoms versus fewer symptoms. However, no such associations were found among Mexican-Americans or Cuban-Americans. In conclusion, despite the findings in Puerto Ricans with depressive symptoms short of major depression, hearing impaired Hispanics overall do not appear at increased risk of major depressive disorder.>

Lee DJ; Markides KS; Ray LA (1997): Epidemiology of self-reported past heavy drinking in Hispanic adults. *Ethn Health* 2, 77-88.
[DRINKING; HHANES; SMOKING]

<OBJECTIVES: Self-reports of past heavy drinking correlate with the current drinking practices and with risk of mortality in non-Hispanic males. The prevalence of past heavy drinking has not been reported in Hispanic populations. METHODS: Using data from the Hispanic Health and Nutrition Examination Survey (HHANES) we (1) report on the prevalence, duration and severity of past heavy drinking in three Hispanic groups, (2) compare the current alcohol consumption patterns among past heavy drinkers and those who do not report a history of past heavy drinking and (3) compare the risk factor profiles and health indicators in these two groups. RESULTS: The prevalence of past heavy drinking among Mexican American and Puerto Rican males ranged from 28-35% while the rates for Cuban American males ranged from 7-16%. The rates for Hispanic women were much lower (1-8%). The average years of past heavy drinking ranged from 2.3-14.9 years, while the alcohol consumption during the past heavy drinking period ranged from 24.4-44.0 drinks per week. Past heavy drinkers tended to consume more alcohol at present than did never heavy drinkers with the greatest differences found for Mexican American females. Comparisons of the risk factors and health indicators by drinking status revealed a higher prevalence of smoking among past heavy drinkers (50-60%) versus never heavy drinkers (34-43%). Past heavy drinking Mexican American females also reported significantly more chronic conditions and depressive symptoms than did never heavy drinkers. CONCLUSIONS: Prevalence rates of past heavy drinking among Mexican American and Puerto Rican males are approximately three times higher than rates reported for non-Hispanic male populations.>

Lee JH; Reed DR; Price RA (1997): Familial risk ratios for extreme obesity: implications for mapping human obesity genes. *Int J Obes Relat Metab Disord* 21, 935-940.

[BMI; GENES; NHANES III; OBESITY]

<OBJECTIVE: To determine familial risk ratios for extreme obesity to aid in the design of obesity linkage studies. DESIGN: Family study of obesity. SUBJECTS: 2349 first-degree relatives (parents and siblings) of 840 probands who are members of the National Association to Advance Fat Acceptance (NAAFA) and 5851 participants of the first phase of the National Health and Nutrition Examination Survey III. METHODS: Computed age-gender standardized risk ratios (SRRs) for obesity in relatives categorized by the level of obesity in the index case (proband). MEASUREMENT: Body mass index (BMI) (kg/m²). RESULTS: The risk of extreme obesity (BMI > or = 40) in relatives of extremely obese women (BMI > or = 40) was more than five times greater than in the population; furthermore, the risk of obesity in relatives was approximately linearly associated with the degree of obesity in the proband. The risk of thinness in relatives of obese individuals was substantially lower than in the general population. CONCLUSION: Because the familial risk ratio for extreme obesity is higher than for moderate levels of obesity, the number of families required to achieve adequate statistical power in gene mapping studies of obesity can be reduced substantially by focusing on family members of extremely obese individuals (BMI > or = 40).>

Li L; Schatzkin A; Yong L; Mussolino M; Harris T; Madans J (1997): Bone mineral density in the NHANES I Epidemiologic Follow-up study: A potential marker of endogenous estrogen exposure - meeting abstract. American Journal of Epidemiology 145, 285-285.

[BONE DENSITY; ESTROGEN EXPOSURE; NHANES I; NHEFS]

Looker AC; Dallman PR; Carroll MD; Gunter EW; Johnson CL (1997): Prevalence of iron deficiency in the United States. JAMA 277, 973-976.

[IRON DEFICIENCY; NHANES III]

<OBJECTIVE: To determine the prevalence of iron deficiency and iron deficiency anemia in the US population. DESIGN: Nationally representative cross-sectional health examination survey that included venous blood measurements of iron status. MAIN OUTCOME MEASURES: Iron deficiency, defined as having an abnormal value for at least 2 of 3 laboratory tests of iron status (erythrocyte protoporphyrin, transferrin saturation, or serum ferritin); and iron deficiency anemia, defined as iron deficiency plus low hemoglobin. PARTICIPANTS: A total of 24,894 persons aged 1 year and older examined in the third National Health and Nutrition Examination Survey (1988-1994). RESULTS: Nine percent of toddlers aged 1 to 2 years and 9% to 11% of adolescent girls and women of childbearing age were iron deficient; of these, iron deficiency anemia was found in 3% and 2% to 5%, respectively. These prevalences correspond to approximately 700,000

toddlers and 7.8 million women with iron deficiency; of these, approximately 240,000 toddlers and 3.3 million women have iron deficiency anemia. Iron deficiency occurred in no more than 7% of older children or those older than 50 years, and in no more than 1% of teenage boys and young men. Among women of childbearing age, iron deficiency was more likely in those who are minority, low income, and multiparous. CONCLUSION: Iron deficiency and iron deficiency anemia are still relatively common in toddlers, adolescent girls, and women of childbearing age.>

Looker AC; Orwoll ES; Johnston CC; Lindsay RL; Wahner HW; Dunn WL; Calvo MS; Harris TB; Heyse SP (1997): Prevalence of low femoral bone density in older US adults from NHANES III. *J Bone Miner Res* 12, 1761-1768.

[BONE DENSITY; NHANES III; OSTEOPOROSIS; WHO]

<Most estimates of osteoporosis in older U.S. adults have been based on its occurrence in white women, even though it is known to affect men and minority women. In the present study, we used dual-energy X-ray absorptiometry measurements of femoral bone mineral density (BMD) from the third National Health and Nutrition Examination Survey (NHANES III, 1988-1994) to estimate the overall scope of the disease in the older U.S. population. Specifically, we estimate prevalences of low femoral BMD in women 50 years and older and explore different approaches for defining low BMD in older men in that age range. Low BMD levels were defined in accordance with an approach proposed by an expert panel of the World Health Organization and used BMD data from 382 non-Hispanic white (NHW) men or 409 NHW women ages 20-29 years from the NHANES III dataset. For women, estimates indicate 13-18%, or 4-6 million, have osteoporosis (i.e., BMD >2.5 standard deviations [SD] below the mean of young NHW women) and 37-50%, or 13-17 million, have osteopenia (BMD between 1 and 2.5 SD below the mean of young NHW women). For men, these numbers depend on the gender of the reference group used to define cutoff values. When based on male cutoffs, 3-6% (1-2 million) of men have osteoporosis and 28-47% (8-13 million) have osteopenia; when based on female cutoffs, 1-4% (280,000-1 million) have osteoporosis and 15-33% (4-9 million) have osteopenia. Most of the older U.S. adults with low femur BMD are women, but, regardless of which cutoffs are used, the number of men is substantial.>

Marwick C (1997): NHANES III health data relevant for aging nation [news]. *JAMA* 277, 100-102.

