Benefits of adjuvant adenoectomy in persistent OME (glue ear)

M M GANNON for MRC Multi-Centre Otitis Media Study Group (MRC Institute of Hearing Research, Nottingham)

Background—From the mid-1980s, paediatric ENT operations encountered increasing scepticism in public health quarters. The 1992 Effective Health Care Bulletin, coinciding with fundholding, substantially reduced referral rates. Only a few operations were covered, and also compressed the district level practice variation. Variation in rates for adjuvant adenoectomy remains high, suggesting uncertain clinical criteria and variable pressures of facilities and workload.

TARGET (The MRC randomised Trial of Alternative Regimens in Glue Ear treatment) is a three arm multicentre trial not led by service providers. It was undertaken to address overall intervention policy by measuring broad family centred outcomes not used in previous trials. It has already reported benefits from combined surgery versus medical management controls over one year. This paper reports outline adenoectomy results over two years.

Methods—Scores with norms were developed from parental questionnaires and operate in large samples of unafflicted children and to children at +3, +6 and +12 months. These cover symptom areas (ear problems; respiratory infection; hearing difficulties), two behaviour factors (aggression and non-aggression problems), general health and parent quality of life. All children were aged 3.5–7.0 years and had met stringent criteria (chiefly 20dB hearing loss on two occasions, three months apart). In other first world healthcare systems, most would have been treated much earlier. Of 251 grommeted children, 127 were randomised to simultaneous adenoectomy. The two year data include follow up also at +18 and +24 months.

Results—Highly significant additional gains were obtained for the two year average in weight, dB hearing level, parent reported hearing difficulties, respiratory symptoms, parent quality of life, and on the first principal component summarising all outcomes. Additional benefit in aggressive behaviour, and in general health was marginal, but was null for non-aggressive behaviours, ear symptoms and balance. Several of the adjuvant adenoectomy effect sizes were about 0.5 standard deviation; limited effect modification suggests little scope for indicators of groups that could be targeted receiving greater benefit. Re-insertion of grommets was performed according to strict criteria reflecting hearing level, and its frequency within two years was significantly lower in those with adenoectomy (15% versus 34%).

Conclusions—Over all policy conclusions await the analysis of the economic data being gathered. However, given some complementarity of effects from the two operations over time, these results rehabilitate grommet insertion plus adenoectomy as a serious candidate for a cost effective treatment policy.
All's fair in love and cardiology? Sex differences in risk factors, treatment, and survival after acute myocardial infarction—a prospective observational study

B HANRATTY, D A LAWLOW, R SAPSFORD, A HALL, D GREENWOOD, M B ROBINSON, B JACKSON, C MORRELL (Department of Public Health, University of Liverpool, Department of Social Medicine, University of Bristol, South West Clinical Trials Centre, Leeds General Infirmary, University of Oxford, University of Leeds, University of Birmingham, Department of Public Health, University of Glasgow)

Objective—To explore the association between job satisfaction, self perceived stress, cardiovascular risk factors and mortality. Design—Prospective observational study. Setting—27 workplaces in the West of Scotland. Participants—1006 women and 6022 men in paid work.

Outcomes—Cardiovascular disease (CVD) and all cause mortality in a 21 year follow up period, according to job satisfaction at baseline, at second screening and comparison of job satisfaction between baseline and second screening.

Results—There was a significantly greater age adjusted association between job satisfaction and stress at baseline, at second screening and between the two periods The overall difference between occupational class groupings in the reporting of job satisfaction, cross sectionally and longitudinally, was significant for women only. After adjustment for age and occupational class, little job satisfaction was associated with high body mass index in men at baseline, and with a greater number of cigarettes smoked in men at second screening. Job satisfaction was not significantly associated with any of the CVD risk factors examined in women at baseline or second screening. For CVD mortality in a 21 year period, there was no significant difference in the reporting of job satisfaction at baseline, at second screening or between baseline and second screening for men or women. For all cause mortality in a 21 year period, there was no significant difference in the reporting of job satisfaction between baseline and second screening were significantly less likely to die from any cause than women who were always satisfied with their paid work. Women were reported an increased level of job satisfaction between baseline and second screening were significantly less likely to die from any cause than women who were always satisfied with their paid work. Women were older and less likely than men to be smokers or have a history of ischaemic heart disease. Crude in hospital fatality rate was higher for women than men but not significantly so.

Conclusions—While we found a strongly significant association between job satisfaction and perceived stress, there was little evidence to suggest that lack of job satisfaction was associated with cardiovascular risk factors. We suggest that job satisfaction may be contributing to this. There is some evidence to suggest that lack of job satisfaction was associated with cardiovascular or all cause mortality in men, once adjustment had been made for age and social class. There was some suggestion that women who reported increased satisfaction in their jobs between baseline and second screening were at less risk of dying from any cause than other women. We suggest that job satisfaction is an important form of stress for those in current employment and that there is a case for separating the experiences of men and women in future studies.
standardised mortality ratios (SMRs) and cause of death were determined by linkage to national mortality statistics and death certificates (99% complete). Patterns of referral and treatment were established by record linkage to routine data sets and a medical note search in a sample of 376 (35%).

**Results**—1076 cases of CRF were identified. Five year survival within the cohort was 34% with no gender difference. However, in comparison with the general population mortality was influenced by gender: men for SMRs and women were 2.10 and 2.85 respectively. Age was also a major determinant of mortality; SMRs for the age groups <50, 50–64, 65+ were 1.42, 2.02 respectively. Vascular causes comprised 46% of deaths and renal disease was only mentioned on 17% of death certificates. Referral to a nephrologist was low (24%) and significantly influenced by age, comorbidity and severity of disease. Referral cases had more extensive investigations and therapy. Eleven per cent of cases showed progression with a doubling of SCr. 27% (n=33) of those with an SCr >300 µmol/l were accepted for renal replacement therapy, lower age was significantly related to acceptance.

**Discussion**—Survival in CRF is poor (about 90% of deaths were due to vascular causes). Of a cohort were referred to a local nephrologist. The Renal Association recommends that all cases with an SCr >150 µmol/l should be seen by a nephrologist, so there is scope for increased referral, but the cost effectiveness and the implications of an increased workload have not been assessed. There is a strong association between vascular disease and CRF, highlighting the important considerations to reduce vascular disease, which may be as important as those aimed at CRF.

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**CVD MANAGEMENT**

Appropriate coronary revascularisation: clinical outcomes in patients who do not receive it compared with those who do: the ACRE study

H HEMINGWAY, 1 H COHEN, 1 S BANERJEE, 1 F C TAYLOR, 1 J SANDERS, 1 J P FLEMING, 1 A WOOD, 2 P MAGUIRE, 2 A D TIMMS 2 (Kensington, Chelsea and Westminster Health Authority, London, Queen Mary and Westfield College, London, Royal Hospitals Trust, London)

**Background**—The quantified judgements of expert panels might be a better guide to clinical practice than the pragmatic decisions of individual clinicians, yet there have been no prospective clinical outcome studies. We sought to determine whether patients rated appropriate for coronary revascularisation and who did not receive it had worse outcomes than those who did.

**Methods**—Prospective, population-based study of all patients undergoing coronary angiography (no exclusion criteria) during 1996/7 at three London, UK hospitals. Clinical indications for percutaneous transluminal coronary angioplasty (PTCA) and coronary artery bypass grafting (CABG) were rated as appropriate, uncertain or inappropriate by a nine member expert panel prior to patient recruitment. Patients were managed using these ratings. Altogether 4020 patients were followed up (median 30 months) for subsequent revascularisation, angina and functional status, non-fatal myocardial infarction and mortality (n=2363 deaths).

**Results**—All effects were adjusted for age, number of diseased vessels and other prognostic factors. At the time of angiography 582 patients were rated appropriate for PTCA; the 385 patients (66%) who did not undergo PTCA had worse follow up angina status than those who did (odds ratio 1.56, 95% confidence intervals (95% CI) 1.1, 2.3). Some 943 patients were rated appropriate for CABG; the 419 (44%) who did not undergo CABG had worse angina status (odds ratio 1.88 (95% CI 1.4, 2.6)) and mortality (hazard ratio 3.34 (95% CI 2.3, 4.9)) than those who did.

**Conclusion**—Among patients judged appropriate for coronary revascularisation, those who did not receive it had worse clinical outcomes than those who did. Randomised trials are required to confirm whether decisions guided by expert panels are indeed superior to those of individual clinicians.

To be anticoagulated or be given antiplatelet treatment for non-rheumatic atrial fibrillation: this is the question

F C TAYLOR, 1 H COHEN, 1 S BANERJEE, 1 (Bristol Heart Institute, 2 Department of Haematology, University Hospital, Bristol, 3 Department of Social Medicine, University of Bristol)

**Background**—In the past decade, there has been widespread implementation of oral anticoagulation in favour of antiplatelet treatment in patients with non-rheumatic atrial fibrillation (NRAF) in the reduction of risk of stroke. This is based upon evidence from randomised controlled trials (RCT) comparing low dose warfarin versus placebo and antiplatelet treatment versus placebo. However, these "indirect" comparisons of the effects of the two treatment options may be biased by different selection criteria used in trials leading to differences in prognosis unrelated to treatment and (2) over-estimate the effects found. It is, therefore, necessary to undertake a direct, "head to head" comparison so that unbiased estimates of which is the better treatment option can be determined.

**Methods**—We conducted a systematic review of RCT comparing long term anticoagulation with antiplatelet treatment using the Cochrane library, Medline, Cinhal and Sigle for investigation criteria used in trials leading to differences in prognosis unrelated to treatment and (2) over-estimate the effects found. It is, therefore, necessary to undertake a direct, “head to head” comparison so that unbiased estimates of which is the better treatment option can be determined.

**Results**—Five RCT published between 1980–99 were identified. Using a fixed effects model on the pooled data, there were no differences between the two treatment options in stroke or cardiovascular death (stroke OR 0.91, 95% CI 0.47, 1.74; vascular OR 0.84, 95% CI 0.62, 1.14). There was a significant difference in non-fatal stroke in favour of anticoagulation (OR 0.67, 95% CI 0.47, 0.99). However, this difference was not seen when AFASAK 1 (in which there was selection bias, premature cessation of the study and unblinded observers) was excluded (OR 0.75, 95% CI 0.59, 1.01). Using a random effects model, there was also no difference in the combined fatal and non-fatal events (OR 0.74, 95% CI 0.53, 1.02). Major bleeding events among patients on anticoagulation tended to be higher than on antiplatelet treatment (OR 1.45, 95% CI 0.93, 2.27).

**Conclusion**—The heterogeneity between the trials and the limited data result in considerable uncertainty about the value of anticoagulation compared with antiplatelet treatment. The risks of bleeding and the higher cost of anticoagulation make it an even less convincing treatment option. The trials were small in number, two were stopped prematurely and the one that demonstrated a difference in effect was methodologically weak in design, skewing the true treatment effects. Further large scale RCT are needed to establish the value of long term anticoagulation in patients with NRAF.

Reducing absolute risk of cardiovascular disease: randomised controlled trial of training interventions in general practice informing systems or knowledge of evidence-based medicine in primary care

J LANGHAM, 1 H TUCKER, 1 D SLOAN, 1 P REID, 1 J FETTHER, 1 S THOM, 1 H HEMINOWAY 2 (R&D Department, Kensington and Chelsea and Westminster Health Authority, London, Pembroke Villas General Practice, London, Centre for Health Education, National Heart and Lung Institute, London)

**Objectives**—We sought to determine interventions designed with active participation from the practices to improve management of cardiovascular disease (CVD) patient information and improve the access to and interpretation of evidence of effectiveness for secondary CVD prevention, resulted in an improvement of risk management in patients with established CVD.

**Design**—A factorial cluster randomised controlled trial.

**Participants**—Participating practices: primary care teams from 17 general practices in West London. Participating patients: all patients with CVD, including angina, myocardial infarction, stroke, transient ischaemic attack or peripheral vascular disease patients and those who had undergone coronary artery bypass grafting, percutaneous transluminal coronary angioplasty or vascular surgery.

**Interventions**—Primary care teams were randomly allocated to complex training interventions to improve in information management—of 14.5% and 12.1% at baseline to 55.4% at follow up (p<0.001). However, this “indirect” comparisons of the effects of the two treatment options may be biased by different selection criteria used in trials leading to differences in prognosis unrelated to treatment and (2) over-estimate the effects found. It is, therefore, necessary to undertake a direct, “head to head” comparison so that unbiased estimates of which is the better treatment option can be determined.

**Methods**—We conducted a systematic review of RCT comparing long term anticoagulation with antiplatelet treatment using the Cochrane library, Medline, Cinhal and Sigle for grey literature from 1966 to December 1999. Odds ratios (OR) and 95% confidence intervals (95% CI) were calculated to estimate treatment effects.

**Results**—Five RCT published between 1980–99 were identified. Using a fixed effects model on the pooled data, there were no differences between the two treatment options in stroke or cardiovascular death (stroke OR 0.91, 95% CI 0.47, 1.74; vascular OR 0.84, 95% CI 0.62, 1.14). There was a significant difference in non-fatal stroke in favour of anticoagulation (OR 0.67, 95% CI 0.47, 0.99). However, this difference was not seen when AFASAK 1 (in which there was selection bias, premature cessation of the study and unblinded observers) was excluded (OR 0.75, 95% CI 0.59, 1.01). Using a random effects model, there was also no difference in the combined fatal and non-fatal events (OR 0.74, 95% CI 0.53, 1.02). Major bleeding events among patients on anticoagulation tended to be higher than on antiplatelet treatment (OR 1.45, 95% CI 0.93, 2.27).

**Conclusion**—The heterogeneity between the trials and the limited data result in considerable uncertainty about the value of anticoagulation compared with antiplatelet treatment. The risks of bleeding and the higher cost of anticoagulation make it an even less convincing treatment option. The trials were small in number, two were stopped prematurely and the one that demonstrated a difference in effect was methodologically weak in design, skewing the true treatment effects. Further large scale RCT are needed to establish the value of long term anticoagulation in patients with NRAF.
primary care teams to improve management of absolute risk in patients with CVD the results show that the combination of training in information management and improved access to and interpretation of evidence of effectiveness resulted in the largest increase in complete recording of absolute risk assessment.

Gender differences in health and lifestyle after acute myocardial infarction: relevance for rehabilitation

D A Jones, R R West (University Of Wales College of Medicine, Cardiff)

Background—Studies of rehabilitation after acute myocardial infarction (MI) provide little information on gender differences. Most previous studies have focused on men and particularly men of working age, although a significant and increasing proportion of MI patients are women and half of all are aged 65 or more.

Patients and methods—The British Heart Foundation multicentre trial of rehabilitation after MI (n=650) included 621 women. Data were collected on admission from clinical records, after discharge by structured interview using standard measures in patients own homes, at six months by repeated interview using the same standard measures and at 12 months clinical examination in outpatients.

Results—Comparisons showed many highly significant gender differences in health status, “natural history” of rehabilitation and lifestyle changes after MI. At discharge clinically significant anxiety was identified in 42% of women compared with 26% of men (p<0.0001), depression in 28% versus 16% (p<0.0001) and severe disability in 38% versus 15% (p<0.0001). At six month follow up these differences persisted and women experienced significantly more comorbidity (4.0 versus 3.5 prescribed medications per day p<0.001), fewer had changed their diet 55% versus 26% of men (p<0.001), fewer had changed their lifestyle (25% of women compared with 26% of men (p<0.001)), fewer had changed their diet 55% versus 36% of men (p<0.001) and returned to work (among those previously in paid employment) 31% versus 52% (p<0.001) or undertook any physical exercise 56% versus 83% (p<0.001).

Conclusions—This study shows major differences between women and men in a number of important health and lifestyle measures. Although changes in health status and lifestyle measures are generally considered to be attributable to heart disease in men and in many cases delayed seeking medical help despite having typical angina. This tendency to delay was magnified by women’s greater propensity for self care and greater tendency to use coping mechanisms other than seeking medical help. However, in the long term these differences need to be examined in greater detail.

Inequity

Pattern of associations between social class, education and Townsend Score and coronary heart disease, diabetes/ impaired glucose intolerance and risk factors: cross sectional comparison of South Asians with Europeans

R Bhola,1 L Walker,2 N Unwin,1 A M White,3 J Harland,1 G Alberti1 (Department of Epidemiology, University of Newcastle upon Tyne, Department of Public Health and Medicine, University of Newcastle upon Tyne, Public Health Sciences, Edinburgh University)

Background—Studies of health inequalities within ethnic groups in Britain is difficult because there are no widely applicable measures of socioeconomic position. Existing studies have given conflicting results. This paper applies some socioeconomic indicators widely used in European origin populations to three South Asian groups and to a wider range of health measures than studied hitherto.

Objectives—To compare the pattern of associations between social class, education and Townsend Depreciation Score and coronary heart disease, diabetes/impaired glucose intolerance and related risk factors in South Asians (Indians, Pakistanis, Bangladeshis) and Europeans, to test the hypothesis that associations would show worse risk profile or health in the socioeconomically disadvantaged in all ethnic groups (the predicted direction).

Setting and population—South Asians (n=684) comprising Indians (n=250), Pakistanis (n=305) and Bangladeshis (n=129), and Europeans (n=825), aged 25–74 years in Newcastle upon Tyne.

Design, methods and main outcome measure—Secondary analysis of cross sectional data from a questionnaire and clinical screening study. Eighty four associations were examined in each ethnic group relating to diseases (12 associations), lifestyle (5 associations), physical measures (24 associations), blood pressure (12 associations) and biochemistry (18 associations). Direction of association was the key outcome.

Results—Socioeconomic indicators were mostly associated with health measures as predicted in Europeans (71 of 84 (85%) associations) and less so in South Asians combined (56 of 84 (67%) associations). In Indians, only Townsend Depreciation Score was consistently associated as predicted (23 of 28 (82%)). In Pakistanis and Bangladeshis associations with all socioeconomic measures were inconsistent. There were some differences between Indians and Pakistanis (54 of 84 (64%) associations as predicted), Pakistanis (39 of 84, 46%) and Bangladeshis (40 of 84, 48%). In South Asian men and women associations were as predicted with most anthropometric (17 of 24, 70%) and biochemical (15 of 24, 62%) measures, and lifestyle (13 of 18, 72%) measures, but those with blood pressure (4 of 12, 33%) and disease (6 of 12, 50%) were not. The pattern in Bangladeshis was often opposite to that predicted, even for physical measures (11 of 24, 46%) and biochemistry (44%).

Conclusions—Associations were mostly as predicted in Europeans, but were inconsistent in the South Asian samples. In Pakistanis and Bangladeshis, women were more consistently as predicted in Indians than Bangladeshis. South Asians’ pattern of health inequalities differs from Europeans. Other explanations for the findings include artefacts from small sample size, differences in acculturation in Indians, Pakistanis and Bangladeshis, and that the chosen indicators were inappropriate for South Asian populations. Studies of inequalities in health should examine Indians, Pakistanis and Bangladeshis separately.

Deprivation and death in Scotland: constructing a graphical cohort survival model

C Chalmers,3 S Capewell1 (Information and Statistics Division, NHS in Scotland, Department of Public Health, University of Liverpool)

Objectives—To present disease specific population mortality data in a clear format.

Background—Tables summarising the effects of deprivation on age specific mortality can be difficult to explain to lay audiences and non-specialists. Worse still, their initial confidence can be shattered by the introduction of the concept of competing mortality. One of the conceptually clearest forms of population mortality data is the survival of a birth cohort. We set out to construct cohorts of the Scottish population to examine and illustrate the effects of deprivation on disease specific and overall mortality.

Setting—Scottish population of 5.1 million.

Methods—For cohorts of older people, there will inevitably have been a number of deaths in early childhood and young adulthood (particularly war service). But from the point of view of chronic diseases, deaths are relatively rare until people reach their mid 50s. We therefore identified a cohort population
born in 1920, aged 55 in 1975 and divided them into quintiles of Carstairs deprivation scores. For each subsequent year we identified deaths by specific cause, and deprivation quintile. A disease specific survival chart would then be built up for each of the deprivation quintiles. The exercise was repeated for cohorts born in 1930 and 1940.

Results—The charts clearly demonstrated that there are no specific diseases of poverty. The smoking related conditions of lung cancer and heart disease are only slightly more common. Instead the dominant effect was clearly a general increase in risk of all the major diseases with age. Furthermore, people living in poorer circumstances had broadly the same mortality experience as affluent people of five to six years older. This has been described by Wyatt as the “more miles on the clock” phenomenon. It was possible to discern improvement in survival between the 1920 birth cohort and the 1930 cohort, however, the socioeconomic differentials persist.

Conclusions—This technique potentially offers a graphical method for illustrating the effects of factors such as deprivation on disease specific survival model, while accommodating the problem of competing mortality.

