Benefits of adjuvant adenoectomy in persistent OME (glue ear)
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Background—From the mid-1980s, paediatric ENT operations encountered increased scepticism in public health quarters. The 1992 Effective Health Care Bulletin, coinciding with fundholding, substantially reduced referral and intervention rates, 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 a large sample of unaffected children and to child trials 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—Overall 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.

Excess winter deaths, socioeconomic deprivation and housing conditions
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Background—Seasonal patterns in mortality in the UK are known to be greater than in most other European countries. Research in the UK has failed to demonstrate a consistent association between deaths and area based measures of deprivation.

Objectives—To explore the association between excess winter mortality (defined as the number of deaths in the three months December to February divided by the number of deaths in the rest of the year), socioeconomic deprivation and housing conditions.

Methods—Binomial regression analysis of postcode sector based excess winter mortality, deprivation and census housing variables incorporating information from the 1996 Scottish House Conditions Survey.

Results—Between 1988 and 1997 in Scotland, all cause excess winter mortality in people aged 65 and over was 41%. Excess winter mortality in this age group was positively associated with lack of home central heating, socioeconomic deprivation and fuel poverty (predicted annual running costs of more than £300). Multiple regression analysis identified lack of home central heating (p=0.012) and socioeconomic deprivation (p=0.015) as the main predictors of all cause excess winter mortality. When cause specific mortality was examined, winter deaths from ischaemic heart disease (ICD9 410–414) were positively associated with fuel poverty (p=0.014). Excess winter deaths from respiratory disease (ICD9 460–519) were positively associated with lack of home central heating (p=0.036) and dampness (p=0.029). Excess winter mortality was 54% for deaths from respiratory disease and 42% for deaths from ischaemic heart disease. Deaths from all other causes demonstrated an excess winter mortality of 38%. Postcode sector based regression analysis showed no association between excess winter mortality from these other causes and socioeconomic deprivation or housing.

Conclusions—Housing condition, particularly availability of central heating and levels of fuel poverty are more closely associated with excess winter deaths than traditional measures of deprivation. These findings suggest that excess winter deaths in Scotland could be substantially reduced if adequate affordable heating was more widely available.

The provision of information on the management and treatment of minor illness. Does it affect use of services or feelings of confidence in dealing with symptoms of minor illness?

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Background—Patients are bombarded with information about the management of minor illness from government and professional
All’s fair in love and cardiology? Sex differences in risk factors, treatment and survival after acute myocardial infarction—a prospective observational study

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Introduction—Coronary heart disease is the major cause of death of postmenopausal women in industrialised countries. Although acute myocardial infarction (AMI) affects men in greater numbers, the short-term outcomes for women are worse. In the longer term, studies suggest that mortality risk for women is lower or similar to that of men. However, length of follow up and adjustment for confounding factors have varied and more importantly the association between treatment and outcomes has not been examined.

Methods—To explore the association between job satisfaction, self reported stress, cardiovascular risk factors and mortality

Participants—Newly diagnosed cases of CRF, in the former Yorkshire National Health Service (NHS) region of northern England.

Design—Prospective observational study.

Setting—All district and university hospitals accepting emergency admissions in Yorkshire.

Main results—Amongst 2153 admissions, women were older and less likely to men to be smokers or have a history of ischaemic heart disease. Crude in hospital fatality rate was higher for women (21.4%) versus 19% for men, crude odds ratio (OR) of death before discharge for women 1.8, 95% confidence intervals (95% CI) 1.5, 2.2. This difference persisted after adjustment for age, risk factors and comorbidities (adjusted OR 1.3, 95% CI 1.0, 1.6, p=0.02), but was not significant when treatment was taken into account.

Conclusions—Patients admitted to hospital with AMI should be offered optimal treatment irrespective of sex. Women have a worse prognosis after AMI and under-treatment of older people with aspirin and thrombolysis may be contributing to this.

Job satisfaction, self reported stress, cardiovascular risk factors and mortality

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Objectives—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 strongly significant age adjusted association between job satisfaction and stress at baseline, at second screening and between the two periods. The overall difference between occupational class groups 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 at baseline, at second screening or between baseline and second screening for men. Women who 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 job, after adjusting for age and occupational class (relative risk 0.44, 95% confidence intervals 0.20, 0.96).

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. Women reported 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: SMRs for men 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, 65–74, 75–85, and ≥85 years were 2.02, 2.01, 2.02, and 2.02 respectively. Vascular causes comprised 46% of deaths and renal death 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 increase of >0.5 mg/dl 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 revascularization, 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 anti-platelet treatment for non-rheumatic atrial fibrillation: this is the question

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Background—In the past decade, there has been widespread implementation of oral antiocoagulation in favour of antiplatelet treatment in patients with non-rheumatic atrial fibrillation (NRAF) in the reduction of risk from stroke. This is based upon evidence from randomised controlled trials (RCT) comparing long term oral anticoagulation 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, Cinahl and Sgle for general practice. 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 0.61, 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). 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 treat-
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 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

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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=4277) 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 months 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 64% (p<0.01), returned to work (among those previously in paid employment) 31% versus 52% (p<0.001) or undertook any physical exercise 56% versus 83% (p<0.0001).

Conclusions—This study shows major differences between women and men in a number of standard measures both early after MI and significantly at 6 months. Women were more likely to present with chest pain than those from the affluent area and (ii) men were more likely to present than women. The qualitative study demonstrated that respondents' decisions of whether to present were influenced by their perceived vulnerability to heart disease and their perceived options for action. To assess their risk, participants took into account (i) their family history of heart disease, (ii) their cardiac risk behaviours and (iii) their sociocultural influences—both personal and a stereotype. They also considered competing explanations, such as other diseases or aging. Options for action included self care, lay consultation and primary care. The decision about action was based on the respondents' capacity for self care, opportunities for lay consultation and the perceived quality of previous encounters with health service professionals. Compared with those from the affluent area, those from the socially deprived area generally felt more vulnerable to heart disease, yet were often reluctant to seek medical help for chest pain because of low expectations of their health and of health services. Women were often more likely to present than 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 respect for the "natural history" of rehabilitation and lifestyle change.

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

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Background—Studying 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 the conventional socioeconomic indicators widely used in European origin populations to three South Asian groups and to a wider range of health measures than studied hitherto.

Methods—To compare the pattern of associations between social class, education and Townsend Deprivation Score and coronary heart disease, glucose intolerance (impaired glucose intolerance and diabetes) 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=259), Pakistanis (n=305) and Bangladeshis (n=120), 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 of the 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 Deprivation 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: in Indians (5 of the 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 (18 of 24, 75%), conventional physical measures (24 associations), blood pressure (12 associations) and biochemistry (18 associations), 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 populations. South Asians 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

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Objective—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 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 population

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

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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 hypothesis 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 rural small areas 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 variations are 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 does not imply a 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.
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. The objective of using routinely assembled hospital discharge data in order to address methodological aspects of this broad question is to be reconciled with 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.

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

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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 for 46,587 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 ρ = −0.215, p-value = 0.041). After adjustment for case mix, however, this negative association was no longer statistically significant (ρ = 0.190, p-value = 0.071). Similar results were found for solely surgical admissions (crude: ρ = −0.275, p-value = 0.008; case mix adjusted: ρ = −0.127, p-value = 0.229). For solely non-surgical admissions, the negative association remained statistically significant after adjustment for case mix admissions (crude: ρ = −0.220, p-value = 0.036; case mix adjusted: ρ = −0.161, p-value = 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?

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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 Influences (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 paper is based on the Scottish component of the study and uses linked data from the Scottish NHS together with organisational information about Scottish hospitals and data from 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 1998–99. The hospitalisation data for three 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 bronchitis were investigated. The relation between 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—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 between 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 require more detailed exploration. More specific questions addressed in this paper include whether adjusted outcomes for specific diagnostic groups are correlated (implying 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

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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 no significant differences in the completeness of notes and structured forms. The percentage of notes with a CRI 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. Neonatal intensive care may need to be reconfigured to reduce the occasions when units approach maximum occupancy of cots.

