Society for Social Medicine

The 37th Annual Scientific Meeting of the Society for Social Medicine was held in Cambridge between 8 and 10 September 1991; abstracts of papers selected for oral and poster presentation are set out below.

Oral Presentations

THE HEALTH AND LIFESTYLE SURVEYS
(UNIVERSITY OF CAMBRIDGE)

The Health and Lifestyle Surveys 1984/5 and 1991/2—Methodology and access to the data

JUDITH NICKSON (Department of Community Medicine, University of Cambridge)

Objective of the survey—To examine the relationship of lifestyles, behaviours, and circumstances to the physical and mental health of a large representative sample of the British population.

Setting—England, Wales, and Scotland.


Presentation—The presentation will aim to describe the methodology of the Health and Lifestyle Survey 1984/5 (HALS1), giving a brief outline of the sampling strategy and response rates, and detailing the topics covered in the questionnaires. The HALS1 population was “flagged” with the central NHS register at OPCS, Southport, and mortality data and cancer registration information are being accumulated at Cambridge. The follow up survey (HALS2) will be described, including changes to the questionnaire, coding schemes, etc.

Access to data—The HALS1 data have been deposited at the Economic and Social Research Council data archive at the University of Essex, as a large rectangular ASCII dataset. To enable ease of analysis using SPSS, the “DATA LIST”, “VARIABLE LABELS”, and “VALUE LABELS” definitions are provided. An accompanying manual is available at minimal cost. It is currently anticipated (May 1993) that the mortality data and the HALS2 dataset will be deposited at the archive in the autumn of 1993.

Conclusion—This unique longitudinal survey of a nationwide sample of British adults of all ages offers an opportunity for workers in a wide range of disciplines to explore relationships between lifestyle, behaviour, and circumstances.

Seven year changes in self reported health association with social and demographic factors

VIRGINIA J SWAIN (Department of Community Medicine, University of Cambridge)

Objective—To identify changes in self reported illness and personal evaluation of health status of men and women taking part in the two Health and Lifestyle Surveys (HALS1 and HALS2).

Setting—England, Scotland, and Wales.

Main outcome measures—Reported disease, self assessed health status, and associated social and demographic factors.

Subjects—A total of 5352 respondents followed up from the 9003 randomly selected adults (aged 18 and over), studied in 1984/5 and 1991/2.

Results—Using a checklist format, respondents were asked to identify diseases and conditions “ever suffered from”. Some diseases have shown a considerable increase. The proportion of men and women reporting asthma went up from 6·5% to 9·1% and 5·0% to 8·6% respectively. Similarly, diabetes has risen from an overall figure of 1·9% in HALS1 to 2·1% for HALS2. The greatest proportional increase occurring in the over 60 age group. This has also been confirmed in those respondents who were taking prescribed medication and who were visited by a nurse as part of the study. ME, or post-viral fatigue syndrome, not asked about in HALS1, and for which there is relatively little epidemiological information, has been reported by 1·0% of the male and 2·0% of the female HALS2 population. When asked to continue their health diaries that seven years ago, approximately one fifth in the age groups below 60 years said it was better. Manual groups were more likely to report a worsening of health except in the youngest men where manual workers seem to have experienced greater improvement than their non-manual counterparts.

Conclusion—Despite the rise in illness and disease that is to be expected in a population seven years older, some diseases have shown a noticeable increase which, amongst other things, could have implications for future health provision. Investigating reported incidence of disease and subjective health status alongside social and demographic changes may provide greater understanding of some of the protective and risk factors already known to be associated with health and ill health.

Changes in respiratory function and its association with smoking behaviour and social factors in the Health and Lifestyle Surveys

BRIAN D COX (Department of Community Medicine, University of Cambridge)

Objective—To assess the seven year changes that have taken place in measured respiratory function and the relationship of the changes to smoking and socioeconomic factors.

Design—Measurement of respiratory function using a portable electronic spirometer and collection of anthropometric data by a nurse. Smoking and socioeconomic data were collected by a structured questionnaire at interview.

Setting—The respondents’ own home in 396 electoral wards in Great Britain surveyed in 1984/5 and 1991/2.

Subjects—A total of 1792 men and 2198 women who had successful respiratory function measures in both Health and Lifestyle surveys (1984/5 and 1991/2), and aged between 18 and 99.

Main outcome measures—Forced expiratory volume in one second (FEV1), relation to predicted values, height, age, sex, respiratory medications, smoking status, and socioeconomic group.

Results—Over seven years, respiratory function values changed in relation to age and to smoking behaviour. Smokers of all ages in 1984/5 had poorer lung function values than non-smokers and ex-smokers. Heavy regular smokers had poorer values than light regular smokers. There was a more rapid deterioration of FEV1 over seven years in regular smokers than non-smokers. Those who had stopped heavy regular smoking between the surveys had the poorest initial lung function (mean 84% of predicted value). There was evidence of some recovery of lung function towards predicted values with stopping smoking. Older respondents in manual work had poorer lung function values than non-manual workers, even allowing for smoking behaviour. There was an increase in the percentage of measured respondents who were being treated for respiratory problems—from 2·9% to 5·4% in men and 2·0% to 4·1% in women. These changes occurred mainly in those under 25 and those aged over 54 in 1984/5.

Conclusion—Some recovery of lung function as measured by FEV1, in relation to predicted values was observed in those smokers quitting smoking between 1984/5 and 1991/2. Lung function values for heavy smokers deteriorated most. The increase in prescribed medications for respiratory problems may indicate greater surveillance, changes in diagnosis and treatment, or an increase in the incidence of respiratory conditions. The poorer lung function values seen in manual groups may be due in part to dietary considerations identified in HALS1.

Influence of health promotion on eating habits in Health and Lifestyle Survey respondents between 1984/5 and 1991/2

MARGARET J WHICHELLOW (Department of Community Medicine, University of Cambridge)

Objective—To evaluate changes in eating habits in respondents interviewed in both Health and Lifestyle Surveys.

Design—A longitudinal survey of a nationwide sample of British adults.

Setting—England, Scotland, and Wales.

Main outcome measures—Age, sex, socioeconomic group, frequency of consumption of foods, food knowledge.

Subjects—A total of 5352 respondents followed up from 9003 randomly selected adults of all ages studied in 1984/5 (HALS1) in 1991/2 (HALS2).

Results—A noticeable reduction in the number of respondents reporting “frequently” eating foods with a high fat content was found at the seven year follow up. The proportion frequently eating fried food fell from 59% in HALS1 to 42% in HALS2. The decreases for other foods were: chips from 63% to 51%, eggs from 83% to 71%, meat products from 57% to 45%, and carcass meat from 46% to 29%. The proportion choosing butter and block margarine fell from 70% to 36%, with a correspondant rise in the number using polyunsaturated margarine and low fat spreads. Semiskimmed or skimmed milk was drunk by 16% of respondents in HALS1 but by 53% in HALS2. The trends were consistent across all ages and in both non-manual and manual groups and in both sexes. A rise in the proportion frequently eating poultry and pasta and rice were observed, but there was little change in the frequency of eating fruit, salads, or vegetables.

Changes in respiratory function and its association with smoking behaviour and social factors in the Health and Lifestyle Surveys
Conclusions—The marked changes in eating habits in the seven years between the two Health and Lifestyle Surveys, with a reduction in the consumption of high fat foods, suggest that the “look after your heart” campaigns have been effective. Although the recommendations are for an increase in the consumption of dietary fibre, and despite finding that respondents’ knowledge of fibre containing foods had increased by HALS2, there was little change in the frequency of consumption of high fibre foods.

Indicators of mortality in Health and Lifestyle Survey respondents

A TONY PREVOST, MILDRED BLAXTER (Department of Community Medicine, University of Cambridge)

Objective—To assess demographic and behavioural associations with mortality in the subsequent seven years in the 1984/5 Health and Lifestyle Survey population.

Sample—Notification of death from the Office of Population Censuses and Surveys (OPCS), and other sources, of respondents taking part in a cross sectional, three stage cluster sample survey of 12 254 households.

Setting—England, Scotland, and Wales.

Subjects—The survival status seven years on was known for 9880 of the 9903 respondents.

Main outcome measures—Death within seven years, sex, age, region of residence, marital status, Registrar General’s social class, smoking status, disease state, self assessed health, psychosocial malaise, and the thirty question General Health Questionnaire psychiatric symptoms score.

Results—There were 808 deaths in the seven year period. In England and Wales 366 deaths were observed among 3371 males compared with 388 expected on the basis of the OPCS rates published in Population Trends; and 354 deaths were observed out of 4418 females compared with 358 deaths expected. All comparisons take account of age and were calculated separately for each sex. There were regional variations in mortality for both sexes, with northern regions experiencing higher mortality than southern regions: odds ratio of 1.56 (p<0.001) for males and 1.24 (p<0.10%) for females. There were considerable variations in mortality within the northern regions. Other significant indicators include social class (p<0.1% for male, p<5% for female), smoking (p<0.1%), and, controlling for existence of known disease at the time, self assessed health (p<0.1%), psychosocial malaise, and psychiatric symptoms for those aged 65 or over.

Conclusions—These preliminary results show how useful a large national sample survey can be in demonstrating the associations of a wide range of lifestyle and behavioural factors with subsequent mortality.

Changes in cognitive function in a social context

FELICIA A HUPPERT, JOYCE E WHITTINGTON (Department of Psychiatry, Addenbrooke’s Hospital, Cambridge and Department of Community Medicine, University of Cambridge)

Objective—To examine changes in performance of tests of reaction time, memory, and reasoning in an adult population sample over a seven year period, and to determine the extent to which such changes are related to social circumstances, as well as demographic and intrinsic variables.

Design—In the Health and Lifestyle Surveys (HALS1 and HALS2), seven years apart, an adult population sample was interviewed in their own home by a lay interviewer, and subsequently a nurse who administered a number of cognitive tests.

Setting—HALS1 comprised a representative random sample of adults aged 18 and over in England, Scotland, and Wales, sampled from electoral rolls and HALS2, and mean change in performance by major demographic variables (age, sex, education, social class) and selected social variables (eg marital status, dependent children, household composition, leisure activities).

General findings—The retested subsample was found as expected to perform better than the parent HALS1 population.

Conclusions—While the relationship between performance on tests of cognitive function and basic demographic variables such as age and education is well known, and the relationship to sex is more controversial, little attention has previously been paid to the relationship between social circumstances and cognitive function. The results from this large population sample have provided a unique opportunity to study such associations both cross sectionally and longitudinally. Questions are raised about the direction of the relationship between social disadvantage and cognitive impairment. Variables are also identified which are associated with the maintenance of high cognitive performance. This research identifies the need to include cognitive tests in surveys as indicators of general health in future health promotion agendas.

Main outcome measures—Frequency of selected life events reported over a one year period, by age and sex; total numbers of life events and resulting stress, by chronic diseases, illness symptoms, and scores on mental health questionnaire (GHQ-30), personality (EPI), and selected social factors.

Adverse life events—Subjects in adverse social circumstances report more adverse life events and/or more distress caused by life events. We examine whether this relationship remains true when life events are subdivided into those over which one has little or no control (eg illness or death of relative) and those where some influence may be exerted (eg problems with work). The roles of personality and social support are examined as possible mediators of the degree of stress reported following selected life events. The characteristics of those reporting positive life events (in response to an open ended question) are examined.

Conclusions—The life events measure which we employed combines a conventional checklist approach with a more qualitative approach which elicits the severity of symptoms of distress or disruption associated with events in a manner which may be an informative approach for survey methodology and this study highlights the complex interplay of factors associated with the occurrence and reporting of events, and the complex effects which life events appear to exert on physical and mental well being.

Seven years on: impact of attrition on a follow up of the 1984/5 Health and Lifestyle Survey sample

P CAMPANELLI, R GRAY, P PRESCOTT-CLARKE, K DEEPCHAND (Social and Community Planning Research, London)

The Health and Lifestyle Survey (HALS) is the national sample survey of adults in Great Britain. Two rounds have been conducted, the first in 1984-85 and a follow up in 1990. Each round consisted of a survey interview followed by a physical examination and self completion questionnaire. Since the 1984-85 survey was originally designed as a “within person” survey, no attempt was made to stay in contact with the 9003 respondents. Therefore, a fairly elaborate tracing operation was mounted in order to find the respondents for the 1990 follow up.

A major concern for any longitudinal sample survey is the possible impact of attrition on analytic results. For example, systematic response biases may occur because persons with particular characteristics are more traceable and/or cooperative than those with other characteristics. The extent of the bias depends also on the proportion of cases who are lost along the way.

The current project was designed to explore the impact of attrition on the HALS study. This information was needed for two reasons. First, it was felt that such analyses would serve as a valuable source of information for users of the data. Second, the analyses could serve to advance general knowledge about survey non-response errors. Several studies have examined the characteristics of “non-responders” and the problems of non-response in general panel studies. The effects of attrition in a health panel study are less well documented. As an example, it is likely that the factors and the level of resulting bias will differ depending on the stage of attrition in question. The types of persons who say “no” to a physical measurement may be different from those who refuse...
to fill in a self completion questionnaire or cooperate in a survey interview.

The key questions which are addressed in this paper are: (1) are the people who are lost at each stage of data collection different from those who remain? (2) what is the resulting level of sample bias and what is the implication of this bias? Analyses focus separately on each stage of data collection and major type of non-response (not traced, refused, deceased) with the goal of building several multivariate profiles of "non-responders". Question (1) is addressed by examining a sample of the types of variables included in the survey (including demographic, attitudinal and health measures; physiological measures; and measures of cognitive functioning). Question (2) is addressed by looking at the impact of bias on key dependent and independent variables used in HALS analyses.

### METHODOLOGY OF HEALTH CARE EVALUATION

#### Outcome of health service interventions: a methodological innovation for non-randomised studies

M JOFFE. (Academic Department of Public Health, St Mary's Hospital Medical School, London)

**Objective**—To describe an innovative methodology for evaluating health service interventions, illustrating its use with an actual analysis.

**Background**—It is generally agreed that outcomes on the effectiveness and appropriateness of health service interventions is required. Randomised controlled trials are not applicable to all situations. A method of analysis is presented which overcomes the usual problems of non-randomised studies. The specific analysis presented set out to answer the question: What is the optimal caesarean section rate? Different patient units are grouped into categories by caesarean section rate, and the comparability of risk of the populations served is documented. Units having different implicit thresholds for intervention are compared in relation to a range of outcome variables. The use of units rather than individual patients removes the most serious problems associated with non-randomised studies. Grouping of units shifts the focus from the anecdotal to the systematic, and improves comparability. As a check on the cut-points, a sensitivity analysis is carried out.