[AGING; NEWS ARTICLE; NHANES II]

McQuillan GM; Khare M; Karon JM; Schable CA; Vlahov D (1997): Update on the seroepidemiology of human immunodeficiency virus in the

United States household population: NHANES III, 1988-1994. J Acquir Immune Defic Syndr Hum Retrovirol 14, 355-360.
[HIV; NHANES III]

<To update the estimate of seroprevalence of HIV from the third National Health and Nutrition Examination Survey (NHANES III), data from the second phase of the survey were combined with previously published data to produce a more precise estimate. The testing was performed anonymously on 11,203 individuals 18-59 years of age examined from 1988 to 1994. Fifty-nine individuals were HIV positive, for an overall prevalence of 0.32%. The number of individuals living in households with HIV infection based on this estimate was 461,000, with a 95% confidence interval of 290,000-733,000. Analysis of nonresponse demonstrated that white and black men 40-59 years of age were least likely to participate in the survey. A sensitivity analysis demonstrated that this nonresponse may have biased the NHANES III estimate downward by 190,000 persons. Data from the second phase of the survey were used to analyze the association between drug use and HIV infection. Black women who used cocaine were 12 times more likely to be HIV positive compared with all tested black women (6.5% vs. 0.55%). This survey provides an estimate of HIV prevalence for individuals who reside in households but excludes some persons who are at higher risk for HIV infection, including prisoners and the homeless not residing in shelters.>

Meltzer AA; Everhart JE (1997): Association between diabetes and elevated serum alanine aminotransferase activity among Mexican Americans. Am J Epidemiol 146, 565-571.
[DRINKING; HHANES]

<Elevated activities of serum aminotransferases are a common sign of liver disease and are observed more frequently among diabetics than in the general population. Whether this association is due to confounding factors is unknown. The authors investigated whether diabetes was significantly associated with elevated serum activity of alanine aminotransferase (ALT) after adjustment for factors common to both diabetes and raised ALT. Data from 2,999 men and women aged 20-74 years representative of the Mexican American population of the southwestern United States were obtained from the Hispanic Health and Nutrition Examination Survey (1982-1984). Approximately 6% of men and 2% of women had elevated serum ALT activity (>43 IU/liter). The odds ratio for diabetes as a predictor of elevated ALT was 4.1 (95% confidence interval 2.3-7.6) adjusted for age and sex, which decreased to 3.0 (95% confidence interval 0.92-9.74) after adjustment for age, sex, body mass index, alcohol consumption, and other factors. In addition to diabetes, body mass index was also significantly ($p < 0.05$) associated with elevated ALT activity. Heavier alcohol consumption and male sex increased the likelihood of elevated ALT, whereas coffee consumption

reduced it. Diabetes and liver injury appear to be associated, even with control for factors in common.>

Merikangas KR; Fenton BT; Cheng SH; Stolar MJ; Risch N (1997): Association between migraine and stroke in a large-scale epidemiological study of the United States. Arch Neurol 54, 362-368.
[MIGRAINE HEADACHES; NHANES; STROKE]

<OBJECTIVE: To examine the association between stroke and migraine in an epidemiological study. DATA SOURCES AND DESIGN: The National Health and Nutrition Examination Survey baseline and first follow-up data were used to investigate cross-sectional and longitudinal associations between headache/migraine and stroke. SETTING: Study participants from a national probability sample of the civilian noninstitutionalized population of the United States. MAIN OUTCOME MEASURE: Self-reported physician diagnosis of stroke. RESULTS: After controlling for established risk factors for stroke (hypertension, diabetes, heart disease, and gender), both migraine and severe nonspecific headache were associated with a significantly increased risk for stroke reported at follow-up. The risk for stroke associated with migraine decreased as the age at stroke increased. CONCLUSIONS: Our results strengthen previous evidence regarding a nonrandom association of both headache and migraine with stroke, particularly among young women. To our knowledge, this is the first systematic examination in a large-scale prospective epidemiological study of men and women with sufficient statistical power to test the association between migraine and stroke in women. Severe headache and migraine should be considered as risk factors for the development of stroke, particularly in the absence of other well-established stroke risk factors. Further investigation is required to identify the putative mechanisms underlying comorbidity of migraine and stroke.>

Mussolino ME; Looker AC; Madans JH; Edelstein D; Walker RE; Lydick E; Epstein RS; Yates AJ (1997): Phalangeal bone density and hip fracture risk. Arch Intern Med 157, 433-438.
[BONE DENSITY; HIP FRACTURE; NHANES I; NHEFS]

<OBJECTIVE: To assess the long-term predictive usefulness of radiographic absorptiometry measurements of phalangeal bone density for hip fracture risk. METHODS: Participants were members of the First National Health and Nutrition Examination Survey Epidemiologic Follow Up Study cohort. Subjects were followed up for a maximum of 16 years. The First National Health and Nutrition Examination Survey data were obtained from a nationally representative sample of non-institutionalized civilians. A cohort of 3481 white and black subjects (1559 white women) aged 45 through 74 years at baseline (1971-1975) were observed through

1987. Ninety-eight percent of the original cohort completed the study. Hospital records and death certificates were used to identify a total of 72 hip fracture cases. Phalangeal bone density at baseline was measured using photodensitometry (PD), and later reanalyzed by radiographic absorptiometry (RA), a newer, more sophisticated technique. RESULTS: Results were evaluated to determine the relative risk for hip fracture per 1-SD decrease in bone density, after controlling for age at baseline, race, gender, weight, and previous fractures. Both RA and PD measurements showed a significant inverse relationship to hip fracture risk, with RA density measurements showing a slightly higher adjusted relative risk per 1-SD density decrease than PD measurements. For RA bone density, the relative risk for all subjects was 1.81 (95% confidence interval, 1.34-2.44) compared with 1.57 (95% confidence interval, 1.19-2.07) for PD bone density after adjusting for age at baseline, race, gender, weight, and previous fractures. Results for white women were essentially the same as those for all subjects for RA bone density and PD bone density. CONCLUSIONS: Phalangeal bone density determined from standard hand x-ray films is a significant predictor of future hip fracture risk. Availability of a valid method to assess fracture risk using conventional radiographs will expand the ability to identify individuals with osteoporosis.>

Obisesan TO; Hirsch R; Kosoko O; Carlson L; Parrott M (1997): Wine consumption is associated with decreased odds of developing age-related macular degeneration in NHANES I - meeting abstract. J Am Geriatr Soc 45, 38-38.

