

Abortion

A5105: Factors associated with recurrent abortions- A retrospective study

Author: Kavita Mandrelle

Source: Indian Practitioner, 65, 9 (September, 2012):554-558

Abstract: **Objective:** To determine the distribution of factors associated with two or more consecutive abortions, to analyse the various interventions offered and to study the reproductive outcome. **Method:** A retrospective cohort study was done and a diagnostic screening protocol was applied to 300 couples who presented with two or more consecutive abortions. The outcome measures included genetic, endocrine infectious, anatomical and autoimmune factors associated with recurrent abortions. **Results:** The possible cause of early pregnancy failure in 300 couples with history of repeated reproductive wastage was analysed. The age of patients who presented with recurrent abortions ranged from 18 to 43 years with a mean age of 29.65 years. 82.3% were primary spontaneous aborters with no previous live births. A diagnostic evaluation was done after two abortions in 54.7% cases and 45.3% cases were investigated after three or more consecutive abortions. Among these pregnancy wastages 69.0% occurred in first trimester only, 8.7% presented with only second trimester abortions and 22.3% with both first and second trimester abortions. 31.7% had associated infertility. Genetic, endocrine, infectious, anatomical and autoimmune factors were identified. Fifty-ne patients achieved pregnancy during the study out of which 25 attained term deliveries. **Conclusion:** The present study suggests that the aetiologies for recurrent abortions are complex, but with exact diagnosis of the aetiological factor a good number of couples can be offered a successful treatment.

Keywords: Abortions, Recurrent abortion, Habitual abortion

Aging

A5081: Dynapenic Abdominal Obesity and Metabolic Risk Factors in Adults 50 Years of Age and Older

Author: Martin Senechal and others

Source: Journal of Aging and Health, 24, 5 (August, 2012): 812-826

Abstract: **Objectives:** To investigate the additive effect of dynapenia and abdominal obesity on metabolic risk factors in older adults. **Method:** A total of 3,007 men and women from the

National Health and Nutrition Examination Survey (NHANES) study were categorized as follows: (a) non-dynapenic/non-abdominally obese (N-DYN/N-AO), (b) dynapenic/non-abdominally obese (DYN/N-AO), (c) non-dynapenic/abdominally obese (N-DYN/AO), (d) dynapenic/abdominally obese (DYN/AO) based on waist circumference (WC) and leg muscle strength tertiles. Dependent variables were lipids, glucose, blood pressure, and other chronic conditions. **Results:** The DYN/AO group had lower plasma HDL-chol and higher triglyceride and glucose levels than N-DYN/N-AO and DYN/N-AO groups (all $p \leq .01$). Higher plasma triglyceride was observed in the DYN/AO group compared with N-DYN/AO group ($p \leq .01$). The odds of having metabolic syndrome, cardiovascular diseases, and type II diabetes were higher in DYN/AO compared with DYN/N-AO and N-DYN/N-AO. **Conclusion:** DYN/AO older adults might be at greater risk of metabolic alterations than those displaying dynapenia alone or those with neither abdominal obesity nor dynapenia.

Keywords: Metabolic syndrome, Obesity, Muscle strength, Sarcopenia, Aging

Alcohol and tobacco

A5109: Tobacco use in 3 billion individuals from 16 countries: an analysis of nationally representative cross-sectional household surveys

Author: Gary A Giovino and others

Source: Lancet, 380, 9842 (August 18-24, 2012): 668 – 679

Abstract: **Background:** Despite the high global burden of diseases caused by tobacco, valid and comparable prevalence data for patterns of adult tobacco use and factors influencing use are absent for many low-income and middle-income countries. We assess these patterns through analysis of data from the Global Adult Tobacco Survey (GATS). **Methods:** Between Oct 1, 2008, and March 15, 2010, GATS used nationally representative household surveys with comparable methods to obtain relevant information from individuals aged 15 years or older in 14 low-income and middle-income countries (Bangladesh, Brazil, China, Egypt, India, Mexico, Philippines, Poland, Russia, Thailand, Turkey, Ukraine, Uruguay, and Vietnam). We compared weighted point estimates and 95% CIs of tobacco use between these 14 countries and with data from the 2008 UK General Lifestyle Survey and the 2006–07 US Tobacco Use Supplement to the Current Population Survey. All these surveys had cross-sectional study designs. **Findings:** In countries participating in GATS, 48·6% (95% CI 47·6–49·6) of men and 11·3% (10·7–12·0) of women were tobacco users. 40·7% of men (ranging from 21·6% in Brazil to 60·2% in Russia) and 5·0% of women (0·5% in Egypt to 24·4% in Poland) in GATS countries smoked a tobacco product. Manufactured cigarettes were favoured by most smokers (82%) overall, but smokeless