**Setting**—All maternity units in the North West Thames Regional Health Authority.

**Subjects**—Perinatal mortality analysis: all deliveries in 1983–87 (excluding babies with severe malformations) (n=221 867; 1462 deaths). Using the St Mary's Maternity Information System (SMMIS); all women with singleton pregnancies who delivered in 1988 (n=36 727).

**Outcome measures**—Fetal: perinatal mortality. Apgar scores at one and five minutes, onset of respiration after one minute; maternal: postnatal transfusion, postnatal infection, thromboembolism, low haemoglobin at discharge, peripartum psychosis.

**Results**—The findings suggested that caesarean section rates in many general maternity units could safely be decreased for this reason by a whole, but that a more interventionist approach may be indicated for very low birthweight infants.

**Conclusion**—If confirmed, these recommendations could easily be incorporated into clinical audit. Using a similar method, a subsequent change in practice could be monitored for its effects on outcomes.

### Problems of using overall pooled odds ratio in meta-analysis: the case of cholesterol lowering and total mortality

G DAVID SMITH, T A SHELDON. 1 Department of Public Health, University of Glasgow; 2 Centre for Health Economics, University of York

Randomised controlled clinical trials, while representing the "gold standard" for effectiveness evaluation, suffer from a lack of generalizability. Women, ethnic minorities, the elderly, and patients with comorbidities are frequently not represented among the subjects of these trials and the application of their findings to these groups is often questionable. Similarly, clinical trials are often conducted in specialised settings. Analysis of patient databases has become an increasingly popular method for evaluating the effectiveness of treatments in a wider range and with the full range of patients who actually receive treatment. In the USA the combination of the results of database analyses with the results of randomised controlled trials, in a process labelled "cross design synthesis", has been strongly advocated by the General Accounting Office. The improvement of administrative patient databases for this purpose, together with the development of mathematical techniques for predicting outcomes in groups not included in randomised trials, are central features of this strategy. Routine outcomes data are also used to compare the quality of care provided by institutions and individuals, practitioners, increasingly presented in the form of "league tables". This paper will advance the view that usually these database analyses are, in reality, examples of analytical epidemiology carried out under maximally unfavourable conditions. They are therefore subject to a range of confounding and biases that are not adequately addressed in the resulting estimation of effectiveness and incorrect ranking of providers. Examples will be presented from non-medical interventions for coronary heart disease, prostatectomy, and the evaluation of mammography for women under 50.

The implications for effectiveness research and quality assurance will be discussed.


### Problems of using overall pooled odds ratio in meta-analysis: the case of cholesterol lowering and total mortality

T A SHELDON, 1 F SONG, 1 G DAVID SMITH 1 (Centre for Health Economics, University of York; 2 Department of Public Health, University of Glasgow)

**Aim**—To illustrate the limitations of using an overall estimate of treatment effect in studies which vary according to levels of another relevant risk variable.

**Background**—Meta-analysis is now extensively used to pool estimates of treatment effects from a number of RCTs in order to obtain more precise estimates of effect and help resolve disputes based upon selective reporting of the literature. However when there is heterogeneity between studies, simple pooling can be misleading. For example, cholesterol lowering trial results are highly heterogeneous because of differences in a simple and clinically relevant risk indicator by which the trials can be ordered—risk of death from coronary disease (CHD) and other causes. To illustrate this, odds ratio (OR) of total mortality in the treated compared with the control group. Method—A meta-analysis of cholesterol lowering in single intervention (drug, diet, or surgery) trials was carried out, stratifying the studies by risk of CHD mortality in the control group. Weighted regression methods were used to estimate the relationship between the net effect of treatment on total mortality and risk of CHD mortality and other relevant variables.

**Results**—Overall estimates of the effect of cholesterol lowering in single intervention CHD prevention trials are confusing. When stratified by CHD mortality risk, cholesterol lowering significantly reduces total mortality in high risk groups (OR 0.78; 95% CI: 0.63, 0.95) and raises total mortality in the low risk group (OR 1.22; 95% CI: 1.05, 1.42). Weighted regression shows a statistically significant linear relationship between the log OR of total mortality and the risk of CHD mortality (coefficient=-0.049 (P<0.001)), which is not significantly changed when using average CHD mortality risk in the treated and control groups to allow for the possible bias introduced when stratifying by risk in the control group (P=0.081).

**Conclusion**—In trials which systematically differ by characteristics which are associated with the likely efficacy of treatment, meta-analysis which estimates on overall treatment effect can be misleading. In such cases, the relationship between treatment effect and these variables should be explicitly modelled rather than calculating a single estimate. Care must be taken in assessing the potential role of bias when stratifying studies by levels of (any) risk in the control group.

### PATIENT SATISFACTION

#### Disabled persons’ perceptions of their experiences as hospital inpatients

DAVID BONIFACE, MICHAEL DENHAM 1 (University of Heriot-Watt, Hatfield; 2 Northweek Park Hospital, Harrow)

There are several published reports of disabled people having negative views of their experiences as patients in acute sector hospitals. This is sometimes attributed to a lack of understanding of disability by those who treat and care for disabled people in hospital. This paper is concerned with the extent to which it is specifically the disability which gives rise to these problems rather than long term illness in general.

An interview based survey of randomly selected adult residents which was carried out in 1990–91 by North West Thames Regional Health Authority allowed a comparison of the perceptions of their experiences as inpatients of 687 disabled with 635 chronically ill non-disabled individuals. Members of the disabled group were somewhat older and had 43% more long term illnesses (average 2.0 com-
pared with 1:4 each). They had almost twice as much musculo-skeletal illness (60% compared with 35%) and more circulatory, heart, respiratory, vision, and hearing problems. An attempt was made to allow for the difference in age distributions, highly significant differences between the two groups were found in responses to eight of the 15 questions that referred to periods in hospital. The disabled patients were more likely to feel that every thing was out of their control, that they were not treated as individuals, that doctors treated them with a lack of respect, that their special needs for nursing care on the wards were not properly met, and that they were discharged home too early and without sufficient guidance.

An interpretation is proposed based on the difficulties facing care staff in providing for the special needs of patients not necessarily arising from their current acute health problem. The psychology of disability is also considered as relevant to the full picture.

The Royal College of Physicians’ Charter for Disabled People using Hospitals (1992) is evaluated in the light of these findings.

**Consumer satisfaction with general practice in the Eastern Health and Social Services Board in Northern Ireland**

D MULDAVE (Department of Public Health Medicine, Eastern Health and Social Services Board, Northern Ireland)

Objective To develop an explanatory model of patient satisfaction with general practice using data generated from a large scale postal survey of patients resident in the Eastern Health and Social Services Board in Northern Ireland.

Design A stratified random sample of 1200 patients selected from 24 of the 142 general practices in the area was undertaken in November 1992. The sample was stratified by age, community unit of management, and general practice size. The Northern Ireland Central Service Agencies Central Health Index was used as the sampling frame for the study.

Results The survey obtained a response rate of 69%. Descriptive findings have identified significant variation in satisfaction levels between the sociodemographic groups of the data. The more intangible aspects of general practice (eg aspects of the doctor-patient relationship) were found to correlate highest with overall patient satisfaction, with the more tangible aspects of general practice (eg distance to surgery and GP’s prescribing pattern) showing the lowest correlation with overall patient satisfaction. Multidimensional scaling techniques identified the existence of specific components of patient satisfaction—ie access; GP’s personal skills; availability; medical care; and surgery premises. Each of these scales was tested for reliability and was found to be satisfactory. Multivariate analyses tests will be used to identify which of the components or scales of patient satisfaction are the strongest predictors of overall patient satisfaction. Further multivariate analyses will be undertaken to identify the effect of sociodemographic variables on patient satisfaction.

Discussion This paper will discuss how the research findings have impacted upon policy development in the area of resourceing and planning of primary health care within the EHSB. The difficulties of communicating research findings of this nature to GPs and practice staff will also be discussed.

**Cost and effectiveness of health care**

**Cost effectiveness of cholesterol lowering treatments: towards a new model**

F SONG, J M MASON, T A SHELDON, G DAVEY SMITH, N FREEMANTLE (Centre for Health Economics, University of York; Department of Public Health, University of Glasgow; Nuffield Institute for Health, University of Leeds)

Aims To develop a reliable model for estimating the cost effectiveness of cholesterol lowering treatments.

Background The extensive literature modelling the cost effectiveness of cholesterol lowering for the prevention of coronary heart disease (CHD) and total mortality is flawed. Usually the assumed benefits from cholesterol lowering are derived from observational studies based upon the experience of people with different "naturally occurring" levels of serum cholesterol concentrations. It is also assumed that there are no adverse effects (eg non-CHD mortality) associated with cholesterol lowering interventions. These models are therefore likely to overestimate the cost effectiveness of such lowering treatments.

Outcomes Cost per life year gained.

Method A model was developed, based upon a new meta-analysis of cholesterol lowering studies. In this model, the equation is used for which relates net benefit to risk of CHD mortality as well as reduction in cholesterol. Using the results of cohort data, population characteristics are converted into risk of CHD mortality and then into odds ratio of total mortality. The net benefit of cholesterol lowering is calculated for different population groups. The cost of treating a cohort of people able to benefit from cholesterol lowering primary care prescribing data and the cost effectiveness of treatment for different groups is compared.

Results The paper will present the result of the cost effectiveness of different subgroups. Comparisons with other medical treatments such as aspirin will be discussed. Possible extensions of the model will be discussed. The problem of using trial data for estimating the lifetime, population wide impact of treatment are discussed.

Conclusions Economic appraisals should be based more firmly on trial data. Cholesterol lowering is shown to be cost effective for patients with a very high risk of CHD mortality. This model can be used to develop guidelines for cholesterol treatment which can be altered as new trial data become available.

**Strategies for the prevention of suicide: is changing antidepressant prescribing cost effective?**

N FREEMANTLE, J M MASON, A HOUSE, T A SHELDON, NUFFIELD INSTITUTE FOR HEALTH ECONOMICS, UNIVERSITY OF YORK; CENTRE FOR HEALTH ECONOMICS, UNIVERSITY OF YORK; PSYCHIATRIC LIASON, LEEDS GENERAL INFIRMARY

Object Each year there are around 400 deaths from antidepressant poisoning, mainly due to overdoses in suicide. A new class of antidepressants, the selective serotonin reuptake inhibitors (SSRIs), is being heavily promoted. The paper presents a model, based on their relative safety and overdose compared with some other antidepressant drugs in common use. This paper examines the cost effectiveness of changes in prescribing practice and of switching patients when attempting to achieve the 15% reduction in overall suicide rate target set as part of the Health of the Nation proposals.

Method The paper explores the potential impact of three key elements of a strategy for reducing suicide by a change to less toxic antidepressant prescribing. First, the accuracy of tests to predict suicide risk in depressed people. Second, the impact on which the people with suicidal intent substitute between available means. Third, the effectiveness of different antidepressants. Official data are used to examine trends in prescribing behaviour in terms of cost and volume of treatment. Toxicity rates are calculated for the main classes of antidepressants. The direct cost of transferring patients to the SSRIs is calculated, and the cost per life saved is presented. A sensitivity analysis is carried out to explore the effect of varying assumptions about the impact of the strategy.

Results Currently, the SSRIs account for around 15% of total prescribing by volume, and over 50% of the total spending on antidepressants, in primary care. The direct cost per life saved from this strategy is likely to be between £40000 and £70000. It is unclear to what extent this change will affect a depressed person’s lifetime risk of suicide which, given the availability of other lethal means, may not be affected.

Conclusions It is likely that a strategy to reduce suicide through a change in prescribing practice towards SSRIs will be partially effective and hugely expensive. Other, more multifactorial strategies may prove more effective in reducing the rate of suicide with other accompanying benefits.

**Does length of stay affect cost and outcome in hysterectomy?**

ALIEN CLARKE, PAM ROWE, NICK BLACK, SARAH MOTT (Health Services Research Unit, London School of Hygiene and Tropical Medicine)

Problem Length of stay (LOS) for major elective surgery has been falling over the past 20 years. Does a reduced LOS affect cost and outcome?

Subjects 366 women undergoing routine elective abdominal hysterectomy for benign conditions in six hospitals in North West Regional Health Authority.

Methods Women completed questionnaires before and after surgery and one month after surgery. They were asked demographic details, current symptoms, comorbidity, and in each questionnaire they completed a Lifestyle Index, an Activities of Daily Living Scale, and the Nottingham Health Profile. After surgery they were asked about LOS, current symptoms, complications, and community care. Compensatory data were collected from the hospital case notes. Routine hospital costs data were collected and a sub-sample of the women filled in forms on the extent of professional care in their last 24 hours in hospital.

Results Women experienced improvements in all measured outcomes at three months. However, early adverse outcomes were common, with for example, 25% of women suffering a wound infection. One third of the women (the short stay group) had a LOS of five days or less after surgery, and two thirds, (the long stay group) six days or more. Mean difference between LOS groups was 1 79 days but LOS had a minimal effect on outcomes, although women in the long LOS group were more likely to suffer minor complications such as constipation. Altogether 27% of women regarded their postoperative LOS as too short but this did not vary by LOS group.
Women in the short LOS group were less likely to be visited by a GP or district nurse after discharge and were more likely to have a lay carer who spent less time off work to look after them. The difference in hospital cost was £155/person.

Conclusions—There are substantial benefits to be gained from hysterectomy, but it does not appear that a shorter LOS reduces those benefits. Indeed, some adverse effects of a longer LOS have been shown by this research. There are cost savings to be made by reducing length of stay; however, a high proportion of women in this population identified their postoperative stay as too short. Those who had a longer LOS had better access to community services, both lay and professional.

CANCER INCIDENCE

Problems with cancer registration of malignant melanoma in England and monitoring trends in incidence

J MEILA, R ELLMANN, D COLEMAN, J SLOANE, J CHAMBERLAIN (Cancer Screening Evaluation Unit, Section of Epidemiology, Institute of Cancer Research, Sutton, Surrey)

Objective—to investigate the extent of non-registration of malignant melanoma, the characteristics of registered and unregistered cases, and implications for monitoring trends in incidence of melanoma in England.

Study population—Residents of seven district health authorities in England covered by four registries: three cancer registries and Nottingham.

Methods—Demographic and histopathological details which included date of birth, sex, Breslow thickness, and presence of metastases at the time of diagnosis were collected for all cases of in situ and invasive malignant melanoma diagnosed from 1987 to 1989 at pigmented lesion clinics, pathology laboratories, and cancer registries covering the study population. Multiple regression analyses were used to compare characteristics of registered and non-registered cases and to calculate rates between cancer registries.