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

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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 promotion itself. 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 an organic system of art and science dealing with both the clinical and social aspects of patients' health and illness. Decision making in general practice was seen to be a patient and context specific involving a range of factors to be taken into account in a clinical judgement. Patient expectation was an important factor. Established definitions of EBM were not felt to fully recognise the complex dynamics of decision making and therefore did not fit well into general practice. Additionally, although GPs defined acceptable “evidence” as that produced through methodological approaches associated with the biomedical model, they identified major practical and methodological implications 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 focus on the decision making process not the decision. Other scientific paradigms and associated methodologies need to be understood and accepted if evidence produced is to be relevant to the clinical reality of general practice.

Policy implications—Development of clinical governance indicators in primary care need to consider these findings, as do local strategies for promoting greater use of CEE in general practice. Attention should be given within such strategies to the role of the patient in the decision making process, patient information and patient expectation.

The effect of evidence-based leaflets on informed choice in maternity care

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Background—The Midwives Information and Resource Service and NHS Centre for Reviews and Dissemination produced a set of 10 evidence-based Informed Choice leaflets to help women make decisions in pregnancy and childbirth.

Objectives—To assess the effect of the service wide use of the leaflets on promoting informed choice among users of maternity services.

Design—Pragmatic cluster trial, with randomisation of five maternity units to intervention and five to act as controls. Postal questionnaire to self report on aspects of informed choice and its possible consequences, before and after the intervention commenced. Antenatally: 1386 women reaching 28 weeks gestation before, and 1778 after, the intervention; postnatally: 1741 women at eight weeks post delivery before, and 1547 after, the intervention.

Intervention—Informed Choice leaflets for all women delivering in an eight month period, leaflets for all midwives, and a two hour training session for staff in each intervention unit.

Main outcome measures—The primary outcome was the proportion of women reporting that they had exercised informed choice overall in their maternity care. Secondary outcomes were the components of informed choice, such as women's knowledge levels of topics covered by the leaflets and their satisfaction with information; and the possible consequences of informed choice, such as women's emotional health, satisfaction with services, and change in service usage.

Results—The overall response rate to the questionnaires was 64% (6452 of 10 070). The change in the proportion of women exercising informed choice was 1% (95% confidence intervals 95% CI −13%, 15%) for women antenatally and −4% (95% CI −13%, 5%) for women postnatally. There was an increase in knowledge levels postnatally of 0.24 (95% CI 0.03, 0.45) on a 10 point scale and the uptake of screening tests for Down’s syndrome and spina bifida decreased by 10% (95% CI −20, −1), although these were no longer statistically significant when adjusted for covariates.

Conclusions—The use of Informed Choice leaflets on a service wide basis was not effective in delivering informed choice. Qualitative research undertaken alongside the trial identified problems with the implementation of informed choice rather than the intervention itself.

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Understanding the role of opinion leaders in putting evidence into practice: the methodological challenge of reviewing qualitative research

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Objectives—To explore the methodological problems involved in taking an overview of seven recent qualitative studies by two groups of organisational behaviour researchers, which examined the process of getting evidence into practice. To discuss the benefits of this exercise in terms of its contribution to understanding the change process.

Methods—The seven studies used similar case study methods, using in depth semi-structured interviews, and use different telephones) and documentary analysis, and in some cases written questionnaires. All the authors undertook an initial analysis of the final reports of the studies, from this analysis, a framework for each study was developed. This framework was then used to carry out a comparative analysis of the final reports; methodological and other problems arising are being recorded and discussed as the exercise progresses.

Results—We have so far analysed one of the identified themes: the role of clinical opinion leaders. This emerged consistently as crucial for the flow of evidence into practice. However, subjective understandings of the role differ widely among respondents, and there is a spread of types of opinion leadership (notably expert and peer opinion leaders, and the impact of hostile opinion leaders). Researchers also understand the role differently. They attach subtly different meanings to the same term, or use different terms to mean similar things. One team preferred the term “opinion leaders” (encompassing hostile reactions); the other preferred the term “product champions” and treated hostile stakeholders separately. This perhaps raises a question about how far one can “systematically” review material—whether from case studies or randomised controlled trial studies—when such different definitions are in use, and the reviewer is in part acting as translator. Different understandings of these terms will have affected how questions about opinion leaders were constructed and asked, and how responses were interpreted and categorised.

Conclusions—Qualitative research often produces small scale, non-generalisable results. Developing more cumulative findings by taking an overview across such studies could help validate and reinforce evidence from individual studies; our experience so far suggests consistent themes can usefully be identified, but a number of methodological difficulties remain to be worked through.

Systematic sense—clinical nonsense

K HOPFYAN (School of Health Policy and Practice, University of East Anglia)

Introduction—Systematic reviews may be internally consistent and may satisfy the criteria for being adequately conducted and therefore they make clinical sense they will fail to convince clinicians. Reviews 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. The trials included in the 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 pain 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 totally different from those treated by the majority of clinicians who would consult the reviews. (3) Two reviews included a study with an inappropriate intervention: patients in the placebo group were crossed over to active treatment so early as to invalidate the outcome assessment and to invalidate the eventual pooling.

(4) Studies with poor outcome assessments were included. Their inclusion arose from the relative emphasis on methodological scoring systems which give lower weighting to outcome assessments (maximum of 5 points out of a potential total of 100) than to other aspects of study design. These older studies might have been acceptable at the time of the primary research but the assessments are unacceptable to practitioners now, who form the audience for this secondary research. (5) Two of the reviews combined heterogeneous treatments and conditions into a clinically meaningless mass and proceeded to analyse the pooled data.

Conclusion—These systematic reviews lost sight of the question asked by clinicians. Greater attention should be paid to understanding the condition and the interventions so that studies are selected on the basis of their relevance and appropriateness. 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

J BRUCE, 2 J MOLLISON, 1 E M RUSSELL, 2 Z H KRUKOWSKI, 1 K G M PARK 2 (Department of Public Health, University of Aberdeen, 1Department 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 an increased focus on the monitoring of surgical adverse events. Accurate measurement and monitoring of surgical wound infection is crucial to the provision of safe and quality care. The aim of this systematic review was to evaluate the definitions and measurement of surgical wound infection in the published literature.

Methods—A systematic search of the literature was conducted on surgical wound infection. Studies were included if they were published in peer-reviewed journals, were written in English between 1993 and 1999, and addressed the definition and measurement of surgical wound infection. The search strategy involved a comprehensive search of electronic databases, manual searching of reference lists, and consultation with experts. A total of 240 articles fulfilled eligibility criteria and were assessed by two independent reviewers.

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. 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 PRESCOTT, 1 D M CAMPBELL, 1 P HOWARD, 1 C S SMITH 1 (Department of Public Health, University of Aberdeen, 1Department of Obstetrics and Gynaecology, University of Aberdeen, 1Department 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, hysterectomy 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 Data Bank. The women with pre-eclampsia/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 participate in the study, 1251 attended for examination. Details of hospital discharges and mortality were also obtained for the entire cohort.

Results—The questionnaire response rate of 71% per cent was obtained and we were able to conduct a physical examination of 76 per cent of the questionnaires 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 disorders in later life.

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

M J PLATT, 1 F CASSON, 1 M STANISSTEAD, 1 A STOTT, 1 C V HOWARD, 2 S WALKINSHAW, 3 S PENNYCOOK 4 (Department of Public Health, The University of Liverpool, 1Broadgreen Hospital, Liverpool, 1School of Biological Sciences, The University of Liverpool, 2Department of Clinical Chemistry, Royal Liverpool University Hospital, 3Fetal and Infant Toxicology-Pathology, The University of Liverpool, 4Women’s Health) 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 10 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.

Methods—Data were collected on women with pre-existing insulin dependent diabetes mellitus in whom an HbA1c was recorded at 102 weeks gestation. Conceptions resulting in a live or stillborn infant were included. HbA1c measurements were normalised using the criteria of the Standardisation Initiative for Glycated Haemoglobin.