Spatial variation in mortality and morbidity and the relations with social deprivation and accessibility to health services

Objectives—To describe the epidemiology of hospital admissions for acute anaphylaxis by deprivation, residence in rural areas and geography.

Design—Descriptive study using routinely collected individual hospital discharge data.


Participants—2323 emergency admissions for anaphylaxis to NHS hospitals between 1 January 1991 to 31 March 1995.

Main outcome measures—Admission adjusted anaphylaxis discharge rates (emergency anaphylaxis discharges per 100 000 emergency discharges). We defined Poisson regression models to examine the strength of the associations between the admission adjusted rates and four potential risk factors: deprivation (UPA score of greater than 18); rural residence; residence in north/south; residence in east/west.

Results—Of the 13.5 million emergency discharges from NHS hospitals during the study period, 2323 patients had a primary diagnosis of anaphylaxis. Overall admission adjusted anaphylaxis rate was 17 per 100 000 emergency admissions. Three of the four factors studied were independent risk factors for anaphylaxis admission: south relative risk (RR) 1.35 (95% confidence intervals (95% CI) 1.24, 1.47), rural RR 1.33 (95% CI 1.16, 1.51), and non-deprived RR 1.24 (95% CI 1.12, 1.37).

Conclusions—Study of four years national hospital discharge data reveals that rates of emergency anaphylaxis hospital discharges vary considerably by deprivation, residence in rural areas and geography. The highest rates of anaphylaxis discharges were seen in patients resident in rural, affluent areas of the south west of England.

Deprivation and poor health in rural areas: inequalities hidden by averages

R Haynes, A Sheikhi (School of Health Policy and Practice, University of East Anglia, School of Environmental Sciences, University of East Anglia)

In the UK, poor health is strongly associated with socioeconomic deprivation and increases in health services are allocated to areas in proportion to their aggregate levels of social deprivation. This seems to work reasonably well in urban areas, but previous research has shown that the link between population measures of ill health and poverty is weaker in rural settings. This research considered 570 census wards in East Anglia, UK, and found that poor health and social deprivation scores were much less associated in rural than in urban areas. Why is this? Two possible reasons are that the measures of social deprivation used are biased towards urban conditions and that wards are too large to capture social variations in rural areas. In the least accessible rural wards in East Anglia the deprivation measure most closely related to poor health was male unemployment, but use of this measure did not remove the urban-rural gradient of association strength over the region. Neither did replacing wards by smaller enumeration districts as the units of analysis. The differences between urban and rural correlations were removed by restricting the comparison to wards with the same unemployment range and combining pairs of rural wards with similar deprivation values. Apparent differences between rural and urban associations are therefore not due to the choice of deprivation indices or census areas but due to the effects of the greater internal variability, smaller average deprivation range and smaller population size of rural small areas. Deprived people with poor health in rural areas are hidden by favourable averages of health and deprivation measures and do not benefit from resource allocations based on area values.

Spatial variation in mortality and morbidity and the relations with social deprivation and accessibility to health services

S Barnett, P Rodrick, H Wrigley, D Martin (Department of Social Statistics, University of Southampton, Health Care Research Unit, University of Southampton, Department of Geography, University of Southampton)

Objectives—To study the spatial variation in mortality and self perceived morbidity in a region with a significant rural population. To examine whether the generic deprivation indices adequately reflect deprivation in rural areas, and whether these can be improved upon by the use of customised measures. To explore the associations of access to primary and secondary health care with such variation.

Design—A geographically based cross sectional study examining urban-rural and intra-rural variations in two health outcome measures, using several definitions of rurality. Correlation and regression analyses explore how well these are explained by generic deprivation indices. Multilevel Poisson modelling investigates whether Customised Deprivation Profiles (CDPs), area characteristics and access to GP surgeries and acute district general hospitals improve upon the explanatory power of the generic indices.

Setting—Nine counties in the south west of England, comprising of just over six million.

Main outcome measures—1991 Census limiting long term illness (LLTI) (0–64), and 1991–1996 all cause mortality (0–74).

Results—Intra-rural variation is apparent, with higher rates of premature LLTI, but not premature mortality, in remoter areas. The generic deprivation indices have strong positive relations with the health outcome measures in urban areas, but these are much weaker in semi-rural and rural locations. CDPs improve upon the generic indices, especially in the rural settings. A substantial reduction in unexplained variation in LLTI in rural areas is seen after controlling for the level of local isolation, with higher isolation, at the wider geographical scale, being related to higher levels of LLTI. The results for SMR will be presented as well as the associations between access to health care and both health outcomes.

Conclusions—This study highlights the need to treat rural areas as heterogeneous, although this has not been the tendency in health research. Generic deprivation indices are unlikely to be a true reflection of levels of deprivation in rural environments. The importance of CDPs that are specific to the area type and the health outcome measure is emphasised. The significance of physical isolation suggests that accessibility to public and health services may be an important issue. This analysis is in progress at present and findings will be presented at the conference.

Variations in English hospital admissions for anaphylaxis by deprivation and geography

B Alves, A Sheikh (Department of Primary Health Care and General Practice, Imperial College School of Medicine)

Background—The most severe of the allergic disorders, anaphylaxis, is poorly described. This is of particular concern as recent time trend studies of hospital admissions for acute anaphylaxis have shown admission rates to have almost doubled between 1991–1995.

Objectives—To describe the epidemiology of hospital admissions for acute anaphylaxis by deprivation, residence in rural areas and geography.

Design—Descriptive study using routinely collected individual hospital discharge data.


Participants—2323 emergency admissions for anaphylaxis to NHS hospitals between 1 January 1991 to 31 March 1995.

Main outcome measures—Admission adjusted anaphylaxis discharge rates (emergency anaphylaxis discharges per 100 000 emergency discharges). We defined Poisson regression models to examine the strength of the associations between the admission adjusted rates and four potential risk factors: deprivation (UPA score of greater than 18); rural residence; residence in north/south; residence in east/west.

Results—Of the 13.5 million emergency discharges from NHS hospitals during the study period, 2323 patients had a primary diagnosis of anaphylaxis. Overall admission adjusted anaphylaxis rate was 17 per 100 000 emergency admissions. Three of the four factors studied were independent risk factors for anaphylaxis admission: south relative risk (RR) 1.35 (95% confidence intervals (95% CI) 1.24, 1.47), rural RR 1.33 (95% CI 1.16, 1.51), and non-deprived RR 1.24 (95% CI 1.12, 1.37).

Conclusions—Study of four years national hospital discharge data reveals that rates of emergency anaphylaxis hospital discharges vary considerably by deprivation, residence in rural areas and geography. The highest rates of anaphylaxis discharges were seen in patients resident in rural, affluent areas of the south west of England.

HEALTH SERVICES RESEARCH I

Why surgeons don’t follow guidelines

C Pope (Department of Primary Health Care and General Practice, University of Bristol)

Introduction—Widespread and persistent medical and surgical practice variation is held to be a consequence of the failure of clinicians to incorporate research evidence in their everyday work. Practice guidelines are one of the key tactics advocated by the proponents of evidence-based medicine (EBM) to ensure that clinicians apply research evidence to their practice. The critics of EBM contend that there are fundamental differences between the formulated rules encapsulated in guidelines and the type of knowledge required to practise medicine. Much of the opposition to guidelines has been rooted in philosophical arguments about the tensions between “art” and “science”, and surgeons, in particular have been quick to argue that the exercise of clinical judgement makes the use of guidelines problematic. The aim of this paper is to suggest why surgeons ignore guidelines.

Methods—A qualitative study of 34 surgeons practising urology, gynaecology or pelvic surgery in the UK and USA, involved in treating women with stress urinary incontinence. Qualitative interviews and observational methods were used to explore surgeons’ views of surgical practice, to examine the nature of everyday surgical work and consider the applicability of guidelines to this area of medical work. Analysis used techniques of constant comparison to generate themes and categories.
Results—Surgeons view surgical work as contingent: they describe it as both dependent on conditional factors and subject to chance. They respond to contingency by drawing on tacit knowledge and instinctive responses. Surgical judgement provides a strong justification for resisting the imposition of guidelines.

Conclusion—The technical knowledge embodied in guidelines may be difficult to reconcile with the individual and practical nature of everyday surgical work.

Does “practice make perfect”? Volume of work and outcome in intensive care medicine

C GOLDFRAD, K ROWAN (Intensive Care National Audit and Research Centre, London)

Background—Before a policy to regionalise intensive care in the UK was implemented, it is important to have evidence that larger centres seeing greater numbers of patients achieve better outcomes for patients. There is little evidence, however, that larger centres provide better outcomes for patients. Previous analyses on 26 intensive care units (ICUs) using data from 1988-90 in the UK showed a statistically significant association between higher volumes of work and lower crude hospital death rates that could not be demonstrated after case mix adjustment. Given the small sample size of 26 ICUs in the earlier work, we repeated these analyses on a larger number of ICUs.

Methods—The relation between average daily ICU volume and hospital outcome was investigated in 587 admissions to 91 adult ICUs in the Case Mix Programme Database covering the period 1995–99. The average daily volume for each unit was calculated as the number of admissions divided by the number of days in the data collection period for each unit. The same analysis was repeated for solely surgical and non-surgical admissions.

Results—Unit volume varied from 2.3 to 26.6 admissions per week across ICUs while ultimate hospital mortality rates varied from 17.7% to 48.7%. The proportion of surgical admissions varied from 8.6% to 71.2% across ICUs. For all admissions to ICU, there was a statistically significant negative association between unit volume and ultimate hospital death rate (Pearson correlation coefficient \( r = -0.215 \), \( p = 0.041 \)). After adjustment for case mix factors, this negative association was no longer statistically significant (\( p = 0.190 \), \( p = 0.071 \)). Similar results were found for solely surgical admissions (crude: \( r = -0.275 \), \( p = 0.008 \); case mix adjusted: \( r = -0.227 \), \( p = 0.029 \)). For solely non-surgical admissions, the negative association remained statistically significant after adjustment for case mix admissions (crude: \( r = -0.220 \), \( p = 0.036 \); case mix adjusted: \( r = -0.208 \), \( p = 0.048 \)).

Conclusions—Results showed no overall benefit of higher unit volume for case mix adjusted ultimate hospital mortality, although there was some marginal evidence of benefit for non-surgical admissions. To better understand the relation between volume and outcome, further analyses for subgroups of patients, with diseases that are rare in some ICUs, are warranted.

Do hospitals influence their own death rates?

H M BALLIE, A H LVEYLAND, F A BODDY (Department of Public and Public Health Sciences Unit, University of Glasgow)

Background—From the standpoint of understanding both the underlying mechanisms of inequalities in health outcomes and the pressure for increased accountability of health care services, the question of the extent to which variability in the outcomes of hospital care is attributable to hospitals themselves is of growing importance. The International Study of Hospital Outcomes (based at the University of Pennsylvania) includes the objective of using routinely assembled hospital discharge data in order to address methodological aspects of this broad question. This research is investigating the Scottish component of the study and uses linked data from the Scottish NHS together with organisational information about Scottish hospitals and data from a more detailed survey of nurses in acute hospitals.

The analysis uses multilevel modelling with a three level model describing area, patient and hospital effects.

Data—The data cover all patients discharged from any one of the 29 acute hospitals in Scotland in 1999-2000. Diagnostic groups: 8440 patients with acute myocardial infarction (AMI), 4634 with bacterial pneumonia, 6716 with chronic obstructive pulmonary disease (COPD), 6328 with stroke and 5825 with chronic heart failure.

Results—Crude death rates for these conditions varied by factors of between two and four: as examples, unadjusted death rates for AMI ranged from 12.1% to 24.7% and those for stroke from 17.1% to 55.5%. Explanations for these differences, of course, require adjustment for several possible influences: within broad diagnostic categories it is necessary to take account of the influence of comorbidities; the demographic characteristics of a hospital’s patients and its admission and discharge policies are clearly relevant, as is the population served by a particular hospital in terms of its patterns of health and social characteristics. As a further example, crude hospital death rates for COPD ranged from 2.7% and 11.5%; overall, a high proportion of these differences were explained by variables that were not within the control of individual hospitals.

Conclusions—Answers to the question of whether hospitals are able to influence death rates are likely to be more detailed exploration. More specific questions addressed in this paper include whether adjusted outcomes for specific diagnostic groups are correlated (implicating links to other hospital attributes); whether hospital effects are focused on particular patient groups (such as those who have longer lengths of stay); and whether organisational features of different hospitals influence outcomes. Answers to these questions are relevant to “good practice” in the evaluation of hospital care, but are also germane to such wider questions as resource allocation and service planning.

Changing the medical record—improving quality

K THOMAS, D S M EMBERTON M, B REEVES (Institute of Urology and Nephrology, Middlesex Hospital, London; Clinical Effectiveness Unit, Royal College of Surgeons of England)

Objectives—Medical records are often incomplete. This study aims to determine if completeness is improved by replacing the traditional medical record with structured forms in one specialty (urology).

Methods—All new patients attending urology clinics in two hospitals were randomised to a consultation recorded using traditional notes versus structured forms. The completeness of the notes was compared using a 15 point scale of essential data items. The time taken to complete the forms and traditional notes was recorded. All the clinicians were given a questionnaire to assess acceptability of the forms.

Results—Over six months, 200 patients were randomised between 15 clinicians. There were significant differences in completeness of both traditional notes (TN) and the structured forms for the following items: clinicians name (TN 32%, risk difference (RD) +55%, confidence intervals (CI) 41, 65); medical history (RD 28, 48), drug history (RD 50%, RD +40%, CI 29, 51), allergies (TN 32%, RD +61%, CI 51, 71), social history (TN 30%, RD +64%, CI 54, 74), examination (TN 68%, RD +23%, CI 12, 34), investigation (TN 80%, RD +16%, CI 7, 24), diagnosis (TN 31%, RD +48%, CI 36, 60), outcome (TN 44%, RD +51%, CI 40, 62) and signature (TN 60%, RD +37%, CI 27, 47). All but two of the clinicians said that the structured forms and would opt to use them if given the choice. There was no significant difference in the time taken to use the forms compared with TN.

Conclusions—Using structured forms significantly improved the completeness of urological documentation. The differences seen were most dramatic (risk difference >85%) in the following: clinician name, allergies, social history, diagnosis and consultation outcome. This simple and economical method of improving the quality of documentation in the medical record has obvious benefits for patient care, audit, research and medico-legal claims.

The United Kingdom Neonatal Staffing Study

G PARRY, J TUCKER, W TARNOPF-MORDI, P McCARR, P NICOLLSON (School of Health and Related Research, University of Sheffield, Dugald Baird Centre for Research on Women’s Health, University of Aberdeen, Westmead and New Children's Hospital, University of Sydney, Australia)

Objectives—To assess whether risk adjusted outcomes of neonatal intensive care are related to differences in patient volume, levels of nursing and medical staffing and workload.

Design—A prospective, study of outcomes for a cohort of infants consecutively admitted to a random sample of UK neonatal intensive care units, stratified in a 3×2×2 factorial matrix by high, medium, or low volume of patients; higher versus lower provision of nursing staff; and higher versus lower neonatal consultant availability.

Setting—54 UK neonatal intensive care units within the National Health Service.


Main outcome measures—Death before hospital discharge; major brain damage of probable nosocomial origin, adjusted for risk using the Clinical Risk Index for Babies (CRIB) score and other case mix variables obtained in the first 12 hours after birth.

Results—High volume units were found to care for sicker infants than medium and low volume units. The percentage of infants with a CRIB Score greater than 0 was 52% in high volume units, 26% in medium volume units and 23% in low volume units. No differences
were found in the risk adjusted odds of mortality, mortality or brain damage and nosocomial bacteraemia with patient volume, consultant availability and nursing provision. Infants admitted during periods when occupancy of cots was above 70% were found to have increased risk adjusted odds of mortality (1.64, 95% confidence intervals 1.10, 2.45) compared with periods of lower occupancy.

**Conclusions**—The current system of neonatal intensive care in the UK reveals no differences in risk adjusted outcomes in simple relation to these major organisational characteristics. There is an increased risk of mortality for all infants admitted when units approach maximum occupancy of cots. Neonatal intensive care may need to be reconfigured to reduce the occasions when units approach maximum occupancy of cots.

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### Evidence-Based Medicine/Systematic Review

The Emperor's New Clothes: general practitioner views on evidence-based medicine and the role of clinical effectiveness evidence—a qualitative study

**Background**—Both development work to promote evidence-based medicine (EBM) and studies, which evaluate the impact of these activities, are mostly based on the assumption that GPs hold the same views and beliefs about what EBM is, to those of the EBM promoters. There is growing evidence in the literature that this is not the case and this assumption may contribute to the low impact of attempts to promote EBM among GPs.

**Research aim**—How can EBM be best defined, understood and supported in general practice and what are the implications for Primary Care Groups/Trusts approaches to Clinical Governance?

**Method**—Qualitative methods were used in one case study, a Health Authority area. Semi-structured face to face interviews and group discussions were carried out. Both interview and discussion schedule were piloted. A purposeful sample of 98 GPs from a possible 148 were involved in interviews (12), group discussion (40) and pilot (6).

**Findings**—General practice was defined by GPs as a combination of art and science. To make clinical sense they will fail to conform to the biomedical model, they identified major practical limitations to the application of clinical effectiveness evidence (CEE) produced in this way. These were lack of relevance and sensitivity to general practice patient populations and the individual patient context.

**Main conclusions**—EBM in general practice requires redefining. Measures of it should be relevant to the clinical reality of general practice.

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### Systematic Sense—Clinical Nonsense

A HOPFAN (School of Health Policy and Practice, University of East Anglia)

**Introduction**—Systematic reviews may be internally consistent and may satisfy the criteria for adequately conducting such reviews. They make clinical sense they will fail to convince clinicians. Evidence of the effectiveness of epidural corticosteroid injections for low back pain and sciatica illustrate this well. Practitioners want an answer to the question,
If I give an epidural corticosteroid injection to a patient with low back pain or sciatica in primary care or outpatients, will the patient get pain relief more quickly than if I do not?

**Method**—Three systematic reviews on the subject, including a Cochrane review, have been published. They included The Cochrane reviews were scrutinised for the relevance of the study population, clinical appropriateness of the intervention, and the adequacy of the outcome measures.

**Results**—The conduct of the reviews did not make sense from a practitioner’s viewpoint. The following faults were identified: (1) One review said more about the inadequacies of performing wound scoring than about the condition under study by demonstrating that methodological quality was not related to statistical significance. (2) Two reviews included populations, such as postoperative patients, who are not suited for this role in systematic reviews. Greater attention should also be paid to the adequacy of the outcome measures. Clinicians may be best suited for this role in systematic reviews.

A systematic review of the definition and measurement of surgical wound infection

**I BRUCE,**1 J MOLLISON,1 E M RUSSELL,2 Z H KRUOKOWSKY,3 K G M PARK3 (Department of Public Health, University of Aberdeen, Department of Surgery, University of Aberdeen)

Introduction—The measurement and monitoring of surgical adverse events is of growing importance given the increase in innovative surgical techniques. Furthermore, the general decline in hospital length of stay has contributed to the need to review whether postoperative events are being accurately and comprehensively monitored.

**Objectives**—To review the definition and measurement of surgical wound infection.

**Study design**—A systematic review of prospective, follow up, cohort and longitudinal studies of surgical wound infection published in English between 1993 and 1999. This study was taken as part of an NHS R & D Health Technology Assessment methodological review.

**Main outcome measures**—(1) The definition of surgical wound infection, (2) identification of measurement, scoring or grading systems and (3) the assessment of the validity, reliability, accuracy and practicality of identified definitions and grading systems.

**Results**—Over 1400 abstracts were retrieved and read; 240 articles fulfilled eligibility criteria and were assessed by two independent reviewers. Preliminary findings suggest that there is no clear consensus on the definition of surgical wound infection. There is large variation in the measurement of wound infection and little evidence on the validity and reliability of wound scoring and grading systems currently in practice.

**Conclusion**—Despite international efforts at surveillance over at least 20 years, there is wide variation in the definition of surgical wound infection in the published literature. The measurement of postoperative wound infection is hampered by the lack of a standardised, repeatable and validated definition. Given the trend towards decreased hospital length of stay it is crucial that a single repeatable definition be used in the measurement of surgical wound infection in both hospital and post-discharge settings.

**WOMEN’S HEALTH**

Cardiovascular disease in women in Scotland: long term implications of hypertension in pregnancy

B J WILSON,1 M S WATSON,1 G PESCOTT,1 D M CAMPBELL,2 B WILSON,2 C S SMITH1 (Department of Public Health, University of Aberdeen, Department of Obstetrics and Gynaecology, University of Aberdeen, Department of General Practice and Primary Care, University of Aberdeen)

**Background**—Scotland has one of the highest rates of cardiovascular disease mortality in the world. Women are exposed to the same cardiovascular risk factors as men and to a number of gender specific risk factors such as pregnancy, menopause, hysterecomy and the use of exogenous hormones. Vital statistics data suggest that, compared with nulliparous women, parous women have higher mortality from hypertension, ischaemic and degenerative heart disease and cerebrovascular disease. Recent case-control studies have suggested an association between pregnancy related hypertensive diseases and later cardiovascular morbidity. However, these studies are potentially confounded by recall bias.