Results—It was found that 128 cases of in situ and 677 cases of invasive melanoma were recorded, of which 68% and 25% respectively had not been registered by 1993. There was a significantly higher proportion of early stage cases with Breslow thickness <1.5 mm in non-registered cases (66%) than in registered cases (55%). Non-registration was most marked for early stage cases but 17% of 76 deep or late stage cases with metastases were also not registered. Further analyses are being conducted to compare other characteristics of registered and non-registered cases and to provide estimates of incidence for invasive melanoma which include non-registered cases.

Conclusions—The incidence of invasive malignant melanoma may be underestimated by up to 25% in England. This may explain why the incidence in England seems to be lower than in Scotland, where the cancer registry liaises with a national melanoma register. Future monitoring of incidence rates in response to the Health of the Nation target for skin cancer should ideally take into account the stage of cancer. Artefactual incidence of melanoma may occur because of improved ascertainment and increased diagnosis of early stage lesions. These increases may be expected to negates the effectiveness of primary prevention strategies in reducing incidence.

Increasing incidence of adenocarcinoma of the oesophagus within the Mersey region from 1963 to 1987

R SUTTON,1 J HERD,1 J YOUNGS6,1 D ASHYB,2 E M I WILLIAMS1 (Departments of Surgery1 and Public Health2, University of Liverpool)

Background—National statistics suggest an increasing incidence of oesophageal carcinoma in men in the past 30 years, primarily of adenocarcinoma; the region with the highest incidence has recently been Mersey.

Objective—to determine in detail the incidence of the histological subtypes of oesophageal carcinoma in the Mersey region from 1963 to 1987.

Design—Examination of all registrations of oesophageal carcinoma (ICD 150) made by the Mersey Regional Cancer Registry from 1963 to 1987.

Setting—Mersey Regional Cancer Registry, University Departments of Public Health and Surgery.

Subjects—4493 registered cases of oesophageal carcinoma.

Main outcome measures—Averaged annual age standardised incidence rates over quinquennal periods for squamous carcinoma, adenocarcinoma, and carcinoma not otherwise specified.

Results—Averaged annual age standardised incidence rates of oesophageal carcinoma increased from 2.7 (95% CI 2.5–2.9) to 8.0 (7.8–8.3) per 100 000 persons between the first and last quinquennia; adenocarcinoma increased from 0.3 (0.2–0.3) to 3.3 (3.1–3.5) and unspecified carcinoma from 0.3 (0.3–0.4) to 2.4 (2.2–2.5) per 100 000, with little change in squamous carcinoma rates. Oesophageal carcinoma rates also increased from 1.9 (95% CI 1.8–2.1) to 4.0 (3.8–4.1) per 100 000 women over the same period; adenocarcinoma increased from 0.0 (0.0–0.0) to 0.6 (0.6–0.7), squamous carcinoma from 2.7 (1.5–2.8) to 2.2 (2.0–2.3), and unspecified carcinoma from 0.2 (0.1–0.2) to 1.2 (1.1–1.3) per 100 000.

Conclusions—These results are remarkable not only because of the large increases in the incidence of adenocarcinoma over the 25 year period, which have been reported by others elsewhere, but also because of the large increases in women. The increase in the incidence of adenocarcinoma, alongside little change in the incidence of squamous carcinoma, remains unexplained.

Diet and testicular cancer

T W DAVIES, F RUJA, C R PALMER (Department of Community Medicine, University of Cambridge)

Introduction—There is ecological evidence of an association between dietary product consumption and the incidence of testicular cancer, possibly acting as a promoter in susceptible men.

Objective—to test the hypothesis that milk and dairy product consumption in adolescent boys is a risk factor for the development of cancer of the testis.

Design—a case control study. All cases were living men who had had testicular cancers and 125 control subjects, from a larger sample, were included. In the control group were four controls, two living cancer controls and two population controls. All subjects were asked to complete a questionnaire giving details of current milk, dairy product, and fruit consumption, and an estimate of consumption in adolescence. In addition, where possible, the man's mother was asked to give an independent estimate of the man's childhood consumption during adolescence. These estimates, which correlated significantly with those of the sons, were used to enhance the reliability of the estimates.

Results—the response rate was 64% for cases, 54% for cancer controls, and 50% for population controls. Of those subjects responding 34% had an independent response from their mothers. According to the estimate of the mothers and their sons, men with testicular cancer consumed significantly more milk in adolescence than population controls. This difference did not apply to other dairy products and fruit. The consumption of cancer controls was intermediate between cases and population controls, but was not significantly different from either. In an analysis using multiple regression, undescended testis and social class had a significant effect on the probability of suffering from testicular cancer when height and year of birth were also included. The odds ratio associated with undescended testis compared with population controls was 6.1 (95% CI 2.07, 18.10) and with each extra pint of milk consumed it was 2.5 (95% CI 1.44, 4.40).

Conclusion—the findings support the hypothesis that milk consumption in adolescence is a risk factor for testicular cancer. The lack of association with cheese consumption suggests that substances present in milk but not in cheese may be important ingredients.

CANCER SCREENING

Sensitivity of faecal occult blood as a screening test for colorectal cancer

S M MOSS, J CHAMBERLAIN, M ROBINSON, J HARDCASTLE, O ROKBRONG (Cancer Screening Evaluation Unit, Section of Epidemiology, Institute of Cancer Research, Sutton, Surrey)

Objective—to estimate the sensitivity of faecal occult blood test by faecal occult blood tests repeated at two yearly intervals; and to compare the sensitivities of similar screening programmes in England and in Denmark.

Design—Randomised controlled trials of screening.

Setting—one health district of England (Nottingham), and one county in Denmark (Fünen).

Subjects—77 323 men and women aged 50 to 74 invited to do a screening test in Nottingham and 30 796 in Fünen; and 77 559 and 30 752 subjects in the same age-range in uninvented control groups.

Interventions—Invitations to undertake a faecal occult blood test (Haemoccult II), with investigation by colonoscopy of those testing positive.

Outcome measures—Incidence of symptomatic colorectal cancers arising at intervals after a negative screening test expressed as a proportion of the control group incidence in the same time periods.

Results—These are currently being analysed. The sensitivity of screening will be presented using the proportional incidence method (as in outcome measures above). Interval cancers will be described in terms of the subjects' age...
group, and their stage (Dukes’ classification) and subsite within the large bowel. The implications of differing sensitivity between the trials for an eventual meta-analysis of their effect on colorectal cancer mortality will be discussed.

Audit of failsafe for the follow up of women with abnormal cervical smear

G A COKER, E ROBERTS, G LANCASTER, S BARROW, C WOODMAN (*North Western Regional Health Authority; +Centre for Cancer Epidemiology, Manchester)

Aims—To assess the adequacy of failsafe procedures for the management of abnormal cervical smear. The study was set up following findings from studies in north western England which questioned the efficacy of the cervical screening failsafe mechanism. Study design—A retrospective study of the records of 954 women with abnormal smears in 1991 (indicating moderate dyskaryosis or a more severe abnormality).

Sample—The first 50 women (25 with moderate dyskaryosis and 25 with severe dyskaryosis or invasive disease) who had abnormal smears as a result of routine call/ recall from each district in the North Western Regional Health Authority in 1991.

Method—The index smears were identified from laboratory records and the subsequent follow up was determined from laboratory and family health service authority (FHSAs) records.

Results—In 5% of cases, there was no recorded follow up after the index abnormality and in around a third of these cases the failsafe mechanism seemed to have failed. In a further 21% of cases, the recorded follow up indicated that management seemed to be inadequate. In over half of these cases, there was an initial delay before adequate follow up was carried out. In 15% of these cases, women became non-responders during the course of follow up. There were district variations in the number of cases that were adequately followed up. The best district achieved an adequate follow up rate of 92%, the worst only 54%.

Conclusions—Despite that fact that almost all district screening laboratories and FHSAs’s claimed to work to national guidelines on failsafe procedures, a significant proportion of the sample appeared not to have been followed up adequately. The variations between districts are important and are due to various factors. It is hoped that an understanding of the underlying factors contributing to examples of good and bad failsafe practice will lead to a reduction in the number of cases where poor follow up is a cause for concern.

Objective—To determine differences in the management of primary breast cancer between district health authorities and units and their effect on survival.

Design—Retrospective cohort analysis of cases of primary breast cancer notified to the Thames Cancer Registry (TCR).

Subject and setting—A total of 1757 women, aged under 50 at the time of diagnosis of primary breast cancer between 1 January 1984 and 31 December 1988 who were resident in South East Thames Regional Health Authority.

Measures—Five year district incidence rates. Comparisons were made between the following groups: Teaching versus non-teaching hospitals; mastectomy versus less than mastectomy; axillary node surgery versus none; stage of disease (local, local plus nodes, or metastasis), morphology (ductal, specific other, non-specific other); the use of adjuvant therapy.

Conclusions—Different incidence rates between teaching hospitals and non-teaching hospitals were not significant. There were 11 cases of breast cancer (7% of the sample) noted at the time of diagnosis of primary breast cancer. There were no differences in stage between different hospital authorities.

Relative survival for invasive cancers in Wessex compared with other regions

S M BYGRAVE, S M MOSS, J A S SMITH (Wessex Cancer Intelligence Unit, Institute of Public Health Medicine, Winchester)

Objective—To produce relative survival estimates for the main cancers in Wessex health region and compare these with rates for other regional health authorities to determine variations.

Design—Calculation of relative survival estimates using data from the Wessex Cancer Registry and other regional cancer registries.

Setting—A selection of relative health authorities in England and Wales; Wessex Regional Health Authority and its component district health authorities.

Subjects—All cases of malignant neoplasms diagnosed in Wessex during the years 1983 to 1985, excluding death certificate only (DCO) registrations; similar data specification for other regional health authorities but for varying years in the early 1980s from published reports.

Main outcome measures—Relative survival rates, proportion of DCO registrations, proportion of histologically verified cases, proportion of duplicate registrations for all malignant neoplasms and 16 specified sites.

Results—Relative survival estimates for the cancers did not differ significantly from those produced by other regions. However, for cancers of the cervix, uterus, rectum, and bladder the survival estimates were significantly higher for other regions in the early 1980s. The proportion of DCOs, duplicate registrations, and the histological verification rate were compared for all regions as they are known to affect the quality of cancer registry information. The effect of these factors on the survival estimates was negligible.

Conclusions—The comparatively high relative survival estimates for cancers of these sites can be satisfactorily explained in terms of recognised sources of data artefacts. Hypotheses are proposed for the comparatively higher survival for cases of cancer of the rectum, uterus, cervix, and bladder. For example, the proven high intervention rate for rectal cancer in Wessex (90% of cases receive an operation compared with 80% in other regions) might contribute to the increased survival for Wessex residents. Similarly, there may be a high intervention rate for cancer of the uterus.
which could be contributing to the greater survival. With regard to cervical cancer, the comparatively higher survival may be attributable to the high coverage of the screening programme which has been active since the early 1980s, longer than the screening programmes of many other regions. Finally, higher relative survival for bladder cancer could be associated with the large presence of the petrochemical industry in the Wessex region which might indicate a higher input of occupational screening such that cases are diagnosed at an earlier stage. These and other likely hypotheses are to be further investigated, together with further analysis in terms of measurements of data quality.

COMMUNICABLE DISEASES

Costs and benefits of preventing Legionnaires' disease by maintenance of cooling towers and hot water systems

K R SMITH,1 D W PARKIN,2 R S BHOPAL,1 (1Centre for Health Economics, University of York, 2Department of Epidemiology and Public Health, University of Newcastle upon Tyne)

Effective maintenance guidelines for the maintenance of water cooling towers and hot water systems is seen as an important means of reducing the incidence of Legionnaires' disease. The Health and Safety Commission has issued an approved code of practice containing such guidelines. We have carried out an economic evaluation of the prevention of Legionnaires' disease by implementation of guidelines. A cost-benefit framework was used to display the main costs and benefits of the policy alternatives, which for this preliminary study was limited implementation of the guidelines versus non-implementation. Many of the data which would have been required for the definitive study of this issue were not available in a usable form, so a number of assumptions were made which were subjected to sensitivity analysis.

The best estimate of the costs of implementation in Britain as a whole was £2 billion per year when compared with £82 million for non-implementation, that is 85 times as much. Even under the most favourable assumptions, the cost of implementation is 40% greater.

The case for implementing these guidelines requires discussion and further research. Any decisions, such as making them compulsory, ought to be informed by proper evaluation of their likely costs and benefits. In addition, there are alternative and complementary strategies for controlling Legionnaires' disease, which ought also to be subject to evaluation in order to determine the best policy.

Tuberculosis among the homeless in London

D KUMAR,1 I LEESE,1 K CITRON,1 J WATSON,1 (1PHLS Communicable Disease Surveillance Centre; 2Department of Health; 3Royal Brompton National Heart and Lung Hospital, London)

Introduction—Tuberculosis is a well recognised problem among the homeless. Recent figures show that tuberculosis notifications are no longer declining in England and Wales, with a rise of around 5% per year in the past two years. In the USA, tuberculosis, especially multidrug resistant tuberculosis, is an increasing problem among the homeless in New York in whom treatment presents major difficulties. In England and Wales an increase in homelessness has also been suggested as one of the possible causes of the recent increase in notifications of tuberculosis. However, reliable estimates on the prevalence or incidence of tuberculosis in this population subgroup are not available for this country.

Objectives—To estimate the prevalence of active pulmonary disease in a homeless population in London and to assess whether these individuals could be integrated into the existing health care system for further follow up and treatment.

Design—Voluntary screening programme based on a questionnaire survey and chest x-ray.

Setting—A London temporary shelter for the homeless.

Cases—An offer of screening was made to all individuals who visited the centre during the period 24–28 December 1992. An interviewer administered a questionnaire to complete those who volunteered for the screening. On the basis of predetermined criteria chest x-rays were offered to those with a relevant medical history.

Main outcome measures—The chest x-rays were developed and read on site. Individuals with chest x-ray features suggestive of tuberculosis or other medical problems were referred to a hospital of their choice.

Results—A total of nearly 1600 people visited the centre, of whom 372 volunteered for the screening and 342 were x-rayed. Of these 342, 18 (5.4%) had radiological features suggestive of tuberculosis. Of these, two refused treatment. This paper will present results of further follow up and treatment as well as discuss the reasons for loss to follow up. The validity of such a survey based on questionnaire and chest x-rays in assessing the prevalence of tuberculosis in this community will also be discussed.