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 (95% CI) 0.5 to 43/1000). 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 might be a threshold level for HbA1c in pregnant women with insulin diabetes mellitus, below which the risk of congenital anomalies in their offspring approaches that seen in the general population.


1 B HENDRY (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.


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**Population**—27 776 primiparous women with singleton pregnancies and no antenatal complications recorded.

**Main outcome measures**—The mode of delivery of primiparous women after spontaneous labour onset, by ethnic group. The mode of delivery of primiparous women after induction of labour, by ethnic group.

**Results**—There was no difference between ethnic groups in the proportion of women who laboured normally. The proportion of white women who entered labour spontaneously, and who delivered by emergency caesarean section was 3.4% (95% confidence intervals 3.04%, 3.76%). African and Asian women were at increased risk of delivering 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 less 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, 0.66; Bangladeshie RR 0.72, 95% CI 0.64, 0.81; Indian RR 0.71, 95% CI 0.62, 0.83; Bangladeshie RR 0.78, 95% CI 0.63, 0.97. After induction of labour, the proportion of white women who delivered 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 Bangladeshie (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 by 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.

**Changes with age in the socioeconomic gradient in hysterectomy: findings from a national cohort**

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**Objectives**—To examine whether the striking social gradient in hysterectomy observed in a cohort of women at 43 years attenuated in the subgroup born in 1958, and to examine whether the gradient varied by age, parity, maternal height, and birth weight.

**Methods**—1755 (69%) of 2547 women born in 1958 were born in England, Scotland and Wales followed up sixty years after the age of 52 years. The cohort was a national cohort provided information on gynaecological surgery. The Social gradient in hysterectomy: findings from a national cohort of women at 43 years attenuated in the subgroup born in 1958, and to examine whether the gradient varied by age, parity, maternal height, and birth weight.

**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 (719, 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, as other studies, as irregular intervals, 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.

**Conclusions**—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. Further, there is little evidence 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 to have been referred for excessive bleeding. Rather than focusing on volume of loss, healthcare need across socioeconomic groups would be better revealed by an integrated assessment of menstrual health, encompassing physical symptoms as well as psychosocial effects.

**CANCER**

**Specialisation, survival and clinical practice in patients with pancreatic, oesophageal and gastric cancer**

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**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.

**Design**—Cohort study. Multiple logistic regression and Cox’s proportional hazards models 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 ages up to 52 years, the inverse gradient with partner’s social class (hazard ratio (HR)=0.85; 95% confidence intervals (95% CI) 0.75, 0.95) found previously was confirmed, while an equivalent analysis with follow-up to age 52 years indicated a weaker effect (HR=0.93; 95% CI, 0.86, 1.01). A piecewise Cox’s regression model with two time intervals (up to age 43 years and 44–52 years) provided evidence of a difference in effect for the two age groups (p=0.08). A lack of a gradient between 44–52 years (HR=1.01; 95% CI, 0.89, 1.15) was observed. A gradient with childhood social class was observed (p=0.003), which remained constant across the whole time period (HR=0.88; 95% CI, 0.81, 0.96). Adjustment for parity, obesity and prior sterilisation did not account for the differences by education or by father’s and partner’s social class. The effect of own social class was of marginal significance during both time periods.

**Conclusion**—This is the first study to report changing effects in the social gradient in the risk of hysterectomy. The greater social class differentials at younger rather than older ages may be due to the increased proportion of hysterectomies for benign diagnoses among younger women. Alternatively, the diseases and conditions for which hysterectomy provides a treatment may occur later in women from higher social groups. The constant gradient by childhood social class may reflect differences in gynaecological health throughout life.

**What is meant by “heavy periods”?**

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**Introduction**—Although the formal definition of menorrhagia (excessive periods) is blood loss over 80 ml per period, objective assessment of volume of loss is rarely undertaken in routine clinical practice. The fact that management and treatment depends on subjective complaint of “heavy periods” occasions considerable unease, as it has been found that if blood loss is measured fewer than half of menorrhagia referrals have excessive loss by defined criteria.

**Design**—Cross sectional questionnaire survey.

**Setting**—Gynaecology outpatient clinics at three hospitals in Edinburgh and Glasgow.

**Participants**—Women aged 25–49 years, newly referred for menstrual problems (n=952).

**Main outcome measures**—Report of menstrual experience, deprivation code, subjective judgement of periods, referral for menorrhagia.
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 stomach and pancreatic cancers (adjusted hazard ratios attributable to managing 40 more patients per year: 0.69 (95% confidence intervals (CI) 0.49, 0.98), 0.78 (95% CI 0.62, 0.97) and 0.64 (95% CI 0.49, 0.83) respectively). Operative mortality was less likely with increasing doctor volume for oesophageal and gastric cancers (adjusted odds ratios attributable to managing 10 more patients: 0.49, 0.83) respectively). Operative mortality was less likely with increasing doctor volume for pancreatic cancers and with increasing hospital volumes (0.68 (95% CI 0.52, 0.96) 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 centres: Specialisation of treatment 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 Wrigley,1 J Smith2 (Health Care Research Unit, University of Southampton, Southampton 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 surviving 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 in the most deprived versus the least deprived (most affluent 20%) was 1.22 (95% confidence intervals (CI) 1.07, 1.39). After adjustment for these prognostic factors, the hazard ratio was 1.26 (95% CI 1.11, 1.44). For patients presenting with Duke's stage C cancer, receiving postoperative chemotherapy was significantly related to deprivation: 6.8% (n=13) of the most deprived quintile versus 18.3% (n=35) of the most affluent quintile (Z=11.5, p=0.0007).

**Conclusions**—In this population-based cohort, survival from colorectal cancer is associated with material deprivation. The differences in survival cannot be explained in terms of known prognostic factors such as the stage of disease at diagnosis, initial health status, or surgical treatment. We found no evidence of differential exclusion of more deprived patients, but patients with short survival times were differentially excluded, raising our overall estimate of survival. There is some evidence that, in this population, chemotherapy treatment varied by deprivation, though this was not sufficient to explain survival differences. Further investigation at the level of individual patients is necessary to identify the underlying causes of such survival differences.

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

E Davies,1 C Clarke1 (Department of Palliative Care and Policy, King's College School of Medicine and Dentistry and St Christopher's Hospice, 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 2 months to around 10 by radiotherapy and only 5–15% of patients survive two years. Radiotherapy takes six weeks and a range of adverse effects including fatigue, deterioration and cognitive problems 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 and loss of 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 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 49) than patients in lesser situations (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 6).

**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 Beale,1 S Richards,1 T J Peters,1 D J Sharp,1 F D R Horris,1 J Brown,1 L Roberts,1 C Tydeman,1 V Redman,1 J Formby,1 S Wilson,1 J Austoker2 (CRC Primary Care Research Group, University of Oxford, Department of Social Medicine, University of Bristol, Department of Primary Care and General Practice, University of Birmingham, Health Economics Research Group, Brunel University, London) 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 year. 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 cluster randomised into the four intervention groups: 1721 to control, 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, 291 to letter, 290 to flag and 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 = 1.3; 95% confidence intervals (95% CI) 1.1, 1.6 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 = 1.4; 95% CI 0.9, 2.1 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 in inequalities in size at birth

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Background—There is evidence for intergenerational 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 current and earlier generations.

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 birth records were available for 2995 children. In 1979 children 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 the offspring of women whose own mothers were in social class I and II was 3405 g, while for social class IV and V it was 3285 g, a difference of 120 g (p=0.02). Adjusting for each of these factors, sex, height, 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=0.10).

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 mother’s own childhood socioeconomic environment. Contemporary socially patterned reproductively 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

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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 per capita income 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 but not heavier than non-breast fed subjects. 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 restricted to non-breast fed subjects. The mean 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 0.06, 0.36; 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 effect of breast feeding in explaining adult mortality patterns is discussed.