[MACULAR DEGENERATION; NHANES I; WINE]

Ogden CL; Troiano RP; Briefel RR; Kuczmarski RJ; Flegal KM; Johnson CL (1997): Prevalence of overweight among preschool children in the United States, 1971 through 1994. Pediatrics 99, E1.

[HHANES; NHANES I; NHANES II; NHANES III; OBESITY]

<OBJECTIVE: To examine the prevalence of overweight among US preschool children 2 months through 5 years of age between the years 1971 through 1974 and 1988 through 1994. DESIGN: Nationally representative cross-sectional surveys with a physical examination, including measurement of stature, length, and weight. Between 1200 and 7500 children younger than 6 years were examined in each of four different surveys during 1971 through 1974 (first National Health and Nutrition Examination Survey [NHANES I]), 1976 through 1980 (NHANES II), 1982 through 1984 (Hispanic Health and Nutrition Examination Survey), and 1988 through 1994 (NHANES III). RESULTS: The prevalence of overweight increased among some sex and age groups of preschool children between 1971 through 1974 and 1988 through 1994. More than 10% of 4- and 5-year-old girls were overweight in 1988 through 1994 compared with 5.8% in 1971 through

1974. However, there was no change during this period in the prevalence of overweight among 1- and 2- to 3-year-old children. During 1988 through 1994, the prevalence of overweight among children 2 months through 5 years of age was consistently higher in girls than boys. Mexican-American children had a higher prevalence of overweight than non-Hispanic black and non-Hispanic white children. These results parallel what has been reported for older children and adults in the United States. CONCLUSION: These results show that in the last 20 years the prevalence of overweight has increased among 4- and 5-year-old children but not among younger children. These findings suggest that efforts to prevent overweight, including encouragement of physical activity and improved diets, should begin in early childhood.>

Orsi AJ; Grady C; Tax A; McCorkle R (1997): Nutritional adaptation of women living with HIV: a pilot study. *Holist Nurs Pract* 12, 71-79.
[HIV; NHANES II]

<The incidence of human immunodeficiency virus (HIV) infection in women worldwide is increasing rapidly. Assumptions about HIV-related immunologic and nutritional changes are primarily based on data derived from men infected with HIV. The article reports a pilot study designed to examine the immunologic and nutritional responses of a small group of women with HIV infection and to suggest the Roy adaptation model as a framework for understanding HIV-related changes in women. A cross-sectional descriptive design was used to study physiologic mode responses in women seropositive for HIV. Results indicated that the subjects had lower than normal total CD4+ counts. The mean body mass index and midarm muscle area of this cohort of women fell between the 50th and 75th percentiles, and the triceps skinfold thickness was slightly below the 50th percentile, compared with age-matched norms derived from NHANES II data. Although wasting and nutritional problems are common in men with HIV disease the results suggest that women at the midlevel of the disease may not yet have major problems with nutritional adaptation to HIV. Future studies using the Roy adaptation model with larger samples of women who are followed over time are needed to determine whether the decline in physiologic mode adaptation level noted in men infected with HIV is also experienced by women infected with HIV.>

Patterson ML; Stern S; Crawford PB; McMahan RP; Similo SL; Schreiber GB; Morrison JA; Waclawiw MA (1997): Sociodemographic factors and obesity in preadolescent black and white girls: NHLBI's Growth and Health Study. *J Natl Med Assoc* 89, 594-600.
[NHANES II; OBESITY]

<The association of sociodemographic and family composition data with obesity was studied in 1213 black and 1166 white girls, ages 9 and 10,

enrolled in the National Heart, Lung, and Blood Institute's Growth and Health Study. Obesity was defined as body mass index at or greater than age- and sex-specific 85th percentile as outlined in the Second National Health and Nutrition Examination Survey . The prevalence of obesity was higher for pubertal girls than for prepubertal girls and for girls with older mothers/female guardians. As odds ratio of 1.14 was observed for each 5-year increase in maternal age. Obesity was less common for girls with more siblings; the odds for obesity decreased by 14% for each additional sibling in the household. In blacks, the prevalence of obesity was not related to parental employment or to parental education. In whites, the odds of obesity were higher for girls with no employed parent/guardian in the household and for girls with parents or guardians with lower levels of educational attainment. Examining the associations between sociodemographic factors and risk of childhood obesity provides important clues for understanding racial differences in obesity, a major risk factor for coronary heart disease.>

Pegelow CH; Colangelo L; Steinberg M; Wright EC; Smith J; Phillips G; Vichinsky E (1997): Natural history of blood pressure in sickle cell disease: risks for stroke and death associated with relative hypertension in sickle cell anemia. *Am J Med* 102, 171-177.

[HYPERTENSION; NHANES I; NHANES II; SICKLE CELL DISEASE; STROKE]

<PURPOSE: Blood pressure in individuals who have sickle cell disease has been reported to be lower than published normal values. We determine whether and to what degree this is true, using data obtained as part of a large natural history study. PATIENTS AND METHODS: Blood pressure was measured annually for 3,317 subjects with sickle cell disease who were 2 years old or older. Values obtained were compared with those reported by the National Health and Nutrition Examination Survey I and II (NHANES I and II). They were further analyzed with respect to age, sex, height, weight, hematologic diagnosis, blood urea nitrogen and creatinine, stroke, and death. RESULTS: Blood pressure was significantly lower in subjects with sickle cell anemia than published norms for age, race, and sex, a difference that increased with age. It correlated with body mass index, hemoglobin, measures of renal function and age, but the strength of the correlation varied among age and sex subgroups. The risk for occlusive stroke increased with systolic but not diastolic pressure. Mortality was related to elevated blood pressure in males ($P < 0.05$) and to a lesser extent in females ($P = 0.10$). In subjects with hemoglobin SC disease, blood pressure also deviated from normal but to a lesser degree. CONCLUSION: Blood pressure is generally lower than normal in individuals with sickle cell anemia. Those with high values relative to this population had an increased risk of stroke and death. Blood pressure should be monitored but values obtained must be assessed relative to the lower values expected for patients with this

disease. Those with blood pressure values above 140/90 mm Hg should be evaluated and considered for treatment.>

Plankey MW; Stevens J; Flegal KM; Rust PF (1997): Prediction equations do not eliminate systematic error in self-reported body mass index. *Obes Res* 5, 308-314. [BMI; NHANES II]