Relationship between Helicobacter pylori infection and living conditions in childhood: evidence for person to person transmission in early life

P WEBB,1 D FORMAN,1 K KNIGHT,1 A WILSON,3 S GREEVES,1 D NEWELL,2 J ELDER (1ICRF Cancer Epidemiology Unit, Oxford; 2Department of Postgraduate Medicine, Keels University; 3Central Veterinary Laboratories, Weybridge)

The gastric bacterium Helicobacter pylori has been identified as a major source of chronic gastritis, it seems to be involved in the development of duodenal, and possibly gastric ulcer disease and may also play a role in the development of gastric cancer. More than 50% of the world’s population is thought to be infected; however, no reservoir of organisms has been identified outside the human stomach and it is not known how the organism is transmitted. It has been suggested that infection may be passed directly from person to person and that most infections may be acquired in childhood.

Objectives—To relate the prevalence of H pylori infection in adults to their living conditions in childhood in order to identify risk factors for infection.

Subjects—A total of 489 volunteers, aged 20 to 65 years, from three factories in Stoke on Trent.

Results—Prevalence of infection increased with age (p for trend <0.001) and was higher in subjects with a manual occupation (p=0.002). After adjusting for both age and manual occupation, infection was positively associated with the number of siblings (p<0.001) and overcrowding in childhood (p<0.001). In particular, subjects who shared a bed in childhood were significantly more likely to be infected than those who did not (46 ± 31%, p<0.001). Possession of a bathroom, inside toilet, or refrigerator in childhood was related to infection after adjustment for age, and there was no association with household pets.

Conclusions—Of the factors studied here, close person to person contact in childhood seems to be the major determinant of H pylori infection. This suggests that the organism is transmitted directly from one person to another and that infections are commonly acquired in early life.

RISK FACTORS

Before case control studies: smoking and lung cancer in Weimar and Nazi Germany

GEORGE DAVEY SMITH,1 SARINE STROEBLE,1 MATTHIAS EGGERT (1Department of Public Health, University of Göttingen; 2Institute of Medical Sociology, University of Hamburg; 3Department of Preventive Medicine, National Autonomous University of Nicaragua)

It has been suggested that in 1948 "the idea that smoking might damage a person, other than in his or her pocket, was seldom taken seriously". During the 1930s, however, a possible causal association between smoking and lung cancer was widely discussed within Germany. Fritz Lickint, for example, summarised evidence from ecological analyses, time trends, clinical studies, and animal experiments, which led him to the conclusion that there "could be no doubt anymore that tobacco smoke is of major importance for the development of lung cancer . . . and that, at the least, the habit of tobacco smoke inhaling should be fought". Following from Lickint’s work, Franz Müller reported on a series of 86 male lung cancer cases, among whom smoking was more prevalent and heavier than among 86 healthy men of the same age. In retrospect, these data give odds ratios for lung cancer of 1:0; 3:1; 2:8; 16:8; and 29:2, from non-smokers to extreme smokers (p<0.00000001 for trend). A Scientific Institute for Research into the Dangers of Tobacco was established at the University of Jena and from there Schairer and Schöninger reported on a planned attempt to replicate Müller’s finding in a formal study. Smoking patterns of male patients who died of lung cancer were compared with those of patients who died of other cancers and with a general population sample of middle aged men in Jena: essentially a case-control study with both clinical and community controls.

Retrospective analysis yields highly statistically significant (p<0.0000001), strong, dose response associations between smoking and lung cancer. The authors themselves examined whether the association could be due to early stages of cancer inducing increased smoking and found it could not. Methodological limitations of their study were discussed in some detail, but it was reasonably considered that they could not account for the findings.
The low impact of these and other German studies of smoking and lung cancer cannot be attributed purely to the poor quality of the evidence. The various factors involved—including the low acceptability of what were essentially epidemiological data in the period before chronic disease epidemiology was widely established; the lack of statistical summary measures with which to champion and promote the validity of the findings of such studies; and the increasing isolation of researchers in Germany—will be discussed.

Cardiorespiratory disease in 15 411 men and women in an urban population: mortality after 15 years

G C M WATT, C L HART, D J HOLE, G DAVEY SMITH, C R GILLIS, V M HAWTHORNE (Department of Public Health, University of Glasgow)

Objectives—To compare the potential impact of preventive strategies for cardiorespiratory disease in men and women in an area with a high level of socioeconomic deprivation.

Design—A prospective study of risk factors, risk behaviours, symptoms, and the prevalence of cardiorespiratory disease in a random sample of adults and women in an urban population with high mortality rates (the MIDSPAN study).

Setting—Paisley and Renfrew, Scotland.

Outcomes—All cause and cause specific mortality.

Results—A total of 7058 men and 8353 women aged 45–64, representing 80% of the populations of Paisley and Renfrew, took part in the screening examination between 1972 and 1974. Of men and women aged 65%, a large proportion of men and women aged 56% of those aged 55% were in manual social groups. By October 1991, 2549 male deaths and 1898 female deaths had been notified to the study by the Registrar General.

The main male characteristics, compared with previous British studies, were shorter stature, higher blood pressure, lower serum cholesterol, a higher proportion of smokers continuing to smoke, lower PEV2, and higher levels of reported angina, breathlessness on effort, and chronic bronchitis. In comparison with men, women had shorter stature, higher serum cholesterol, lower PEV2, fewer current and ex-smokers, and a higher prevalence of breathlessness on effort. There were only small differences between men and women in the prevalence of angina, ECG evidence of myocardial ischaemia, and chronic bronchitis.

Compared with the Whitehall study, all cause mortality rates in men were 69% higher in the MIDSPAN study. Inspection of major disease specific mortality suggests that the excess mortality is explained to a lesser extent by differences in risk factors, and to a greater extent by increased mortality for a given level of risk. Possible explanations for the latter finding, including “new” risk factors and high levels of pre-existing disease, are reviewed.

Conclusions—The findings will be discussed in relation to the potential effects of conventional high risk and mass strategies of prevention in urban populations with a high level of socioeconomic deprivation.

Low cholesterol and mortality: demonstration of a health selection effect

D J HOLE, G DAVEY SMITH, G C M WATT, C L HART, C R GILLIS, V M HAWTHORNE (Department of Public Health, University of Glasgow)

Prospective epidemiological studies have identified low cholesterol levels as a marker for increased risk of death from non-coronary causes. Particular attention has been paid to the finding of the Renfrew and Paisley survey of marked reductions in cholesterol concentration and mortality from cancer and from “other” (non-cancer, non-coronary) mortality. It is possible that these inverse relationships are generated through a cholesterol lowering effect of ill health existing at the time of examination. The Renfrew and Paisley survey involved a population based sample which would have included sick individuals. If such a work-up effect did not generate the observed relationships, it would be expected that inverse cholesterol-mortality associations would be weaker or non-existent in studies which recruited healthy individuals. The presence of a cohort recruited from workplaces in the West of Scotland around the same time as the Paisley and Renfrew survey allows this hypothesis to be tested.

A study of this type would contain less sick individuals than a community based sample. Cholesterol concentrations were measured in 3768 men aged 45–64, of whom 1281 died over a 20 year follow up period. The results from the occupational cohort and a similar sample of non-smokers have been compared with a re-analysis of data from the Renfrew and Paisley survey, in which 2532 deaths occurred among 7002 men with a cholesterol measurement aged 45 to 64 over a 15 year follow up period.

In the occupational cohort the all cause mortality rate increased with increasing cholesterol level, whereas in the Renfrew and Paisley survey there was no such association. Cancer and respiratory disease mortality showed no association with cholesterol concentration in the occupational cohort, whereas there were marked inverse associations in the Renfrew and Paisley survey.

These findings suggest that the inverse cholesterol-mortality associations found in prospective studies may be generated by reductions in cholesterol concentration consequent on ill health and may provide a framework for publishing less cohort studies provides further support for this assertion.


Breast feeding and the onset of rheumatoid arthritis

PAUL BRENNAN, ALAN J SILMAN (ARCH Epidemiology Research Unit, University of Manchester)

Objective—The postpartum period, particularly after the first pregnancy, represents a time of increased risk for the development of rheumatoid arthritis (RA). 1 The authors have tested the hypothesis that this may be explained by breast feeding and subsequent exposure to high levels of prolactin.

Design—A case-control study was used. Information on pregnancy history and other demographic details was gained from both cases and controls using a postal questionaire.

Subjects—The cases were 187 women identified through a nationwide media campaign and who were notified to RA within a year of a live birth. These were compared with a control group of 149 similarly aged parous women chosen from the age sex registers of a nationwide group of rheumatologists.

Results—Response rates were 92% for the cases and 90% for the controls. Odds ratios (OR) and (95% confidence intervals) were calculated for each pregnancy, estimating the risk ratio of developing RA after pregnancy for women who breast fed. Factors known to be related to breast feeding were adjusted for in the analysis. Restricting analysis to feeding after their first pregnancy showed that the 88 women who developed RA were more likely to have breast fed than the control women, OR 5·4 (2·5, 11·4). A smaller increase was observed for the 48 women who developed RA after their second pregnancy, OR=2·0 (0·8, 5·0), and no increase for the 31 women who developed RA after their third pregnancy, OR=0·6 (0·2, 2·2).

Conclusion—The authors therefore conclude that first exposure to breast feeding, typically after the first pregnancy, is associated with an important increase in the risk for RA development and may be related to hormonal events, specifically an increase in prolactin level.

Air pollution and acute morbidity: innovative use of general practice records

CVOJ H PHILMOR, B BHALA, J M SOFFATT (Department of Epidemiology and Public Health; 2Department of Social Policy, University of Newcastle upon Tyne)

Objective—to determine whether morbidity, as measured by general practitioner consultation, increases in incidence on days of poor air quality in a population living close to heavy industry.

Design—Comparison of daily consultation rates, for both respiratory and other disorders, and air pollution (SO2 and smoke) over a 51 month period.

Setting—Two general practices with patients living close to the Monkston Coking Works, and two practices in a control area of comparable social and economic structure.

Subjects—A total of 621 adults and children were registered with these practices and were included in a community survey.

Method—General practice data including dates of consultation and Read Codes for diagnoses were keyed into a Medisat system. Air pollution data were obtained from three local authority gauges 1–2 km downwind of the works. Log-linear modelling related daily consultations (respiratory and non-respiratory) to day of the week, air temperature, and SO2 and smoke levels in study and control areas.

Results—In the area closest to the works, respiratory consultation rates were 752 per 1000 patients per annum on days when SO2 levels were highest compared with 489 on days of lowest SO2 (χ2=7·4 for the gradient, df=1, P<0·01). No gradient was seen in the control area or for non-respiratory conditions. There was a weak association with daily smoke levels.

Conclusion—The findings provide strong evidence that air pollution from local industry led to increased morbidity. General practice records provide an objective means of assessing subtle effects of air pollution on health.

Ageing in the developing world: a neglected challenge

ALEX KALACHE (Health Promotion Sciences Unit, LSHTM, London)

Ageing has now become a phenomenon of vital importance to developed and developing countries alike. In Europe, for instance, pro-
portion of the population over 60 years of age increased by 33% between 1960 and 1980, and since then, through the year 2000 a further 25% increase is expected. Among the very old (those over 80 years, with their particular high demands on health and social services) the rate of growth will be even more substantial. However, in relative terms the pace of the ageing process will be particularly intense in the Third World for the next few decades. This is largely due to sharp declines in mortality and fertility rates recently experienced by many countries, resulting in rapidly increasing absolute and relative numbers of the elderly population. In 1980 two thirds of the world’s elderly already lived in developing countries. By the beginning of the next century seven of the 10 largest elderly populations will be from countries such as China, India, Brazil, Indonesia, Pakistan, Mexico, and Nigeria.

Throughout the world, radical social and cultural changes have taken place in recent years in the process of urbanisation; and the societal “modernisation”; increased participation of women in the workforce; and continuing internal and international migration (resulting in old people being left behind) are examples of these changes. Very often these changes do not favour the traditional care provided by families for the elderly and alternative forms are either too expensive or have not been properly evaluated. Furthermore, health systems are being restructured, and this affects the way elderly people are cared for. Increasing competition for scarce resources will prevail. As the proportion of elderly people in developing countries increases while infrastructural problems remain, difficult dilemmas will be faced by service planners and decision makers. In countries like Brazil half of the social benefits paid by the government are already absorbed by those aged 50 years and over leaving very little for health care and education of children on whom the future of the country depends.

This paper will present data to illustrate the speed of the ageing process of populations in developing countries and its impact on public health. It will advocate the need for adopting a multidisciplinary and scientific approach to examine concepts and policies aimed at promoting well being of elderly populations. Finally, it will emphasise the need for more and properly funded research.

SYMPOSIUM ON CARDIOVASCULAR DISEASE AND DIABETES

Risk factors for sudden cardiac death

G WANNAMETHEE, A G SHAPER, P MACFARLANE, M WALKER (Department of Public Health and Primary Care, Royal Free Hospital School of Medicine, London)

Sudden cardiac death (SCD), death within one hour of the onset of symptoms, accounts for half of all coronary heart disease (CHD) deaths. The well established risk factors for CHD are also predictive for SCD, however, and the need for predisposing specifically to SCD are poorly identified. The relationship between potential risk factors for CHD and SCD was examined in 7735 middle aged men drawn from general practices in 24 British towns in the Birmingham Regional Heart Study. During eight years’ follow up there were 488 major CHD events (non-fatal and fatal) of which 117 were classified as SCD. Pre-existing ischaemic heart disease, age, systolic blood pressure, cholesterol concentration, smoking, haematocrit, raised heart rate, heavy drinking, and abnormal ECG were independently associated with an increased risk of SCD. Physical activity and HDL-C showed a strong independent inverse association with SCD. The independent predictors of SCD were examined separately in relation to non-fatal events and non-sudden cardiac death to identify factors specifically associated with SCD. A raised heart rate, heavy drinking and hypertension on ECG distinguished those at risk from sudden cardiac death from those at risk for non-sudden fatal and non-fatal events, particularly in men without evidence of pre-existing ischaemic heart disease at screening.

This study has identified risk factors which contribute to the identification of people at high risk for SCD. This has important implications for determining the aetiology and prevention of SCD.

Weight change and risk of coronary heart disease in middle aged men

M WALKER, G WANNAMETHEE, AG SHAPER (Department of Public Health and Primary Care, Royal Free Hospital School of Medicine, London)

Weight reduction is associated with a decrease in some cardiovascular risk factors (blood cholesterol and blood pressure) but the benefits of weight reduction on coronary heart disease morbidity and mortality are less certain. There is growing concern that weight fluctuation is associated with an increased risk of coronary heart disease (CHD).

The relationship between weight change over a five year period and subsequent risk of major CHD events (fatal and non-fatal) was examined in a prospective study of 7735 middle aged British men. Data on weight change were available for 7100 men, of whom 439 presented with CHD in the 6-5 year follow up. All men with a history of myocardial infarction at the initial examination or who had suffered a heart attack within the five year period were excluded from the analyses.