We have conducted a cohort study to test this hypothesis, starting with reliable data on exposure to raised blood pressure during pregnancy.

**Methods**—Women who delivered their first baby in Aberdeen maternity hospitals between 1951 and 1970 were identified from the Aberdeen Maternity and Neonatal Database. The women with pre-eclampsia or eclampsia (defined using internationally agreed criteria) were age matched with those with gestational hypertension and those with normotensive pregnancies. The women were traced through their medical records in Grampian and contacted with the knowledge of their GP. A total of 1876 were invited to complete a questionnaire and attend for an examination. Details of hospital discharges and mortality were also obtained for the entire cohort.

**Results**—A questionnaire response rate of 71 per cent was obtained and we were able to conduct a physical examination of 76 per cent of the questionnaire respondents. Differences between the three study groups were observed for body mass index and smoking history. Overall analysis indicates statistically significant excess risks of hypertension at follow up clinical examination, and of hospital discharge diagnoses of hypertension, ischaemic heart disease and circulatory disorders in women with previous hypertensive disease of pregnancy.

**Conclusion**—These data contribute to a growing understanding of the pathogenesis of cardiovascular disease in women. If the associations described here are real, we suggest that long term follow up of women who have raised blood pressure during pregnancy might be warranted in order to minimise morbidity due to cardiovascular and circulatory diseases in later life.

The association between HbA1c levels in early pregnancy and poor pregnancy outcome

M J PLATT,1 I F CASSON,1 M STANISTREET,1 A STOTT,1 C V HOWARD,1 S WALKINSHAW,1 S PENNYCOOK1 (Department of Public Health, The University of Liverpool, Broadgreen Hospital, Liverpool, School of Biological Sciences, The University of Liverpool, Department of Clinical Chemistry, Royal Liverpool University Hospital, Fetal and Infant Toxicology-Pathology, The University of Liverpool, Liverpool Women’s Hospital)

**Objectives**—To assess the relation between HbA1c levels in the first trimester of pregnancy in women with pre-existing insulin dependent diabetes mellitus in whom an HbA1c was recorded at 102 weeks gestation. Pregnancies resulting in a live or stillborn infant were included. HbA1c measurements were normalised using the criteria of the Standardisation Initiative for Glycated Haemoglobin.

**Design**—Prospective cohort study.

**Setting**—Geographically defined cohort, attending ten centres for maternity care in north west England.

**Main outcome measures**—Adjusted HbA1c measurement in the first trimester of pregnancy. The prevalence of congenital anomalies.

**Results**—202 pregnancies were included in the analysis. The HbA1c values were divided into tertiles. The prevalence of congenital anomalies in the lowest tertile was not statistically different from that observed in the general population, (14/1000 total births; 95% confidence intervals, 8.8% CI 5.3, 216/1000). In contrast, the prevalence of congenital anomalies in women in the uppermost tertile was nine times higher (134/1000; 95% CI 53, 216/1000).

**Conclusions**—The findings suggest that there may be a threshold level for HbA1c in pregnant women with insulin dependent diabetes mellitus, below which the risk of congenital anomalies in their offspring approaches that seen in the general population.


I ROBBINS (Department of General Practice and Primary Care, St George’s Hospital Medical School, London)

**Objectives**—To analyse the variation in mode of delivery in primiparous women, by ethnic group.

**Design**—Retrospective analysis of a computerised obstetric database.

Changes with age in the socioeconomic gradient in hysterectomy: findings from a national cohort
S MARSHALL, R HARDY, K DAVIES (MRC National Survey of Health and Development, Department of Epidemiology and Public Health, Royal Free and University College London Medical School)

Objectives—To examine whether the striking social gradient in hysterectomy observed in a cohort of women at ages 43 years attenuated in the fifth decade of life.

Methods—1755 (69%) of 2547 women born in England, Scotland and Wales followed up since the age of 52 years who provided information on gynaecological surgery. Socioeconomic status was measured using highest educational qualifications, partners’ and own social class and childhood social class. Cox’s regression models were used to examine the risk of hysterectomy by education, fitted as a categorical factor with no qualifications as baseline, and social class, fitted as a linear trend with social class V as baseline. Time dependent covariates were used to assess whether the effects remained constant at all ages.

Results—The cumulative hysterectomy risk doubled (from 10 to 21%) between 43 and 52 years. By 52 years, women with less education were still more likely to have had a hysterectomy (p=0.005) but the hazard ratio for women in the highest three educational categories, compared with women with no qualifications, attenuated with increasing age. For age up to 42 years, West Indian (RR=0.54, 95% CI 0.46, 0.64; Bangladeshi RR=0.57, 95% CI 0.45, 0.73), West Indian (RR=0.57, 95% CI 0.45, 0.73), West Indian (RR=0.65, 95% CI 0.5, 0.9) and Bangladeshi (RR=0.79, 95% CI 0.64, 0.98) women were less likely to deliver by emergency caesarean section compared with white women, after spontaneous labour onset (African relative risk (RR) 2.46, 95% CI 2.07, 2.93; West Indian RR 1.56, 95% CI 1.30, 1.85). The proportion of white women who delivered by forceps or ventouse extraction was 13.7% (95% CI 13.01%, 14.39%), after spontaneous labour onset. Non-white ethnic groups were more likely to deliver by forceps or ventouse delivery after spontaneous labour onset, compared with white women: African RR 0.54, 95% CI 0.46, 0.64; West Indian RR 0.57, 95% CI 0.47, 0.76; Bangladesh RR 0.72, 95% CI 0.64, 0.81; Indian RR 0.71, 95% CI 0.61, 0.85; and Pakistani women RR 0.78, 95% CI 0.63, 0.97. After induction of labour, the proportion of white women who delivered by emergency caesarean section was 14.00% (95% CI 13.01%, 15.46%), and by forceps or ventouse extraction was 24.8% (95% CI 21.3%, 28.4%). After induction of labour, African (RR 2.02, 95% CI 1.72, 2.34), West Indian (RR 1.32, 95% CI 1.02, 1.70) women were more likely to deliver by emergency caesarean section, compared with white women. The risk of forceps or ventouse delivery was lower for African (RR 0.57, 95% CI 0.45, 0.73), West Indian (RR 0.65, 95% CI 0.5, 0.9) and Bangladesh (RR 0.79, 95% CI 0.64, 0.98) women, after induction of labour, compared with white women.

Conclusions—Factors known to increase the rate of caesarean section such as maternal age, parity, maternal height, and birth weight do not explain the found variation in mode of delivery of ethnic group, although maternal weight and choice of anaesthesia may contribute. Prospective observation, measurement and recording of the process and progress of labour, and confounding variables, are required to elucidate the reasons for the found variation in mode of delivery by ethnic group.

CANCER

Specialisation, survival and clinical practice in patients with pancreatic, oesophageal and gastric cancer
M BACHMANN,1 D ALDERSON,2 D EDWARDS,3 C BEDFORD,1 S WOTTON,4 T PETERS,1 I HARVEY1 (MRC Health Services Research Collaboration, University of Bristol, Department of Social Medicine, University of Bristol, Department of Surgery, University of Bristol)

Objectives—To examine the relations between specialisation of cancer care (indicated by volumes of patients managed annually by doctors and hospitals) and clinical practice and patient mortality.

Methods—Seven retrospective studies, reporting on observational studies using prospective and retrospective data, on a range of cancers, were included. For all cancers, a general cancer centre, an oncology centre, a cancer surgery centre and a specialist centre were defined. A hierarchy of care pathways was defined for each cancer. Specific cancer-related activities were defined and standardised across the centres.

Results—Among 343 (36%) women reporting periods as very heavy, less than half (47%) state volume of loss as a severe problem, and only a third (35%) say it contributed to healthcare seeking. The majority of referrals were for excessive periods (71%, 76%) but even within this subgroup only 43% reported their periods as “very heavy”. Logistic regression analyses were undertaken to construct a model explaining subjective judgement of periods as “very heavy”. This shows that “very heavy” periods are associated with a range of menstrual aspects being experienced as problematic, particularly “accidents”, change from normal, volume of loss, and pain, but also, at least in some socio-economic groups, and with having to get up to change protection at night and needing to use double protection. Reporting of “very heavy” periods was not associated with deprivation category but there was a strong deprivation gradient for reporting the various aspects of menstruation as “severe problem”, including extra washing caused and cost of sanitary protection, with up to a fourfold increase in prevalence with deprivation.

Conclusion—Less than half of menorrhagia referrals judge their periods as “very heavy”, which may partly explain why relatively few of similar women have excessive blood loss, if objectively measured. Furthermore, period that periods are “very heavy” is based on more than solely subjective volume of loss. However, despite the fact that women from relatively deprived areas are more likely to report severe problems with periods, they are not more likely to judge their periods “very heavy”, nor have been referred for excessive bleeding. Rather than focusing on volume of loss, healthcare need across socio-economic groups would be better revealed by an integrated assessment of menstrual health, encompassing physical symptoms as well as psychosocial effects.

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CANCER
have resections. "No active treatment" was more likely with lower doctor volumes for all three cancers and with lower hospital volumes for pancreatic cancer. Survival time was longer with higher doctor volumes for oesophageal cancer and with higher hospital volumes for pancreatic cancer (adjusted hazard ratios attributable to managing 40 more patients per year: 0.69 (95% CI 0.62, 0.75) and 0.60 (95% CI 0.52, 0.69) and 0.60 (95% CI 0.39, 1.0) respectively), for oesophageal and gastric cancers (adjusted hazard ratios attributable to managing 40 more patients per year: 0.69 (95% CI 0.62, 0.75) and 0.60 (95% CI 0.39, 1.0) respectively), but for pancreatic cancers was not associated with doctor or hospital volumes.

Conclusions—Specialist cancer care, as indicated by patient volumes, was significantly and substantially associated with lower mortality. Clinical practice was influenced more by doctor specialisation than by hospital specialisation. The study supports the specialisation of cancer care. Specialisation of care is at least as important as specialisation of hospitals, especially for oesophageal and gastric cancers.

Inequalities in survival from colorectal cancer: data from the Wessex Colorectal Cancer Audit

H WIGLEY,1 P RODERICK,1 S GEORGE,1 J SMITH1 (Health Care Research Unit, University of Southampton, South and West Cancer Intelligence Unit, Winchester)

Introduction—The relation between deprivation and survival from a wide range of cancers has been well documented, but the underlying reasons are not well understood. Delay in presentation, comorbidity and inequity of treatment have been cited as possible factors.

We investigated the effect of deprivation on survival from colorectal cancer while controlling for prognostic factors of age, sex, site of cancer, Duke’s stage at diagnosis, comorbidity at presentation, emergency versus elective initial surgery and specialist versus non-specialist surgeon.

Methods—All incident cases of colorectal cancer in the residents of Wessex, SW England, over a three year period between 1991 and 1994 were included in the study (n=5176). Patients with complete data on all prognostic factors were included in the survival analysis (n=4169). Deprivation was measured using the Townsend score of the patient’s postcode of residence. Z tests were used to identify differences between included and excluded cases. Kaplan-Meier analysis was used to confirm the effect of the above variables on survival in this population, and survival of the most and least deprived quintiles of the study population was compared using Cox regression analysis. For patients presenting with Duke’s stage C cancer, numbers receiving chemotherapy in the most and least deprived population quintiles were compared.

Results—Patients excluded from the analysis had a similar level of deprivation to those included: (Z=0.18, p=0.5), but had shorter median survival times (45 versus 1096 days).

The unadjusted hazard ratio for dying from colorectal cancer was significantly lower with higher hospital volumes for pancreatic cancer. Survival time was longer with higher doctor volumes for oesophageal and gastric cancers (adjusted hazard ratios attributable to managing 40 more patients per year: 0.69 (95% CI 0.62, 0.75) and 0.60 (95% CI 0.39, 1.0) respectively), but for pancreatic cancers was not associated with doctor or hospital volumes.

Conclusions—Specialist cancer care, as indicated by patient volumes, was significantly and substantially associated with lower mortality. Clinical practice was influenced more by doctor specialisation than by hospital specialisation. The study supports the specialisation of cancer care. Specialisation of care is at least as important as specialisation of hospitals, especially for oesophageal and gastric cancers.

Exploring some QALY assumptions: the views of bereaved relatives about the value of survival in malignant cerebral glioma

B DAVIES,1 C CLARKE1 (Department of Palliative Care and Policy, King’s College School of Medicine and Dentistry and St Christopher’s Hospices, London, National Hospital for Neurology and Neurosurgery, London)

Background—Malignant cerebral glioma provides one example of a potential trade off between quality and length of survival. The median survival after surgery is increased from only 6 months to around 10 by radiotherapy and only 5–15% of patients survive two years. Radiotherapy takes six weeks and is associated with adverse effects including fatigue, deterioration and cognitive problems that may follow. An economic appraisal shows that the cost of achieving one QALY is over £100,000.

Objective—To explore the views of bereaved relatives of patients with malignant cerebral glioma about survival following radiotherapy.

Design—Semi-structured interviews with relatives of patients previously studied between diagnosis and death.

Setting—Patients attending radiotherapy at five London hospitals between 1990–2.

Subjects—56 relatives (44 spouses; 12 others) seen 4–6 months after bereavement and 20 relatives re-interviewed at 13 months.

Main outcome measures—Relatives’ views about quality of life and the value of radiotherapy.

Results—Relatives viewed quality of life as good or acceptable when they saw patients as having been fit, able to carry on some normal activities or to enjoy social relationships. They described restricted and dependent states, constant deterioration or loss of normal social interaction as providing poor quality of life. Most relatives (34 of 56) described poor quality of life and most were satisfied with radiotherapy (36 of 36). (Inter-rater reliability for interview ratings of quality of life and satisfaction with radiotherapy was assessed by k 0.73 and 0.83). Relatives’ views were stable over time. Patients highly disabled at diagnosis were less often felt to have had a good or acceptable quality of life (3 of 19) than patients initially rated as less highly disabled (9 of 12). Patients initially rated as highly distressed were also less often viewed as having an acceptable quality of life (2 of 12 versus 23 of 42). Relatives more often expressed dissatisfaction with radiotherapy when patients lived no months free from disability (13 of 21) than when they lived one to six months or more free from disability (7 of 35). Relatives of patients surviving less than six months also expressed more dissatisfaction with radiotherapy (12 of 19) than those living six months or more (7 of 40).

Conclusions—Bereaved relatives’ views about quality of life relate to patient disability and distress at diagnosis. Relatives judge short periods free from disability or 6 to12 months of survival as worthwhile. These findings support the use of disability and distress in quality of life indices but suggest shorter periods than a full year free from disability are judged worthwhile.

General practice approaches to increase attendance for breast screening: results from two randomised controlled trials targeting either recent non-attenders or all eligible women

C B WEAVER,1 S H RICHARDS,2 T J PETERS,3 D J SHERRY,3 F D R HOBBS,3 J BROWN2,1 L ROBERTS,1 C TYDEMAN,1 V REDMAN,1 J FORMBY,1 S WILSON5, J AUSTORKE3 (CRC Primary Care Research Group, University of Oxford, Department of Social Medicine, University of Oxford, Primary Care Centre, University of Bristol, Department of Primary Care and General Practice, University of Birmingham, Health Economics Research Group, Brunel University)

Introduction—Breast cancer screening in the UK is offered three yearly to women aged 50 to 64 years by specialist screening units. It has been estimated that a 25% reduction in mortality from breast cancer could be realised if 70% of eligible women invited for screening subsequently attended. These studies examined the effectiveness of two primary care interventions aimed at improving uptake in areas with previously low uptake rates when targeting either recent non-attenders or all eligible women.

Methods—Two interventions aimed at improving screening attendance were investigated in two parallel factorial trials. The interventions were a systematic intervention (a letter of endorsement from all general practitioners in the practice) and an opportunistic intervention (a coloured flag in the notes to prompt the health professional to mention breast screening). General practices were eligible to participate in these trials if they had obtained a practice uptake of less than 70% in the previous screening round. The two trials differed as they targeted: all women prior to being invited for the third screening round in Trial 1; recent non-attenders in the third screening round in Trial 2. In addition, Trial 1 was cluster randomised by practice, while Trial 2 individually randomised women.

Results—In Trial 1, 6133 women from 24 GP practices were clustered randomised into the four intervention groups: 1818 to letter, 1232 to flag, and 1362 to letter and flag. Attendance data were obtained for 5732 women (94%). In Trial 2, 1158 non-attenders were individually randomised: 289 to control, 201 to letter, 201 to flag, 288 to letter and flag. Subsequent attendance status was obtained for 1148 women (99%).

The letter independently increased attendance in both trials (Trial 1: OR = 1.4; 95% CI 1.1, 1.7 and Trial 2: OR = 1.5; 95% CI 1.0, 2.2), whereas the flag only significantly improved attendance for all eligible women (Trial 1: OR = 1.9; 95% CI 1.0, 1.4 and Trial 2: OR = 1.4; 95% CI 0.9, 2.1). Costs per
extra attendance were £26 (Trial 1) and £35 (Trial 2) for the letter and £39 (Trial 1) and £63 (Trial 2) for the flag.

Conclusion—The letter was the most cost effective intervention when targeting recent non-attenders or all eligible women prior to screening. The flag intervention was effective for all eligible women, although slightly less cost effective than the letter.

EARLY LIFE RISK FACTORS

Transgenerational influences on inequalities in size at birth

S M B MORTON, A LEON, B L DE STAVOLA, D M CAMPBELL, H H HALL, A CLARK ('Epidemiology Unit, London School of Hygiene and Tropical Medicine, London; University of Bristol, Department of Public Health, London School of Hygiene and Tropical Medicine, London; Department of Social and Environmental Medicine, University of Sheffield, Sheffield; Department of Public Health, University of Aberdeen) Background—There is evidence for inter-generational continuities in birth outcome, however, the mechanisms underlying these are not fully understood. This area is difficult to research in part because of the very few settings in which adequate information is available for two or more generations for both birth and adult parameters. Developing an adequate understanding of these inter-generational effects, however, could throw new light upon the mechanisms underlying the perpetuation of socioeconomic inequalities in size at birth across generations.

Study aim—To identify the pathways through which a woman’s social class at the time of her own birth can affect the size at birth of her offspring.

Methods—In 1962 all Aberdeen primary school children were included in a study designed to investigate the antecedents of an IQ <60. Perinatal records including parental socioeconomic status and school health records detailing height and weight measurements at school entry were obtained concurrently. Using record linkage we have been able to identify the offspring of approximately 2500 of these women who subsequently gave birth to over 4500 infants between 1967–98.

Results—Social class of the mother in her own childhood was predictive of the birth weight of her own offspring. The mean birth weight of women whose own mothers were in social class I and II was 3405 g, while that of women whose own mothers were in social class III and IV it was 3285 g, a difference of 120 g (p=0.02). Adjusting for each of maternal age, parity and smoking in pregnancy failed to reduce the difference to less than 82 g. However, the difference was reduced to 57 g on adjustment for the mother’s own size at birth (p=0.10) and to 62 g adjusting for height at age 4–6 years (p=0.09). Simultaneous adjustment for both early factors reduced the difference further to 25 g (p = 0.44). Adjusting for all contemporary factors reduced the difference to 43 g (p=0.40).

Conclusion—Inequalities according to current social class exist in each generation’s size at birth. These results demonstrate that the birth weight of an infant is also related to the mothers’ childhood socioeconomic environment. Contemporary socially patterned re-productive behaviours account for only a small proportion of this gradient. Instead, much of this effect is mediated through the effect of social class on the mother’s own fetal and postnatal growth. These results demonstrate the way in which poor socioeconomic circumstances of one generation can have an adverse effect upon the fetal growth of the next.

Association between breast feeding and growth in childhood through to adulthood: the Boyd Orr cohort study

R MARTIN, D GUNNELL, P MANGSTANI, S FRANKEL, G DAVEY SMITH ('Department of Social Medicine, University of Bristol, Department of Epidemiology and Public Health, London School of Hygiene and Tropical Medicine) Background—The long term influences of breast feeding on childhood and adult nutritional status are unclear. Based on a long term follow up study of the Carnegie (Boyd Orr) Survey of Diet and Health in Pre-War Britain (1937–39), we investigated the effects of breast feeding on later childhood and adult height and body mass index.