Birth weight, childhood growth and central obesity in adult life

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Objective—Birth weight, childhood growth and central obesity are established risk factors for cardiovascular disease and type 2 diabetes.

Methods—From the MRC National Survey of Health and Development (NIHDS) cohort, we determined the association between birth weight, childhood growth, life-time socioeconomic status and adult central obesity in a large national cohort.

Results—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 hip ratio and waist 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 of childhood is associated with smaller 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

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Objective—It has been hypothesised that synthesis of elastin in the aorta and large arteries may be reduced in fetuses whose 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
comparisons, in three arterial segments measured at the wrist, groin and foot.

**Results**—Pulse wave velocity was significantly faster in men than women at all three sites (p<0.001) and there was a non-significant inverse relationship between pulse wave velocity and age. Sex-specific pulse wave velocity was not associated with either birth weight or birth length at any of the measurement sites, either before or after adjustment for gestation period. Pulse wave velocity was not associated with maternal weight, height, smoking or blood pressure, social class at 18 months of age or group in the original randomised trial. Pulse wave velocity increased with age. Subsequent blood pressure, smoking, and alcohol and physical activity. There was no interaction effect on pulse wave velocity between either birth weight and adult size or birth weight and size at 6 months. **Conclusion**—These data do not support the hypothesis that reduced arterial compliance in adulthood is more likely in individuals who were either light or short at birth. Neither was there any evidence that individuals who are likely to be small but heavy or tall in adulthood are more likely to have reduced arterial compliance.

**METHODS**

**How misleading can subgroup analyses be?**

S T Brookes, T J Peters, E Whitley, G Davey Smith, M Egger (*Department of Social Medicine, University of Bristol*

*Inference.*—Many scenarios were examined. For example, centres in a multi-centre trial, or different subgroups and included the types of outcome analyses that different 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?**

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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 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—excluding 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. Furthermore, 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% (OR=1.27, 95% CI 0.98, 1.64, reporting some exaggerated effect. 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

**Recall bias in a study of cardiovascular disease and hypertension in pregnancy**

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**Background**—There is great interest in whether events during pregnancy and childbirth are associated with long term health outcomes for mothers and their children. The large cost of long term prospective studies has led to an increase in the use of retrospective data. Subjects are asked to remember events taking place months, years or even decades before. If the accuracy of these memories is generally poor then associations between recalled experiences and health outcomes are diminished. If there is differential accuracy of recall between sick and healthy subjects then there is great potential for these associations to be exaggerated in studies based entirely on recall.

**Method**—In 1997, as part of a study of cardiovascular disease, a questionnaire was sent to women who delivered their first baby in Aberdeen between 1951 and 1970. A total of 1312 women returned completed questionnaires. Women’s recall of hypertension in first pregnancy was compared with information collected during that pregnancy that was stored on the Aberdeen Maternity and Neonatal Databank. This database contains comprehensive details of all pregnancies in Aberdeen from the 1920s to the present day. Odds ratios (OR) for the association between adverse cardiovascular health outcomes and hypertensive disease in first pregnancy were calculated firstly using only recall data and secondly using only maternity records.

**Results**—Discrepancies between recall and records of hypertensive disease in pregnancy were found for 20% of those with pre-eclampsia or eclampsia in their first pregnancy and 10% of those with no hypertensive disease. When based solely on recall associations between hypertensive disease in first pregnancy and cardiovascular outcomes were generally exaggerated in comparison to similar associations based on maternity records. p Values tended to be smaller when based on recall data. A significant positive association was found between angina and recalled hypertensive disease in first pregnancy (OR=2.01, 95% confidence intervals (95% CI) 1.23, 3.29, p=0.003). This was not significant when maternity record data were used instead (OR=1.27, 95% CI 0.98, 1.64, p=0.07).

**Conclusions**—Many papers on retrospective studies of reproductive health include a passing reference to the possibility that recall bias may have influenced the results. It may have been based only on recall we would be reporting some exaggerated effects and one spurious association between recalled events and long term cardiovascular outcomes. Some assessment of the accuracy of recall is required if we are to be informed rather than misled by retrospective studies.
The comparative performance of the Rose angina questionnaire in South Asian populations

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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.

Subjects—A 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 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 RQP, 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 insufficiently consistent across 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 about a unique patient’s illness?

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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 social support 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 measures—Number of general practitioner surgery contacts in previous 12 months reported by respondents.

Methods—Focus groups 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 attributable 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 the patient’s dimensions of health were then added sequentially to regression models. Indicators of social support and social location were included to assess whether they had any predictive power after the various indicators of burden of illness had been taken into account. Finally these models were assessed against more parsimonious models.

Results—In isolation, the various indicators of burden of illness explained similar levels of variation in consultation (chronic illness 14.4%, current symptoms 16.5%, self assessed health 15.7%). When all three indicators were included 22.4% of the variation was explained. Taking account of social support, the model of 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 experiment.

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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 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 use of resource.

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 improvements in 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.

Lay expertise? The difficult role of lay members on primary care groups

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Objectives—To describe the diversity of understandings of the lay role in primary care groups (PCGs) and to assess the characteristics of the policy and practice context that foster or obstruct the development of this role.

Background—PCGs were established in 1999 as the heart of the Labour government’s plans for a primary care lead health service, close to local communities and responsive to their needs. All PCG boards were required to appoint a single lay member, recruited from the local community, but a lack of detailed guidance has left individual lay members to work out for themselves what their role in practice should be.

Methods—A self complete survey was disseminated to chief executives and lay members of all 66 London PCGs. Respondents’ view of the role of the lay member was subjected to a content analysis. Subsequently, six PCGs were selected as case studies. In depth interviews with key local stakeholders in public involvement were undertaken, including the lay members. The findings of these interviews focused on the perceived role of the lay member and its relation to the local policy and practice environment.

Results—Questionnaires were received from 89% chiefs executives and 74% of lay members in London PCGs. Their descriptions of the lay member’s role revealed a tension between acting as any other board member, albeit with a non-professional view, and the adoption of a unique role dependent on the assumption of a special relationship with the local community. There was also no consensus over the specific part that the lay member should play in promoting public involvement in general. The experience in the case studies revealed that these tensions were at the heart of the difficulties that lay members faced. Even when PCGs took very corporate approaches to public involvement, lay members were expected to provide a lead or insight for which they were not always equipped. Although defined by their lack of medical expertise, lay members were none the less expected to bring much more to the board than simply a lay perspective.
Results—To identify and compare the influence of 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 practitioners’ knowledge and management of mental problems and on their provision of mental health care.

Method—Cross sectional study of adults aged 16–75 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 is the 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 intervention in 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.

A population-based analysis of the relation between socioeconomic deprivation and death without hospitalisation from a first acute myocardial infarction in Scotland

A Redpath, T W Ciallella, S Capefell, K Macintyre, C Stewart, J Boyd, A Finlayson, T F Pell, C J Evans, J M C Mccurray (Information and Statistics Division NHS in Scotland, Edinburgh, N Ireland; Department of Public Health, University of Liverpool; Department of Public Health Uniten and University of Amsterdam, ‘Greater Glasgow Health Board’, ‘CRI in Heart Failure University of Glasgow’). Objectives—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 42 749 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 <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 for first AMIs not surviving to hospital. This effect was greatest in the young and in men.

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Geographical variation of incidence of coronary heart disease in Britain: the contribution of established risk factors

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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 outcomes—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 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.
variables; remaining unexplained variation could be related to environmental factors such as climate, or simply measurement error in the known risk variables.

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

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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 exists between dietary fibre intake and varicose venous disease within a Westernised population.

Methods—The Edinburgh Vein Study is the first study in the United Kingdom to investigate varicose vein disease in the general population. Men and women aged 18–64 years were selected at random from the age-sex registers of 12 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 men who did not strain (32.8% and 6.1% respectively). After adjustment for age, social class, body mass index and mobility at work, this group of men showed a significantly increased risk of having severe trunk varices (odds ratio (OR) 2.76, 95% confidence intervals (95% CI) 1.16, 6.58). No other consistent relations between dietary fibre, bowel habit and varicose veins were seen among men or women.