Over half of the men remained stable in weight (< less than 4% change in body weight), 31% gained weight, and 13% lost weight over five years. The lowest risk was seen in those who had gained 4-10% body weight. Substantial weight gain (>10%) and weight loss (>4%) were associated with an increase in risk of CHD even after adjustment for age, social class, smoking, systolic blood pressure, blood cholesterol, and initial body mass index (BMI). When examined separately by initial BMI (<25, 25-28, and >28 kg/m²), substantial weight gain was associated with a significant increase of CHD in the two heavier groups in whom the majority of those who had gained weight had attained obese levels (>22.8 kg/m²). The increased risk of CHD in those who had lost weight was most noticeable in those with an initial BMI <25 kg/m². Weight loss in the moderately overweight and the obese men (25-30 kg/m²) showed no apparent benefit for risk of CHD but in the small number of very obese men (>30 kg/m²), weight reduction to non-obese status was associated with a small reduction in CHD risk.

The results raise concern about weight loss in middle age, particularly in those who are not regarded as overweight. Consideration of weight gain in later adult life even over a short period of time increases the risk of CHD.

Smoking habits and plasma fatty acids as risk factors for peripheral arterial disease

G C LENG, D F HORROBIN, F G R FOWKES, FR SMITH, PT DONNAN, KELLS (Wolfson Unit for Prevention of Peripheral Vascular Diseases, Edinburgh University)

Background—Throughout Europe, low levels of total and fatty acids have been shown to be inversely related to the gradient of coronary heart disease (CHD). In Japan, it has been suggested that the incidence of CHD remains low because of the high intake of essential fatty acids despite an increase in the number of smokers.

Objective—to identify differences between smoking habits in cases of peripheral arterial diseases and controls, and to determine whether these were associated with plasma fatty acid levels.

Design—A case-control study nested within a cross sectional survey of the general population (the Edinburgh Artery Study).

Setting—The city of Edinburgh.

Subjects—A random sample of 1592 men and women aged 55-74 years, selected from the age-sex registers of 10 general practices (representing geographically and socioeconomically the people living in Edinburgh). These were matched by age and sex to 153 controls with no evidence of cardiovascular disease.

Main outcome measures—Current and previous smoking habits, and plasma levels of essential fatty acids.

Results—There were significantly more smokers in the cases than controls: 44% of cases and 20% of controls were current smokers (p<0.001); 42% of cases and 30% of controls were exsmokers (p<0.001).

Smoking was significantly correlated with lower levels of the following essential fatty acids: linoleic acid, arachidonic acid (AA), docosatetraenoic acid (DPA) and docosapentaenoic acid (DPA-n-3) (p<0.001). AA, EPA, DHA, and DPA-n-3 were all significantly lower in the cases than controls (p<0.01). However, after adjusting for smoking, age, and sex, only DPA-n-3 remained significantly different between cases and controls (OR 0.63, p<0.01).

Conclusions—in patients with peripheral arterial disease, it is possible that the risks associated with smoking may be partly explained by differences in essential fatty acids.

Innocent until proved guilty: reflections on the career of clofibrate

G DAVEY SMITH, T A SHELDON (Department of Public Health, University of Glasgow; Centre for Health Economics, University of York)

McKinlay’s influential work identified prototypical stages in the career of medical innovations which provides a useful framework for analysing the diffusion, or career, of health technologies. In brief, they develop McKinlay’s schema with regard to the use of clofibrate as a lipid modifying agent. In the early 1960s, highly favourable reports suggested that clofibrate was expected to delay the process of atherosclerosis and diabetic retinopathy (stage of
promising report"). Clofibrate began to be used in general clinical practice ("stage of professional adoption"), and a variety of guidelines appeared which promoted this activity ("stage of public acceptance and third party encouragement"). Clofibrate came to be widely prescribed and various descriptive and non-randomised studies were published purporting to show its efficacy. In Britain, nearly a million prescriptions a year were issued for clofibrate during the early 1970s ("stage of standard procedure and observational reports"). The unfavourable results of two large RCTs, established during the earlier phase, the "stage of reaction", were published. Initially the results of these studies were played down, or even dismissed, by the advocates of clofibrate ("stage of professional denunciation"), but prescription levels began to decrease in the late 1970s and by the end of the 1980s clofibrate was a rarely used drug ("stage of erosion and discreditation").

Prescription data show international variations in rate through which the stages can be paralleled. France clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrate clofibrat

A dilemma for public health—how can we afford renal replacement therapy?

P RODERICK, R PRYATT (Public Health Directorate, North West Thames Regional Health Authority, Department of Public Health, South Bedfordshire Health Authority) The uptake onto renal replacement therapy (RRT) for end stage renal failure (ESRF) in the UK has increased threefold in the 1980s from a position of historical underprovision. This has been due to the acceptance of older patients and patients with serious comorbidity such as diabetes; patients who were previously largely excluded from treatment. Nevertheless acceptance rates have still not reached the current estimate of population need of 80 new patients per million population. The stock of patients on RRT is increasing substantially and steady state has not been reached. Purchasers and providers are therefore faced with rising demand for an expensive form of lifesaving treatment at a time of limited public financial resource.

This paper will explore some key public issues: population need and the scope for prevention, the cost effectiveness of treatment, and prioritisation at district level. It is based on work conducted in one region on both regional and district level with both nephrologists and purchasers.

Population need between districts varies significantly in certain areas due to the higher risk of ESRF in some ethnic minorities (blacks and Asians from the Indian subcontinent). A regional survey of district acceptances in the North West Thames (NWT) showed considerable interdistrict variation with high levels found in districts with sizeable ethnic minority populations. The current population need is estimated in NWT to be around 1500. If this is taken as a proportion of this ethnic dimension, using 1991 census data and a range of relative risks derived from studies in the United States (for the black population) and the few UK studies on Asians. The population for reducing demand for RRT by preventing ESRF, especially secondary to diabetes and hypertension, is discussed.

Despite the rising demand and high costs, RRT is life saving. District health authorities are therefore in a difficult position in prioritising care for RRT. Broad criteria for accepting patients onto programmes are difficult to apply because of the heterogeneous nature of the population of ESRF patients. In particular, age per se is a poor predictor of outcome. Routine information currently available to purchasers is inadequate for proper monitoring and evaluation, the need for costs, population need or demand, or outcomes. The options for managing demand are discussed in the light of cost effectiveness and ethical considerations, and current purchasing arrangements.

Recommendations are made about a future public health response to ESRF. A national population based registry is central; this would facilitate purchasing decisions, reduce transaction costs, and help ensure an equitable provision of RRT.

Coronary risk factors and non-insulin dependent diabetes (NIDDM) in middle aged British men

I J PERRY, G WANNAMETHEE, M WALKER, A G THOMPSON, A G SHAPER (Department of Public Health and Primary Care, Royal Free Hospital, London) Background—Prospective studies in selected populations have indicated that coronary risk factors, including hyperglycaemia, obesity, hypertension, hyperlipidaemia and physical inactivity predict non-insulin dependent diabetes (NIDDM). In few studies it has been possible to examine inter-relations between all of the major coronary risk factors and the development of NIDDM.

Objectives—To examine the relation between the major cardiovascular risk factors and the development of NIDDM in a cohort of middle aged British men.

Design—A prospective study.

Subjects and setting—A population based sample of 7735 middle aged British men, drawn from one group practice in each of 24 towns in England, Wales, and Scotland. Prevalent cases of diabetes and men newly diagnosed at screening were excluded (n=119).

Main outcome measures—Physician diagnosed NIDDM over a mean follow up period of 12.5 years. Cases were ascertained on the basis of regular, systematic reviews of primary care records and a questionnaire to the men.

Results—There were 184 new (incident) cases of NIDDM. In univariate analysis, glucose and body mass index (BMI) were dominant risk factors with 5th quintile to 1st quintile relative risks of 8.0 and 11.5 respectively. In multivariate analysis (with adjustment for age and BMI) systolic blood pressure, heart rate, HDL-cholesterol and triglyceride concentration, physical activity level (inverse association), and prevalent ischaemic heart disease (IHD) emerged as significant predictors of NIDDM. In a multivariate model including all of these factors (with the exception of blood glucose), only BMI, physical activity level, triglyceride concentration, and prevalent IHD emerged as significant predictors of NIDDM. Relative risk of NIDDM for moderate or higher level of physical activity versus the lowest level, was 0.47 (0.21, 0.76). The association between triglyceride concentration and NIDDM was linear with a 5th quintile to 1st quintile relative risk of 2.5 (1.3, 2.8). The relative risk of NIDDM for prevalent IHD at screening was 1.6 (1.2, 2.2). These factors (BMI, physical activity, triglyceride concentration and prevalent IHD) also predicted NIDDM among men in the upper glucose quintile (>6.1 mmol/L). Results were unchanged in an analysis from which men diagnosed within 5 years of screening (n=58) were excluded.

Conclusions—These findings emphasise the inter-relationships between lifestyle and NIDDM and cardiovascular disease. The independent role of physical inactivity in the development of NIDDM has important implications for future health promotion. This is the first study to show that this relation is independent of the major cardiovascular risk factors.

Trends in central obesity and insulin resistance across employment grades: the Whitehall II Study

ERIC BRUNNER, AMANDA NICHOLSON, M G MARMOT (Department of Epidemiology and Public Health, University College London) Objectives—To investigate the role of central obesity and insulin resistance as possible explanations of the social gradient in cardiovascular risk.

Design—A 75 g oral glucose tolerance test was administered at the second and third medical examinations of the Whitehall II cohort.

Setting and participants—In the first Whitehall study, a clear inverse association had been seen between employment grade and mortality from cardiovascular disease. Subjects were recruited to the Whitehall II study in 1985–88 from 20 London-based Civil Service departments. 5471 men and 2436 women aged 40–60 years attended a second examination in 1991–93.

Main outcome measures—Plasma glucose and serum insulin were determined before and after two hours 75 g oral glucose. Fasting serum lipids were also determined. Waist and hip circumferences, weight, and height were measured using standardised methods. The waist:hip ratio and body mass index (BMI) (kg/m²) were calculated.

Results—Both central obesity (waist:hip ratio) and the degree of adiposity (BMI) showed an inverse trend across employment grades in men and women. Similarly, the increment in plasma glucose and the insulin response to the standard oral glucose load were considerably larger in study participants in lower grades. Central obesity was inversely associated with one another (men: r=0.25, women: r=0.26; both p=0.0001). Both factors were associated with serum lipid levels (total and HDL cholesterol, triglyceride concentrations), with sex (both sexes p≤0.0001 for each fraction). Weaker associations with factor VII coagulant activity were also seen. Trends in HDL cholesterol were generally consistent with trends in obesity.
cholesterol and triglycerides, but not total cholesterol or factor VIIc, were evident across employment grades. The patterns of central obesity and insulin resistance, similar to the “metabolic syndrome”, are consistent with roles in mediating cardiovascular risk in both sexes. The relationship between employment grade and insulin resistance remained after controlling for central obesity and degree of adiposity.

Conclusions—Significant trends in central obesity and insulin resistance have been observed across employment grades. These two factors, which are associated with established coronary risk factors HDL cholesterol and triglycerides, may partly account for social inequalities in cardiovascular risk which had hitherto been unexplained.

Excess mortality in 10 international cohorts of diabetic patients: the WHO Multinational Study of Vascular Disease in Diabetes

S.L. WANG, J. HEAD, J.H. FULLER (Department of Epidemiology and Public Health, University College London)

Objectives—To determine and compare excess mortality in diabetic subjects according to country of origin, sex, age, and diabetes type.

Design—This is a prospective study in which patients have been followed up from 1975 to 1987.

Setting—Study centres in London, Warsaw, Hong Kong, and Tokyo recruited samples from outpatient clinics. The Swiss sample was randomly selected from diabetic patients all over the country. Patients from Berlin, Zagreb, and Havana were sampled from a geographically defined register of all diabetic residents. The remainder were recruited from registers of diabetic patients belonging to identifiable ethnic groups: the Pima Indians in Arizona and the American Indians in Oklahoma.

Patients—Eligible patients were stratified according to age (35–41; 42–48; 49–54 years), duration of diabetes (1–6; 7–13; 14 or more years) and gender, and a random sample of 4714 patients was selected from these strata (18 in total).

Measurements and results—Life/death status was ascertained for 95% of the sample and death certificates were collected for deceased patients. Excess mortality was assessed in terms of standardised mortality ratios (SMRs), which were calculated on the basis of diabetic and background population rates for each of the 10 cohorts.

During the 10–12 year follow up period, a total number of 1088 patients died. SMRs were generally higher in IDDM patients (ranging from 188 to 686 for men and from 336 to 790 for women) compared with NIDDM patients (ranging from 138 to 370 for men and from 126 to 435 for women). In Tokyo, excess mortality for NIDDM patients was the lowest of all the centres and Tokyo was the only centre for which SMRs were not significantly greater than 100. For both types of diabetes and genders, excess mortality decreased with increasing age. When all the centres were compared for mortality for age 35–44 years in 1975, for IDDM, M: 680 (95% CI 452–986), F: 682 (363, 1166), for NIDDM, M: 472 (296, 713), F: 632 (368, 1011); and for 55 years or over, for IDDM, M: 389 (311, 481), F: 618 (484, 778), for NIDDM, M: 314 (276, 355), F: 448 (386, 517).

Conclusions—There were considerable international variations in the extent of excess mortality. Low excess mortality in Tokyo offers hope that lifestyle modifications together with improved diabetes care may reduce potentially avoidable diabetes related excess mortality in other parts of the world.

Prenatal screening

Assessment of the epidemiological impact of maternal serum alpha-fetoprotein screening for Down’s syndrome in Glasgow

P. MARTIN, D. STONE (‘Department of Public Health and ‘Public Health Research Unit, University of Glasgow)

Objective—to assess the epidemiological impact of the introduction of a new screening test (maternal serum alpha-fetoprotein) for Down’s syndrome (DS)

Design—An analysis of the temporal trend (1980–90) in the pattern of pregnancies, births, and induced abortions associated with DS as recorded in the population register of congenital anomalies.

Setting—the area served by the Greater Glasgow Health Board (total population approximately 1 million, annual births approximately 13 000).

Subjects—A total of 173 pregnancies (live births, still births, and induced abortions) following pregnancy diagnosis of DS in women resident within the study area occurring in the birth years 1980–90. The denominator was the total number of births to women resident within the study area.