<Epidemiological studies of the risks of obesity often use body mass index (BMI) calculated from self-reported height and weight. The purpose of this study was to examine the pattern of reporting error associated with self-reported values of BMI and to evaluate the extent to which linear regression models predict measured BMI from self-reported data and whether these models could compensate for this reporting error. We examined measured and self-reported weight and height on 5079 adults aged 30 years to 64 years from the second National Health and Nutrition Examination Survey. Measured and self-reported BMI (kg/m²) was calculated, and multiple linear regression techniques were used to predict measured BMI from self-reported BMI. The error in self-reported BMI (self-reported BMI minus measured BMI) was not constant but varied systematically with BMI. The correlation between measured BMI and the error in self-reported BMI was -0.37 for men and -0.38 for women. The pattern of reporting error was only weakly associated with self-reported BMI, with the correlation being 0.05 for men and -0.001 for women. Error in predicted BMI (predicted BMI minus measured BMI) also varied systematically with measured BMI, but less consistently with self-reported BMI. More complex models only slightly improved the ability to predict measured BMI compared with self-reported BMI alone. None of the equations were able to eliminate the systematic reporting error in determining measured BMI values from self-reported data. The characteristic pattern of error associated with self-reported BMI is difficult or impossible to correct by the use of linear regression models.>

Qureshi AI; Giles WH; Croft JB; Bliwise DL (1997): Habitual sleep patterns and risk for stroke and coronary heart disease: a 10-year follow-up from NHANES I. *Neurology* 48, 904-911. [CHD; NHANES I; NHEFS; SLEEP PATTERNS; STROKE]

<BACKGROUND: Habitual sleep patterns may independently affect morbidity and mortality. However, the effect of habitual sleep patterns on the risk for stroke and coronary heart disease is unclear. METHODS: We evaluated the association between sleep duration and daytime somnolence (often or almost always taking daytime naps) with the incidence of stroke and coronary heart disease in a national cohort of 7,844 adults who participated in the First National Health and Nutrition Examination Survey Epidemiologic Follow-up Study. Cox proportional hazards analyses were used to examine these relationships during the 10-year follow-up. RESULTS: After adjusting for differences in age,

race, gender, education, cigarette smoking, body mass index, serum cholesterol, systolic blood pressure, and diabetes mellitus, the risk for stroke was increased in persons who reported sleeping greater than 8 hours at night compared with persons who slept between 6 and 8 hours (relative risk [RR] = 1.5, 95% confidence interval [CI] = 1.1 to 2.0). Daytime somnolence was also associated with stroke incidence (RR = 1.4, 95% CI = 1.1 to 1.8). Persons who reported both greater than 8 hours of sleep and daytime somnolence were at the greatest risk for stroke (RR = 1.9, 95% CI = 1.2 to 3.1). Similar results were also found for coronary heart disease, although the results did not reach statistical significance in the multivariate adjusted model. CONCLUSIONS: Habitual sleep patterns have significant effects on the risk for stroke.>

Qureshi AI; Giles WH; Croft JB; Stern BJ (1997): Number of pregnancies and risk for stroke and stroke subtypes. Arch Neurol 54, 203-206.

[NHANES I; PREGNANCIES; STROKE]

<OBJECTIVE: To examine the effect of the number of pregnancies on the subsequent risk for stroke and stroke subtypes. DESIGN: Prospective cohort study. PARTICIPANTS: National cohort of 3852 women aged 45 to 74 years who participated in the first National Health and Nutrition Examination Survey Epidemiology Follow-up Study. MAIN OUTCOME MEASURES: Stroke, cerebral infarction, and intracerebral hemorrhage during a 20-year follow-up period. RESULTS: After adjusting for differences in age, women with 6 or more pregnancies were at an increased risk for any type of stroke (relative risk [RR] = 1.7; 95% confidence interval [CI], 1.2-2.3) and cerebral infarction (RR = 1.6; 95% CI, 1.2-2.3). Adjustment for stroke risk factors explained some but not all of the risk associated with pregnancy (RR = 1.3; 95% CI, 0.9-1.9 for all stroke, and RR = 1.3; 95% CI, 0.9-1.9 for cerebral infarction). The rate of intracerebral hemorrhage was 3-fold higher among women who had been pregnant when compared with nulligravida women; however, this finding did not reach statistical significance possibly because of the small number of intracerebral hemorrhages (n = 33). CONCLUSION: The number of pregnancies may influence the risk for stroke, particularly cerebral infarction, in women.>

Rehm JT; Bondy SJ; Sempos CT; Vuong CV (1997): Alcohol consumption and coronary heart disease morbidity and mortality. Am J Epidemiol 146, 495-501. [ALCOHOL; CHD; MORBIDITY; MORTALITY; NHANES I]

<Alcohol consumption is associated with a reduced risk of coronary heart disease (CHD) but an increased risk of other causes of morbidity and mortality. It remains unclear whether there is an upper limit to a protective effect of alcohol intake on CHD risk. Whether there is a U-or

an L-shaped relation between alcohol consumption and CHD incidence (hospitalization and mortality due to ischemic heart disease: International Classification of Diseases codes 410-414) is examined using the National Health and Nutrition Examination Survey I. Baseline data were collected in 1971-1975. Follow-up data through 1987 (14.6 years mean follow-up) were analyzed for 6,788 European-American males (n = 2,960) and females (n = 3,828) aged 40-75 years at baseline. Cox regression was used to assess the association between alcohol consumption and incidence of CHD. For females, an increased risk was found above 28 drinks per week relative to abstainers (relative risk = 2.6, 95% confidence interval 1.2-5.5), which was significant, but was based on small numbers. For males, no upturn in risk was found at higher intake. Mortality data supported these results. Sex differences should be explored further, since they are relevant to understanding causal mechanisms and public policy and prevention.>

Reuben DB; Moore AA; Damesyn M; Keeler E; Harrison GG; Greendale GA (1997): Correlates of hypoalbuminemia in community-dwelling older persons. *Am J Clin Nutr* 66, 38-45.
[ELDERLY POPULATION; HYPOALBUMINEMIA; NHANES I]

<To identify easily ascertainable sociodemographic and health characteristics that are associated with hypoalbuminemia in community-dwelling older persons, we used data from the first National Health and Nutrition Examination Survey . This population-based stratified probability sample survey included 4728 persons aged 55-74 y. We defined hypoalbuminemia in two ways: < 35 g/L (1.2% of the sample) or < or = 38 g/L (7.9% of the sample) and used multivariate logistic models to identify independent predictors of hypoalbuminemia. Older age; receiving welfare; a condition interfering with eating; vomiting > or = 3 d/mo; previous surgery for gastrointestinal tumor; self-reported heart failure; recurring cough attacks; feeling tired or wornout; edentulous, fair, or poor condition of teeth; little or no exercise; a low-salt diet; trouble chewing meat; self-reported protein albumin, blood, or sugar in urine; and current cigarette smoking were independently associated with albuminemia (< or = 38 g/L) or progressively lower albumin concentrations < 40 g/L. Persons with 3-5 of these factors (51.5% of the sample) had an odds ratio of 2.73 (95% CI: 1.64, 4.54) and those with > or = 6 factors (9.4% of the sample) had an odds ratio of 6.44 (95% CI: 3.49, 11.86) of albuminemia < or = 38 g/L compared with those with 0-2 risk factors (39.1% of the sample). These findings suggest that several easily assessed sociodemographic, lifestyle, and disease-related factors are associated with hypoalbuminemia and might be valuable items to include on general health surveys to identify older persons who have this marker of poor health status.>

Robertson PB (1997): Diversity and critical forces in dental education.