Methods—4999 children from 1352 families were included in the study. Information on infant feeding method and later childhood nutritional status was available for 2995 children. The main outcomes were mean differences between ever and never breast fed subjects for childhood and adult anthropometry. Findings—Breast feeding was weakly associated with greater age at menarche and increased weekly food expenditure, but was not associated with the number of children in the household, birth order or social class. In childhood, breast fed subjects were significantly taller, had lower body fat and were heavier.

The mean difference in Z score for childhood height was 0.15 standard deviations (SD) (95% confidence intervals (95% CI) 0.06, 0.24; p=0.001) and the mean difference in Z score for childhood leg length was 0.15 SD (95% CI 0.07, 0.24; p=0.001). The association between breast feeding and childhood height and leg length persisted when the analysis was stratified by birth weight and family height differences in relation to within family differences in breast feeding. Breast feeding was also associated with greater adult height and leg length (mean differences: 0.21 SD, 95% CI 0.10, 0.33; p=0.005; and 0.21 SD, 95% CI 0.04, 0.38; p=0.018, respectively). There was no association between breast feeding and childhood or adulthood body mass index.

Interpretation—Infants who were breast fed in the 1930s were taller in later childhood and became taller, but not more obese, adults. As stature is associated with health and life expectancy, the benefits of breast feeding in explaining adult mortality patterns is discussed.

Birth weight, childhood growth and central obesity in adult life

D KURI, R HARDY, N CHATURVEDI, M WALDBORTH ('MRC National Survey of Health and Development, Department of Epidemiology and Public Health, Royal Free and University College London Medical School, 'Department of Epidemiology and Public Health, Royal Free and University College London Medical School) Objective—Birth weight, childhood growth and central obesity are established risk factors for cardiovascular disease, diabetes and stroke. Although the relationship between birth weight, childhood growth and adult BMI have been examined, the relationship between birth weight, childhood growth, adult BMI and central obesity in a large national cohort has not been investigated.

Methods—3200 men and women born in England, Scotland and Wales, followed up since birth until age 43 years and with measurements on waist and hip circumference. Information on birth weight, weight relative to height at 4, 7, 11 and 15 years, body mass index (BMI) at 43 years and social class in childhood and adult life was collected prospectively. Waist and hip circumference were examined by birth weight, relative weight in childhood and adult BMI grouped into equal fifths of their respective distributions. The relations were tested using linear regression.

Results—There was a small inverse effect of birth weight on waist hip ratio (p=0.01) but not waist circumference in women, after adjustment for current body size. In men, relative weight at age seven was inversely related to waist hip ratio and waist circumference after adjustment for current body size (p>0.001 for both). These relations were attenuated in men of large BMI (p <0.01 for interactions between relative weight at 7 years and BMI in both cases). Relative weights at 4, 11 and 15 years showed similar patterns to those observed at 7 years. These findings were independent of lifetime socioeconomic circumstances.

Conclusions—Women of low birth weight may have higher waist hip ratios because of a small pelvic size rather than abdominal obesity. Our findings for men may simply mean that lightness in childhood is a marker of poor growth rather than birth weight of impaired fetal growth. Alternatively, the relation may be independent of fetal growth, supporting studies that link poor childhood growth to insulin resistance. The stronger association in men with lower BMI in adult life (counter to the findings of other studies), may occur if being heavy in childhood or reaching puberty earlier is associated with a greater concentration of weight around the hips.

An investigation of birth size and arterial compliance in a cohort of young adults

A A MONTGOMERY, Y BEN-SHLOMO, A MCCARTHY, D DAVIES, P ELWOOD, G DAVEY SMITH ('Department of Clinical Medicine, University of Bristol, 'Department of Social Medicine, University of Bristol, 'Department of Child Health, University of Wales College of Medicine, Cardiff) Objective—It has been hypothesised that synthesis of elastin in the aorta and large arteries may be reduced in low birth size and that growth is impaired, leading to permanent stiffening of these vessels and raised blood pressure in later life. The aim of this study was to investigate the relation between birth size and arterial pulse wave velocity in a cohort of young adults.

Design—Follow up study of men and women who, along with their mothers, had been participants in the MRC Infant Growth and Nutrition Study (a randomised controlled trial of milk supplementation) between 1972 and 1979.

Subjects—603 men and women from the towns of Barry and Caerphilly in South Wales, who as part of the original study, had detailed anthropometric measurements from birth until age 5.

Exposure—Primary: body size, as measured by weight and length at birth. Secondary: changes in weight and length (or height) between birth and adulthood, and birth and 6 months.

Outcome—Pulse wave velocity, which is inversely related to arterial compliance and an indicator of alterations in elastin.
Methods—Data were computer simulated as if from two treatments across different subgroups and included the types of outcome variables commonly encountered in clinical trials. The estimated effect size was affected by the outcomes of subgroup analyses, such as the magnitude of the overall treatment effect and the sizes of the treatment arms and subgroups, were varied in a controlled manner to assess their impact on false positive and false negative rates. Analysis of simulated data considered the overall treatment effect, subgroup specific treatment effects and formal interaction tests. Results—Many scenarios were examined. For example, estimates were randomly generated from the normal distribution for two treatments and two subgroups of equal size, to represent the case where the null hypothesis of no overall treatment effect and no subgroup effects is true. All features of the simulated data produced a statistically significant overall treatment effect. Of those significant overall, subgroup specific tests found just one treatment effect to be significant in 5% to 6% of cases, for various sample sizes. Altering the subgroup ratio led to a marginal increase in this percentage (58% to 71%). Data were also simulated for the case where an overall treatment effect exists but no differential effect across subgroups. At 80% nominal power for the overall test, just one subgroup reached significance in 77% to 58% of cases, for various sample sizes. Altering the subgroup ratio led to an increase in this percentage (61% to 79%). No patterns were seen with a change in treatment ratio. For all these scenarios the percentage of significant interaction tests fluctuated around 5%.

Conclusions—The degree of error when performing subgroup specific treatment tests is high and may result in the incorrect conclusion of differential treatment effects across different subgroups. It is important that researchers and clinicians are aware of this potential problem when assessing the validity and interpreting the results of subgroup analyses.

Estimating the degree of undercount in Congenital Anomalies Registers: How well does the capture-recapture technique perform? N A TAUR, T S J L B U D D , E S DRAPER , P R BURTON (‘Department of Epidemiology and Public Health, University of Leicester, †Trent Institute for Health Services Research, ‡Trent Congenital Anomalies Register) Congenital anomalies are a significant cause of ill health and mortality in childhood, with approximately 2.5% of all newborn babies having at least one major structural abnormality. The Trent Register for Congenital Anomalies started data collection in 1997, at which time Trent was the only region in mainland Britain not to be at least partly covered by a register. The benefits are not restricted to Trent, as the data (along with that from the other regions) are now routinely transferred to the National database managed by the Office for National Statistics. This has led to substantial increases in the recorded rates of the great majority of anomalies. How many cases could the register still be overlooking? One method used for estimating the extent of undercount in registers in many areas of medicine—including congenital anomalies—is capture-recapture. This is based on a straightforward and attractive concept, using the pattern in which different notifiers to a register may notify some of the same children. Difficulties can occur when using capture-recapture in practice. Estimates can be very imprecise, as often only relatively small amounts of data are available. In particular, assumptions need to be made about the extent of correlation between the different sources of information. For example, an infant notified with a gastrochisis by an antenatal clinic has an increased probability of also being notified by a paediatric surgeon and a neonatal intensive care unit. This situation can be simplified by combining the notifiers into a number of groups, but the way in which this is done can have a large effect on the estimate. Depending upon the assumptions made, experimental estimates from Trent of the number of unrecorded cardiovascular defects include 17% ignoring low estimate (yielding a rate of 27 per 10 000 registrable births; 95% confidence intervals (95% CI) 18, 134) and 1018 as a relatively high estimate (76 per 10 000 births; 95% CI 56, 108). Indeed, some sets of assumptions result in no useful estimate at all being obtained. This paper will present work currently in progress on the Trent data and introduce some of the potential solutions to the concerns expressed above. It is argued that these need to be addressed before embarking on a capture-recapture exercise with congenital anomaly register data.

Recall bias in a study of cardiovascular disease and hypertension in pregnancy G J GLENNIE, W C S SMITH, T S BROOKES, S T SMITH, E WHITNEY, M E GEBBER (‘Department of Social Medicine, University of Bristol) Infarcts were kept within randomised controlled trials arise in many different settings, for example, centres in a multi-centre trial, or groups of patients defined by age, gender or baseline risk. While the presentation of baseline risk. While the presentation of subgroup-specific tests of treatment effects and the sizes of different subgroups. It is important that researchers and clinicians are aware of this potential problem when assessing the validity and interpreting the results of subgroup analyses. different subgroups. It is important that researchers and clinicians are aware of this potential problem when assessing the validity and interpreting the results of subgroup analyses.

Congenital Anomalies Registers: How well does the capture-recapture technique perform? N A TAUR, T S J L B U D D , E S DRAPER , P R BURTON (‘Department of Epidemiology and Public Health, University of Leicester, †Trent Institute for Health Services Research, ‡Trent Congenital Anomalies Register) Congenital anomalies are a significant cause of ill health and mortality in childhood, with approximately 2.5% of all newborn babies having at least one major structural abnormality. The Trent Register for Congenital Anomalies started data collection in 1997, at which time Trent was the only region in mainland Britain not to be at least partly covered by a register. The benefits are not restricted to Trent, as the data (along with that from the other regions) are now routinely transferred to the National database managed by the Office for National Statistics. This has led to substantial increases in the recorded rates of the great majority of anomalies. How many cases could the register still be overlooking? One method used for estimating the extent of undercount in registers in many areas of medicine—including congenital anomalies—is capture-recapture. This is based on a straightforward and attractive concept, using the pattern in which different notifiers to a register may notify some of the same children. Difficulties can occur when using capture-recapture in practice. Estimates can be very imprecise, as often only relatively small amounts of data are available. In particular, assumptions need to be made about the extent of correlation between the different sources of information. For example, an infant notified with a gastrochisis by an antenatal clinic has an increased probability of also being notified by a paediatric surgeon and a neonatal intensive care unit. This situation can be simplified by combining the notifiers into a number of groups, but the way in which this is done can have a large effect on the estimate. Depending upon the assumptions made, experimental estimates from Trent of the number of unrecorded cardiovascular defects include 17% ignoring low estimate (yielding a rate of 27 per 10 000 registrable births; 95% confidence intervals (95% CI) 18, 134) and 1018 as a relatively high estimate (76 per 10 000 births; 95% CI 56, 108). Indeed, some sets of assumptions result in no useful estimate at all being obtained. This paper will present work currently in progress on the Trent data and introduce some of the potential solutions to the concerns expressed above. It is argued that these need to be addressed before embarking on a capture-recapture exercise with congenital anomaly register data.

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The comparative performance of the Rose angina questionnaire in South Asian populations

C M FISCHBACHER,1 K BHOPAL,1 M WHITE,1 N UNWIN,1 K G M ALBERTI1 (‘Department of Epidemiology and Public Health, University of Newcastle, Department of Public Health Sciences, University of Edinburgh, Department of Diabetes, University of Newcastle)

Objectives—To assess the performance, in South Asian populations compared with Europeans, of two versions of the Rose angina questionnaire, as translated and implemented in the Newcastle Heart Project.

Design—Cross sectional study.

Setting—Stratified random sample of 1509 Newcastle residents aged 25–74 years from European (n=825), Indian (n=259), Pakistani (n=305) and Bangladeshi (n=120) ethnic groups.

Main measures—Major abnormalities on a resting 12 lead ECG; prevalence of possible (RQP) or definite (RQD) Rose questionnaire angina; self reported doctor’s diagnosis of angina; and associations between these measures.

Results—Major ECG abnormalities were commoner in South Asians than Europeans (5% versus 2% in men). The prevalences in South Asians and Europeans of RQP and a definite diagnosis of angina were similar (18% versus 19% for RQP and 7% versus 8% for a doctor’s diagnosis in men, respectively), but RQD was less common (3% versus 7% in men). Among Indian men the prevalence of RQD (4%) was similar to that of a doctor’s diagnosis (5%) and major ECG abnormalities (4%) but among Bangladeshi men RQD was about half as common (4%) as a doctor’s diagnosis (9%) and major ECG abnormalities (8%). RQD showed a pattern of lower sensitivity and lower agreement with other measures in South Asians compared with Europeans. For example, sensitivity for a doctor’s diagnosis was 25% in South Asian and 38% in European men. By contrast, RQP showed similar levels of sensitivity and agreement in the South Asians and Europeans. For RQD, the corresponding figures were 83% and 84%. Similar patterns were seen in women.

Conclusions—The performance of the Rose angina questionnaire, particularly the RQD form, was an order of magnitude lower than among different ethnic groups to warrant further work to achieve greater cross cultural validity. The RQP form of the Rose questionnaire performed more consistently across ethnic groups than the RQD.

GENERAL PRACTICE AND PRIMARY CARE

Beyond the burden of illness? What factors predict general practitioner concern over a unique service

K HUNT,1 S WYKE,1 J WALKE1 (MRC Social and Public Health Sciences Unit, Glasgow University, Department of Community Health Sciences- General Practice, Edinburgh University)

Objectives—(a) To compare the effectiveness of different indicators of the burden of illness in predicting 12 month consultations with general practitioners; (b) to evaluate whether such indicators and indicators of social location have any additional explanatory value.

Design—Community health survey of two age cohorts of adults taking part in the West of Scotland Twenty-07 study.

Respondents—331 men and 423 women in their early 40s and 323 men and 400 women in their early 60s.

Main outcome measure—Number of general practitioner surgery contacts in previous 12 months reported by respondents.

Methods—Face-to-face interviews conducted by nurse interviewers included the collection of detailed data on morbidity. A series of regression models compared the amount of variation in consultation rates explained by (i) detailed indicators of burden of illness attributed to chronic illness (including number of conditions, type of condition, severity, frequency of pain); (ii) detailed data on current symptoms; (iii) a global self assessment of health; (iv) dimensions of social location; and (v) attributes of the health care system (the proportion of consultations with a doctor’s diagnosis or that for a doctor’s diagnosis of angina were similar (14.4%, current symptoms 16.5%, self assessed health 15.7%). When all three indicators were included 22.4% of the variation was explained. The proportion of explained variation in social support and social location further enhanced the predictive power of the model (to 25.6% and 28.1% respectively). These models were assessed against simpler, more parsimonious models. One such model estimated that 23.6% of variation is explained by a small subset of just eight predictors.

Conclusions—The three general approaches to measurement of burden of illness were equally successful in explaining variation in 12 month consultation rates. However, combining the three approaches was even more successful. Social support and indicators of social location contributed to explaining 12 month consultation rates even in parsimonious models, confirming that non-illness factors influence the use of services.

General practitioner’s involvement in commissioning maternity care. Will it make a difference? Evidence from the total purchasing and extended fundholding experiments

S WYKE,1 J WHEWAL,1 B ELTON,1 F ROSSETT,1 L MACLEOD,1 R ROSS-MCGILL1 (‘Department of Community Health Sciences, University of Edinburgh, Department of Psychology, University of Leeds, York Health Economics Consortium, University of York)

Objectives—To evaluate the impact of general practitioners’ commissioning of maternity services on women’s experiences of care, and on resource use, and to consider the implications for primary care commissioning more generally.

Design—Comparison of women’s experiences and resource use between 21 matched commissioning and non-commissioning general practices.

Subjects—Staff in general practices, NHS Trusts, and health authorities described organisation of care. Women registered with general practice who responded to a postal questionnaire about their experience and resource use.

Main outcome measure—Women’s self reported experience of information, choice in and control over care, and of resource use.

Results—After two reminders, 1957 women responded to the questionnaire (overall response rate 62% range (52%–81%)). Multi-level models adjusted for case mix showed no difference in women’s experience of care, or their resource use, between commissioning and non-commissioning practices. Commissioning practices were more likely to be associated with more vertically integrated models of service organisation, but responses to only 3 of 21 questions about experience of information, choice and control over care, or about resource use, varied between models of service organisation.

Conclusions—The expectation that giving primary care organisations responsibility for commissioning care will result in improvement of patient experience of care or better use of resources, may be misguided. The presence of strong national policy (such as Changing Childbirth) may be equally important. Models of service organisation are not proxies for quality of care. The most powerful force shaping patients experiences of care may be professionals themselves.

Society for Social Medicine—Community health survey of two age cohorts of adults taking part in the West of Scotland Twenty-07 study.
Conclusion—Public involvement in healthcare will require considerable investment if it is to move beyond the levels of informing and consultation (on Armstrong’s ladder of participation). Although lay members have a role in this development, it is complicated by the tension between their lay status and expectations of special skills or community relationships. Greater clarity is needed about the future role of lay members within the development of public involvement in primary care.

Patient determinants of mental health interventions in primary care R S TINNEY, T A HUTCHINGS, N HIRSCH,1 N BLACK1 (‘Health Services Research Unit, London School of Hygiene and Tropical Medicine, Department of Psychiatry, Imperial College of Science, Technology and Medicine, London, Department of Public Mental Health, Imperial College of Science, Technology and Medicine, West Midlands University Hospital) Background—A large proportion of a general practitioner’s caseload comprises patients with mental health problems. It is important to ensure that care is provided appropriately, on the basis of clinical need. It is therefore necessary to investigate the determinants of the use of mental health care in the primary care sector and, in particular, to identify any non-clinical characteristics of patients that affect the likelihood of their receiving appropriate care.

Aim—To identify and compare the influence of non-clinical patient factors on general practitioner acknowledgement of mental problems and on their provision of mental health care.

Method—Cross-sectional study of adults aged 16–65 years (n=802) attending one of eight practices (20 general practitioners) in inner west London.

Results—Multivariable analysis showed that the combination of factors that best predict general practitioners’ acknowledgement of the presence of mental health problems are GHQ scores (odds ratio (OR) 1.10 per unit increase in score, 95% confidence intervals (95% CI) 1.07, 1.13), previous mental symptoms (OR 7.5, 95% CI 4.3, 12.9), increasing age (OR 1.03 per 1 year increase, 95% CI 1.01, 1.04) and physical health status (OR 0.98 per unit increase in SF36 score, 95% CI 0.96, 1.00).

Multivariable analysis showed that the combination of factors that best predict intervention (prescription for psychotropic medication; referral visit to general practitioner; referral to psychiatric inpatients/outpatients; referral to other (specified) health professionals, or social services) are previous symptoms (OR 7.4, 95% CI 3.8, 14.4), white ethnic group (OR 2.2, 95% CI 0.9, 5.5); and not owning a property (OR 2.1, 95% CI 1.1, 4.0).

Life events influenced only the presence of low GHQ scores (OR 8.1, 95% CI 2.7, 24.0).

Conclusions—Mental problems are common in primary care and their acknowledgement is a necessary but not a sufficient condition for intervention. Our results show that general practitioners’ decisions about mental health interventions can be influenced by non-clinical patient factors, regardless of patients’ clinical needs. The results suggest that current practice may not always be equitable, and point to the need for better understanding of the basis of these potential inequalities and for focused training.

CARDIOVASCULAR DISEASE RISK 1

Lp(a) lipoprotein and risk of coronary and peripheral arterial disease: Edinburgh Artery Study A J LEWIS,1 T FRICK,1 M BREBIE,1 G D DOWIE,1 A RUMLEY,1 F G R FOWKES1 (‘Wolfram Unit, Department of Community Health Sciences, University of Edinburgh; Haematology, Thrombosis and Vascular Medicine Unit, Department of Medicine, University of Glasgow) Background—Lp(a) lipoprotein consists of a large glycoprotein, apolipoprotein(a), linked to a molecular of low density lipoprotein cholesterol and may be an important risk factor for the development of atherosclerosis. It is widely accepted that Lp(a) lipoprotein levels are raised in patients with pre-existing coronary artery disease, but there is some doubt about the causality of the relation. Little is known about the relation between Lp(a) lipoprotein and either stroke or peripheral arterial disease, nor about the role of Lp(a) lipoprotein in women.

Methods—1592 men and women aged 55–74 years were selected at random from 11 general practices in Edinburgh, Scotland and followed up for 15 years. Three diseases were defined: myocardial infarction (fatal and non-fatal), peripheral arterial disease (WHO intermittent claudication) and stroke (fatal and non-fatal).

Results—The incidences of myocardial infarction, intermittent claudication and stroke were 13.4%, 9.4% and 3.7% respectively. Raised Lp(a) lipoprotein levels at baseline were associated with an increased risk (95% confidence interval (95% CI) 1.10 per unit increase in Lp(a), 95% CI 1.02, 1.17) for myocardial infarction relative risk (RR) 1.15 (95% CI 1.00, 1.32), intermittent claudication RR 1.32 (95% CI 1.10, 1.57), but not significantly for stroke RR 1.24 (95% CI 0.93, 1.64). This increased risk persisted for intermittent claudication after adjustment for baseline cardiovascular disease and other risk factors RR 1.20 (95% CI 1.00, 1.44), but for myocardial infarction became non-significant RR 1.07 (95% CI 0.93, 1.24). The risk of disease associated with raised Lp(a) lipoprotein was slightly higher in women than in men, especially for intermittent claudication (men RR 1.12 (95% CI 0.88, 1.37) compared with women RR 1.38 (95% CI 1.01, 1.89)).