tobacco and bidis were commonly used in India and Bangladesh. For individuals who had ever smoked daily, women aged 55—64 years at the time of the survey began smoking at an older age than did equivalently aged men in most GATS countries. However, those individuals who had ever smoked daily and were aged 25—34-years when surveyed started to do so at much the same age in both sexes. Quit ratios were very low (<20% overall) in China, India, Russia, Egypt, and Bangladesh. **Interpretation:** The first wave of GATS showed high rates of smoking in men, early initiation of smoking in women, and low quit ratios, reinforcing the view that efforts to prevent initiation and promote cessation of tobacco use are needed to reduce associated morbidity and mortality.

Keywords: Tobacco, Household surveys, Surveys

Cancer

A5083: Caring for a Parent with Lung Cancer: Caregivers' Perspectives on the Role of Communication

Author: Anne M. Stone

Source: Qualitative Health Research, 22, 7 (July, 2012): 957-970

Abstract: We investigated communication and care in the context of lung cancer through qualitative interviews with 35 adult children. Participants described two core influences on communication: situational and relational influences. Participants also suggested that the ways in which support was communicated impacted how they managed challenges and how they were able to cope with the loss of their parent. This research adds to the literature on caregiving and communicating social support by exploring the experiences of families coping with lung cancer. We suggest theoretical and practical implications for the ways family members might communicate about illness.

Keywords: Cancer, Lung Cancer, Caregivers, Parent-child, Communication

A5107: Radiation exposure from CT scans in childhood and subsequent risk of leukaemia and brain tumours: a retrospective cohort study

Author: Mark S Pearce and others

Source: Lancet, 380, 9840, (August 4-10, 2012): 499 – 505

Abstract: Background: Although CT scans are very useful clinically, potential cancer risks exist from associated ionising radiation, in particular for children who are more radiosensitive than adults. We aimed to assess the excess risk of leukaemia and brain tumours after CT scans in a cohort of children and young adults. **Methods:** In our retrospective cohort study, we included patients without previous cancer diagnoses who were first examined with CT in National Health Service (NHS) centres in England, Wales, or Scotland (Great Britain) between 1985 and 2002, when they were younger than 22 years of age. We obtained data for cancer incidence, mortality, and loss to follow-up from the NHS Central Registry from Jan 1, 1985, to Dec 31, 2008. We estimated absorbed brain and red bone marrow doses per CT scan in mGy and assessed excess incidence of leukaemia and brain tumours cancer with Poisson relative risk models. To avoid inclusion of CT scans related to cancer diagnosis, follow-up for leukaemia began 2 years after the first CT and for brain tumours 5 years after the first CT. **Findings:** During follow-up, 74 of 178 604 patients were diagnosed with leukaemia and 135 of 176 587 patients were diagnosed with brain tumours. We noted a positive association between radiation dose from CT scans and leukaemia (excess relative risk [ERR] per mGy 0.036, 95% CI 0.005—0.120; $p=0.0097$) and brain tumours (0.023, 0.010—0.049; $p<0.0001$). Compared with patients who received a dose of less than 5 mGy, the relative risk of leukaemia for patients who received a cumulative dose of at least 30 mGy (mean dose 51.13 mGy) was 3.18 (95% CI 1.46—6.94) and the relative risk of brain cancer for patients who received a cumulative dose of 50—74 mGy (mean dose 60.42 mGy) was 2.82 (1.33—6.03). **Interpretation:** Use of CT scans in children to deliver cumulative doses of about 50 mGy might almost triple the risk of leukaemia and doses of about 60 mGy might triple the risk of brain cancer. Because these cancers are relatively rare, the cumulative absolute risks are small: in the 10 years after the first scan for patients younger than 10 years, one excess case of leukaemia and one excess case of brain tumour per 10 000 head CT scans is estimated to occur. Nevertheless, although clinical benefits should outweigh the small absolute risks, radiation doses from CT scans ought to be kept as low as possible and alternative procedures, which do not involve ionising radiation, should be considered if appropriate.