J Dent Educ 61, 412-416.
[DENTAL; NHANES III]

<Critical issues that affect dental education and the connection between science and practice include the community, managed patient care, public skepticism and fiscal support, and shifting demography in patterns of oral disease as well as the background of students entering the dental profession. During the past several decades, there have been major shifts in the patterns of oral disease, most recently described in results of the NHANES III dental survey. The diversity and background of students entering the dental profession have changed dramatically as well, and present estimates of change in U.S. population are no less volatile. Funding for dental education in constant dollars is decreasing nationally, with declining support from state and federal sources and a much greater reliance on clinical and development income. Recent recommendations by the Institute of Medicine and Pew Health Commission and reactions to those recommendations by representative dental organizations-particularly the American Dental Association, American Association of Dental Schools, and the American Association of Dental Examiners-have significant implications for the structure of dental education. All of these factors are tempered by the emergence of managed patient care and the implications of that environment to increasing the level of academic excellence of students, improving the quality of care delivered to patients, and enhancing the scholarly contributions of faculty. These forces may represent an opportunity to maintain a well-documented national excellence in oral health care, expand the educational options to meet student demand and interest, increase the biological and behavioral background of our graduates, and explore new educational approaches to preclinical and clinical training.>

Russell LB; Milan E; Jagannathan R (1997): Comparison of two surveys of hospitalization: the National Hospital Discharge Survey and the NHANES I Epidemiologic Followup Study. Vital Health Stat 2 .
[HOSPITALIZATION; NHANES I; NHEFS]

Seidell JC; Flegal KM (1997): Assessing obesity: classification and epidemiology. British Medical Bulletin 53, 238-252.
[NHANES III; OBESITY]

Sempos C; Gillum R; Looker A (1997): Iron and Heart Disease. A Review of the Epidemiologic Data. Title of collective work: Preventive Nutrition. The Comprehensive Guide for Health Professionals. Humana Press, Totowa, New Jersey. [HEART DISEASE; IRON DEFICIENCY; NHANES III]

Siegal MD; Farquhar CL; Bouchard JM (1997): Dental sealants. Who

needs them? Public Health Rep 112, 98-106.
[DENTAL SEALANTS; NHANES]

<Most childhood tooth decay is preventable with a combination of fluoride--which protects the smooth surfaces of a tooth--and dental sealants--which protect tooth surfaces with irregularities called pits and fissures. Sealants are plastic coatings that protect these vulnerable areas, often narrower than a single toothbrush bristle, from decay-causing bacteria and food in the mouth. Yet, 1988-1991 data from the National Health and Nutrition Examination Survey showed that while many children still had cavities, over 80% of which were related to pits and fissures, relatively few children had sealants applied to permanent teeth. As caries has gone from a ubiquitous disease to one affecting only half of children in early elementary school and two-thirds of those who are 15 years of age, dentists must consider how to best target sealants to individual children who are at greatest risk for new disease. Most sealants are placed in private dental offices, but children at greatest risk for problems resulting from tooth decay are least likely to get private care. State and local health departments, therefore, have gone after hard-to-reach children and adolescents through school-based and school-linked sealant programs, often using portable dental equipment. This article focuses on public health strategies for community-based prevention.>

Simmons A; Simpson DE; O'Doherty MJ; Barrington S; Coakley AJ (1997): The effects of standardization and reference values on patient classification for spine and femur dual-energy X-ray absorptiometry. *Osteoporos Int* 7, 200-206.
[NHANES III; SPINE; X-RAY ABSORPTIOMETRY]

<The effect of two methods for standardizing dual-energy X-ray absorptiometry (DXA) measurements on patient classification by the T-score has been determined for a group of over 2000 patients. The methods proposed by the International DXA Standardization Committee and the European Community's COMAC-BME group were used in conjunction with young reference data from the major DXA manufacturers, the COMAC-BME group and the third US National Health and Nutrition Examination Survey (NHANES III). The two standardization techniques produced dissimilar classifications as measured by the kappa statistic ($\kappa = 0.34-0.90$), especially for the femoral neck, with up to 24.3% of patients reclassified from osteopenic to normal and 18.6% reclassified from osteoporotic to osteopenic when the standardization method was changed. Considering the effects of both reference data and standardization techniques together, there was a wide variation of patient classification, with the number of patients classified as osteoporotic varying from 9.6% to 21.1% for the postero-anterior spine L2-4 region and from 2.3% to 27.6% for the femoral neck. The

agreement between different classifications ranged widely, from very poor to excellent ($\kappa = 0.02-0.98$). The creation of standardized reference data must be an important priority in order to harmonize patient management using standardized BMD measurements. The choice of standardization technique, however, must be addressed in light of the results presented here.>

Smith KR; Waitzman NJ (1997): Effects of marital status on the risk of mortality in poor and non-poor neighborhoods. *Ann Epidemiol* 7, 343-349.

[MARITAL STATUS; NHANES; NHEFS; POVERTY]

<PURPOSE: The purpose of this paper is to consider whether the mortality risks associated with marital status are conditioned by the socioeconomic quality of neighborhoods. METHODS: The analysis is based on the first National Health and Nutrition Examination Survey 1971-1974 (NHANES I), and the 1987 NHANES I Epidemiologic Followup Survey (NHEFS). Cox proportional hazards regressions were used to assess whether the effect of marital status on the risk of all-cause and cause-specific mortality is altered by local area poverty. Analyses are stratified by age, sex, and urbanicity. RESULTS: The interaction between neighborhood poverty and marital status is suggested for non-elderly men, particularly for cancer mortality and for men in urban areas. Interaction effects are evident among older women residing in urban areas. CONCLUSIONS: The absence of a spouse elevates the risk of mortality but this risk is moderately higher in impoverished neighborhoods, notably in urbanized areas, for non-elderly men and elderly women. Future studies with larger samples of non-married persons where marital status changes are incorporated are needed to improve our understanding of the joint mortality effects of local area poverty and marital status.>

Sowell A; Carrol M; Huff D (1997): Prevalence of low serum vitamin A concentrations among children in the United States 1988-1994: Results from the third National Health and Nutrition Examination Survey (NHANES III) - meeting abstract. *FASEB J* 11, 1089-1089.

[NHANES III; VITAMIN A]

Steenland K; Johnson J; Nowlin S (1997): A follow-up study of job strain and heart disease among males in the NHANES I population. *Am J Ind Med* 31, 256-260.