Conclusion—We found that Lp(a) lipoprotein was an independent predictor of cardiovascular events in both sexes. The association between Lp(a) lipoprotein and cardiovascular events may have been stronger in women than in men, and for peripheral arterial disease than myocardial infarction or stroke.

A population-based analysis of the relation between socioeconomic deprivation and death without hospitalisation from a first acute myocardial infarction in Scotland A REDPATH,1 J W CHALMERS,1 S CAPEWELL,2 K MACINTYRE,1 S STEWART,1 J BOYD,1 A FINLAYSON,1 J F PELL,1 C J IVANS,1 J MCMURRAY1 (‘Information and Statistics Division NHS in Scotland, Edinburgh, Department of Public Health, University of Liverpool, Department of Public Health University of Glasgow, Greater Glasgow Health Board, ‘CRI in Heart Failure University of Glasgow) Objective—to examine population mortality rates according to socioeconomic deprivation for those individuals who experienced a first acute myocardial infarction (AMI) but did not survive to reach hospital.

Design—Population-based study.

Setting—Scotland.

Subjects—All Scottish residents dying between 1986 and 1995 for whom a first AMI was the principal cause of death. First AMI was defined as no prior hospitalisation for AMI since 1981.

Main outcome measures—Death from first AMI (ICD code 410) between 1986 and 1995 according to age, sex and deprivation category.

Results—Between 1986 and 1995, 48 481 men (mean (SD) age 71.2 (11) years) and 42 164 women (mean (SD) age 78.8 (10) years) died without hospitalisation following a first AMI in Scotland. There was a marked socioeconomic gradient, which was greater in men and in younger age groups (p < 0.001 for all age groups). The population-based mortality rate in deprivation category five was more than twice that of category one in men and women aged 55–65 years. In this age group alone, there were 665 and 388 more male and female deaths than expected. Overall, there were 2007 excess deaths in the lowest socioeconomic category.

Conclusion—Socioeconomic deprivation profoundly affects population-based mortality rate in first AMIs not surviving to hospital. This effect was greatest in the young and in men.

The authors are grateful to the British Heart Foundation for funding for this work.

Geographical variation of incidence of coronary heart disease in Britain: the contribution of established risk factors R W MORRIS, P H WHINCUP, F C LAMPS, M WALKER, G WANNAMETHEE, A G SHAPER (Department of Primary Care and Population Sciences, Royal Free and University College Medical School, London) Objective—to quantify the degree of geographical variation in incidence of coronary heart disease (CHD), and to estimate how much may be explained by conventional risk factors.

Design—Prospective study.

Setting—24 British towns.

Subjects—7735 men followed up from screening in 1978–80 for 15 years.

Main outcome—Percentage of variance between the towns in CHD incidence that can be explained by attributes of men in the towns.

Results—Incidence rates over 15 years varied from 7.7% in Lowestoft to 16.0% in Dewsbury, and tended to follow the well known pattern of being higher in Scottish and northern English towns, and lower in southern English towns (‘north–south gradient’).

Town incidence rates were strongly related to average systolic blood pressure, prevalence of current cigarette smoking, of leisure time physical activity, and social class distribution. Allowing for sampling error only, we estimated that true age adjusted CHD incidence (over 15 years) would vary from 8.8% to 15.2% among British towns (95% range). After adjusting for baseline blood pressure, cholesterol, body mass index, smoking status, and physical activity, this variation would reduce by 59%, and by 65% if adjustment for social class was also included. A model based on these six variables accounts partially but not completely for the north–south gradient.

Conclusion—Almost two thirds of the variation in CHD incidence between British towns was accounted for by conventional risk.

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Are dietary fibre and bowel habit risk factors for varicose veins in the general population?: Edinburgh Vein Study

A D LEON,1,2 C M HAUT,1,2 M M BREY,1,2,3 C B R FOWKES (Welford Unit, Department of Community Health Sciences, University of Edinburgh)

Background—Venous disease is common, resulting in considerable morbidity and a heavy burden on national healthcare resources. For many years, it has been postulated that diets deficient in fibre-rich plant foods are a fundamental cause of varicose veins in the Western world. Such a refined diet results in larger, harder stools that are more difficult to pass leading to constipation and regular straining. The objective of this study was to determine if a relation existed between dietary fibre intake, constipation and clinical venous disease within a Westernised population.

Methods—The Edinburgh Vein Study is the first study in the United Kingdom to investigate venous disease in the general population. Men and women aged 18–64 years were selected at random from the age-sex registers of 14 general practices and invited to screening. A total of 1566 subjects completed a validated questionnaire enquiring about dietary fibre intake and bowel habit. The presence and severity of varicose veins were assessed during a standardised clinical examination.

Results—Fibre intake, intestinal transit time, defecation frequency and the prevalence of straining at stool were all found to be significantly different between the sexes. Men who reported that they strained in order to start passing a motion showed a higher prevalence of mild (46%) and severe (12%) trunk varices compared with women who did not strain (32.8% and 6.1% respectively). After adjustment for age, social class, body mass index (32.85 and 6.1% respectively). After adjustment for age, social class, body mass index (32.85 and 6.1% respectively). After adjustment for age, social class, body mass index (32.85 and 6.1% respectively). After adjustment for age, social class, body mass index (32.85 and 6.1% respectively).

Cardiovascular Disease Risk II

Birth weight and ethnicity as predictors of coronary artery calcification

E F HALL,1,2 D A LEON,1,2 P M MCKEIGUE,3 S BRADLEY,3 N UNDERWOOD,1,2 M BREY,1,2 (London School of Hygiene and Tropical Medicine, Department of Imaging, Royal Brompton Hospital, London)

Background—High rates of coronary heart disease (CHD) are seen in first generation South Asians in the UK; and there is increasing evidence of an inverse association between size at birth and CHD among men born before the second world war. However, it is not clear whether these observations are relevant to those born in Britain to South Asian parents and to younger post-war cohorts. Electron beam computed tomography (EBCT) is a new non-invasive measure of coronary artery calcification and thus indirectly of coronary atheroma. We have used EBCT in a study of young men to address these uncertainties.

Study aim—To determine whether birth weight and ethnicity are associated with calcified coronary atheroma in men born in west London 1964–68.

Methods—Obstetric records of 19000 men born in west London hospitals 1964–68 were abstracted. Men in the top and bottom 15% of the birth weight for gestational age distribution were measured at term to mothers with South Asian names were traced. All those currently registered with a London GP were invited to participate. To date, 3135 men (53 South Asian) have been examined. In the non-South Asian group, 91 are low birth weight.

Results—The overall prevalence of coronary calcification was 21% (calcification defined as calcium score >0). Body mass index (p<0.001), weight (p<0.001), height (p=0.00) and waist hip ratio (p<0.001) were all independently and positively associated with coronary calcification. South Asian ethnicity was associated with an increased risk of coronary artery calcification (odds ratio (OR): 1.94: 95% confidence intervals (95% CI) 0.99, 3.82). Adjusting for concurrent body size increased the strength of association (OR: 2.53: 95% CI 1.10, 6.42). Low birth weight was associated with a lower prevalence of coronary artery calcification, but this association was not statistically significant, even when adjusted for anthropometric measures (OR: 0.59: 95% CI 0.35, 1.05).

Conclusions—These results indicate that second generation South Asians in the UK have a higher prevalence of coronary atheroma than their non-South Asian counterparts, suggesting that the higher rates of CHD evident in first generation South Asians may be exhibited in their children. The lack of a significant association between low birth weight and coronary calcification is interesting questions regarding the mechanisms underlying the size at birth—CHD association and its relevance to those born more recently.

Folate, vitamin B6, vitamin B12 and coronary heart disease in the Caerphilly study

U B FALCON,1,2 Y BEN-SHLOMO,3 P ELWOOD,1,2 DAVEY SMITH1 (Department of Social Medicine, University of Bristol, MRC Epidemiology Unit, Llandough Hospital, South Glamorgan)

Objective—To assess the risk of coronary heart disease (CHD) associated with dietary folate, vitamin B6 and vitamin B12.

Design—Nested case-control study.

Setting—Caerphilly and surrounding villages in South Wales, UK.

Participants—2512 men recruited in 1979 to phase I of the study. After 15 years of follow up, 357 men developed CHD and were compared with 1348 randomly selected age frequency matched controls.

Main outcome measure—Acute myocardial infarction or death due to CHD.

Results—The adjusted odds ratio of CHD per standard deviation change in nutrient as measured by a food frequency questionnaire was 0.85 (95% confidence intervals (95% CI) 0.7, 1.0) p=0.02 for folate, 0.81 (95% CI 0.7, 0.9) p=0.003 for vitamin B6 and 0.95 (95% CI 0.8, 1.1) p=0.4 for vitamin B12. Sixty two men with three separate measures (phase I to III) of dietary folate, vitamin B6 and vitamin B12 developed CHD between phase III and IV of the study. Comparing these 62 cases with 248 age frequency matched controls show an odds ratio per standard deviation change in mean folate of 0.81 (0.6, 1.1) p=0.2 using the phase I measurement, 0.85 (0.6, 1.1) p=0.3 using the mean of phase I and II, and 0.83 (0.6, 1.1) p=0.2 using the mean of phase I, II and III. When more than one measure of vitamin B6 is used, the odds ratio of CHD is 0.77 (95% CI 0.6, 1.1) p=0.1 for one measurement, 0.84 (95% CI 0.6, 1.1) p=0.2 for the mean of two measurements and 0.85 (95% CI 0.6, 1.2) p=0.2 using the mean of the three measurements.

Conclusions—These findings support the hypothesis that folate and B6 are protective against CHD. Using the mean of more than one measurement does not alter the odds ratio greatly. Randomised controlled trials of folic acid and the B vitamins are needed to determine if this is a true association.

Psychosocial risk factors for coronary disease in white, South Asian and Afro-Caribbean civil servants: the Whitehall II study

H HEMINGWAY,1,2 J M WHITTY,1,2 M SHIPLEY,1,2 E BRUNNER,1,2 S STANSFIELD,1,2 R FUEHER,1 M MARMOT1 (International Centre for Health and Society, Department of Epidemiology and Public Health, University College London Medical School, Department of Research and Development, Kensington and Chelsea and Westminster Health Authority, Clinical Research Unit, London School of Hygiene and Tropical Medicine, Department of Public Health, Queen Mary and Westfield College, London)

Background—Psychosocial factors are associated with the aetiology and prognosis of coronary heart disease (CHD) in white populations, but previous studies have not examined the distribution of psychosocial factors in ethnic groups with coronary rates higher (South Asian) and lower (Afro-Caribbean) than a white population.

Study objective—To determine whether ethnic differences in psychosocial risk factors parallel those in CHD mortality.

Design—Cross sectional survey.

Setting—20 civil service departments in London.

Participants—8973 white, 577 South Asian (62% Indian) and 360 Afro-Caribbean office based civil servants aged 35–59. Psychometric validity was observer and self-assigned (agreement beyond chance κ 0.85 (95% confidence intervals (95% CI) 0.83, 0.87).

Outcome measures—Minor psychiatric morbidity (General Health Questionnaire), social supports (marital status, social networks, negative aspects of support, confiding/emotional support, social support at work), psychosocial work characteristics (job control, effort-reward imbalance), hostility and Type A personality.

Results—South Asians and Afro-Caribbeans were considerably more likely than white subjects to be in lower employment grades; with grades, South Asians were more likely than white subjects or Afro-Caribbeans to have a car, own their own home or be highly educated. South Asians, compared with the white population, had more depression, higher negative support, social support at work, less job control, more effort-reward imbalance and higher hostility, when adjusting for age and sex. Afro-Caribbeans, compared with white subjects, had lower psychosocial morbidity and lower Type A personality.
scores. Thus, the odds of being in the adverse tertile of the depression sub-scale of the GHQ was higher among South Asians (odds ratio 1.42 (95%CI 1.2, 1.7)) and lower among Afro-Caribbeans (0.65 (95%CI 0.5, 0.8)) than among white office workers. The remaining psychosocial factors showed either no ethnic differences in distribution, or effects opposite in direction to those predicted from coronary event rates. Further adjustment for employment grade made little difference to these associations.

Conclusion—Among South Asians, the majority of whom were Indian, the distribution of psychosocial factors was consistent with ethnic differences in coronary rates; the pattern for Afro-Caribbeans was less consistent. Further work is required to test the ability of psychosocial factors to predict events within ethnic groups and to characterise better psychosocial measures.

Personality and social predictors of atherosclerotic progression: Edinburgh Artery Study

M C WINTER,1 F G ROBERTS,2 I J DEARY1 (Department of Psychology, University of Edinburgh, Department of Community Health Sciences, University of Edinburgh)

Background—If personality and social factors relate to the occurrence of acute cardiovascular events, but also to the progression of atherosclerosis, then research can be better targeted to examine the putative mechanisms driving the disease process. An objective, non-manipulative and reliable measure of atherosclerosis is the ratio of ankle systolic pressure to arm systolic pressure (ABPI). The ABPI is related inversely to the degree of atherosclerotic loss in the legs (and throughout the vascular system). Studying personality and social factors in relation to ABPI change may indicate whether these factors are part of the mechanism that accelerates atherosclerosis.

Methods—In the Edinburgh Artery Study, 1992 men and women were sampled randomly from the general population and had their ABPI measured at baseline and at the end of a five year follow up. Trait subscale scores (novelty seeking, harm avoidance, reward dependence and Persistence) were assessed at baseline using the Bedford-Foulds personality validity scales. Data on other baseline risk factors, including social and physiological factors, were also collected.

Results—Over five years of follow up, an increase in atherosclerotic progression over five years was correlated with increased baseline age and smoking in both men and women (age; men: r=−0.10; women: r=−0.25; smoking; men: r=−0.09; women: r=−0.11; p<0.05). Other significant (p<0.05) correlations with atherosclerotic progression in men were decreased baseline alcohol consumption (r=−0.10) and higher subsensitiveness (r=−0.09). In women, baseline cholesterol levels (r=−0.11, p<0.01) and alcohol consumption (r=0.09, p=0.05) were also correlated with atherosclerotic progression. In multiple linear regression models, in men, smoking, alcohol consumption and subsensitiveness accounted for 25% of the variance in ABPI change. In women, only age related to ABPI change, accounting for 6% of the variance. Well fitting structural equation models in both sexes revealed complex associations; age directly influenced both baseline ABPI and change in ABPI; smoking and social deprivation directly affected baseline ABPI; but the effect of hostility, and some of the effect of social deprivation, was mediated by smoking.

Conclusions—In addition to biological factors, social and psychological variables have an impact on cardiovascular disease. This is important for a clearer understanding of the complex interaction of risks and for more effective disease prevention.

The influence of socioeconomic circumstances in early and later life on stroke risk among men in a Scottish cohort study

C L HARTY,1 D J HOLE,2 G DAVY SMITH1 (Department of Public Health, University of Glasgow, Department of Social Medicine, University of Bristol)

Objectives—The purpose of the study was to investigate stroke risk in relation to socioeconomic position at different stages of the life course.

Design—Prospective cohort study.

Setting—27 workplaces in Scotland.

Subjects—5765 working men aged 35–64 at the time of screening in 1970–1973, who had completed questionnaires and had their baseline ABPI measured for, or death from stroke (ICD8 or ICD9 codes 430–438 and ICD10 codes I60–I69 and G45) in a 25 year follow up period.

Results—There were 416 men who had a stroke. Men with manual occupations when screened, men whose first occupation was manual and men whose fathers had manual occupations had significantly higher rates of stroke than men in the non-manual categories. Men who left full time education at 16 years or under also had significantly higher rates of stroke. Men living in more deprived areas had non-significantly higher rates of stroke. The most marked difference was in relation to father’s social class (age adjusted relative rate was 1.70 (95% confidence intervals (95% CI) (1.31, 2.20)) for manual father’s social class compared with non-manual). Father’s social class was divided into three categories (their occupation), III their first occupation, their father’s occupation, their age leaving full time education and their home address.

Main outcome measures—Hospital admission for, or death from stroke (ICD8 or ICD9 codes 430–438 and ICD10 codes I60–I69 and G45) in a 25 year follow up period.

Conclusions—Among South Asians, the major source of social deprivation, was mediated reference to these associations.

Conclusion—Risk among men in a Scottish cohort study

C L HARTY,1 D J HOLE,2 G DAVY SMITH1 (Department of Public Health, University of Glasgow, Department of Social Medicine, University of Bristol)

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Conclusions—Among South Asians, the major social predictor of atherosclerosis is the ratio of ankle systolic pressure to arm systolic pressure (ABPI). The ABPI is related inversely to the degree of atherosclerotic loss in the legs (and throughout the vascular system). Studying personality and social factors to predict events within ethnic groups and to characterise better psychosocial measures.

Evaluation of the NHS Direct Hampshire 2nd Wave Pilot Site

A MOON,1 F THOMPSON,1 V LATTIMER,2 G GEORGE3 (University of Southampton Health Care Research Unit)

Objectives—to determine: (1) Callers’ perceptions of ease of access and satisfaction with the service offered by NHS Direct, Hampshire. (2) Safety of the service in terms of adverse incidents following a call.

Study design—(1) Postal survey of NHS Direct callers using a structured questionnaire, with space for free text comments. (2) Comparison of caller data with coroners’ records over a six month period to identify deaths within seven days of consulting the service.

Setting—NHS Direct pilot site, Hampshire.

Participants—1000 consecutive callers to NHS Direct over one week. Anonymous questionnaires, based on a previously tested model, were withheld in extreme emergencies or if a caller declined.

Main outcome measures—(1) Caller satisfaction and dissatisfaction with the service. (2) Number of deaths within seven days of calling NHS Direct.

Results—(1) 700 people (70%) responded after repeat mailing. Ages of callers ranged from 16–84 years, peaking in the 25–34 years age group. Female callers outnumbered males by more than 3:1. Forty per cent called
for themselves and 48% on behalf of others. Ninety five per cent indicated satisfaction with the service. Of 176 who commented, 33 (19%) cited potential benefits to the NHS of fewer visits to GPs and A&E departments. Main benefits included reassurance, and helpful, appropriate advice. Negative comments (13%) concerned length of calls, excessive questioning, and waiting time. (2) Eighteen patients from 19 355 callers (0.09%) died within seven days of consulting NHS Direct.

**Discussion**—(1) NHS Direct is being used predominantly by younger women. They appear to consider it an efficient, professional source of health advice, sympathetic staff who give appropriate advice. Some comments reveal poor understanding of its purpose and indicate a need for clearer advertising. The view expressed by some of excessive questioning reflects the use of clinical decision support software in the consultation. (2) No adverse incidents resulting from calls to NHS Direct were detected. The rates of deaths of patients within seven days of consulting the service are similar to those observed in the SWOOP study.

**Conclusions**—NHS Direct Hampshire is a safe service that is popular with members of the public. It seems likely that these results will support the government’s determination to roll out the service to the whole UK by Octob 2000. Callers’ perception that the service will ease demand on busy doctors and A&E departments, while yet unproven, supports calls for closer integration with primary care.

### Health Improvement Programmes: what do health authorities mean by health improvement, and how do they plan to achieve it?

S Abbott, S Gillam (The King’s Fund, London)

**Background**—“The new NHS. Modern. De-

centralised.” emphasised that the NHS should strive to improve the general health of the population. Health authorities (HAs) are now required to draw up Health Improvement Programmes (HImPs), and to revise and extend them each year. HImPs must take account of national priorities for health (for example, the four Our Healthier Nation priority areas), management and organisational issues (for example, the NHS Modernisation Fund), and include Service and Financial Frameworks.

**Objectives**—(1) To discover how HAs interpret “health improvement”, and how they have used HImPs to focus activity on improving health.

**Design**—Structured analysis of the first and revised HImPs of a sample of 36 HAs.

**Results**—In the first HImPs, priorities relating to population health receive considerably more emphasis than do bureaucratic priorities. The health priorities chosen are predominantly those set out in Our Healthier Nation, particularly coronary heart disease, cancer and mental health. Population health priorities are more likely to be targeted at specific diseases than at the socioeconomic determinants of health, although the need for help and support to people with harmful lifestyles is often mentioned. In most cases, intended processes for achieving priorities lack specific measurable targets and do not name the people or agencies responsible for key outcomes. Some HAs make little reference to consultation and partnership working with NHS and non-NHS organisations, and with the public. However, a few make very little mention of primary care groups (PCGs) despite their central importance in delivering the HImP agenda. In general, therefore, the first HImPs provide broad frameworks for NHS activity, rather than detailed strategies for health improvement at a local population level. The analysis of the revised HImPs (April 2000) will examine evidence of whether these priorities are being implemented by the NHS, maintained, whether strategic planning for health focus has become any sharper, and whether PCGs are pursuing HImP priorities in locally specific ways.