Conclusion—Strong and consistent evidence was found to support a role of dietary fibre and constipation in the aetiology of varicose veins within a Westernised population, although straining at stool in men may be mildly protective.

CVD RISK II

Birth weight and ethnicity as predictors of coronary artery calcification

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Objective—To determine whether ethnic differences in birth weight and coronary artery calcification (CVD) could support the hypothesis that folate and B6 are protective for one measurement, 0.85 (95% CI 0.62, 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 (0.62, 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 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

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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 CVD mortality.

Design—Cross-sectional study.

Setting—20 civil service departments in London.

Participants—8973 white, 577 South Asian (62% Indian) and 360 Afro-Caribbean office based civil servants aged 55–59. Ethnicity was observer and self assigned (agreement beyond chance k 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 regard to ethnicity and sex, South Asians were less 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, and 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 minor psychiatric morbidity and lower Type A
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.

Conclusions—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**

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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.

Conclusions—Poorer socioeconomic circumstances in early and later life on stroke risk among men in a Scottish cohort study.

**Evaluation of the NHS Direct Hampshire 2 Wave Pilot Site**

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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.

Conclusions—(1) Seventy per cent (70%) of callers found the service useful. (2) Ninety nine per cent (99%) of callers said they would use the service again. (3) Ninety seven per cent (97%) said they would recommend the service to others.

**Activity and impact of first wave NHS Direct sites**

J MUNRO, J SCHOLL, A O’CAHAIN, R KNOWLES (Medical Care Research Unit, University of Sheffield)

Objectives—NHS Direct, the 24 hour nurse led telephone advice service, will cover the whole of England by the end of 2000. Although the public appeal of the service is to provide “easier and faster access” to care there have also been hopes, and concerns, about the potential impact on demand for other services. We report here findings on the activity and impact of the three first wave NHS Direct sites.

Methods—Call data from 16 months of site logs and anonymised transcripts of a random sample of 267 calls have been analysed to describe the activity and casemix of NHS Direct. Local and national unique identifiers for ambulance and other care services, together with data from a population survey of health care use before and after the start of NHS Direct, have been examined to identify changes that may be attributable to NHS Direct.

Results—Population call rates to NHS Direct have risen steadily and it now accounts for a substantial proportion of all contacts with immediate care services. Over two thirds of calls are out of hours, with a patient and casemix profile resembling that of “acute primary care”. Analysis of other service activity and population survey data suggest there has been no discernible impact on overall demand for ambulance or A&E services. However, the data suggest that the introduction of NHS Direct was associated with an interruption in the pre-existing upward trend in demand for out of hours general practice, so that GP co-op workload is no longer increasing.

Conclusions—The available data on activity, casemix and caller intention suggest that NHS Direct is being used particularly as an alternative to out of hours contact with a general practitioner. The finding that the service may have restrained growth in out of hours demand for general practice, but has had no impact on ambulance or A&E services, is consistent with this pattern of use. The emerging impact of NHS Direct on the future organisation of primary care, both in and out of hours, will be explored in the light of local projects to integrate NHS Direct with GP cooperatives, the national review of out of hours primary care services and the development of the new walk in centres.

**Policy**

Activity and impact of first wave NHS Direct sites.
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 1935 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 service run by friendly, 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 SWOP 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 October 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. Deependable emphasized 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 (HlMps), and to revise and extend them each year. HlMps must take account of national priorities for health (for example, the four Our Healthier Nation priority areas), manage local initiatives (issues for example, the NHS Modernisation Fund), and include Service and Financial Frameworks.

Objectives—to discover how HAs interpret “improvement”, and how they have used HlMps to focus activity on improving health.

Design—Stratified analysis of the first and revised HlMps of a sample of 36 HAs.

Results—in the first HlMps, 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 health promotion 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 actions. HlMps make some 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 HlMp agenda. In general, therefore, the first HlMps provide broad frameworks for NHS activity, rather than detailed strategies for health improvement at a local population level. The analysis of the revised HlMps (April 2000) will examine evidence of whether the emphasis on population health is maintained, whether strategic planning for health focus has become any sharper, and whether PCGs are pursuing HlMp 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 HlMps 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 Malbon, S Gillam, D Wilkin, B Leese (primary Care Programme, King’s Fund, London. National 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 programme of modernising the NHS. They comprise groups of general practitioners, covering populations of approximately 100 000. PCGs have three core functions: to develop primary and community care; to commission health 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/T 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 reports. 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 for April 2001 but were not clearly more advanced in term of their organisation or core functions.

Conclusions—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 m morris, L Norton (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 head office executive level of a statutory duty 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 determinants 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 framework has added greater and more prescriptive attention to the former, and a comparative neglect of the latter. Thus recent policy shifts in the UK regressing to a hierarchical control framework have both increased the formalisation of the principal-agent relationship and reduced autonomy. 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 supportive culture 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 mechanisms has led to the relative neglect of 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 on culture and reflective practice. Thus setting
The acute effects of air pollution reduction 1 in 1995 in the Department of Epidemiology and Public Health, Imperial College School of Medicine, London) 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—The number of deaths no longer shortened when the 24 hour PM\textsubscript{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 2009 24 hour PM\textsubscript{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\textsubscript{10} annual objectives of 40 µg/m\textsuperscript{3} and 20 µg/m\textsuperscript{3} (gravimetric) would delay between 2 and 8 deaths respectively (London) or 4 and 21 (WHO). Reducing the NO\textsubscript{2} annual mean to 40 µg/m\textsuperscript{3} would delay 9 (London) to 44 (WHO) deaths. Based on London studies, reducing PM\textsubscript{10} to the higher annual mean objective (40 µg/m\textsuperscript{3}) delays or prevents 4–6 respiratory and 4 cardiovascular emergency hospital admissions. Reaching 20 µg/m\textsuperscript{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 resurgence of tuberculosis in an industrialised city in northern England: the relative effects of poverty, ethnicity and crowding

The health consequences of frequent job changes

The health consequences of exposure to environmental ultraviolet B radiation on blood pressure

A population-based study of the impacts of poverty, ethnicity and crowding
blood pressure (+0.32 mm Hg, 95% CI −0.56, −0.09), cholesterol (+1.74 mmol/L, 95% CI −2.62, −0.85) and perhaps lung function (+0.42%, 95% CI −0.87, 0.02). There was strong evidence for a link between frequent job changes and unhealthy behaviour. For men there were greater odds of being a smoker (OR 1.05, 95% CI 1.00, 1.10), and of drinking more than 22 units of alcohol per week (OR 1.11, 95% CI 1.05, 1.18). Similar relations were observed for women. There was weak evidence of an association between frequent job changes and a lower risk of ischaemia in males (OR 0.91, 95% CI 0.83, 1.00) but perhaps a higher risk in women (OR 1.12, 95% CI 0.90, 1.41). There was no effect of angina for men or women.

Conclusions—There was little evidence for the expected relation between frequent job changes and poor health despite an associ- ation of more frequent changes with high stress in women and greater cigarette and alcohol consumption in both sexes. An intensi- fied healthy worker effect among frequent job changers will be proposed as a possible explanation of these findings.

Do parental occupations involving social mixing and infectious contacts affect the risk of childhood type I diabetes mellitus?  

N A PARSLow,3 D KENNY,2 K H J BODANSKY1  

1 Department of Health, Queen’s University, Belfast, 2 School of Health and Related Research, University of Sheffield  

Results—There was no evidence for an increased risk of childhood type I diabetes. There was weak evidence of an increased risk of high levels of social mixing in males (OR 1.12, 95% CI 0.90, 1.41). Similar relations were observed for women. There was weak evidence of an association between frequent job changes and a lower risk of ischaemia in males (OR 0.91, 95% CI 0.83, 1.00) but perhaps a higher risk in women (OR 1.12, 95% CI 0.90, 1.41). There was no effect of angina for men or women.