[CHD; NHANES I]

<Several studies have associated heart disease with job strain, defined as low job control and high job demands. We have studied incident heart

disease (519 cases) and job strain among 3,575 males in NHANES I survey who were currently employed at baseline in the early 1970s, and followed through 1987. Scores for job control and job demands were assigned to each subject based on current occupation at baseline. Controlling for conventional risk factors, we found no excess risk for those with the highest strain (lowest control and highest demands, rate ratio 1.08). Those with highest job control did have significantly decreased risk (rate ratio 0.71, 95% CI 0.54-0.93). In blue-collar workers (58% of subjects) there was a significant inverse trend in risk with increasing job demands. Control for level of physical activity did not change this finding. A combination of high control and demand was protective among blue-collar workers (odds ratio 0.69, 0.48-0.99). Our findings suggest that class-specific analyses are needed in studying job stress, and that "active" blue-collar workers with high control and high demand are protected against heart disease. The "job demand" variable may measure whether work is challenging rather than fast-paced. Our findings are limited by the use of assigned job scores based on job title.>

Taren DL; deTobara M; Ritenbaugh C; Teufel N; Aickin M (1997): Portion-size differences between the National Cancer Institute's food-frequency questionnaire and the Mexican American portion of the Hispanic Health and Nutrition Examination Survey: Implications for the development of food-frequency questionnaires - meeting abstract. *Am J Clin Nutr* 65, S1342-S1343.
[FOOD QUESTIONNAIRE; HHANES]

Tillotson JL; Bartsch GE; Gorder D; Grandits GA; Stamler J (1997): Food group and nutrient intakes at base-line in the multiple risk factor intervention trial. *Am J Clin Nutr* 65, S228-S257.
[CHOLESTEROL; FATTY ACIDS; NHANES II]

<This chapter relates food and nutrient intakes at baseline to other facets of reported dietary behavior, major risk factors, and sociodemographic characteristics of men in the Multiple Risk Factor Intervention Trial. Intakes of total fat (38.4% of energy), saturated fatty acids (14.2%), and dietary cholesterol (492 mg/d) were similar to amounts seen in the first and second National Health and Nutrition Examination Surveys in the 1970s and were generally lower than findings from studies in the 1960s. There were inverse relations between total serum cholesterol and intakes of total fat, saturated and monounsaturated fatty acids, and dietary cholesterol. These paradoxical associations were largely attributable to findings in the 21% of men who reported following a special diet, indicating that use of such a diet increases with severity of hypercholesterolemia. Fat intake was directly related to number of meals per week eaten away from home, and to cigarette smoking. Patterns of food and nutrient intake were similar for men stratified by baseline blood pressure and antihypertensive treatment. Intake of total energy and

percentages from various dietary fats decreased with age, as did use of sucrose and caffeine. White men consumed more dairy products than did other ethnic groups, whereas black men consumed more eggs, sugars, and sweets. Asians had the highest intake of cereal foods. Those with more education ate less high-fat meat products, more fruit, and more polyunsaturated oils, but also more high-fat dairy products and less breads and cereals; they also drank more alcohol.>

Vargas CM; Burt VL; Gillum RF (1997): Cardiovascular disease in the NHANES III. *Ann Epidemiol* 7, 523-525.
[CVD; NHANES III]

Vargas CM; Burt VL; Gillum RF; Pamuk ER (1997): Validity of self-reported hypertension in the National Health and Nutrition Examination Survey III, 1988-1991. *Prev Med* 26(5, Pt 1), 678-685.
[HYPERTENSION; NHANES III]

<BACKGROUND: The National Health and Nutrition Examination Survey (NHANES) is the main data source for hypertension surveillance. However, because of a gap of almost 10 years between each NHANES, self-reported data from annual surveys need to be examined as an alternative data source. This study analyzes the validity of self-reported hypertension in a national sample of non-Hispanic whites, non-Hispanic blacks, and Mexican-Americans. METHODS: Sensitivity, specificity, and predictive values positive (PVP) and negative (PVN) of self-reported hypertension were calculated against two definitions of hypertension: the definition recommended by the Third Joint National Committee on Hypertension, JNC III (blood pressure \geq 140/90 and/or taking antihypertension medication) and a broader definition including control with lifestyle modifications. Data used come from the NHANES III, 1988-1991. RESULTS: Overall test characteristics using the JNC III definition are sensitivity 71%, specificity 90%, PVP 72%, and PVN 89%. Test characteristics were consistently higher for the broad than for the JNC III definition. Validity of self-reported hypertension is higher among women than among men and among persons with a medical visit during the past year than among those with no visits: validity was lowest among Mexican-American men. Due to the similarity between sensitivity and PVP, the prevalence of self-reported hypertension is nearly equal to the prevalence of JNC III-defined hypertension. CONCLUSIONS: Self-reported hypertension may be used for surveillance of hypertension trends, in the absence of measured blood pressure, among non-Hispanic whites and non-Hispanic black women and persons with a medical visit in the past year. Validation should be repeated with each NHANES.>

Verbrugge LM; Rennert C; Madans JH (1997): The great efficacy of personal and equipment assistance in reducing disability [see comments]. *Am J Public Health* 87, 384-392.

[DISABILITIES; NHANES I; NHEFS]

<OBJECTIVES: Personal and equipment assistance are common strategies to reduce disability. This study sought to determine how often assistance reduces or even completely resolves health-related difficulties in everyday tasks. METHODS: Data are from the NHANES I Epidemiologic Followup Study. Adults aged 35 to 90 reported difficulty doing 12 everyday tasks on their own without assistance. Those stating that they had much difficulty or were unable were asked if they had personal assistance and/or equipment assistance, and their degree of difficulty with assistance. Use and efficacy of assistance are studied by gender, age, intrinsic (unassisted) degree of difficulty, and type of assistance. RESULTS: Most people use assistance for the 12 tasks; "personal assistance only" is the principal type used for upper-extremity and body transfer tasks; "equipment only" ranks first for lower-extremity tasks. Assistance reduces difficulty for the great majority of persons (75% to 85%) and completely resolves difficulty for about 25%. Equipment only proves to be the most efficacious strategy for reducing and resolving limitations. CONCLUSIONS: Equipment's success may be due to greater perceived gains when people accomplish the assistance by themselves.>

Wagener DK; Walstedt J; Jenkins L; Burnett C; Lalich N; Fingerhut M (1997): Women: work and health. Vital Health Stat 3 (31), 1-91. [HEALTH BENEFITS; NHANES; NHIS; WOMEN]

<This report describes the sociodemographics, household characteristics, and health of women according to workforce status and job conditions. The report also presents data on men for comparison. METHODS: This report combines data from numerous data systems, including: The National Health Interview Survey, National Health and Nutrition Examination Survey, National Maternal and Infant Health Survey, National Hospital Ambulatory Medical Care Survey, National Traumatic Occupational Fatalities Surveillance System, and the National Occupational Mortality Surveillance System, which are conducted by the U.S. Department of Health and Human Services; the Census of Fatal Occupational Injuries and Annual Survey of Occupational injuries and illnesses conducted by the U.S. Department of Labor; and the Current Population Survey conducted by the U.S. Department of Commerce. The report also presents selected tables from publications of the Women's Bureau and the Bureau of Labor Statistics, U.S. Department of Labor. RESULTS: The report presents summary data on physical conditions and exposures, health conditions attributed to work, other health conditions that impact on work, health promotion in the workplace, and health-related benefits provided by employers. Most estimates are shown according to sex, age, race, ethnicity, educational attainment, and major occupational group.>

Wallace LA (1997): Human exposure and body burden for chloroform and other trihalomethanes. *Critical Reviews in Environmental Science and Technology* 27, 113-194.