**Conclusion**—The challenge for HAs is to devise a deliverable strategy for health gain at population level that can be implemented locally by PCGs in partnership with other agencies. Future HImPs need to include more detailed strategies for improving health that have local relevance and ownership, so that stakeholders can work together effectively and accountably to improve the health of their populations.

### How have primary care groups managed their core functions in their first year?

**Findings from the National Evaluation**

J SMITH, G MALDON, S GILLAM, D WILKIN, B LEES (Primary Care Programme, King’s Fund, London; Primary Care Research and Development Centre, University of Manchester)

**Introduction**—Primary Care Groups/Trusts (PCGs/TS) were introduced in 1997 as part of Labour’s policy of devolving the NHS. They comprise groups of primary practic practitioners, covering populations of approximately 100 000. PCGs have three core functions: to develop primary and community care; to commission hospital and community health services; and to improve the health of the local population. The King’s Fund and National Primary Care Research Development Centre were commissioned by the Department of Health to undertake a national evaluation of PCGs’/TS’ development. This paper will present findings from the first year of the study.

**Objectives**—(1) To describe how PCGs have tackled their core functions and the obstacles and enabling factors encountered. (2) To identify features associated with the successful delivery of their core functions drawing on lessons from previous forms of primary care commissioning.

**Design**—A random sample of 72 PCGs (15% of PCGs in England) were selected to form a three year longitudinal cohort. Structured face to face interviews were held with each PCG Chair, chief executive and nominated health authority lead during September–October 1999. Postal questionnaires were used to collect further data from other key stakeholders on the PCG boards. Relevant documents were collected from each PCG, including Health Improvement Programmes, Primary Care Investment Plans and Annual Accountability Proposals.

**Results**—PCGs spent much of their first year developing the organisation. Management costs varied considerably across PCGs; 17% had fewer than two staff with smaller PCGs generally having lower management costs and fewer staff. PCGs had begun to take stock of their existing practice infrastructure and provision and had developed specific initiatives on prescribing and clinical governance. PCGs were also beginning to tackle their commissioning role, with 50% having fully delegated responsibility for commissioning hospital and community health services. Health improvement was usually defined as tackling inequalities in access, rather than health inequalities. Forty per cent are considering applying for PCT status by April 2001 but were not clearly more advanced in terms of their organisation or core functions.

**Conclusion**—PCGs/TS have made significant steps in the first year, although much variation was observed among them. Not surprisingly they have tended to concentrate on areas that are more familiar to them, such as prescribing and general practice provision. However, the majority have plans to develop their commissioning role. PCGs need scope for local innovations if they are to consolidate their early achievements.

### Clinical governance in the UK: a principal-agent analysis

S.COOPER, P KUESVANN (Centre for Health Economics, University of York, Department of Management, University of St Andrews, Fife)

**Background**—A key feature of the latest round of UK health reform is the placing on senior health service managers the accountability for clinical quality. Accountability for clinical performance is to be achieved by new structural, procedural and cultural changes collected under the umbrella term of “clinical governance”.

**Objectives**—This paper analyses the latest proposals for clinical governance in the UK. The objective is to elucidate shifts in the emphasis of government policy regarding physician control. Key aims include: describing the preconditions of current policy; analysis of the implications of new policy mandates; and a SWOT analysis (strengths, weaknesses, opportunities, threats) of the proposals as currently constituted.

**Methods**—Analysis of the key government policy documents, and assessment of the proposals contained therein, in the light of the established literature on performance management and control strategies. The dominant perspective of the analysis is a principal-agent framework.

**Principal findings**—The UK NHS can be envisaged as a diverse collection of overlapping principal-agent relationships. Yet asymmetries of information and a lack of congruence of objective functions hamper principals’ ability to control clinical behaviour. This policy is likely to require greater and more prescriptive attention to the former, and a comparative neglect of the latter. Thus recent policy shifts in the UK regarding physician remuneration, professional standard setting, detailed measurement of local clinical practice, and external scrutiny. The incentive framework to reward excellence and punish ineptitude, however, remains under-articulated. Internal modes of control (for example, individual ethics, professional norms, and satisfaction in self efficacy) receive little concrete attention. Although frequent mention is made of inculcating an appropriately quality focused and the importance of leadership it remains unclear how this is to be accomplished.

**Conclusions**—An over-reliance on bureaucratic control facilitated by performance measurement and other forms of accountability is not only one of the major asymmetries inherent in the principal-agent relationship. The comparative neglect of possible incongruities in objective functions and the potential for the deleterious impact of top-down control mechanisms need further consideration. Bureaucratic control brings one level of reassurance but may impact adversely on the development of an appropriate quality focus. A culture and reflexive practice thus setting...
together these diverse objectives of public policy remains a key challenge.

ENVIRONMENT AND OCCUPATION

The acute effects of air pollution reduction in Westminster in disease outcomes 1 A Population Research Unit, Department of Epidemiology and Public Health, Imperial College School of Medicine, London, UK

Objectives—To model the effects of achieving the UK National Air Quality Strategy objectives on mortality and morbidity.

Design—Modelling that combines epidemiological evidence with policy options to influence determinants of disease.

Setting—City of Westminster.

Main outcome measures—Estimated lives no longer shortened and emergency cardiac and respiratory hospital admissions no longer caused or brought forward.

Background—Westminster City Council has declared an air quality management area: levels of PM$_{10}$ and NO$_2$ are predicted to exceed the UK National Air Quality Strategy targets unless additional action is taken. I have developed spreadsheets to enable local or health authorities to calculate the health effects of reducing particulate and NO$_2$ pollution in their area.

Method—I derived three models, representing minimum, maximum, and an intermediate, fall in daily pollution to achieve the UK objectives. Using 1996–98 ONS and HES data, I modelled the effects of achieving various reductions in ambient concentrations of PM$_{10}$ and NO$_2$, from 1996–1998 ambient levels. Results are based on effect estimates from the most recent time series studies in London and on WHO meta-analyses.

Results—The minimum estimate for lives no longer shortened when the 24 hour PM$_{10}$ objective for 31 December 2004 is met was 1 per year (London or WHO) when particulate levels are “capped” at that concentration. This increased to 4 (London) to 11 (WHO) when the percentage fall in concentration each day is the same as the reduction needed for the highest non-permitted level. Based on London studies, reaching the 31 December 2004 24 hour PM$_{10}$ objective results in 1 (minimum) to 7 (maximum) lives no longer shortened. Using the WHO meta-analysis, the figures are 3 (minimum) to 18 (maximum) lives. Half are cardiovascular and half respiratory deaths. Achieving the PM$_{10}$ annual objectives of 40 µg/m$^3$ and 20 µg/m$^3$ (gravimetric) would delay between 2 and 8 deaths respectively (London) or 4 and 21 (WHO). Reducing the NO$_2$ annual mean to 40 µg/m$^3$ would delay 9 (London) to 44 (WHO) deaths. Based on London studies, reducing PM$_{10}$ to the higher annual mean objective (40 µg/m$^3$) delays or prevents 4–6 respiratory and 4 cardiovascular emergency hospital admissions. Reaching 20 µg/m$^3$ (gravimetric) affects 20–32 respiratory and 17 cardiovascular admissions.

Conclusion—It is possible to use modelling to estimate the health impacts of achieving environmental targets and to compare different strategies. With an assumption of no threshold, greater reductions are obtained when air pollution is reduced each day than with a model that removes the exceedences alone.

The resurgences of tuberculosis in an industrialised city in northern England: the relative effects of poverty, ethnicity and crowding

F. Elender, G. Bentham (*School of Health Policy and Practice, University of East Anglia, School of Environmental Sciences, University of East Anglia*)

Since the mid-1980s, several industrialised countries have seen a resurgence in tuberculosis (TB). In England, the city of Liverpool has experienced one of the fastest growing rates for the disease. This study overcomes some of the limitation of routinely published TB statistics by using individual level data from the 1991 Census register. It presents a ward level ecological analysis of standardised annual TB notification rates between 1974 and 1995, categorised by age, sex, type of TB and ethnic group. Mapped distributions of relative risks illustrate the cross sectional variation in disease and how this has changed over time. The relation between TB and various socioeconomic, demographic and ethnic measures is analysed using multiple regression mod-elling techniques. The relative contributions to disease levels made by exogenous infec-tion and endogenous re-activation are dis-cussed.

For all TB categories, a cluster of high rela-tive risk was evident in inner city wards. In contrast, mapped distributions of trends over time indicated that most of the increase in TB has occurred elsewhere in the city. Cross sectional Poisson models confirmed the strong known relation between TB and pov-erty. For indigenous white and ethnic minor-ity groups alike, the Jarman index constit-uted the key determinant of disease variation in disease. For men under 65 years, an inter-ac tion effect was found between poverty and the proportion of ward level population from the Indian subcontinent. In more affluent wards TB was negatively associated with Indian subcontinent population but, as poverty increased, the relation became increasingly positive. Models of trends indicated that TB in TB has occurred, not in the poorest parts of the city, but in those wards with relatively high population densities and low levels of household over-crowding. For those over 65 years, increased relative risk was characterised by those areas that have seen least improvement in the level of household overcrowding. Explanations for the observed relations include poverty related immunosuppres-sion, population mixing and migration because of slum clearance and re-housing programmes.

A population-based study of the impacts of exposure to environmental ultraviolet B radiation on blood pressure

J. A. Jones, D. E. Cato, G. Bentham (*School of Environmental Sciences, University of East Anglia, Norwich*)

Objectives—To determine the geographical relationship between exposure to environmental ultraviolet B radiation, blood pressure, and mortality from ischaemic heart disease (ICD410–414) and cerebrovascular disease (ICD430–438).

Results—For the INTERSALT centres, mean population blood pressure was positively associated with estimated population exposure to ultraviolet B radiation. For the population of the City of Westminster, mean diastolic pressure for a 200 000 J/m$^2$ increase in annual environmental ultraviolet B radiation ($r=1,9$ mm Hg, $p<0,001$). Within Great Britain a similar positive association was found between exposure to ultraviolet B radiation and mortality from ischaemic heart disease (reduction in adjusted relative risk for a 50 000 J/m$^2$ increase in annual environmental ultraviolet B dose = 0.08, $p<0,005$).

Conclusions—There is evidence that exposure to environmental ultraviolet B radiation may be protective against hypertension and related conditions within populations. The mechanism by which this protection is afforded is not fully understood but seems to be associated with the process by which levels of 1,25-dihydroxyvitamin D are regulated within the body. The generally held view of the negative health impacts of exposure to environmental ultraviolet B radiation could require a fundamental reassessment.

The health consequences of frequent job changes

C. Melfalidi, G. Davey Smith, J. Sterne, J. Maccloist, P. Heslop, C. Harky (*Department of Social and Preventive Medicine, University of Bristol, Department of General Practice, Birmingham University, Department of Public Health, Glasgow University*)

Background—The health consequences of frequent job changes have received little attention. Such employment histories are becoming more common in an increasingly flexible labour market. It is hypothesised that an employment history characterised by frequent job changes will be associated with poorer health. Psychosocial stress, and its influence on health linked behaviours and physiological factors, will be considered as a possible mediator in such a relation.

Design—Cross sectional study.

Setting—27 workplaces in the west of Scotland.


Main measures—Number of job changes since leaving school (categorised as 0, 1–2, 3, 4–5, 6–8, 9+ changes), “Reeder” stress inventory, health behaviours (cigarette smoking, alcohol consumption, physical exercise), physiology (diastolic blood pressure, body mass index, forced expiratory volume, plasma cholesterol concentration), and current health (angina and myocardial ischaemia).

Results—The statistics presented here are odds ratios (OR), or differences in means where units are given, for each increase in job change category, adjusted for age, sex, socioeconomic position and time since most recent job change. The 95% confidence intervals (95% CI) are also provided. Fre-quent job changes were associated with greater psychosocial stress for women (OR 1.25, 95% CI 1.11, 1.40) but not men (OR 1.03, 95% CI 0.99, 1.09). There was no association between frequent job changes and physiological measures for females, while for men there was evidence of lower diastolic
Do parental occupations involving social mixing and infectious contacts affect the risk of childhood type I diabetes mellitus?

N J PEARL, P A MCKINNEY, C C PATTMSON, R C FARSLOW, H J BODANSKY (Leukaemia Research Fund, University of Leeds, Paediatric Epidemiology Group, University of Leeds, Department of Epidemiology and Public Health, University, Belfast, Leeds, General Infirmary).

Objectives—To investigate the hypothesis that increased exposure to infections, through parental jobs involving high levels of social mixing, reduces the risk of childhood type I diabetes.

Design—Two population-based case-control studies of children diagnosed with type I diabetes.

Setting—Yorkshire and Northern Ireland.

Subjects—220 cases and 433 controls from Yorkshire (aged 0–15 years); 189 cases and 465 controls from Northern Ireland (aged 0–14 years).

Main outcome measures—Associations between parental occupational social mixing and childhood type I diabetes were assessed using an occupational (OR) adjusted for age and sex. For each OR, 95% confidence intervals (95% CI) and two sided tests of statistical significance were obtained. Analyses were performed by level of parental occupational social mixing and age at diagnosis.

Results—Parental occupations were coded using a standard occupational classification and each job allocated to high, medium or low levels of social mixing according to a predefined categorisation. One hundred and six (29%) occupations out of 371 were identified as having potentially increased levels of social mixing: 75 classified as “high” and 31 as “medium”. The remaining 265 (71%) occupations whose likely social mixing was not judged to be unusual, classified as low. Because of small numbers within the medium exposure group (Yorkshire—mothers: 12 cases and 22 controls; fathers: 13 cases and 27 controls; Northern Ireland—heads of household, usually the father: 8 cases and 27 controls), low and medium exposure levels were combined. Childhood type I diabetes was not associated with high levels of parental occupational social mixing (Yorkshire—mothers: OR 1.07, 95% CI 0.76, 1.50, based on 88 exposed cases; fathers: OR 1.15, 95% CI 0.75, 1.76, based on 41 exposed cases; Northern Ireland—heads of household, usually the father: OR 0.78, 95% CI 0.49, 1.25, based on 27 exposed cases). A larger proportion of fathers (18% Yorkshire, 17% Northern Ireland) had jobs involving high levels of social mixing. Mothers with high social mixing jobs conferred a non-significant reduced risk of diabetes among children diagnosed under 5 years (OR 0.58, 95% CI 0.24, 1.38) compared with those diagnosed at age 5 and over (OR 1.14, 95% CI 0.77, 1.69).

Conclusions—There was weak evidence of a link between parental occupational social mixing and childhood type I diabetes was detected for all ages combined. Mothers were more likely to have jobs involving high levels of social mixing than fathers. The possible protective effect of maternal high occupational social mixing on children diagnosed under 5 merits investigation.

HEALTH SERVICES RESEARCH II

Comparing the length of NHS waiting times: can we trust official statistics?

P W ARMSTRONG (Department of Health Sciences, University of East London)

Objectives—To assess the validity of measures of the promptness of elective admission, namely the proportion of valid elective episodes “admitted” within three months and the likelihood of elective admission within three months. To assess the relationship of the measures of the promptness of elective admission to other measures of the performance on one measure predicts rank performance on the other.

Methods—We obtained information on each elective episode with a date of enrolment other than “15 Oct 1582” and a date of admission for trauma and orthopaedic surgery at each of 34 NHS Trusts in South Thames Region between 1 July and 31 December 1994 inclusive. We calculated the proportion of valid elective episodes “admitted” within three months. We also obtained the KH06, KH07 and KH07A counts submitted for these waiting lists for the quarters ending 30 September and 31 December 1994. We calculated the proportion eventually admitted—that is, the proportion of waiting times no longer eligible for inclusion in the waiting list census as a result of elective admission. Finally, we calculated the likelihood of elective admission within three months, among all those at risk, as the product of these two proportions.

Results—The proportion of elective admissions occurring within three months of enrolment ranged from 0.62 to 0.27. The proportion eventually admitted ranged from 0.93 to 0.31. As a result, the likelihood of elective admission within three months, among all those at risk, ranged from 0.55 to 0.12. This measure confirms that elective admission may be very much less prompt than suggested by the Government Statistical Service estimates of the proportion of patients admitted within three months of enrolment. The measure may be very different from that suggested by the official statistics.

Conclusions—The published statistics allow those already admitted to look back over their shoulder and question whether their experience was. And the published statistics allow those destined to be admitted to assess their chance of admission within any given “time since enrolment”. But patients, clinicians, managers and politicians all want to know how long new recruits might expect to wait and cannot predict whose “time since enrolment” will end in admission and whose “time since enrolment” will end in some competing event. As a result, the published caveats fail to protect users from misinterpreting official statistics: the proportion of 0.31 for “time since enrolment” is of no interest unless it estimates how long new recruits might expect to wait so users assume that this is what it does.

Health variations: a qualitative study of the reasons for differences in health services use and access to health care.

K S KENNEDY, N PAYNE, C SAUL, D LUFF, K MCKEIE (School of Health and Related Research, University of Sheffield)

Background—The qualitative study is part of a research programme investigating inequalities as they relate to the use of, and access to, health services.

Aims and objectives—To develop understanding of the reasons for differences in the use of, and access to, health services; to generate questions for a population survey in order to assess the relative importance of the reasons.

Method—Fourteen focus groups, involving purposive recruitment of parents, were conducted from the general public and health care occupation, were conducted to explore people’s various experiences and knowledge of the health service and discuss key issues and factors they consider pertinent to differences in use and access.

Analysis—Verbatim transcripts from each session were coded independently and then together. Data were indexed manually, as well as identified via a computer, using NVivo and analysis software Atlas.ti. Similar themes and issues within and across sessions were grouped together, then associations and relations between the categories were identified. The detail, sequence, emphasis and consensus/divergence within the discussions was emphasised rather than just frequency, as befits the methodology.

Results—Prior health related experiences; attitudes and beliefs (general and health related); knowledge, skills and abilities (general and health related); and social/economic circumstances; operating within a service context (organisation and quantity); combine together to influence use of services (by the public) or provide access to them (by the professional).

Each category involves many elements, with participants/groups of participants experiencing different elements with varying levels and directions of influence. Some elements relate to each other across categories: for example, some circumstantial factors directly influence use of services—as such access to/ownership of a car—whereas others, such as poverty, influence use indirectly, via relations to attitudes to life. Most importantly it is experience of health care encounters that influences use and access: the participants’ approach, either as user or provider, strongly influences the response of the other; interpersonal aspects of the professional’s approach are identified as especially crucial, and more so than technical ones. For example, experiences of an encouraging/defensive provider, strongly discouraging health professional strongly impact on decisions relating to whether, how and when a person uses the services subsequently; similarly, experiences of assertive patients and/or perceptions of motivation influence professionals’ decisions to provide treatment and/or referral. Diagrammatic representations of the key issues and processes in use of and access to services have been developed, which will also be presented.
Open SESAME—the impact of socioeconomic status on health care seeking behaviour

J A ADAMS,1 J L DONOVAN,1 N CHATURVEDI,1 Y BEN-SHLOMO1 (Department of Social Medicine, University of Bristol, Department of Epidemiology and Public Health, Royal Free and University College London Medical School)

Objectives—The study aims to explore how variations in health care seeking behaviour can be explained by the level of equitable health care access, specifically testing the hypothesis that sociodemographic factors such as socioeconomic status, gender, and age influence an individual's perception of the need and urgency of seeking health care.

Methods—1500 people aged 30 to 80 years, from a general practice in the south of England were sent a questionnaire asking about sociodemographic characteristics, attitudes to health and health care, and intended response to a clinical vignette about a lump under the armpit. Initially it is non-tender (part I) but then a few weeks later it is associated with night sweats and a throbbing pain (part II). Practice was selected because it contained an even social mix according to census data.

Main outcome measures—The main outcome measure was the proportion indicating that immediate care (hospital measure was the proportion indicating that census data.

Conclusions—Although all factors could not be accounted for, it was possible to conclude, drawing on published literature, that clinical factors were not the sole determinants of care. It is suggested that decisions on the grounds of chronological age may be made by clinicians because of beliefs and expectations about “quality of life” in older people that are out of date with the present evidence base. Furthermore, it is thought that, where the basis of the decision is belief and expectations, weighting too much on economic pressures, withholding treatment without clinical justification should be seen ethically as discrimination rather than as rationing.