Main outcomes—Comparison of two time periods (1980–87 and 1988–90) in terms of total DS pregnancies, outcome of DS pregnancies (live births, still births, and induced abortions), outcome of DS pregnancies by maternal age, and time of diagnosis of DS (whether prenatal or postnatal).

Results—The pregnancy prevalence of DS for the study period was 1.2 per 1000 births. The proportion of DS pregnancies which resulted in live births declined from 84% in 1980–87 to 66% in 1988–90, while the proportion of DS pregnancies terminated increased from 14% to 31%. The proportion of DS pregnancies terminated in those aged 35 and over rose from 43% in 1980–87 to 57% in 1988–90, while in those aged under 35 the proportions were 3% and 15% respectively. The proportion of DS pregnancies diagnosed prenatally trebled between the two time periods from 13% to 38%.

Conclusions—The addition of maternal serum alpha-fetoprotein assay to maternal age significantly enhanced the effectiveness of screening for DS in Glasgow, particularly in younger women. Screening, however, continued to be more effective in older than younger women and to result in the termination of a minority of all DS pregnancies.

Regional differences in prenatal diagnosis of Down’s syndrome pregnancies

A. ALBERMAN, D. MUTTON, R. IDEU, M. BRobor (‘Wolfson Institute of Preventive Medicine, St Bartholomew’s Hospital Medical College, London; ‘Paediatric Research Unit, Division of Medical and Molecular Genetics, United Medical and Dental Schools, Guy’s Hospital, London)

Objective—to study regional differences in prenatal diagnosis rates in Down’s syndrome (DS) pregnancies.

Design—An anonymous national cytogenetic register of Down’s syndrome has been set up. Ascertainment of all cytogenetic diagnoses associated with DS in births, terminations, or spontaneous miscarriages is through regional laboratories. Clinical and demographic data are collected from the laboratories and where possible, from referring clinicians. A “capture-recapture” exercise with the use of the independent notifications of DS received by the OPCS suggests that the data on live births are over 90% complete.

Setting—England and Wales from 1989 onwards. Data in this abstract are based on laboratory samples received between 1.1.89 and 31.12.91; data from 1992 are currently being analysed.

Subjects—a total of 3259 cytogenetic diagnoses of DS, of which 1115 had been made prenatally and 2144 had been made after the birth.

Main outcome measures—Proportion of all diagnoses made prenatally, by maternal age group, and regional health authority of referring hospital.

Results—the proportion of prenatal diagnoses varied overall between regions, partly because of differences in regional maternal age distribution, but also between other large groups. Of the postnatal diagnoses, 8% were in cases where maternal age was at yet unknown. These were redistributed within regions in terms of those age groups that were known. After this adjustment, which made small difference to the results, the proportion diagnosed prenatally in different regions varied from 6% (95% CI 5.5–7.8) to 54% (95% CI 45.6–62.5) in mothers aged over 34; and 20% (95% CI 13.1, 27.9) to 6% (95% CI 2.2, 12.5) in mothers under 35 years.

Conclusions—These findings confirm the necessity for continuing monitoring of the regional services for this condition, and for investigations to explain to what extent the variations observed are due to differences in screening services offered.

Fetal carrier screening for cystic fibrosis: comparative evaluation of two approaches

Z. MIEZYBRODZKA, N. HATTES, M. HALL, A. TEMPLETON, J. MARTEAU, J. DEAN, K. KELLY, J. RUSSELL (‘Departments of Medical Genetics, Obstetrics and Gynaecology’ and Health Services Research Unit, University of Aberdeen. Wellcome Psychology and Genetics Research Group, Department of Medical and Molecular Genetics and Division of Psychiatry, UMDS, Guy’s Hospital, London)

Objective—to perform a comparative evaluation of two approaches to antenatal carrier screening for cystic fibrosis, namely disclosure (step-wise) testing and non-disclosure (couple) testing.

Design—Pragmatic randomised trial.

Setting—Aberdeen Maternity Hospital Antenatal Clinic.

Patients—a total of 2002 couples in which the female partner was attending for her routine antenatal care. Controls were selected by age and area. Couples were eligible for study if gestation was less than 17 weeks, and no family history of CF was elicited by clinic staff.
Interventions—Couples were randomly allocated to be offered carrier testing by the disclosure method or the non-disclosure method, in a ratio of 5:1. **Main outcome measures**—Women’s anxiety, knowledge of carrier status and test results, attitudes to pregnancy and the baby, perception of health, satisfaction with screening service; men’s knowledge of carrier testing status and attitude to screening; and uptake rates, screening efficiency (number of carrier’s relatives informed of increased risk), and financial costs were determined.

Results—In the disclosure arm, 1641 tests were offered and 1487 were performed (91% uptake); 48 carriers were detected. In the non-disclosure arm, 361 tests were offered and 321 were performed (89% uptake). In two couples, both partners were found carriers—one couple within each arm of the study. Both of these couples elected to have prenatal diagnosis. Uptake of screening was the same in both groups; the other outcomes under assessment will be presented.

Conclusions—Both forms of screening are feasible in an antenatal clinic and uptake is the same for both approaches to screening. Further analyses will be drawn from the other results which are in preparation.

**PAEDIATRIC PROBLEMS**

OPCS’s new hierarchical classification of causes of infant deaths

BEVERLEY BOTTING, EVA ALBERMAN, NICK BLATCHFORD (Office of Population Censuses and Surveys (OPCS), London)

Objective—To produce a classification for the fetal and maternal causes of death available since 1986 on stillbirth and neonatal death certificates. The classification should be robust without additional clinical data, be applicable to postneonatal deaths, and produce minimal change to previous cause, age-specific, or international trends.

Method—OPCS set up a working group of paediatricians, paediatric pathologists, and epidemiologists. It first published classifications to identify nine main classes of infant death. These were ordered, with the causes acting earliest in pregnancy taking precedence. This reflects the interest in identifying implications for prenatal, obstetric, postnatal, or paediatric services. An algorithm was developed which would be used firstly to trigger further medical enquiries from the certifiers. Secondly, the algorithm would be used to group the deaths to enable a more detailed analysis of each specific grouping. The algorithms produced a classification which allocated deaths to one of the following nine groups in this order of precedence:

1. Congenital malformations and defects;
2. Congenital infections;
3. Immaturity;
4. Asphyxia, anoxia or trauma;
5. External cause;
6. Infection;
7. Other specific causes;
8. Sudden infant deaths;
9. Other causes.

Evaluation—The final classification was examined for consistency of trend from 1981 to 1991, looking for signs of disruption in the analysis of causes of neonatal deaths in 1986 when the new certificate was introduced. It was also tested for validity in terms of birthweight distributions, which it had not been possible to take into account at the time of the initial grouping. These analyses provided evidence of the algorithm’s robustness, clinical validity and consistency with previous trends.

Conclusions—OPCS will be publishing causes of infant death classified as described, as well as continuing existing ICD based tables. Views of customers on its usefulness will be sought. Work on the stillbirth data is also under way, with a view to producing an algorithm for these deaths in a similar format.

Birth prevalence of malformations after matings between different ethnic groups

JAN LECK, R J LANCASHIRE (‘Woodstock, Oxford; ‘Department of Public Health and Epidemiology, University of Birmingham)

Objective—to clarify the reasons why some ethnic groups are at relatively high risk of malformations (eg why Irish Irish people are more prone to neural tube defects and Afro-Caribbeans to polydactyly) by examining the birth prevalence of these malformations in the offspring of matings between members of high and low risk ethnic groups.

Results—Infants whose parents were of different ethnic groups differed significantly (p<0.01) from parental ethnic groups in respect of the prevalence of the following malformations:

1. Neural tube defects (less common when the mother is British and the father Afro-Caribbean than when both are Afro-Caribbean);
2. Cleft lip with or without cleft palate (less common when the mother is European and the father Afro-Caribbean than when both are Afro-Caribbean);
3. Polydactyly (more common when either parent is European and the other Afro-Caribbean than when both are Afro-Caribbean);
4. Clubfoot (less common when the mother is European and the father South Asian than when both are South Asian);
5. Dislocation of the hip (less common when the mother is European and the father Afro-Caribbean than when both are European).

Conclusions—It may be because of genetic differences between European and Afro-Caribbean infants that cleft lip, polydactyly, and hip dislocation differ in prevalence between these infants. Variations in the intrauterine environment may, however, account for neural tube defects being relatively common in Irish infants and uncommon in Afro-Caribbeans, and for South Asians being at relatively high risk of clubfoot.

How long do children with cerebral palsy survive?

JAN HUTTON, P O D PHARAOH, THERESA COOKE (Departments of Statistics and Computational Mathematics and Public Health, University of Liverpool)

Objective—to determine the length of survival of children with cerebral palsy according to the degree of functional disability.

Methods—A register of all cases of cerebral palsy born in the Mersey region since 1966 has been maintained using multiple sources of ascertainment. Hospital paediatric records were abstracted to obtain information on the degree of functional disability. Functional disability was split into mild, moderate, severe and profound levels of disability in four categories according to the IQ, manual dexterity in four categories, and ambulatory disability in six categories. All cases were followed by the National Health Service Central Register and notifications were received of their current status—ie, whether alive or dead. Life table analysis was used to determine length of survival.

Results—There were 1252 cases of cerebral palsy on the register. The 25 year survival of the whole cohort was 85% with no significant difference between males and females. The lowest category of mental ability (IQ<30) had a mean 25 year survival of 75% which differed significantly from the three less severely affected categories. Similarly, the most severe grade of physical disability (25 year survival 5%) differed significantly from all other categories of physical disability (25 year survival 95%).

Conclusions—Only the severely disabled children with cerebral palsy have a 25 year survival that is significantly less than for normal children. A high proportion of children with cerebral palsy show survival rates that do not differ significantly from normal. In the light of the Royal College of Physicians report drawing attention to the gap in service provision for the young physically disabled adult, greater awareness of this increasing problem is needed.

Costs of education and care for low birthweight children

R C STEVENS, P O D PHARAOH (Departments of Economics and Public Health, University of Liverpool)

Low birthweight is frequently expressed about the medium and long term costs of care and education for low birthweight (LBW) children. This paper reports on a follow up study of infants of BW<2000g born in 1980 and 1981 to mothers resident in the county of Merseyside. The sample included all 220 survivors of BW<1500g, all 38 children of BW 1501-2000g impaired or thought to be impaired when assessed at age 3, and a random 10% sample (n=46) of 461 children of BW 1501-2000g who were free of clinical disability when assessed at age 3. LBW children attending normal schools were matched with a control of the same sex, from the same school, and as close as possible in birthdate. The extra cost of caring for LBW...
Assessing the need for prostatectomy: prevalence of appropriate indications and patient choice for treatment

D J W HUNTER, MARTIN MCKEE (Health Services Research Unit, London School of Hygiene and Tropical Medicine)

Background—Recent reform of the National Health Service now requires health authorities to assess the health needs of their populations and to purchase appropriate care to meet these needs. Traditional needs assessments rely on existing utilization data and do not consider such issues as appropriateness and patient choice. Assessing the need for specific health care interventions should be based on both the prevalence of agreed indications and patient preference for treatment.

Aim—To measure: (1) the prevalence of appropriate indications for prostatectomy; and (2) patient preference among those for whom prostatectomy is indicated.

Method—A questionnaire was sent to 2000 men over the age of 55 in the North West Thames region. The sample was obtained from practice lists of randomly selected GP practices in North West Thames. Urinary symptoms were measured using the American Urological Association’s symptom index for benign prostatic hyperplasia (BPH). Those reporting symptoms were sent a second questionnaire that provided information about the outcomes of prostatectomy and asked about their preference for treatment. To estimate the need for prostatectomy, survey results were combined with the results of a consensus panel, which employed consensus methods (a nominal group of urologists and GPs) to establish the appropriate indications for prostatectomy.

Results—The response rate among eligible responders was 78%. The prevalence of BPH defined as moderate or severe urinary symptoms, was 309 per thousand. The prevalence of appropriate indications for prostatectomy was 150 per thousand. When adjusted for the percentage of those who would choose treatment (64%), the need for prostatectomy was determined to be 96 per 1000 men over the age of 55.

Conclusions—This study provides estimates of the need for prostatectomy based on the prevalence of appropriate indications and patient choice for care. These results will aid purchasing authorities to specify contracts for the provision of urological services.

Is selection bias a problem in small scale medical audits?

M ROBINSON (Health Services Research Unit, London School of Hygiene and Tropical Medicine)

Objective—To determine if time saving measures in the selection of cases for topic based audit produce misleading results compared with a more rigorous sampling method.

Design—Comparison of results from a rigorous sample based on accident and emergency registers and ward admission books with two subsamples (1) quartile of cases whose record folders were most easily located (2) cases detectable from hospital computer about 3 months after discharge on the basis of their coded discharge diagnosis.

Setting—Five district general hospitals.

Subjects—All emergency admissions with chest pain due to suspected myocardial infarction during four observation periods spanning 12 months.

Main outcome measure—Change in rate of use of thrombolyis and “door to needle” time in each hospital between the first and subsequent observation periods.

Results—In the complete sample 54 of 84 (64%) patients with chest pain were given thrombolyis in the first observation period compared with 129 of 152 (85%) in the last, indicating an increase in the rate of use of 21% over the 12 months. Comparable results from the quartile of notes most easily found were an increase from 61% to 85%. Limiting the audit to cases which were coded on the hospital computers as myocardial infarctions gave results of 39 of 48 (81%) compared with 100 of 123 (81%) in the third observation period nine months later. Coded diagnoses were not collected during the final set of observations.

The average door to needle time was found to increase over time using all three methods. Using the complete sample, the average increased from 97 to 123 minutes. Using the easiest quartile to locate, it increased from 112 to 160 minutes. Corresponding figures for those cases coded as infants were 89 to 135 minutes.

Conclusions—Saving time and money by employing short cuts in case selection for audits of thrombolyis did not affect their ability to detect changes in clinical performance, although statistical significance was reduced. Limiting the audit to cases which were coded as infants overstated the true rate of use of thrombolyis. Consideration should be given to using similar methods in other topic based audits.

Using simulation methods in the appraisal of purchasing options

C W PERTCHARD (Public Health Research Unit, Glasgow)

Objective—To investigate the feasibility of a proposed increase in the numbers of hip replacement operations using simulation as a way of illustrating the utility of these methods for purchasing. The study was undertaken as a preliminary to a large-scale simulation of the needs of the elderly for acute in-patient care.

Setting—Lanarkshire Health Board Area.

Patients—Lanarkshire residents receiving treatment for fractured neck of femur or hip replacement.