[CHLOROFORM; NHANES; TRIHALOMETHANES]

<Existing information on human exposure to chloroform and other trihalomethanes (THMs) in air, water, and food is summarized. Three major surveys have collected data on chloroform levels in finished water at treatment plants. EPA's TEAM Studies have measured concentrations of THMs in residential drinking water and in personal, indoor, outdoor, and expired air from about 800 participants in eight cities. The Food and Drug Administration has surveyed chloroform levels in food and beverages. Recently, the Centers for Disease Control (CDC) have completed measuring blood levels of THMs in about 1000 participants in the National Health and Nutrition Examination Survey (NHANES). Exposure occurs through ingestion (drinking tap water and soft drinks and eating certain dairy foods), inhalation (breathing peak amounts of chloroform emitted during showers or baths, and lower levels in indoor air from other indoor sources), and dermal absorption (during showers, baths, and swimming). Each of these routes of exposure appear to be potentially substantial contributors to total exposure. The major source of exposure to chloroform is chlorination of water supplies. This results in exposure through ingestion of drinking water, but also through inhalation and skin absorption as a result of the myriad other uses of chlorinated water in the home: showers, baths, washing clothes and dishes, etc. Because chlorinated water supplies are used by bottling plants of soft drink manufacturers, even the chloroform found in beverages may be partially due to the chlorination of water supplies. Other sources of exposure, which can be important for specific groups of people, include chlorination of swimming pools, industrial production and use, and use of bleach during clothes washing.>

White LL; Ballew C; Gilbert TJ; Mendlein JM; Mokdad AH; Strauss KF (1997): Weight, body image, and weight control practices of Navajo Indians: findings from the Navajo Health and Nutrition Survey. *J Nutr* 127(10, Suppl), 2094S-2098S.

[NAVAJO; NHANES II; OBESITY]

<Historically, the Navajo exhibited a low prevalence of overweight, but a number of small studies over the past few decades indicate that the prevalence is increasing. In the population-based Navajo Health and Nutrition Survey conducted in 1991-92, overweight was defined as a body mass index (BMI, kg/m²) at or above the 85th percentile (BMI > 27.8 for men, > 27.3 for women) of the Second National Health and Nutrition Examination Survey . One third of men age 20 and 39 and one

half of men age 40 and 59, but fewer than 10% of men age 60 and older were overweight. Two thirds or more of women in all age groups were overweight. Nineteen percent of the participants underestimated their weight status (underweight, appropriate, overweight) relative to their BMI category and 17% overestimated their weight status. Women overestimated their weight status more often than men ($P < 0.05$), and participants age 20-39 overestimated their weight status more often than older participants ($P < 0.001$). Men and women age 60 and older preferred heavier body shape models as ideals of health more often than younger participants ($P < 0.001$). Nearly half of the participants, regardless of their weight status, reported that they were trying to lose weight; most reported using diet and exercise. Because overweight is an important risk factor for many chronic diseases, including diabetes mellitus, cardiovascular disease and cancer, primary prevention of overweight and weight management for adults are recommended to prevent an increase in the burden of chronic disease among the Navajo.>

Wilcox AJ; Gartside PS (1997): Validity of 24-h dietary recall data from examinees in the second National Health and Nutrition Examination Survey - meeting abstract. *Am J Clin Nutr* 65, S1344-S1344.
[DIETARY RECALL; NHANES II]

Wolfe WS; Sobal J; Olson CM; Frongillo EA Jr (1997): Parity-associated body weight: modification by sociodemographic and behavioral factors. *Obes Res* 5, 131-141. [BMI; NHANES II]

<This research examines the association between parity and body weight and how this relationship is modified by sociodemographic and behavioral factors. Using multiple linear regression analysis, the study assessed the relationship between parity and relative body weight (as Body Mass Index, BMI) and how this relationship interacts with seven sociodemographic and seven behavioral factors in a national sample of 5,707 women from the second National Health and Nutritional Examination (NHANES II) survey. After adjusting for sociodemographic factors, the amount of weight associated with parity averaged about 0.5 kg per child. However, parity-associated weight differed by sociodemographic and behavioral factors, and was much larger in some subgroups. Among 18-45 year olds, the amount of weight associated with parity was greater in blacks than in whites, less in employed than unemployed white women but greater in employed than unemployed black women, less in smokers than nonsmokers, less in those with a high level of recreational exercise, and differed with the level of nonrecreational physical activity depending on race. Among 46-74 year olds, the amount of weight associated with parity was greater in married than unmarried women, and less in those who were active outside of

recreation versus those who were less active. These results suggest that sociodemographic and behavioral variables modify the relationship between parity and body weight, and provide insight for identifying women who are at risk for having greater BMI with higher parity. This information may be applicable to the targeting and design of interventions to prevent postpartum weight retention.>

Wolfe WS; Sobal J; Olson CM; Frongillo EA Jr; Williamson DF (1997): Parity-associated weight gain and its modification by sociodemographic and behavioral factors: a prospective analysis in US women. *Int J Obes Relat Metab Disord* 21, 802-810.
[NHANES I; NHEFS; WEIGHT]

<OBJECTIVE: To examine how the relationship between parity increase and weight gain is modified by sociodemographic and behavioral factors. DESIGN: Prospective longitudinal data from the first National Health and Nutrition Examination Survey (NHANES I, 1971-75) and its follow-up of those aged 25 y and older, the NHANES I Epidemiologic Follow-up Survey (NHEFS, 1982-84). SUBJECTS: The analytical sample was nationally representative of the United States and included 2952 white or African-American non-pregnant women aged 25-45 y at baseline, who were re-measured approximately 10 y later. MEASUREMENTS: Statistical interactions in multiple linear and logistic regression models were examined to identify how eight sociodemographic and three behavioral factors modified the effect of parity increase on body weight change and risk of substantial weight gain. RESULTS: Factors that increased parity-associated weight gain included being African-American, living in a rural area, not working outside the home, having fewer children, lower income and lower education, and being unmarried. Among white women, being younger and having higher body weight at baseline increased parity-associated weight gain, while among African-American women, being older and having lower body weight increased parity-associated weight gain. African-American smokers gained less weight with an increase in parity, while the interactions between smoking and physical activity with parity-associated weight gain in whites were complex. CONCLUSION: The effects of sociodemographic and behavioral factors on parity-associated weight gain varied by race and parity change, with the most consistent findings being that unmarried and unemployed white women had greater parity-associated weight gain, while both white and African-American women who smoked, had higher education, or higher parity had lower parity-associated weight gain. This information may contribute to better targeting and more effective interventions to prevent postpartum weight retention.>

Yanovski SZ; Reynolds JC; Boyle AJ; Yanovski JA (1997): Resting

metabolic rate in African-American and Caucasian girls. *Obes Res* 5, 321-325.