An introduction to DIPEx—a database of individual patient experience

A MCPHERSON, Z INGBER, R MILLER, S SHEPPARD (DIPEx project, Department of Primary Health Care, University of Oxford, Institute of Health Sciences)

Objectives—DIPEx is a multimedia web site and CD ROM that links patients’ experiences with evidence-based information about treatments and the illness itself, with a range of other resources that may be useful, including support groups and links to other web sites. DIPEx aims to identify the questions that matter to people when they are ill and may be used for informing patients, educating health care professionals and providing a patient-centred perspective to those who manage the health service. An important feature of the database is that it addresses the needs of professionals and the general public. The same database will be available for patients, carers, professionals and students, policy makers and researchers. In this paper the first complete DIPEx site, for hypertension, will be demonstrated.

Methods—A purposive sample was chosen to represent the widest practical range of experiences of hypertension. Volunteers for the project were sought through GP's, support groups, radio broadcasts and newspaper articles. Interviews took place in the respondents' homes. Experienced qualitative researchers conducted semi-structured, narrative interviews with 40 respondents, recorded on digital video or audio tape. The information about treatment and material resources was compiled by a steering group including lay and professional experts.

Results—The analysis used grounded theory to identify the issues that are important to the respondents. Themes are illustrated with video, and audio clips and written excerpts from the interviews. The information about hypertension and the answers to “frequently asked questions” on the site have been developed in response to the information needs of the interviewees. This includes questions about prevention, causes and effects of hypertension and explanation of the meaning of blood pressure readings.

Conclusions—We believe that DIPEx is unique in the field of patient and healthcare communication. The demonstration of the hypertension site includes a short film about the project and video clips from the interviews.

DIABETES AND MUSCULOSKELETAL HEALTH

Family history of diabetes in UK South Asians

C M FISCHBACHER,1 R BHOPAL,1 N UNWIN,1 M WHITE1, 1K G M M ALBERTI1 (Department of Epidemiology and Public Health, University of Newcastle, Department of Public Health Sciences, University of Edinburgh, Department of Diabetes, University of Newcastle)

Objectives—To describe the associations between diabetes mellitus (DM) and impaired glucose tolerance (IGT) in study subjects and reported diabetes in their parents and siblings.

Design—Cross sectional study.

Subjects—A stratified random sample of 1509 Newcastle residents aged 25–74 years from European (n=705), Indian (n=305) and Pakistani and Bangladeshis, and when male and female respondents were analysed separately.

Conclusions—An association between the glucose tolerance status of the respondent and the frequency of diabetes in parents and siblings is consistent with a genetic basis for diabetes. An association between the sibling of the respondent was 91% (70.8%). The social class distribution was: SCI and II 31%, IIINM 25%, IIIM 19% and V 24% and mean age of respondents 53 years (range 30–84). A five group socioeconomic ordinal scale was created based on a composite of several measures. For part I of the vignette, the age and sex adjusted odds ratio (OR) for trend across the scale was 1.29 (95% confidence intervals (95% CI) 1.13, 1.46; p<0.001), so that lower socioeconomic status was associated with greater reporting of seeking immediate care. However, in part II, this had now disappeared (OR for trend across groups 1.02, 95% CI 0.93, 1.14). Other variables that were strong predictors of immediate care seeking were being older, high degree of anxiety, agreement that good health is very important, and being white. Multivariable analysis, however showed that adjustment for these variables attenuated, but did not abolish the association (OR 1.19, 95% CI 1.03, 1.38, p=0.02).

Conclusion—These data suggest that lower socioeconomic status is associated with increased care seeking behaviour. It is important not to over-generalise these results as diagnostic procedures or the degree of anxiety and depression, and intended response to a clinical vignette about a lump under the armpit. Initially it is non-tender (part I) but then a few weeks later it is associated with night sweats and a throbbing pain (part II). Practice was selected because it contained an even social mix according to census data.

Main outcome variables—The main outcome measure was the proportion indicating that immediate care was indicated (hospital measure was the proportion indicating that census data.

Conclusions—Although all factors could not be accounted for, it was possible to conclude, drawing on published literature, that clinical factors were not the sole determinants of care. It is suggested that decisions on the grounds of chronological age may be made by clinicians because of beliefs and expectations about “quality of life” in older people that are out of date with the present evidence base. Furthermore, it is thought that, where the basis of the decision is belief and expectations, weighting too much on economic pressures, withholding treatment without clinical justification should be seen ethically as discrimination rather than as rationing.

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www.jech.com
Primary Care and Population Sciences, Royal Free Hospital School of Medicine, London

Introduction—It is known that smoking causes insulin resistance. However, the relation of smoking to risk of type II diabetes has not been well defined.

Aim—To estimate the relative risk of type II diabetes in smokers relative to non-smokers and to assess the effect of smoking cessation on diabetes risk.

Design—Prospective cohort study involving a group of 7124 middle aged men followed up for an average period of 16.8 years.

Results—Baseline data on smoking status were available from 7124 men. Upon exclusion of known diabetics at screening, and those with a history of ischemic heart disease and stroke, there were 290 incident cases of diabetes in this group of 7128 men during follow up. All current smokers combined had a significantly increased risk of diabetes compared with never smokers, relative risk (RR) (95% confidence intervals (95% CI)) 1.7 (1.2, 2.4), adjusted for body mass index and other potential confounders including physical activity, social class, alcohol intake, pre-existing coronary heart disease and anti-hypertensive treatment. Primary pipe/cigar smokers showed similar risk to never smokers but secondary pipe/cigar smokers showed significantly higher risk than never smokers, adjusted RR 1.9 (95% CI 1.1, 2.9). Ex-smokers showed lower risk than current smokers and diabetes risk tended to decrease with increasing years since quitting. After adjustment for age, body mass index and other confounders the benefit of giving up smoking was apparent in those who had given up at least 20 years before screening. Diabetes risk reverted to that of never smokers in those who had given up at least 20 years before screening.

Conclusion—The findings suggest that smoking is an independent and reversible risk factor for type II diabetes.

Work disability in patients with rheumatoid arthritis

E M BARRATT, D P M SYMONS, D G I SCOTT (Department of Public Health, University of Bristol)

Introduction—Work disability in patients with rheumatoid arthritis (RA) and the ability to remain in work is an independent and reversible risk factor for work disability in a new community based group of 7735 middle aged men followed up for up to 10 years.

Methods—Subjects—2296 men and 2914 women, aged 45-74 years who were registered with general practices in Norwich, UK and were surveyed as part of the EPIC—Norfolk study between 1995 and 1998.

Methods/main outcome measures—Time spent participating in recreational physical activity was calculated for four groups that were defined according to the level of impact from questionnaire data. The questionnaire also quantified stair climbing and frequency of inactivity (time spent viewing television/video). At least two measurements of bone density, per foot, at the heel were recorded by broadband ultrasound attenuation (BUA). BUA has previously been shown to predict hip fracture risk.

Results—Self reported time spent in high impact physical activity was strongly and positively associated with heel bone density, independently of age, weight, sex and other confounding factors. Men who reported participating in ≥2 hours per week of high impact activity compared with men who report no such participation, had 8.40 dB/MHz (95% confidence intervals (95% CI) 4.49, 12.32) higher heel bone density. In women, the difference in heel bone density between reporting any versus no time spent in high impact activity was 2.36 dB/MHz (95% CI 0.42, 4.31). The size of this effect was equivalent to that of four years in age. There was no significant association between time spent in moderate impact activity on heel bone density in either men or women. This null association is explained when the analysis was restricted only to people who did not participate in high impact activity. For each additional five flights of stairs climbed per day the increase in heel bone density was 0.09 dB/MHz (95% CI 0.22, 1.13), p<0.005 for women. There was a significant negative association between increasing television/video viewing hours per week and heel bone density in men. The effect of each additional hour of television/video viewing per week was 0.08 dB/MHz (95% CI −0.14, −0.02), p<0.009. These associations were independent of possible confounding factors; age, weight, height, cigarette smoking habit and hormone replacement therapy in women.

Conclusion—This cross sectional study demonstrates an independent relation between high impact physical activity and a measure of bone density (by BUA) in men and women. Interventions to increase participation in these activities may have important public health consequences.

Barriers to utilisation of total joint replacements

C SANDERS, J DONOVAN, J CHARD, P DIEPPE (Department of Social Medicine/MRC HSRG, University of Bristol)

Introduction—While total joint replacement (TJR) is an effective treatment for severe joint disease, research evidence consistently shows variation in primary care physician referrals for unmet need. We investigated barriers to appropriate utilisation of TJR.

Methods—Published literature from standard electronic databases concerning indicators for osteoarthritis was reviewed. Consent panels including primary care physicians, rheumatologists and orthopaedic surgeons were formed to explore expert views about barriers to utilisation. In depth interviews were undertaken with people with severe hip/knee disease and low levels of service utilisation selected from a community prevalence survey (Somerset and Avon Survey of Health) to explore why they had not sought help. Interviews were audiotaped and transcribed. Analysis was according to the method of constant comparison.

Results—Evidence of inequality in the provision of TJR was found in the literature, with wide variations in surgical rates nationally and internationally. Expert discussions and literature identified three potential barriers to appropriate utilisation: people with joint disease not presenting to primary care physicians, primary care physicians not referring people to specialists, and surgeons refusing to operate on particular groups (for example, young, obese). Raising awareness through interviews to explain why people did not seek health care included perceptions that they were too old or unwell for TJR, a view that joint problems were a normal part of aging, not wishing to undergo surgery and that TJR only dealt with outcomes in friends/relatives, and unwillingness to initiate reconsideration for referral/surgery after previous refusal.

Conclusions—There is the potential to develop strategies that might reduce inequality and unmet need, including referral and review guidelines for primary care physicians. It is also clear that there is a need for further research to establish appropriate indications for the timing of TJR and to incorporate patient preferences and clinical factors.
Identifying the risk factors and indicators of ischaemic heart disease in primary and secondary care: is there a consensus model?

D J FORREST, C HARRIS, N HARVEY, A BOWLING, H BOWLING, B HANRATTY, C ROBINSON, B JACKSON, C MORRELL (Department of Public Health, University of Liverpool) and A HALL, D GREENWOOD, M B ROBINSON, B JACKSON, C MORRELL (University of Liverpool) and Y Hemingway (Department of Social Medicine, University of Bristol)

Background—Coronary heart disease is a major factor in the widening social divide in health. The decline in death rates since the 1970s has been least marked in lower socioeconomic groups; variations in lifestyle and environmental factors are likely to account for most of this difference. With the advent of effective treatments such as thrombolysis, ACE inhibitors and aspirin, the management of acute myocardial infarction (AMI) may be an additional factor contributing to the socioeconomic variation in outcomes.

Objective—To investigate the association between socioeconomic deprivation and the management of, and survival after, AMI.

Design—Prospective observational study collecting demographic and clinical data on all cases of AMI admitted to hospitals in Yorkshire and Cleveland. Setting—Acute admitting district and university hospitals in the Yorkshire region of northern England.

Participants—3684 consecutive patients with a possible diagnosis of AMI admitted to hospital in Yorkshire between 1 September 1994 and 30 November 1995.

Main outcome measures—Types of ward on admission, AMI in secondary care, survival status at discharge from hospital and two years, by quintiles of Townsend score.

Results—2153 people had a confirmed AMI. From Townsend quintiles waited a similar time before seeking medical help. After adjusting for clinical variables and hospital of admission, deprived patients were less likely to be admitted directly to a coronary care unit (adjusted odds ratio (OR) 0.96, 95% confidence intervals (95% CI) 0.93, 0.99, p=0.005 per unit of Townsend score) and more likely to attend accident and emergency. Once in hospital, deprivation was associated with treatment with aspirin or thrombolysis, treatment on discharge or investigations planned after discharge. There was no relation between death and death before discharge (adjusted OR 0.99, 95% CI 0.95, 1.03, p=0.60) or two years (adjusted OR 1.01, 95% CI 0.98, 1.06, p=0.41).

Conclusion—Social inequities in the management of AMI were found to exist in hospital, they are not an important contribution to the social divide in coronary heart disease outcomes. However, there may be important differences in the primary care of AMI that merit further attention.

Is “Saving Lives” feasible? Estimating the potential for further reductions in UK coronary heart disease deaths

J CRITCHLEY, J REEVES, S CAPPELL (Department of Public Health, The University of Liverpool) and D J FORREST, C HARRIS, N HARVEY, A BOWLING, H BOWLING, B HANRATTY, C ROBINSON, B JACKSON, C MORRELL (Department of Public Health, University of Liverpool)

Objective—To assess the potential for additional coronary heart disease (CHD) deaths in the UK.

Background—The recent public health white paper “Saving Lives: Our Healthier Nation”, sets a target of a 40% (200 000) reduction in CHD deaths in people under 75 between 1997 and 2010. Is this feasible through further risk factor reductions?

Methods—A previously validated cell-based mortality model combining effectiveness data from published meta-analyses with available information on CHD treatments in all patient categories, (b) risk factor trends (smoking, blood pressure, cholesterol, deprivation) by sex/age group. Applying data from the Health Survey for England (Monitoring of Trends and Determinants in Cardiovascular Disease) project and elsewhere, the model was used to estimate the additional deaths that might have been prevented by a variety of plausible scenarios, such as if: (1) reductions in smoking prevalence in Scotland had been as great among women as among men; (2) reductions in population mean cholesterol level in Scotland had been as great as in Sweden; (3) reductions in population mean diastolic blood pressure had been 50% higher than those observed (an additional 4 mm Hg over all age/sex groups in the model). The robustness of the model results to uncertainty surrounding all key parameters was examined by extensive sensitivity analyses.

Results—Between 1975 and 1994, smoking prevalence in Scotland declined by 26% in men and 34% in women; (b) reductions in population mean cholesterol levels and blood pressure declined by only approximately 5% and 9% respectively. These observed risk factor changes explained approximately 60% of the deaths prevented in 1994 compared with
1975. If the reduction in smoking prevalence among women had equalled that in men, several hundred further deaths might have been prevented in 1994, mostly in older age groups (over 75). Significant additional deaths might have been prevented by further blood pressure reduction, and death rates could have been reduced substantially if the decline in population mean cholesterol in Scotland had mirrored that in Gothenberg, Sweden. Comparable reductions in CHD deaths were seen when the model was extended from 1994 to 2010.

Conclusions—Cautious extrapolation to the UK population of 59 million suggests that comparable risk factor reductions were achieved, approximately 20000 further CHD deaths per annum might be prevented. Given that cardiological treatments should also have a substantial impact, the “Saving Lives” target seems entirely feasible.

MENTAL HEALTH

Is exercise an effective intervention for the management of depression? A systematic review of all randomised controlled trials, in any language, obtained using five electronic databases, (Medline, Embase, PsycLit, Sport discus, Cochrane Library) contact with experts in the field, bibliographic searches and hand searches of recent copies of relevant journals. Meta-analysis and meta-regression of trials for which complete data were obtained.

Explanations for the rise in youth suicide: a European perspective

D GUNNELL,* I WHITLEY,* D DORLING* (Department of Social Medicine, University of Bristol, ‘School of Geography, University of Leeds)

Background—Suicide rates have doubled in men aged <30 in England and Wales (E&W) since 1970, while in young women rates have declined. With the exception of the former West Germany many other European countries have experienced similar increases in young male suicide and elsewhere in Europe trends in female suicide have generally followed those in men.

Methods—Using age and gender specific social and economic data from four countries with different suicide trends, E&W, West Germany, France and Norway— we have investigated whether changes in social and economic conditions or in the lethality of suicide methods underlie these differing trends.

Results—In young men in E&W, France and Norway suicide rates increased by over 70% between 1970–1990, whereas in West Germany, over the same period, rates declined. In young women, rates decreased in E&W and West Germany but increased in both France and Norway. In all four countries there have been reductions in female overdose suicide mortality but in France and Norway these have been offset by increased use of other methods, particularly hanging. Trends in markers of social and economic conditions are broadly similar in the four countries. Between 1970–1990 levels of unemployment rose steeply in each country. In E&W and France the timing of the increase in unemployment coincided with the rise in suicide. While divorce rates have also increased markedly in all four countries, the timing of these rises differs from that for the increases in suicide in all countries except France. Marriage rates declined in all four countries from around 1970. Changes in all these risk factors have been greatest in people aged <30. There are no clear differences between the countries in trends in alcohol consumption or GDP, both of which have increased. Trends in income inequality show no consistent association with suicide trends.

Summary—Changes in the social and economic risk factors examined do not seem to explain differing trends in youth suicide. Changes in the lethality of methods used for suicide may have influenced trends in women. Further research is required into reasons for the discordance in suicide trends in Germany compared with other European countries, explanations are relevant to under-standing the antecedents of suicide and in developing preventive strategies. Particular features of Germany in the past 50 years are postwar reconstruction, changes in its national borders and reunification in 1989. It is notable that similar reductions in youth suicide occurred in Japan 1970–1990.

Urban-rural differences in the rise in youth suicide in England and Wales

N MIDDLETON,* D GUNNELL,* I WHITLEY,* D DORLING* (Department of Social Medicine, University of Bristol, ‘School of Geography, University of Leeds)

Background—Suicide rates have doubled in young men over the past 30 years in most industrialised countries. Explanations for these rises are unclear, but research from Australia indicates that the steepest rises have occurred in rural areas. It is speculated that these changes reflect a decline in the rural economy and its effects on rural communities, including the out-migration of healthier people. We have investigated whether similar geographical differences in trends in suicide exist in England and Wales.


Methods—The wards of England and Wales were categorised into four quartiles of rurality using an index of population potential derived from the 1991 census. The index is based on the populations of all wards in Britain, each weighted by its distance from the centre of the index ward. Differences in suicide rates (ICD9 codes E950–959 and E980–989 excluding E988.8) between 1981–85 and 1986–92 were calculated in each quartile for 15–24 and 25–44 year old men and women separately using routine mortality data.

Results—In men, between 1981–85 and 1986–92, suicide rates increased by 4.9 (95% confidence intervals [95% CI] 4.3, 5.6) per 100 000 person years in 15–24 year olds and by 1.0 (95% CI 0.4, 1.7) in 25–44 year olds. In women, the changes were 0.6 (95% CI 0.3, 1.0) and –1.4 (95% CI –1.8, –1.1) in the same age bands. In men aged 15–24, rises in suicide rates were similar in both rural and urban areas. In men aged 25–44, however, there were striking differences across the four categories of rurality—most of the increase occurred in the most rural wards: 3.0 (95% CI 1.3, 4.7) while just 0.2 (95% CI <1.0, 1.0) in the most urban wards. In women aged 15–24, there were similar marked differences depending on rurality: 1.4 (95% CI 0.5, 2.3) in the most rural and 0.2 (95% CI –0.4, 0.8) in the most urban quartile. In women aged 25–44, suicide rates decreased over the years studied across all quartiles (95% CI –2.6, –1.4) in urban and –1.5 (95% CI –2.5, –0.6) in rural areas. It is unlikely that changes in unemployment explain these trends, as between 1981 and 1991 the greatest increases in unemployment were experienced in urban areas (correlation between change in unemployment and population potential 0.20; p<0.001 in men and 0.33; p<0.001 in women).

Summary—These findings suggest that the greatest increases in youth suicide have occurred in rural areas, in particular in 15–24 year old women and 25–44 year old men. The influence of changes in preferred methods of suicide as well as other social and economic changes in rural wards will be presented at the conference.

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The impact of legislation and changing vehicle propulsion methods on suicides using motor vehicle exhaust gases across the UK

R C WILSON, P J SAUNDERS

Background— Catalytic converters (CATs) have been compulsory on all new petrol cars sold in the European Union since 31 December 1992. As CATs reduce the level of carbon monoxide (CO) in motor vehicle emissions by approximately 86% it has been postulated to have an unintended benefit of reducing suicides using motor vehicle emissions gas. In addition CO has been a major change in the UK car fleet in the past 15 years with an increasing proportion of diesel engine cars, which generate lower levels of CO than petrol engines fitted with CATs. A coincidental decline in suicides and the introduction of CATs has been reported in US and in Scotland. However, the US studies are limited in their generalisability because of the preponderance of petrol vehicles and the age structure of the population as an alternative mode of suicide, and the Scottish study failed to examine the changes in the car fleet.

Objective—to consider: what impact did the uptake of diesel vehicles have on suicide rates; and any substitution of methods occurred.


Methods—Deaths as a result of suicide (ICD9 codes E950–E959), including undetermined deaths, were examined by producing annual rates by age groups (E950–E952) and region (E953–E959), including undetermined deaths, by producing annual rates by socioeconomic group (E953–E954) and region (E955–E956), including undetermined deaths, by producing annual rates by place of death (E957). 

Results—The suicide rate using motor vehicle exhaust gases (E952+E982) increased steadily to peak in 1992 at 2.51 per 100 000 before dropping to 1.55 per 100 000 by 1995 while suicides from other methods remained relatively constant around 8.5 per 100 000. However, rates for hanging (E953+E954) have increased from 2.54 per 100 000 to 3.30 per 100 000.