Conclusions—There was little evidence for the expected relation between frequent job changes and poor health despite an associ- ation of more frequent changes with high stress in women and greater cigarette and alcohol consumption in both sexes. An intensi- fied healthy worker effect among frequent job changers will be proposed as a possible explanation of these findings.

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

V A ARMSTRONG (Department of Health Sciences, University of East London)  

Objectives—To determine the proportion of parents whose actual social mixing job status is recorded, and the protocol of these proportions. To compare the change in the proportion of mothers (39%) compared with fathers (18% Yorkshire, 17% Northern Ireland) 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, usu- ally the father: OR 0.78, 95% CI 0.49, 1.25, based on 27 exposed cases). A larger proportion of fathers (29%) compared with mothers (18%) 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) com- pared with those diagnosed at age 5 and over (OR 1.14, 95% CI 0.77, 1.69).

Conclusions—A large proportion of parental occupational social mixing and childhood type I diabetes was detected for all ages com- bined. 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 investi- gation.

HEALTH SERVICES RESEARCH II

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Open SESAME—the impact of socioeconomic status on health care seeking behaviour

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Objectives—The main outcome measure was the proportion indicating that they would seek immediate care (hospital emergency department or general practice) if they were to attend a clinic or a walk-in comforter. Specifically, we tested the hypothesis that variations in health care seeking behaviour can be explained by a combination of factors, including socioeconomic status, gender, age, and access to medical care. The study aimed to explore the extent to which these factors influence decisions to use health care services.

Design—A cross-sectional study of the general population was conducted. The survey was conducted in a mixed urban area, and included individuals from a variety of socioeconomic backgrounds.

Methods—A stratified random sample of 1509 participants were recruited, divided into five groups based on socioeconomic status. The sample included individuals from different age groups and gender distributions. The survey included questions about health care seeking behaviour, access to medical care, and perceptions of the need for medical intervention.

Results—The main findings were that socioeconomic status and access to medical care were significant predictors of health care seeking behaviour. Individuals from lower socioeconomic groups were more likely to seek immediate care, while those with better access to medical care were less likely to do so. The results also showed that younger individuals were more likely to seek immediate care than older individuals. The study found that the socioeconomic gradient in health care seeking behaviour was stronger in lower socioeconomic groups than in higher socioeconomic groups.

Conclusion—The findings suggest that health care seeking behaviour is influenced by socioeconomic status and access to medical care. This highlights the need for targeted interventions to improve access to health care for those from lower socioeconomic backgrounds.

An introduction to DIPEx—a database of individual patient experience

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

Objectives—DIPEx is a multimedia website and CD ROM that links patients’ experiences with evidence-based information about treatment and the illness itself, with a range of other resources that may be useful, including support groups and links to other websites. 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 for clinicians and 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 is available for patients, carers, professionals and students, policy makers and researchers. In this study, 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’ home. Experienced qualitative researchers conducted semi-structured, narrative interviews with 40 respondents, recorded on digital video or audio tape. The information about treatment and other 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. These include questions about prevention, causes and effects of hypertension and explanation of the meaning of blood pressure readings.

Conclusion—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

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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=825), Indian (n=305) and Pakistani (n=479) ethnic groups.

Main measures—Self reported history of diabetes in parents and siblings of subjects.

Results—Among Europeans 8.3% of those with normal glucose tolerance, 13.3% of those with IGT and 18.9% of those with type II DM reported parental diabetes. Among South Asians the prevalence of diabetes in parents was similar regardless of the glucose tolerance status of the respondent (26.2%, 25.8% and 25.4% of those with normal and impaired glucose tolerance and type II DM respectively). In both Europeans and South Asians the likelihood of reporting a sibling with diabetes was least in those with normal glucose tolerance, greater in those with IGT and greatest in those with type II DM. Among Europeans diabetes is almost five times as likely as those with normal glucose tolerance to report a sibling with diabetes (17.9% versus 3.8%), while among South Asians diabetes was less than twice as likely to report a sibling with diabetes (17.8% versus 9.3%). The same overall patterns were observed in Indians, Pakistanis and Bangladeshis, and when male and female respondents were analysed separately.

Conclusion—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 sibling but not parental diabetes is consistent with changing environmental risk factors, as the exposure status of respondents would be expected to resemble their siblings more than their parents. Our data suggest that risk factors for diabetes in UK South Asians may be more, and genetic factors less, important than is usually acknowledged.

Smoking and risk of type II diabetes

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Background—Age-related differences in the association between smoking and diabetes in middle-aged and older men and women are not known.

Methods—Data are from the National Health and Nutrition Examination Survey (NHANES) I and II (1971–1980). The data were collected among persons aged 25–74 years. The survey included physical examinations and blood tests. The survey was conducted in the United States.

Results—The results show that the association between smoking and diabetes is stronger in middle-aged men than in middle-aged women. The association is also stronger in older men than in older women. The association is strongest in older men who smoke more than 10 cigarettes per day.

Conclusion—The findings suggest that smoking is a risk factor for diabetes in middle-aged men but not in middle-aged women. The association is stronger in older men than in older women. The findings also suggest that smoking more than 10 cigarettes per day is associated with a higher risk of diabetes in middle-aged men.

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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 735 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 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, parity, and history of ischemic 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, 2.8). 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 five years before to 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

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Background—There are strong links between the development of rheumatoid arthritis (RA) and the ability to remain in work. Work loss often occurs early in the disease process. We previously reported work disability rates of 14% at one year and 28.6% at three years from RA onset. The move to earlier, more aggressive treatment of RA and the ability to remain in work, raises questions on the level of impact from confounding factors. Men who reported participation in ≥2 hours per week of high impact physical activity and a measure of heel bone density, were work disabled because of RA after the first few years of disease. There is a need for early advice and education for patients regarding employment.

Methods—(1) To re-examine the magnitude of work disability in a new community based cohort of patients with inflammatory polyarthritis (IP) with longitudinal follow up. To look at the further loss of employment in the original cohort, followed up for up to 10 years.

Subjects—The Norfolk Arthritis Register (NOAR)—a primary care based inception cohort of patients with inflammatory polyarthritis (IP) with longitudinal follow up.

Methods—(1) 134 consecutive patients (52 male, 82 female) with symptom onset in 1994–1997, who met the 1987 ACR criteria for RA and were economically active at onset, were followed up by NOAR for at least two years from onset. Occupational and clinical data were recorded annually. Changes in employment status were analysed in 1999—mean of 48 months from onset. (2) The original cohort of 160 working RA patients with an onset in 1989–1992 were followed up until 1999.

Results—(1) 81 of the 134 cases (60.4%) were work disabled, and three had stopped working for non-health reasons and 50 (37.3%) were work disabled because of RA. Some 26.6% had stopped within 12 months of onset and 52% within two years. The mean interval between onset and stopping work was 11.4 months. (2) A further 10 (6.2%) of the original cohort had stopped work prematurely because of RA.

Conclusion—Work disability is still a major outcome in RA, occurring soon after onset and frequently before second line treatment can become effective. People continue to lose their jobs because of RA after the first few years of disease. There is a need for early advice and education for patients regarding employment.

Associations between self reported physical activity and a measure of heel bone ultrasound in EPIC—Norfolk

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Objectives—To study associations between self reported physical activity and ultrasound measurement of heel bone density in men and women.

Design—A cross sectional population-based study.

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

Methods/main outcome measure—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.

Results—Self reported time spent in high impact physical activity was strongly and positively associated with heel bone density, independently of age, 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 was unexpected 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 0.20 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 both men and women. 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

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Introduction—While total joint replacement (TJR) is an effective treatment for severe joint disease, research evidence consistently shows variance in provision of primary care for patients, primary care physicians not referring people to specialists, and surgeons refusing to operate on particular groups (for example, young, obese). Research in different settings has found that barriers to TJR utilisation are clear and well documented.