Design and methods—Current incidence, waiting list and length of stay statistics were used to derive and validate a linkage set of event simulation models of current service use. The model was designed to replicate current daily bed use and occupancy rates. The validated model was then used to estimate the consequences of simultaneous changes envisaged the next year as follows: An increase of 1% in the numbers of fractured necks of femur, because of demographic trends;
A decrease of one day in average lengths of stay, an effect of improved community care; An increase of 5% in the numbers of hip replacements, part of a purchasing plan.

The results reported represent 1000 years of the second allocation. The validity and
Results—The simulation confirmed the feasibility of the purchasing plan. However, this would be at the expense of an increase in the number of times at which there would be no bed available for a patient with a fractured neck of femur (current 1-3 occasions per year, estimated 17-0 occasions next year) and the proportion of replacement operations cancelled at short notice (current 0-6%, estimated 8-3%). The simulation also showed that there was a risk (1 in 5) that the contract could not be completed with available resources. There was also a risk (1 in 14) that the contract would be completed more than six weeks before the end of the contract period, with consequent underutilisation of resources.

Conclusions—The simulation provided high quality information about the range of possible consequences of the purchasing plan with quantitative estimates of their likelihood. Such information is of considerable value in the appraisal of purchasing options, and simulation methods should be more widely used.

DETECTION OF CHANGE IN HEALTH

Sensitivity to change of generic health status measures

KATE LAWRENCE,1 CRISPIN JENKINSON,1 DOUGLAS McWHINNIE,2 ANGELA COULTER1 (‘Health Services Research Unit, Department of Public Health and Primary Care, University of Oxford; 2Nuffield Department of Anaesthetics, University of Oxford)

Introduction—The NHS reforms and the emphasis on purchaser/hospitals for health gain have made the measurement of health status of increasing importance. A large number of standardised, non-disease specific measures of health status now exist for use in clinical trials, population surveys, and to assist in research. For these measures, validity and reliability of these measures have been the subject of much research, but their sensitivity to change remains unexplored. This study investigates the sensitivity of three widely used generic measures.

Objective—To assess the sensitivity to change of three generic health status measures in patients undergoing surgery.

Design—The three health status measures were administered to patients who were taking part in a randomised controlled trial of laparoscopic versus open hernia repair performed on a day care basis. Questionnaires were administered preoperatively and at 10 and six weeks postoperatively. The measures were used as an indication of the postoperative morbidity experienced by patients undergoing the two types of surgery. Patients were a total of 68 patients presenting with unilateral inguinal hernia who were suitable for day case general anaesthesia. All patients were aged 18 to 65 years. Thirty one patients underwent laparoscopic and 29 open hernia repair.

Outcome measures—Health status was assessed using the Short Form 36 (SF36), a multidimensional measure with multi-item scales; the Dartmouth COOP charts, a multidimensional measure with single item scales; and the Euroquol, an index measure.

Results—Effect size calculations were used to compare the relative sensitivity to change of corresponding dimensions of the SF36 and Dartmouth COOP charts. Results indicated that the SF36 was more sensitive than the Dartmouth COOP charts. This is consistent with the greater sensitivity of multi-item than single item scales which has been previously documented. However the direction of change on the two measures was in the same direction.

It is suggested that while the use of single item scales may lead to a reduction in statistical power in a clinical trial, they may be beneficial as a routine aid in clinical practice given their simplicity. The sensitivity to change of the index measure obtained by use of the Euroquol will also be presented, and the advantages and disadvantages discussed.

Assessment of the sensitivity to change of three pain measurement methods in a randomised control trial of treatment regimes for postoperative pain after surgery

C JENKINSON,1 D CARROLL,2 H MCQUAY1 (‘Health Services Research Unit, Department of Public Health and Primary Care, 2Nuffield Department of Anaesthetics, University of Oxford)

Objective—To assess the sensitivity to change over time of three methods of assessing acute postoperative pain.

Design—Comparison of the sensitivity to change of three pain measurement instruments completed by patients in a double blind, double dummy parallel group study. The pain measures were utilised to evaluate the efficacy of one of three doses of oral bromfenac, an orally active, potent, non-narcotic analgesic compound with anti-inflammatory and antipyretic properties, with one of two doses of sublingual buprenorphine, an opiate used in the management of severe to moderate pain.

Patients—A total of 75 patients after general surgical and orthopaedic procedures.

Outcomes—Pain intensity was measured by the affective, sensory, and evaluative dimensions of the McGill Pain Questionnaire (MPQ) together with total score and word score, a 10 cm visual analogue scale (VAS) and a categorical word scale (CWS).

Results—Effect size calculations indicated considerable variation in the sensitivity of pain measures to change, with the MPQ indicating low to moderate changes in the groups given buprenorphine, and moderate to large changes for the groups given bromfenac. The simpler VAS and CWS measures indicated moderate changes for the groups given buprenorphine, and large changes for bromfenac groups.

Conclusions—This study suggests that multiple measures of pain are sensitive to change and are worthwhile indicators of the impact of an intervention upon acute pain. More complex forms of assessment, such as the calculation of the MPQ subscales, may not add anything to pain measurement in acute conditions, although evidence from other studies suggests such measures may be appropriately utilised in the assessment of pain in chronic conditions.

HEALTH RELATED BEHAVIOUR

Blood, threats, and fear—the public health and human rights consequences of the war in the republics of former Yugoslavia

M BLACK, J GEIGER, T CRANE, J SONAS, N SUGG, J WOODALL (Physicians for Human Rights, Boston, USA)

Objective—To document the medical effects of human rights abuses of this war. To gather systematic data on the public health consequences of the war, in particular the effect on children. To evaluate the effect of United Nations (UN) sanctions on the delivery of health care in Serbia. To bring this information to the attention of the media and the international health care community.

Design—A six member team from Physicians for Human Rights (PHR) completed field work between 25.1.93 and 6.2.93 and continued to gather information for a further six weeks. Available published and unpublished information was scrutinised.

Detailed structured interviews were made. Sixty two refugees were surveyed to evaluate their experiences of human rights abuses. Setting—Bosnia, Croatia, Serbia, and Slovenia.

Subjects—Refugees, former detainees, health care and other professionals, government agencies, local and international humanitarian organisations.

Main outcome measures—Evidence of violations of the Geneva conventions such as complicity by physicians in torture; denial of medical care to civilians or wounded combatants; direct attacks on health personnel, hospitals, or clinics. Evidence of atrocities and mass graves. Reports of deaths, numbers of wounded, epidemics of infectious diseases, and hospital activity levels. Prevalence of malnutrition, injury or post traumatic stress disorder in children. Levels of humanitarian aid and projected needs for the at risk population. Availability of health care in Serbia and evidence of a direct association with UN sanctions.

Results—There are widespread and continuing atrocities and violations of human rights, including the destruction of hospitals, in Bosnia and Herzegovina and Croatia, targeting of health care personnel, and so called "ethnic cleansing". There is little evidence of physician complicity. Access to medical care may be denied. The public health is deteriorating, particularly in the war zones. Children experience injury, increasing levels of malnutrition, and very high levels of post traumatic stress disorder.

The refugees surveyed had experienced a wide range of human rights abuses. Sanctions are adversely affecting the provision of health care in Serbia.

Conclusions—This is the first systematic international attempt to document the effects of this war on health and human rights. The report has been published by PHR and widely distributed. The collection and presentation of information in a war requires epidemiological, forensic, sociological and other public health skills.

Further documentation of evidence for future war crimes tribunals is required. Sanctions are not a bloodless alternative to war.
Quitting and relapsing—smoking cessation in a working population

AMANDA NICHOLSON, ERIC BRUNNER, M G MARKOT (Department of Epidemiology and Public Health, University College London)

Objective—To describe patterns of smoking cessation in an occupational cohort and to study socioeconomic and psychosocial predictors of cessation.

Design—Longitudinal study using two questionnaires (S1 and S2) from the Whitehall II Study, administered two to four years apart. Setting—Twenty London based departments of the Civil Service. Subjects—A total of 8116 subjects (5525 men and 2591 women) who completed smoking questions in both questionnaires, initially aged 35–55 years.

Main outcome measures—"Quitters" reported as current smokers at S1 and not at S2 and "Relapsers" reported as exsmokers at S1 and current smokers at S2.

Explanatory variables at S1—Socioeconomic factors such as housing tenure, financial worries, and educational level; psychosocial factors including the psychosocial work environment and social support; psychological functioning (General Health Questionnaire score and Affect Balance score).

Results—221 of 1342 (16.5%) current smokers at S1 were not smoking at S2. 105 of 2615 (4.0%) exsmokers at S1 were smoking at S2. Both quitting and relapsing showed a strong relationship with grade of employment when divided into three groups. Twenty three per cent of smokers in the top, administrative, grade had quit smoking compared with 10% in the bottom, clerical, grade (p<0.001). Similarly 2.7% of exsmokers relapsed in the top grade and 7-2% in the clerical grade (p<0.001). Other predictors of failure to quit smoking were younger age at starting smoking and heavy smoking. Period of smoking cessation was a strong predictor of relapse. Sixty eight per cent of those relapsing did so within three years of stopping. Age and gender had no independent effect on either quitting or relapsing. Psychosocial factors were not related to future changes in smoking behaviour. Council tenancy was a risk factor for both failure to quit (odds ratio=2.0 [95% CI 1.7–2.3]) and relapse (odds ratio=2.8 [95% CI 1.5–5.0]). Low skill use at work was associated with failure to quit. The proportion of smokers quitting in relation to increasing tertile of skill use was: low 13.9%, middle 15.3%, high 23.0%, (p for trend <0.001). Weaker associations were seen between low control at work and failure to quit and low skill use and relapse. The effect and rationale for controlling for grade of employment in these analyses will be discussed.

Conclusions—These analyses show striking social gradients in smoking cessation, both in stopping smoking and in avoiding subsequent relapse. Possible explanations for these variations include stress at work, particularly lack of control and monotony.

Social image of smoking among young people in Lothian: a qualitative research project

A AMOS, S CUNNINGHAM-BURLEY, H ALBUTT (Department of Public Health Sciences, University of Edinburgh)

Objective—To gain an understanding of the contemporary images of smoking held by young people, the sources of these images, and their relationship to young people's social groupings and smoking behaviour.

Design—A qualitative, in-depth investigation using discussion groups to elicit young people's ideas, attitudes, and experiences of smoking supplemented by a short questionnaire documenting smoking behaviour, drinking habits, magazine reading, and socioeconomic status.

Selection—Recruitment was through schools, colleges, youth clubs, and community centres. Three age groups were selected—11–12 years, 15–18 years, and 18–20 year olds in different areas to enable some comparison across socioeconomic groups.

Results—Twenty eight discussion groups were conducted, 27 of which were tape recorded and transcribed. A total of 234 young people participated in the study. Data are presented thematically, including information on the positive and negative images of smoking, the concept of style and youth subcultures, perceptions of passive smoking, attitudes towards anti- and pro-smoking advertisements, the relationship between smoking, alcohol, and illicit drug use, and the concept of peer pressure and smoking behaviour.

Conclusions—Cigarette smoking among young people is predominantly a social and a group activity. The findings point to the potential of peer education as a possible way forward for the development of effective health promotion initiatives to reduce teenage smoking. Further research, however, combining both qualitative and quantitative techniques will be needed to test hypotheses and to answer questions raised by the study.

Challenge of reducing high abortion rates in an inner city area of London

N BRUCE, A GRIFFITH, S BURNETT, I MORRISON (Department of Public Health, University of Liverpool)

Objective—The London boroughs of Camden and Islington have abortion rates two to three times the national average. The purpose of this study was to examine the reasons, including whether these are partly artefactual due to visitors misreporting their address.

Design—Cross sectional survey using self-completed questionnaires.

Subjects—A total of 290 women aged 16 and above having an abortion in 1992.

Measurement—Main issues examined were, (a) duration of residence in locality, (b) nature and stage of relationship, (c) use of contraception at conception and of emergency contraception, (d) use of and views about community and GP contraception services.

Results—A response of 90% was achieved in the NHS sector and a lower one in the private sector; comparison with GP statistics however, showed a good representativeness for age, marital status, and parity. Very few women were visitors for the purpose of the abortion, but nearly half (46%) had lived in the area for less than two years. Most women were in steady relationships and only 11% reported their relationship as casual; 13% were married, 46% had a steady partner with whom they were not living, and 24% had a partner with whom they were living. Over 80% had had the sexual relationship for a few months at least, although for one third the relationship was beginning or ending at the time they became pregnant.

Overall, 31% reported that no contraception was used on the occasion of conception (43% if withdrawal and safe period are included). Only 8-5% used emergency contraception, with most non-users saying they did not suspect pregnancy until a period was missed. Nearly half (45%) reported at least one previous abortion, including 21% of teenagers; women reporting previous abortion had slightly lower use of contraception. In the year before the abortion 32% had sought contraception advice from GPs but fewer (23%) from the community clinics (p<0.011), despite the latter services scoring more highly in the women's views. Young women (<25) preferred advice from the GP than the community clinic (p<0.016), while blacks had a lower GP attendance than whites (p<0.06).

Conclusions—This study confirmed that the abortion rates were not an artifact caused by visitors for abortion giving a local address. Most pregnancies occurred within "steady" relationships, yet contraception use was relatively low, and emergency contraception barely used at all. The challenge of prevention is heightened by the fact that many women had been resident for less than two years, emphasising the need for a much more active approach to the promotion of routine and emergency contraception.

MENTAL ILLNESS

Unemployment rates as a powerful predictor of psychiatric admission rates

R M KAMMERLING, S O'CONNOR (Department of Public Health Medicine, Bristol and District Health Authority; Barrow Hospital, Bristol)

Objective—To examine the relationship between psychiatric admission rate and both unemployment rates and the underprivileged area (UPA) score at a small area level.

Design—Two groups of small areas were used. One comprised electoral wards within Bristol City, for which the UPA score was available, based on 1981 census data. The other comprised small areas covering the whole of Bristol and District Health Authority, created by regressing together more electoral wards to include a total of 23 electoral wards of a similar socioeconomic status, for which unemployment rates only were available. Psychiatric admission rates, both crude and age standardised, were calculated with data from April 1990 to March 1992. Rates based on all admissions and also on the number of people admitted, regardless of the number of admissions each person accumulated in the time, were calculated. Controlling factors relating to bed availability, lengths of stay, and admission rates were examined.

Results—There were very large variations in admission rates between small areas—a greater than sevenfold variation for people aged less than 65 years. Unemployment rates explained over 90% of the variation in psychiatric, age standardised, person based admission rates for the under 65s within the aggregated small areas. The explanatory power is greater for person based rates, rather than rates based on all separate admissions. Inclusion of the population over 65 decreased the strength of the relationship. Within electoral wards, unemployment rates explained about 50–60% of the variation, but were slightly more powerful than the UPA score, which could not explain more than 50% of the variation. There was a significant negative.
correlation between average length of stay and readmission rates—that is, areas with short lengths of stay were more likely to have patients readmitted.