Conclusions—In the UK suicide using motor vehicle exhaust gases has continued to fall while methods of suicide using other methods has not changed. However, rates for hanging have continued to rise.

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Age and gender differences in utilisation of asthma medication in children and young adults in Tayside, Scotland

D M McNAUGHTON, G LIBBY, P T DONNAN, T M MACDONALD (Medicines Monitoring Unit, Department of Clinical Pharmacology, University of Dundee)

Background—There are studies that examine the age and gender differences in children and young adults aged 0–25 in the utilisation of asthma medications.

Methods—The Medicines Monitoring Unit (MEMO) captures all dispensed medication for the Tayside area of Scotland (population 400 000). These data have a unique patient identifier attached that allows demographic and drug safety studies to be carried out. This study examined the dispensing of asthma medications for a population resident and registered with a GP in Tayside between 1993 and 1995.

Results—A total of 130 372 subjects aged 25 or under were identified. Of this group 18.1% of males and 16.3% of females had received at least one prescription for asthma medication. Stratifying by age in four year bands the age group 1–4 years had the highest proportion with an asthma prescription (29.4% male and 23.5% female, p<0.001 χ² test). The proportion of male subjects with an asthma prescription was consistently higher than female subjects until the age of 19 after which there was a higher proportion of female subjects. Logistic regression analysis showed that overall male subjects were more likely to be dispensed a prescription for asthma medication than female subjects (odds ratio (OR) 1.14, 95% confidence intervals (95% CI) 1.11, 1.18, p<0.001). These aged under 20 were twice as likely to have a prescription as those aged 20–25 (OR 2.02, 95% CI 1.95, 2.10, p<0.001). There was a significant age by gender interaction (p<0.001) whereby male subjects were more likely to have a prescription for asthma than female subjects before the age of 20 (OR 1.26, 95% CI 1.22, 1.30, p<0.001) and less likely after the age of 20 (OR 0.73, 95% CI 0.69, 0.79, p<0.001).

Discussion—The difference in utilisation for males and females may reflect a higher incidence of asthma under age 20 or a possible prescribing bias. Gender should be taken into account when studying asthma in children and young adults.

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Children and Teenagers

Slipping through the net—risk factors for unmet treatment need in children born with cleft lip and palate

S KIDRA, J STEEDMAN-TAYLOR, J O’BRIEN

(Department of Public Health, South and West Devon Health Authority, Department of Clinical Psychology, University of Plymouth)

Objective—to identify the key social determinants of children with behavioural problems.

Methods—Population based cross sectional study; information collected by health visitors.

Results—Of the various household and family circumstances considered, family size, parental education and employment, and having a planned programme of intervention were all significant after adjustment for possible confounders. However, the three most important determinants (adjusted odds ratios (OR) and 95% confidence intervals (95% CI)) as defined by the best model (goodness of fit r² = 0.068) were: (a) either parent being single (OR 2.90, 4.11), (b) low income families (OR 1.88, 95% CI 1.59, 2.21) and (c) one parent families (OR 1.99, 95% CI 1.66, 2.38). The low income group (who were working but dependent on benefits) seemed to be worse off, as compared with the unemployed (OR 1.14, 95% CI 0.93, 1.40). The one parent family (excluding those with extended family support) effect seemed to be independent of the effect of recent divorce (OR 1.31, 95% CI 1.00, 1.72).

Conclusions—Behavioural problems in children are on the rise and to some extent reflect on the changing social environment of early childhood. This study identifies some of the key social determinants that may prove useful to policy makers involved in developing programmes such as “Sure start”.

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Trends in teenage pregnancies in Scotland and the associations with deprivation and rurality

A MCELOD (MRC Social and Public Health Sciences Unit, University of Glasgow)

Background—The recent Scottish white paper “Towards a Healthier Scotland” set a target to reduce pregnancies among 13–15 year olds by 20% by the year 2010.

Objective—To describe trends in teenage pregnancies in Scotland by age and rurality and to explore associations with deprivation.

Subjects—Teenage conceptions treated in NHS hospitals in 1981–96, abstracted from hospital discharge records (SMR1, SMR2).

Methods—Annual age specific conception rates per 1000 population and the proportions resulting in a maternity for 13–15, 16–17 and 18–19 year olds.

Results—Conception rates increased for 13–15 (from 5 to 9 per 1000) and 16–17 year olds (from 45 to 60 per 1000) in 1981–96, while rates remained constant at around 89 per 1000 for 18–19 year olds. The percent resulting in a maternity decreased from 80% for 18–19 year olds, from 70% to 65% for 16–17 year olds and stayed constant at 50% for 13–15 year olds. These trends varied by deprivation and rurality but differences between localities were largely maintained so that districts above the average at the start of the 1980s were still above average in the mid-90s. At the small area level, deprivation, measured by 1991 Carstairs scores, was positively related to both conceptions and maternities. Relative to 13–15 year olds resident in affluent areas, those living in deprived areas were 1.27 times more likely to conceive (95% confidence intervals (95% CI) 1.26, 3.5) and were nearly three times as likely to give birth following the conception (odds ratio (OR) 2.9, 95% CI 2.3, 3.7). When levels of deprivation were taken into account, there was no difference in conception rates between urban and rural areas but 16–17 and 18–19 year olds in urban areas were less likely to have a maternity (OR 0.88, 95% CI 0.80, 0.97 and OR 0.65, 95% CI 0.59, 0.72) than those resident in rural areas.

Conclusion—Pregnancies in young teenagers have increased in the previous two decades while the percent leading to a maternity has remained constant. Risk factors

The relation of body mass index in early and mid-adulthood to mortality

A MCELOD, 1 J MCEWEN, 2 J METCALFE, 3 P HESLOP, 4, 5 P HESLOP, 4, 5, 6 G DAVEY SMITH 1, 6, 7 (Department of Social Medicine, University of Bristol, Division of Psychiatry, University of Bristol)

Objectives—To examine whether increased body mass index (BMI) at both ages was strongly predictive of cardiovascular disease (CVD) and cancer mortality. Change in BMI was positively associated with both conceptions and maternities. However, having controlled for mean BMI substantially attenuated these associations. However, when levels of deprivation were taken into account, there was no association between deprivation and rurality and associations with deprivation and rurality. Main outcome measures—All cause, cardiovascular disease (CVD) and cancer mortality.

Results—BMI at ages 23 and 39, BMI increased by an average 2.7 kg/m². The two BMI measures, based on the original height measurement and weight readings 16 years apart were correlated (r=0.67). Ninety two men (19%) died during the mean follow up period (from the second weight measurement) of 33 years. Fifty two deaths were attributable to CVD and 23 to cancer. BMI at ages 23 and 39 was positively associated with subsequent mortality. Hazard ratios (HR) (95% confidence intervals (95% CI)) per 1 kg/m² increase in BMI were HR 1.27 (95% CI 1.05, 1.52) and HR 1.12 (95% CI 1.05, 1.20) respectively. Cause specific analyses showed BMI at both ages was strongly predictive of cancer. The later the BMI, the earlier BMI increased was related to cancer mortality. There were insufficient deaths to determine whether BMI was related to site specific cancers. Change in BMI was positively associated with increased risk of CVD mortality, per 1 kg/m² increase in BMI change, the adjusted HR were 1.07 (95% CI 0.97, 1.08) and 1.11 (95% CI 0.97, 1.18) respectively. Controlling for mean BMI substantially attenuated these relations. However, when BMI was controlled for mean BMI, a 1 kg/m² increase in BMI change was associated with increased risk of cancer mortality HR 1.18 (95% CI 0.96, 1.45).

Conclusions—Change in BMI between early life and mortality is only partially explained by the tracking of BMI from early to later adulthood. Efforts to decrease BMI in early life and to minimise weight gain from early to mid adulthood may have substantial impact on subsequent health.

Strength and mortality—confounding or causation?

J MCELOD, 1 G DAVEY SMITH, 1 HESLOP, 4, 5, 6 METCALFE, 3, 4, 5 HART, 3 (Department of Primary Care and General Practice, University of Birmingham, 1Department of Social Medicine, University of Bristol, 2Department of Public Health, University of Glasgow)

Background—Perceived psychological stress has been proposed as an important determinant of physical health. Stress may influence health directly (through neuroendocrine mechanisms that increase physiological risk) or indirectly (through the promotion of unhealthy behaviour). Perception of stress is socially patterned therefore other correlates of social position may confound the apparent association between stress and health. Perceived psychological stress is more closely associated with both higher occupational class and unhealthy behaviour (less exercise, more cigarette smoking, greater alcohol consumption) but not with increased physiological risk. High and medium levels of stress (low) perceived stress appeared protective to health in terms of all cause mortality, cardiovascular mortality, and cancers. These associations were generally attenuated on adjustment for occupational class. This protective effect was seen despite the expected association between stress and unhealthy behaviour, suggesting that material circumstances may be more important than individual behaviour in determining health.

Design—Cohort study.

Setting—University of Glasgow student health service.

Main outcome measures—Hazard ratios for death from all causes, from cardiovascular disease (ICD9 codes 390–459), from smoking related cancers (ICD9 codes 140–20.5) at the time of first examination.

Results—Higher stress (measured by the “Recent stress inventory” (RSI)) was significantly associated with both higher occupational class and unhealthy behaviour (less exercise, more cigarette smoking, greater alcohol consumption) but not with increased physiological risk. High and medium levels of stress were taken into account, there was no association between deprivation and rurality and associations with deprivation and rurality.

Subjects—5718 men aged 35–64 at recruitment and followed up for 21 years.

Main outcome measures—Hazard ratios for death from all causes, from cardiovascular disease (ICD9 codes 390–459), from smoking related cancers (ICD9 codes 140–20.5) at the time of first examination.

Results—Higher stress (measured by the “Recent stress inventory” (RSI)) was significantly associated with both higher occupational class and unhealthy behaviour (less exercise, more cigarette smoking, greater alcohol consumption) but not with increased physiological risk. High and medium levels of stress (low) perceived stress appeared protective to health in terms of all cause mortality, cardiovascular mortality, and cancers. These associations were generally attenuated on adjustment for occupational class. This protective effect was seen despite the expected association between stress and unhealthy behaviour, suggesting that material circumstances may be more important than individual behaviour in determining health.
models were used to estimate the association between personality and mortality. Results—There were 830 deaths. The number of participants with at least one personality category was 820 (9.8%). The most common personality category was anxiety with 481 (5.7%) men were labelled depressed. The presence of “any” coding was associated with an increased risk of stroke, hazard ratio (HR) (95% confidence intervals (95% CI)) 1.83 (1.00, 3.56). Both anxiety and depression codings were positively associated with all cause mortality and cancer. For anxiety the HR were 1.33 (95% CI 1.06, 1.68) and 1.46 (95% CI 1.24, 1.74) for all cause and cancer mortality respectively; for depression the 4.02 (95% CI 1.50, 10.73) and 5.54 (95% CI 1.38, 22.27) for the same causes of death respectively. Depression was also positively associated with cardiovascular disease and coronary heart disease and stroke and with both cancers related to smoking and cancers not related to smoking. There were no significant associations between other categories of personality and mortality. These results were unchanged after controlling for the potential confounding variables of cigarette smoking, father’s social class, body mass index, systolic blood pressure and vital status of parents. Conclusions—The results indicate that certain aspects of “personality” in early adulthood may be associated with later mortality. Although state and trait aspects of personality were conflated and assessed subjectively (and only a small number of students were depressed) these findings are suggestive of the importance of psychological well being in early adulthood in determining future mortality risk. Along with other accumulating evidence the results point to the need to optimise mental health in young adults.

Current trends in mortality among adults in Scotland

P Mcdonie (MRC Social and Public Health Sciences Unit, University of Glasgow) Objective—To describe recent trends in death rates in Scotland with particular reference to mortality among young adults. Data and methods—Trends in age specific death rates for all cause and specific causes and all cause mortality among young adults. This picture, however, was somewhat complicated by the number of deaths from AIDS in Dundee and Edinburgh. Conclusion—In Scotland the rate of decline in mortality among men aged 59 and below is slowing down, and death rates among young men aged 20–39 are increasing. If these trends continue there is a suggestion that future death rates will also see a rise at older ages. The failure to maintain earlier gains in mortality had important implications for the ways in which public health policies are prioritised.

Body image and weight change in middle age: a qualitative study

S Zierland, J Jay, J Robertson, A Neil, G Cowburn (Division of Public Health and Primary Health Care, University of Oxford, Institute of Health Sciences) Objective—To explore experiences of weight change in adulthood and views of the medical, social and practical problems associated with different body shapes.

Design—Qualitative study using semi-structured, tape recorded interviews. Views about weight change in adulthood, experiences of changes and motivations to change were explored. Pictures of a set of eight body shapes designed to represent a range from underweight (1) to borderline obese (8) were used to encourage discussion about body image preferences for men and women. Respondents were asked to describe what they would associate with the different body shapes. Setting—A purposive sample was identified through two health centres. Interviews were conducted with respondents’ home by researchers trained in qualitative interview.

Participants—Seventy two men and women aged between 35 and 55 with body mass indices (BMI) between 22 and 29. (That is, of recommended weight or moderate overweight).

Results—Experience of weight gain in adulthood was widespread in this group: 97% of men and 95% of women had noticed gain since they were in their 20s. However, less than half thought that weight gain was inevitable in middle age. One third of the men, but few women, said that they had never tried to lose weight. 42% of the men, but only 13% of the women with BMI below 26.9, had ever tried to gain weight. Responses to the pictures of body shapes were consistent with this finding: more men (41%) than women (26%) expressed a preference for a body shape numbered “4” or above for themselves. Forty seven per cent of men and 60% of women with BMI under 26.9 reported that they had successfully lost weight at least once. Problems associated with overweight included heart disease, joint problems, breathlessness, low self esteem, negative reactions from others, mobility, fitting into seats, and difficulty finding clothes, jobs and partners. Weight gain was attributed to slower metabolic rate, ageing, quitting smoking and more sedentary lifestyle, although childbearing, comfortable living and “letting oneself go” were thought to be reasons for women’s gain while being less sporty and drinking beer were cited for men.

Discussion—Although none of the respondents’ weight would be seen as a medical problem the interviews provide rich accounts of struggles with weight gain.

MISCELLANEOUS

Incidence of HIV infection among gay men seeking a repeat HIV test

J ELFORD,1 S LEAFY,2 H WELLS,1 R MILLER,1 M J ONSON,1 L SHERR1 (Department of Primary Care and Population Sciences, Royal Free and University College Medical School, London, HIV Unit, Royal Free Hampstead NHS Trust, London) Objective—To estimate the incidence of HIV infection among gay men who have previously tested negative for HIV.

Methods—Of 2100 people attending the same day HIV testing clinic at this hospital between September 1997 to July 1998, 1580 (75%) completed an anonymous questionnaire concerning sexual risk behaviour, number of previous HIV tests and date of last test. Of these testers were those clinic attendants who had previously tested negative for HIV and were returning for another test. Only those whose previous test was at least three months before the present test were included in this analysis. HIV incidence was estimated by dividing the number of newly diagnosed cases of HIV among repeat testers by the person years of exposure since their last negative test.

Results—470 clinic attenders were gay men of whom 337 (72%) were repeat testers; 275 provided information on date of last test (median time since last test 24 months), age (median 31 years) and number of previous tests; 151 (55%) had had one or two previous negative tests while 124 (45%) reported three or more. Of these 275, 12 tested HIV positive. Overall HIV incidence was 1.8 per 100 person years (12/655.2) (95% confidence intervals (95% CI) 0.8, 2.9). HIV incidence was increased for men whose previous test was within the last 12 months (4.7%) compared with those who had tested more than 12 months before (1.4%) (p=0.06).

HIV incidence was also higher among men reporting three or more previous HIV tests (3.6%) than men with one or two previous tests (1.1%) (p=0.05). The highest HIV incidence (8.0%) was seen among gay men with a history of three or more previous tests who had tested negative within the past 12 months. Forty two per cent of gay men with three or more previous HIV tests who reported “high risk” unprotected anal intercourse in the past three months (that is, with a partner whose HIV status was either positive or unknown) compared with 25% of those who had had one or two previous tests (p=0.002).

Conclusion—HIV incidence among gay men who had tested negative for HIV in the previous 12 months was high (4.7%) and was even higher for those who reported three or more previous negative tests (8.0%). Some gay...
men a negative HIV test result may produce a disinhibiting effect and reinforce risky behaviour. This needs to be tackled by health promotion programmes.

The impact of bicycle helmets on impacts involving bicycles
A D COOK, A SHEIKH (Department of Primary Health Care and General Practice, Imperial College School of Medicine, London)

Background—The protective effect of bicycle helmets remains unclear, with case-control studies accused of inadequate adjustment for confounding factors and existing time trend studies possibly affected by changing levels of bicycle use.

Objective—To examine patterns of serious head injuries among cyclists during a period of increased helmet usage. Associations with age, sex and deprivation are explored.

Design—Analysis of hospital admissions for the years 1991/92 to 1994/95, using the hospital episode statistics database.

Setting—All emergency admissions to NHS hospitals in England.

Participants—35 056 bicycle related admissions (ICD-9 E8261, E810–E825, 4th digit=6).

Main outcome measures—Monthly counts of admissions. Head injuries defined as fracture of vault or base of skull, or intracranial injury (ICD-9 800, 801, 850–854).

Results—Head injuries were the primary diagnosis in 34% of cases (n=11 985), over half of these being in children. Head injury admissions declined significantly over the four years, by 9% annually (95% confidence intervals (95% CI) 7%, 10%). The decline was significant in three age subgroups: 6–10 years, p<0.001; 11–15 years, p<0.001; and >15 years, p<0.001. The decline did not differ between males and females but was significantly lower among those from deprived areas, 4% annually compared with 10% elsewhere (p<0.001). For all cyclist emergency admissions, 75% were male while 21% were resident in deprived areas (Jarman under privileged area score >20). Numbers of admissions varied strongly by season, from an average of 1173 in July to 352 in January. Over the study period total admissions of cyclists increased, non-significantly, by 0.2% (95% CI 1%, 1.1%). The increase did not differ between the sexes but was significantly higher in those from deprived areas, 6.3% (95% CI 2.6%, 10%) compared with −1.2% (95% CI −2%, 0%).

Conclusion—The level of cycling changed little during the study period, taking total admissions as a marker of cycle use. The observed year on year decline in head injuries occurred during a period of steadily increasing helmet use and provides strong evidence of their having a protective effect at all ages. Residents of deprived areas did however appear to cycle more, again taking total admissions as a marker for cycle use. This may explain the smaller decline they experienced in numbers of head injuries, rather than a difference in helmet wearing patterns.

Print media response to a major malpractice inquiry in the UK
H T O DAVIDS, A V SHEILD (Department of Management, University of St Andrews, Fife)

Background—In 1997–8, the body with the statutory duty to uphold professional standards, the General Medical Council (GMC), held its longest ever disciplinary hearing centred on events at the Bristol Royal Infirmary. Three doctors (two surgeons and a senior health service manager) were eventually found guilty of serious professional misconduct and were severely sanctioned. The case received unprecedented attention in both the professional and the lay media, and provoked intense government scrutiny culminating in a public inquiry.

Objective—To analyse lay print media reaction to The Bristol Case as a way of gaining insight into the public debates over health care quality assurance in the UK NHS.

Methods—We reviewed all major daily and Sunday newspapers in the UK for the five week period surrounding the announcement of the GMC verdict and sentencing (14 newspaper titles in all; total of 230 issues). A total of 184 separate media items were retrieved. A qualitative content analysis of the material was conducted in an attempt to draw out the major ideas and viewpoints. A small number of very prominent themes appeared repeatedly; these themes were confirmed by independent review of the material by each of the authors.

Results—The print media reporting of The Bristol Case was intense, emotive and hostile. Almost all the papers devoted editorial space to the case, some repeatedly. The Bristol Case was seen less as an unusual aberration by individual doctors and more as a symptom of systemic failings in the health system. Many articles referred to diminished public trust in health services and expressed disdain for professional self regulation. The key reforms demanded were greater publication of performance data (for example, individual surgeons’ mortality rates) and increased external scrutiny. These findings will be illustrated with direct quotes from newspaper articles.

Conclusions—The media (and indeed government and professional) interest in The Bristol Case was unprecedented. The print media was characterised by hostility towards doctors, scepticism about self regulation and demands for greater accountability. UK government policy on health care quality will have to pay much greater heed to public sensibilities than hitherto. Any attempts at reforming physician regulation must now take place in the face of a highly sensitised and sceptical print media. Fine tuned arguments on the relative merits of professional self regulation and external scrutiny may thus be hard to sustain. Demands for greater access to data on clinical performance are unlikely to be deflected.