[AFRICAN AMERICANS; CAUCASIAN; FEMALES; NHANES I; RMR]

<Recent studies have found a lower resting metabolic rate (RMR) in African-American (AA) women with obesity as compared with Caucasian (C) women with obesity. It is unknown if this difference in RMR is seen in prepubertal girls or in those of average body weight. Therefore, we studied RMR in 21 AA and 24 C girls, ages 7-10, who were well matched for age, weight, body mass index (BMI), and pubertal status. All had BMI between 15% and 85% for age and race, based on data from the first National Health and Nutrition Examination Survey . Fat free mass (FFM) was measured by dual-energy X-ray absorptiometry. RMR was measured with a Deltatrac indirect calorimeter under controlled conditions after the subjects underwent an overnight fast. The slopes of the regression equations were similar for both groups ($p = 0.7$). After adjustment for FEM, the AA girls had a significantly lower RMR than did the C girls (-92 ± 32 kcal/d, $p = 0.007$ by analysis of covariance). This significance was maintained after exclusion of total body bone mineral content. These data suggest that normal-weight prepubertal AA girls may have reduced resting energy expenditure compared with C girls.>

Yip R; Limburg P; Ahlquist D; Carpenter H; O'Neil A; Kruse D; Stitham S; Gold B; Gunter E; Looker A; et al. (1997): Pervasive occult gastrointestinal bleeding in an Alaska native population with prevalent iron deficiency: role of *Helicobacter Pylori* gastritis. *JAMA* 277, 1135-1139.

[GASTROINTESTINAL; HELICOVACTER PYLORI; NHANES III]

Yong LC; Brown CC; Schatzkin A; Dresser CM; Slesinski MJ; Cox CS; Taylor PR (1997): Intake of vitamins E, C, and A and risk of lung cancer - The NHANES I Epidemiologic Followup Study. *American Journal of Epidemiology* 146, 231-243.

[LUNG CANCER; NHANES I; NHEFS; VITAMINS]

<The relation between the dietary intake of vitamins E, C, and A (estimated by a 24-hour recall) and lung cancer incidence was examined in the first National Health and Nutrition Examination Survey Epidemiologic Followup Study cohort of 3,968 men and 6,100 women, aged 25-74 years. During a median follow-up period of 19 years (from 1971-1975 to 1992), 248 persons developed lung cancer. Adjusted for potential confounders using Cox proportional hazards regression methods with age as the underlying time variable, the relative risk of lung cancer for subjects in the highest quartile of vitamin C intake compared

with those in the lowest quartile was 0.66 (95% confidence interval (CI) 0.45-0.96). For vitamin A intake, a protective effect was observed only for its fruit and vegetable component (carotenoids) among current smokers (relative risk = 0.49, 95% CI 0.29-0.84), but this was modified by the intensity of smoking (a statistically significant effect (relative risk = 0.33, 95% CI 0.13-0.84) was observed only for those in the lowest tertile of pack-years of smoking). The vitamin E intake-lung cancer relation was modified by the intensity of smoking with a significant protective effect confined to current smokers in the lowest tertile of pack-years of smoking (relative risk = 0.36, 95% CI 0.16-0.83). Overall, there was no additional protective effect of supplements of vitamins E, C, and A beyond that provided through dietary intake. When vitamin E, vitamin C, and carotenoid intakes were examined in combination, a strong protective effect was observed for those in the highest compared with those in the lowest quartile of all three intakes (relative risk = 0.32, 95% CI 0.14-0.74). These data provide support for a protective role of dietary vitamins E and C and of carotenoids against lung cancer risk but with a modification in effects by the intensity of cigarette exposure. While smoking avoidance is the most important behavior to reduce lung cancer risk, the daily consumption of a variety of fruits and vegetables that provides a combination of these nutrients and other potential protective factors may offer the best dietary protection against lung cancer.>

Zephier EM; Ballew C; Mokdad A; Mendlein J; Smith C; Yeh JL; Lee E; Welty TK; Howard B (1997): Intake of nutrients related to cardiovascular disease risk among three groups of American Indians: the Strong Heart Dietary Study. *Prev Med* 26, 508-515.
[AMERICAN INDIANS; CVD; NHANES III]

<BACKGROUND: Although diet is implicated in the elevated rate of cardiovascular disease among some American Indian tribes, the dietary intakes of these individuals have not been described. The Strong Heart Dietary Study compared diets of 10 tribes in Arizona, Oklahoma, and the Dakotas to examine the possible contribution of diet to cardiovascular and other chronic diseases. METHODS: During 1988-1991, 892 people responded to a 24 hr diet recall questionnaire. Nutrient intake by study area, sex, and age group were compared by analysis of variance, and intakes were compared with nutrient intakes reported by participants in Phase 1 of the third National Health and Nutrition Examination Survey and with dietary recommendations of the National Research Council, the American Heart Association, and the Healthy People 2000 objectives. RESULTS: The intake of energy and nutrients varied significantly by sex and age. Men consumed more energy, macronutrients, and sodium than did women ($P < \text{or} = 0.001$). Women's diets were denser in carbohydrate, beta-carotene, vitamin C, and vitamin E than were men's diets ($P < \text{or} = 0.001$). Younger participants consumed more energy, macronutrients,

vitamin E, and sodium than did older participants ($P < \text{or} = 0.001$). Older participants had diets denser in protein and beta-carotene than did younger participants ($P < \text{or} = 0.001$). Energy intake did not differ significantly by study area, but men in Arizona consumed more energy from carbohydrate and less energy from total fat than did men elsewhere ($P < \text{or} = 0.01$). Men and women in Arizona consumed more cholesterol and fiber than did other participants ($P < \text{or} = 0.01$) and less of the antioxidant vitamins ($P < \text{or} = 0.01$). Participants in the Strong Heart Diet Study reported diets higher in fats and cholesterol than did participants in Phase 1 of the Third National Health and Nutrition Examination Survey. Few Strong Heart participants achieved dietary recommendations for the reduction of risk of chronic disease. CONCLUSIONS: Area differences in nutrient intake were observed, but most participants consumed diets associated with increased risk of heart disease and other chronic diseases. Women and older participants in general reported healthier nutrient intakes. Dietary intervention programs should educate American Indians about dietary modifications to reduce the risk of cardiovascular and other nutrition-related disorders.>