**Conclusions**—Unemployment rates are an extremely powerful indicator of the need for inpatient mental health care in the under 65s. An admission to hospital is one measure of serious mental illness, a method of resource allocation (such as that used to set budgets for GP fundholders) which does not reflect the high degree of variation could substantially distort the attendance of seriously mentally ill living in areas of high unemployment.

**Parental divorce, own divorce, and depression**

BRYAN RODGERS (NH&MRC Social Psychiatry Research Unit, The Australian National University, Canberra)

**Objectives**—To identify long term social and emotional sequelae of parental divorce.

**Design**—Repeated follow up studies of a British birth cohort.

**Setting**—Respondents interviewed at home.

**Subjects**—A total of 3262 men and women aged 43 years.

**Main outcome measure**—Psychiatric symptom score—from interviewer ratings of 19 items covering depression and anxiety over 12 months.

**Results**—In their early teens, boys of divorced families differed from those in intact families on several behaviour and personality measures, including withdrawn behaviour, antisocial behaviour, and neuroticism. This was not seen in girls. In early adulthood, men and women from divorced families report more job changing and premarital pregnancies than their peers. By age 43, men and women who had experienced parental divorce were more likely to have been divorced themselves. Women whose parents had divorced, but not men, reported far higher rates of psychiatric symptoms than those from intact families of origin. Their symptom level could not be accounted for by current financial circumstances (which played a small part), social networks, emotional support, recent life events, or the first order effect of their current marital status. However, there was a highly significant interaction between parental divorce and own marital status in predicting depression scores. Parental divorce was unimportant in the women who had married and remained so. Within the never-married, divorced, and remarried groups, the difference in depression associated with parental divorce was striking.

**Conclusions**—The previously established relationship between parental divorce and depression in women is moderated by their own marital status. Three possible explanations are: (1) experience of parental divorce engenders a greater likelihood of difficulties in intimate relationships; severe conflict or breakdown in these relationships leads to high rates of depression in women. (2) Parental divorce establishes a specific vulnerability in women to similar events in adulthood. (3) Parental divorce, through an unknown mechanism, gives rise to persistent depression in women which increases the probability of breakdown in intimate relationships. A supplementary factor is that single parents are more likely to report financial difficulties if from a divorced family background, perhaps because of less support from their parents. Analyses of existing data sets should help identify which explanations are most important. If parental divorce does establish a vulnerability to divorce in adulthood, then recent secular trends in divorce rates would be doubly implicated as an influence on the prevalence of depression in women.

**Case-control study of premenile dementia of Alzheimer type (PDAT)**

A J NEWENS, D P FORSTER, D W K KAY, J EDWARDS (Centre for Health Services Research; Department of Epidemiology; CRC Neurochemical Pathology Unit; The Medical School, University of Newcastle upon Tyne)

**Objectives**—To establish if environmental and other risk factors for PDAT differ from those in more elderly patients with Alzheimer’s disease (AD).

**Design**—A retrospective case note review identified cases of PDAT known to hospital and other health and social services. Cases with a suitable and willing informant were interviewed to confirm diagnosis using standardised instruments. Information concerning exposure to previously suggested risk factors, including family history of dementia, was collected from a knowledgeable informant, usually the spouse. Controls, matched for sex and date of birth, were randomly selected from family health service authority registers throughout the area covered by the study. Similar exposure information was collected in controls from an informant in the same manner as cases.

**Setting**—The Northern Regional Health Authority in England.

**Subjects**—A total of 109 cases of PDAT and 109 matched controls.

**Main outcome measure**—Odds ratios (ORs) from a univariate examination of risk factor exposure. Comparisons of continuous variables using Wilcoxon matched pairs rank tests and paired t-tests.

**Results**—An OR of 2.5 (95% CI 1.0, 5.6) for a first degree relative with dementia and an OR of 8 (95% CI 1.07, 34.8) for a first degree relative with dementia in whom the disease onset was before the age of 60 was noted. For patients in whom the onset of dementia was before the age of 60, the OR for any first degree relative with dementia was 3.6 (95% CI 1.29, 12.4). No significant associations (p>0.05) were noted between PDAT and a family history of Parkinson’s disease or motor neuron disease, or previous head injury. Likewise previous thyroid disease, cigarette smoking, antacid use, or tea and coffee consumption did not have significant ORs, although mean consumption of tea was significantly higher (p>0.05) in cases. Exposure to aluminium and silicates in drinking water supplies is currently determined from determined geographical information, and results of this analysis will also be presented.

**TERMINAL CARE**

What’s really happening to dying cancer patients now?

JULIA ADDINGTON-HALL, MARK McCARTHY (Department of Epidemiology and Public Health, University of College London)

**Objectives**—To describe experiences of dying cancer patients, as reported by surviving relatives, and to investigate the extent to which needs are being met in areas such as symptom control and information giving where the hospice movement has done much to improve knowledge and practice.

**Design and settings**—Data from the Regional Study of Care for the Dying are used. A random sample of deaths in 20 English health districts was drawn. Districts were not randomly selected, but data from Department of Health performance indicators show that the districts had a good spread on indicators of deprivation and health service provision. About seven months after the death, interviewees tried to contact the surviving relative to tell them most about the deceased’s last 12 months. A 69% response rate was achieved. A total of 2074 cancer deaths are included in this analysis.

**Results**—Very or fairly distressing levels of depression, anxiety, constipation, breathlessness, and pain were experienced by over 50% of patients. Twenty seven percent had bedsores. Pain control by GPs and hospital doctors was said to relieve pain partially or not at all by 47% and 35% of respondents respectively. Clearly, many cancer patients do not receive the standard of symptom control associated with hospice care. Despite the growing recognition of the importance of good communications, 51% of respondents had been unable to get all the information they wanted at the time they wanted it. The hospice philosophy emphasizes that the wishes of patients and families as to place of death should be respected but our results show that only 56% of patients and 68% of relatives were reported to have had enough choice about this. Adequate community care is essential if patients are to be cared at home. However, 39% had unmet needs for help with self care, 25% had unmet needs for help with domestic tasks, 29% needed more home nursing, and 28% of respondents reported that more home visits by GPs would have been helpful. Sixty five percent of informal carers reported that their activities were severely or fairly restricted by their caring responsibilities.

**Conclusions**—Despite the advances in palliative care many patients and their families still have unmet needs for symptom control, information, for choice about place of death, and for adequate community support. There is no room for complacency about the care received by dying cancer patients and their families.

**Solving money for the NHS: an untapped outcome of specialist palliative care services?**

MARGARET ROBBINS (Health Care Evaluation Unit, University of Bristol)

**Objectives**—To assess the impact that specialist palliative care services have on the place of death of cancer patients.

**Design**—Postal questionnaire to specialist palliative care services to obtain activity data relating to the period since their establishment. Analysis of mortality data covering the years 1981 to 1991.

**Settings**—All specialist palliative care services within the area covered by the South West Regional Health Authority.

**Main outcome measures**—Cancer mortality rates according to place of death (hospital, nursing home, hospice, and home) for the years 1981 to 1991, and questionnaire responses covering the year of introduction of service, and proportion of funding obtained.
from the statutory sector (compared with the proportion of funding obtained from the voluntary sector). Average inpatient costs for hospital and hospice patients.

Results—Trends in place of death for patients dying from cancer suggest that the opening of hospices has greatest effect on the proportion of patients dying in hospital. Across the region home cancer deaths have fallen slightly from 30% to 27% of all deaths for the 11 years examined, while cancer deaths in hospital have fallen by about 13%, from 57% to 44% of all deaths. Nursing homes and hospices account for an increase of about 13%, to 21% of all cancer deaths (hospice account for anything between 70–80% of deaths recorded for the joint category of nursing homes/hospices).

Conclusions—Many of the hospices in the South West Regional Health Authority rely on voluntary funding to cover more than 50% of their running costs. The number of patients dying in hospices therefore represents a saving to the health authority in terms of substituting for hospital admission over the time of death. From the data it seems that the costs of approximately 23% of the total potential final hospital admissions for dying cancer patients have largely been transferred from the health authority (or trust) to the voluntary sector.

HOSPITAL USERS

Hospital inpatient experience of men and women aged 36–43 years

S L MANN, M E J WADSWORTH (MRC National Survey of Health and Development, Department of Epidemiology and Public Health, University College London)

Objective—To investigate predictors of hospital inpatient use between ages 36 and 43 years in a national birth cohort.

Design—Information was used from a national birth cohort study collected at age 43 years and earlier in life.

Setting—The class stratified sample was born in England, Wales, and Scotland in the first week of March 1946.

Subjects—Subjects were 1625 men and 1623 women at the most recent contact in 1989 (age 43 years) provided information on all hospital admissions experienced since the previous interview in 1982 (age 36 years).

Results—A total of 22% of men and 34% of women had been admitted to hospital as inpatients on at least one occasion between ages 36 and 43 years. Unemployed men were at greater risk of admission to hospital than others, but this association was no longer apparent when those who were unable to work due to ill health were excluded from the analysis. Women were at increased risk of admission to hospital if they had ever married, had little or no education, lived in local authority housing, had a relatively low income, originated from a working class background, or were currently smokers. The median number of days spent in hospital by unemployed men was greater than those who were employed. Men with low household incomes, few educational qualifications, and those men who had never married spent longer in hospital than others. Hospital care was provided outside the NHS for 21% of men’s admissions and 17% of admissions of women; length of stay did not differ between NHS and private admissions in men, but NHS admissions of women were significantly longer than private admissions.

Conclusions—Even in this relatively young age group it was evident that greater amounts of inpatient care were taken by the poorer and least educated sector of the population, those already shown in this study to be at greatest risk of premature death. They were also least likely to be cared for by the increasing private healthcare sector, and perhaps, in a longer wait for treatment and probably requiring a longer stay in hospital. Alternatively, the finding, for women in particular, that NHS admissions were longer than those funded privately may reflect differences in policy between the two providers of health care.

Estimating the prevalence of “inappropriate” attendance at accident and emergency departments

A LOWY, J NICHOLLS, B KOHLER (Department of Epidemiology and Public Health, University of Leicester; Medical Care Research Unit, University of Sheffield)

Objective—To assess the validity of the Salford Provincial Hospitals Trust (NPHT) classification in distinguishing inappropriate from appropriate attenders at accident and emergency (A&E) departments, and to develop and validate alternative classification methods.

Methods—100 selected A&E records were classified into “inappropriate” and “appropriate/unknown” attenders according to the NPHT classification. The notes were reviewed by each of a sample of five GPs and the level of agreement was determined. Two novel methods were also devised and validated, one based on the three digit ICD-9 diagnosis and one based principally on processes of care in A&E, such as investigations, treatment, and disposal.

Results—The NPHT method grossly overestimated the level of “inappropriate” attendance of the 34 cases which most GPs thought needed A&E care, 24 (70%) were wrongly designated inappropriate attenders. A second method based on ICD-9 diagnosis yielded few such attenders but failed to detect almost half the cases which all five GPs thought were suitable for GP care. The method based on processes of care performed considerably better: of the 35 cases which all five GPs thought suitable for GP treatment, 28 were identified as inappropriate attenders at A&E (80%); of the 15 cases for whom all five GPs thought A&E attendance was necessary, this method correctly identified 14 (93%). Using this definition, 23.3% of 8877 adult attendances at 16 English A&E depart- ments between 1988 and 1992 were deemed unnecessary or inappropriate.

Conclusions—Consulting a casualty officer in A&E has been shown elsewhere to be an inefficient way of obtaining help for non-acute problems, both for patients and for the NHS. Clinicians’ estimates of the proportion of A&E attendances which are inappropriate have varied from 7% to 66%; much of this may depend on the individual’s opinion of the proper role of an A&E department. A reliable method of assessing the volume of primary care undertaken in A&E may have applications in developing and auditing strategies to meet this demand in a more appropriate way. This study has shown that the NPHT method agrees extremely poorly with the pooled opinions of a sample of GPs. An alternative method based on processes of care (which like the NPHT method is simple to apply, being based on information routinely available in A&E notes) provides a much better indication of whether or not the patient was suitable for GP care, and is both objective and non-judgemental. Using this definition just under one quarter of attendances are unnecessary or inappropriate.

Enhancing appropriateness of acute bed use: the role of the patient hotel

IAN HARVEY, ROSEMARY JENKINS, LISE LLEWELLYN (Health Care Evaluation Unit, Department of Epidemiology and Public Health, University of Bristol; Centre for Applied Public Health Medicine, University of Wales College of Medicine, Cardiff)

Background—Several studies have indicated that a large proportion of patients occupying acute hospital beds in the UK are inappropriately accommodated. Few studies have, however, addressed the issue of where else they could more appropriately be accommodated. Patient hotels, already established in Scandinavia and the USA, have been proposed as suitable alternatives. This study seeks to quantify and characterise potential patient hotel users.

Objective—To assess appropriateness of bed use by determining patients’ suitability for patient hotel accommodation and day treatment and by examining timeliness of discharge; to assess patient and staff views about patient hotels.

Design—Patient assessment by a doctor and nurse against agreed case definition for patient hotel use; validation and measurement of patient acceptability by semi-structured interviews with a random sample of suitable patients; questionnaire to all senior medical and nursing staff.

Setting—University Hospital of Wales, Cardiff (856 beds), all specialties (except intensive care wards).

Subjects—Altogether 3972 occupied bed days accumulated over seven randomly chosen census days.

Results—Data were available for 88% of eligible inpatients. Ten per cent (405 of 3972) of patients were judged suitable for a patient hotel. Specialties indicating major use were obstetrics and gynaecology, general surgery, general and geriatric medicine. Sixty three per cent (254 of 405) of these subjects required low level investigation or treatment. Pre- and postoperative and antenatal patients were also prominent. Three per cent (119 of 3972, 95% CL 2.5%, 3.6%) of inpatients were judged suitable for day treatment/investigation. Seventy nine per cent (291 of 366) of patients suitable for discharge were discharged on the same or the next day. The patient hotel idea was acceptable to 58 of 68 (85%) randomly selected patients and 84 of 93 (90%) staff.

Conclusions—With allowance for non-response, our study indicates that a general hospital of this size generates the need (inpatients, relatives, and ward attenders) for a mean of 72 patient hotel beds. There is also residual scope for increasing day treatment/investigation and for releasing beds by improving speed of discharge. The patient hotel idea is highly acceptable to both patients and staff and should be widely considered as a means of enhancing the appropriateness of patient care.