Methods—Published literature from standard electronic databases concerned with treatments for osteoarthritis was reviewed. Conceptual 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 audiorecorded 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 for initial assessment, primary care physicians not referring people to specialists, and surgeons refusing to operate on particular groups (for example, young, obese). Research in different settings has found that barriers to TJR utilisation are clear and well documented.

Conclusion—This 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 in the light of evidence and outcomes in friends/relatives, and unwillingness to initiate reconsideration for referral/surgery after previous refusal.

Conclusions—There is a need for further research to establish appropriate indications for the timing of TJR utilisation. The existence of patient preferences and clinical factors.

CARDIOVASCULAR DISEASE

Trends in mortality and hospitalisation following a first acute myocardial infarction: a population-based study

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Objectives—To examine the trends in: (a) population mortality rates following a first acute myocardial infarction (AMI) in those people who did not survive to reach hospital and (b) the proportion of people experiencing a first AMI who were admitted to hospital in Scotland between 1986 and 1995.

Methods—Prospective observational study of all 208 527 men and women experiencing a first AMI in Scotland between 1986 and 1995, including the 174 749 people who died in hospital. The Townsend score of Townsend quintiles was used to test the hypothesis that people who did not survive to reach hospital (a first AMI was defined as ICD9 code 410 with no prior hospitalisation for AMI since 1981).

Results—Between 1986 and 1995, a total of 48 481 men and 42 297 women had a first AMI and did not survive to reach hospital. Overall, population-based death rates increased with age. Thus, in 1986 the death rate among men aged <65 years was 1 200/100 000 population respectively, with rising age to 1930 and 1210/100 000 respectively in those aged >74 years. Significant declines were observed in all age groups between 1986 and 1995, and were greater in men and the young. Thus, death rates halved in men aged <65 years; (from 73 to 36/100 000). The proportion of people who survived to reach hospital increased over this period. Although this proportional increase occurred in men and women in all age groups, it was most evident in younger cohorts. According to multivariate analysis performed separately for men and women, year of admission, age and extent of social deprivation were all significant predictors of probability of admission to hospital.

Conclusion—Population-based death rates following a first AMI, but without hospitalisation, declined significantly between 1986 and 1995. This trend was most evident in men and younger age groups. These data are consistent with the impact of primary prevention.

The association between socioeconomic deprivation and the management of acute myocardial infarction and survival at two years: a prospective observational study

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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 social deprivation in outcome variation in outcome.

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

Design—Prospective observational study collecting demographic and clinical data all cases of AMI admitted to hospitals in Yorkshire.

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 hospitals in Yorkshire between 1 September and 30 November 1995.

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

Results—2135 people had a confirmed AMI. Socioeconomic status (SES) was significantly related to death before discharge (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 independently associated with aspirin or thrombolysis, treatment on discharge or investigations planned after discharge. No relation was seen between deprivation 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).

Conclusions—If social inequities in the management of AMI in secondary care do exist, 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.

Identifying the risk factors and indicators of ischaemic heart disease in primary and secondary care: is there a conceptual model?

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Background—Medical research has identified numerous cues that are associated with ischaemic heart disease (IHD), but no one clear pathogenic predictor. Given time and resource constraints in clinical practice, diagnosis is likely to be based upon a subset of these: those a physician considers to be the most predictive of IHD. It is not known which factors are most influential in reaching a diagnosis, nor whether there are systematic differences between primary and secondary care physicians.

Objectives—Our overall aim was to examine the degree of consensus between and within primary and secondary care physicians, subjective models of diagnoses of IHD. Our first objective was to elicit those cues considered by physicians in the diagnosis of IHD. Our second objective was to ascertain the strength of the association between these cues and IHD. Our third objective was to examine the interrelation between these cues.

Method—The study was divided into two experiments. The first experiment used an open-ended cue identification task. Six primary and secondary care specialists were asked to identify the cues, which in their view were predictive of a diagnosis of IHD. Each cue was also subjectively weighted— that is, the strength of association between the cue and IHD was rated. The second experiment used a network diagram technique to elicit each person’s causal model of IHD. Physicians formulated a causal (belief) diagram identifying the relations between cues and the strength of the identified associations.

Results—Seventy two different cues were identified by at least one physician as being associated with IHD. Both primary and secondary care physicians consistently identified six risk factors (angina, diabetes mellitus, hyperlipidaemia, hypertension, smoking and a positive family history of IHD) and four possible test results (ECG, ETT, angiography and thallium scan) as predictive of IHD. Although these six cues were both rated highly and identified by most people, and cues with low ratings tended to be identified by few people, there were some cues that only a few people identified but which were rated very highly.

Conclusion—This is the first study to use causal modelling to examine the role of information used by primary and secondary care physicians in the diagnosis of IHD. Although our model showed agreement on the core cues involved in a diagnosis, we have also identified cues that could lead to a difference in opinion with any one patient.

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

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Background—To assess the potential for further reductions in coronary heart disease (CHD) death rates in the UK.

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 WHO MONICA project (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: (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 10% in men and 34% in women; (b) population mean cholesterol levels and blood pressure declined by only approximately 5% and 9% respectively. These observed risk factor changes explained approximately 30% 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 factor reductions were achieved, approximately 20,000 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

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Background and Objective—Depression is common and an important cause of morbidity and mortality worldwide. Despite the availability of effective pharmacological interventions, much depression remains inadequately treated and complies with antidepressants poorly. An alternative treatment that might be more acceptable to patients would therefore be beneficial. Research into the effect of exercise on depression has gone back several decades and there is a growing body of literature on this subject. This review examines the effectiveness of exercise as an intervention for the management of depression.

Design—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. Analysis—Standardised mean difference in effect size and weighted mean difference in Beck Depression Inventory (BDI).

Results—16 articles referring to 14 studies met our inclusion criteria. The key results are: (a) There is a paucity of good evidence. All studies had important methodological weaknesses with randomisation being adequately concealed in only three and intention to treat analyses undertaken in only two. (b) The majority (nine) of the studies were of non-clinical community volunteers sometimes with financial or other incentives to participate and complete. In most of these an assumption of clinical depression was not made. (c) Most studies did not present data to enable statistical pooling or confirmation of author’s conclusions. After contact with authors, adequate data were available for 12 of the 14 studies. (d) Exercise was efficacious, when compared with no exercise, in reducing depressive symptoms—standardised mean difference −1.1 (95% confidence intervals (95% CI) −1.5, −0.6), weighted mean difference in outcome BDI = −7.3 (95% CI −10.0, −4.6). (e) There were systematic differences (heterogeneity) between studies that were not explained by study quality, setting or depression severity but were explained by publication type and length of follow up. (f) Exercise did not improve efficacy to cognitive therapy in reducing depressive symptoms—standardised mean difference −0.3 (95% CI −0.7, +0.1).

Conclusions—Exercise is efficacious in the management of depressive symptoms but these results may be exaggerated by the inclusion of two conference abstracts in the analysis and the short-term follow up of studies. The impact of the duration of exercise in the treatment of depression cannot be determined with currently available evidence.

Explanations for the rise in youth suicide: A European perspective

D GUNNELL, S FRANKEL, E 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 levels of suicide—E&W, West Germany, France and Norway, we investigated whether changes in either 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 may have been offset by increased use of other methods, particularly hanging. Trends in markers of social and economic conditions are broadly similar across 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 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 the other European countries, explanations are relevant to understanding the aetiology of suicide and in developing preventive strategies.

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

N MIDDLETON, D GUNNELL, S FRANKEL, E 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 the healthiest 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 wards. 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 0.02% (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 rural quartile. In women aged 25–44, suicide rates decreased over the years studied across all quartiles (0.8% per annum (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

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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 there 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 absence of a question regarding diesel as an alternative method of suicide, and the Scottish study failed to examine the changes in the car fleet.

Objectives—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 (ICD codes E950–E959), including undetermined nature (E980–E989), were compared with the number of vehicles powered by petrol or diesel. The question of substitution as a result of diesel was examined by producing annual rates by suicide method. Linear regression was used to test the effect of increasing diesel ownership and the decline in cars without CATs on suicide rates.

Results—The suicide rate using motor vehicle gases (E952+E982) increased steadily to peak in 1992 at 2.51 per 100 000 before dropping to 1.50 per 100 000 by 1995, while suicides from other methods remained relatively constant around 9.3 per 100 000. However, rates for hanging (E953+E953) have increased from 2.54 per 100 000 to 3.30 per 100 000. Initial findings indicate that the increase in diesel vehicles did not have the expected effect on the level of suicides before the introduction of CAT fitted petrol vehicles.

Conclusion—This study shows for the first time that substitution is occurring with a marked shift towards the use of hanging. It is interesting that the uptake of diesel vehicles did have the same impact on suicides as the introduction of CATS. This raises the question whether those who own diesel vehicles are somehow different to those with petrol ones.

CHILDREN AND TEENAGERS

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

A WILLIAMS, J W B E SATTIN (Department of Child Dental Health, University of Bristol)

Background—Children born with cleft lip and palate require long term follow up with multidisciplinary specialist treatment, including surgery, speech therapy and dentistry, from birth until adulthood. After a national audit of the outcome of cleft care the number of cleft teams in the UK is being reduced to create regional specialist centres. The risk in this strategy is that there will be reduced access to specialist services in vulnerable population groups.

Aims—To examine the characteristics of children born with unilateral cleft lip and palate (UCLP) in the UK who have unmet needs for speech therapy and/or dental treatment.

Design and setting—A cross sectional study of subjects under the care of UK cleft teams.

Subjects—Children born with complete UCLP between 1 April 1982 and 31 March 1986 (“twelve year olds”) and 1 April 1989 and 31 March 1993 (“fourteen year olds”). An independent research team collected outcomes for 238 five year olds and 218 twelve year olds (71% of cases identified). Socioeconomic status was determined from postcodes. Children with one or more “serious” consanguineous errors of speech needed speech therapy.

Results—Forty per cent of five year olds and 20% of twelve year olds needed dental treatment; 38% of five year olds and 20% of twelve year olds needed speech therapy. Low socioeconomic status was a risk factor for need for dental care in five year olds (odds ratio (OR) 1.73, 95% confidence interval (CI) 1.01, 2.96 p=0.046) and for need for speech therapy in both age cohorts (OR 2.15, 95% CI 1.40, 3.30 p=0.001). Being under the care of a “high volume” cleft team (more than 25 cleft referrals per year) was associated with unmet need for dental treatment in five year olds (OR 2.45, 95% CI 1.44, 4.18 p=0.001). Adjusting for socioeconomic status and being registered with a dentist had little effect on this association. In both age cohorts, children under the exclusive care of the cleft team therapist were less likely to need speech therapy than children who were managed by a combination of team and local therapists (OR 2.51, 95% CI 1.45, 4.36 p=0.001). This association was independent of socioeconomic status.

Conclusions—Cleft services in the UK are failing to meet the treatment needs of a significant number of children born with UCLP, especially those from low socioeconomic backgrounds. It is important that cleft teams, particularly those treating larger numbers of patients, have adequate arrangements in place to ensure that children receive appropriate treatment and follow up.

Social determinants of children with behavioural problems

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

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

Setting—Torbay, Devon.

Subjects—10 015 households with children under the age of 5 years.

Main outcome measure—Household having a child with behavioural problems where a planned programme of intervention is in place.

Results—Overall there were 866 children (8.5%) with behavioural problems who were also having a planned programme of intervention. Of the various household and family factors studied (n=21), nine remained 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 depressed (mentally ill) (OR 3.94, 9.36), (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”.

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

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Background—There are few 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% males, and 23.5% female, χ²<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). Those 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 results for male and female subjects may reflect a higher incidence of asthma under age 20 or a possibly prescribing bias. Gender should be taken into account when studying asthma in children and young adults.
Trends in teenage pregnancies in Scotland and the associations with deprivation and rurality

A Macleod (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. The target to reduce pregnancies among 13–15 year olds by 20% by the year 2010.

Objectives—To describe trends in teenage pregnancies in Scotland and associations with deprivation and rurality.

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

Methods—Multiyear annual age specific conception rates per 1000 population and the proportions resulting in a livebirth 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 85 per 1000 for 18–19 year olds. The percentage resulting in a livebirth decreased from 80% to 65% 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 category 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 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 25% more likely to conceive (95% confidence intervals (95% CI) 1.26, 1.90) and nearly three times as likely to give birth (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 (95% CI 0.88, 0.95) or to conceive (95% CI 0.88, 0.97 and OR 0.65, 95% CI 0.59, 0.72) than those resident in rural areas.

Conclusions—Pregnancies in young teenagers have increased in the previous two decades while the percent leading to a maternity has changed very little. The consistency of district differentials implies that local strategies to reduce unwanted pregnancies are desirable. While increased maternities in rural areas might reflect cultural differences, the impact of access to services must also be considered. To achieve government targets, population-based interventions aimed at preventing unwanted teenage pregnancies and supporting pregnant teenagers must take account of different social, economic and cultural circumstances and the consequential health service needs of teenagers living in both deprived and rural communities.

Risk factors

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

J Macleod1, G Davey Smith1 (Department of Social Medicine, University of Bristol, 2Department of Public Health, University of Glasgow)

Objectives—To examine the relation between body mass index (BMI) in early and mid-adulthood and subsequent mortality.

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 140–150, 160–69), and from other cancers (remainder of ICD9 codes 140–208).

Results—Higher BMI at both ages was associated with increased risk of death. High and medium (compared with 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 occupation.

Conclusions—BMI at both ages was strongly predictive of adult mortality. 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.

Personal risk factors

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

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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.

Objectives—To examine the association between self reported stress, disease risk, social position and mortality.

Design—Workplace based prospective observational study.

Setting—27 workplaces in west and central Scotland.

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 140–150, 160–69), and from other cancers (remainder of ICD9 codes 140–208).

Results—Higher stress (measured by the “Rutter” stress inventory) was significantly associated with both higher occupational class and unhealthy behaviour (less exercise, more cigarettes smoked, greater alcohol consumption) but not with increased physiological risk. High and medium (compared with 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 occupation.

Conclusions—BMI at both ages was strongly predictive of adult mortality.
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%); depression was 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 1.49 (95% CI 1.06, 1.68) and 1.48 (95% CI 1.24, 1.74) for all cause and cancer mortality respectively; for depression the were 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 labelled depressed) these findings are suggestive of the importance of psychological well being 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 MCLOUGHLIN (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 of death during the grouped years 1996–98 were compared with rates in Scotland with particular reference to 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**

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**Objectives**—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 identify any health, social or practical problems they would associate with the different body shapes.

**Setting**—A purposive sample was identified through two health centres. Interviews were conducted in the respondents’ homes by researchers trained in qualitative interviewing.

**Participants**—Twenty 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. Over a 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 slow gaining in adolescence, ageing, quitting smoking and more sedentary lifestyle, although childbearing, comfort eating 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 control. Respondents were aware of holding contradictory views about ideal weight. Body image preferences bear little relation to recognised medical risk.

**Incidence of HIV infection among gay men following a negative test**

**J ELFORD, S LEATY, H WELLS, R MILLER, M JOHNSON, L SHERER (Department of Primary Care and Population Sciences, Royal Free and University College Medical School, London, HIV Unit, Royal Free Hampstead NHS Trust Hospital, London)**

**Objectives**—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 dates of last negative tests were those clinic attenders 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 HIV tests and dates of last negative tests; 151 (55%) had had one or two previous negative tests while 124 (45%) reported three or more. Of these 275 men, 12 tested HIV positive overall HIV incidence was estimated to be 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 (95% CI) estimated “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). 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%).
men a negative HIV test result may produce a disablinising effect and reinforce risky behaviour. This needs to be tackled by health promotion programmes.

The impact of bicycle helmets on im-

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 mal-

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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 year 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 systematic 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.