Keywords: Leukaemia, Brain tumours, CT scans, Childhood

A5119: Impact of occupational carcinogens on lung cancer risk in a general population

Author: Sara De Matteis and others

Source: International Journal of Epidemiology, 41, 3 (June, 2012): 711-721.

Abstract: Background: Exposure to occupational carcinogens is an important preventable cause of lung cancer. Most of the previous studies were in highly exposed industrial cohorts. Our aim

was to quantify lung cancer burden attributable to occupational carcinogens in a general population. **Methods:** We applied a new job–exposure matrix (JEM) to translate lifetime work histories, collected by personal interview and coded into standard job titles, into never, low and high exposure levels for six known/suspected occupational lung carcinogens in the Environment and Genetics in Lung cancer Etiology (EAGLE) population-based case–control study, conducted in Lombardy region, Italy, in 2002–05. Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated in men (1537 cases and 1617 controls), by logistic regression adjusted for potential confounders, including smoking and co-exposure to JEM carcinogens. The population attributable fraction (PAF) was estimated as impact measure. **Results:** Men showed an increased lung cancer risk even at low exposure to asbestos (OR: 1.76; 95% CI: 1.42–2.18), crystalline silica (OR: 1.31; 95% CI: 1.00–1.71) and nickel–chromium (OR: 1.18; 95% CI: 0.90–1.53); risk increased with exposure level. For polycyclic aromatic hydrocarbons, an increased risk (OR: 1.64; 95% CI: 0.99–2.70) was found only for high exposures. The PAFs for any exposure to asbestos, silica and nickel–chromium were 18.1, 5.7 and 7.0%, respectively, equivalent to an overall PAF of 22.5% (95% CI: 14.1–30.0). This corresponds to about 1016 (95% CI: 637–1355) male lung cancer cases/year in Lombardy. **Conclusions:** These findings support the substantial role of selected occupational carcinogens on lung cancer burden, even at low exposures, in a general population.

Key words: lung neoplasms, Case–control study, Carcinogens, Occupational health

Cardiovascular Disease

A5108: Cardiovascular benefits and diabetes risks of statin therapy in primary prevention: an analysis from the JUPITER trial

Author: Paul M Ridker and others

Source: Lancet, 380, 9841 (August 11-17, 2012): 565 – 571

Abstract: **Background:** In view of evidence that statin therapy increases risk of diabetes, the balance of benefit and risk of these drugs in primary prevention has become controversial. We undertook an analysis of participants from the JUPITER trial to address the balance of vascular benefits and diabetes hazard of statin use. **Methods:** In the randomised, double-blind JUPITER trial, 17 603 men and women without previous cardiovascular disease or diabetes were randomly assigned to rosuvastatin 20 mg or placebo and followed up for up to 5 years for the primary endpoint (myocardial infarction, stroke, admission to hospital for unstable angina, arterial revascularisation, or cardiovascular death) and the protocol-prespecified secondary endpoints of venous thromboembolism, all-cause mortality, and incident physician-reported

diabetes. In this analysis, participants were stratified on the basis of having none or at least one of four major risk factors for developing diabetes: metabolic syndrome, impaired fasting glucose, body-mass index 30 kg/m² or higher, or glycated haemoglobin A1c greater than 6%. The trial is registered at ClinicalTrials.gov, NCT00239681. **Findings:** Trial participants with one or more major diabetes risk factor (n=11 508) were at higher risk of developing diabetes than were those without a major risk factor (n=6095). In individuals with one or more risk factors, statin allocation was associated with a 39% reduction in the primary endpoint (hazard ratio [HR] 0.61, 95% CI 0.47–0.79, p=0.0001), a 36% reduction in venous thromboembolism (0.64, 0.39–1.06, p=0.08), a 17% reduction in total mortality (0.83, 0.64–1.07, p=0.15), and a 28% increase in diabetes (1.28, 1.07–1.54, p=0.01). Thus, for those with diabetes risk factors, a total of 134 vascular events or deaths were avoided for every 54 new cases of diabetes diagnosed. For trial participants with no major diabetes risk factors, statin allocation was associated with a 52% reduction in the primary endpoint (HR 0.48, 95% CI 0.33–0.68, p=0.0001), a 53% reduction in venous thromboembolism (0.47, 0.21–1.03, p=0.05), a 22% reduction in total mortality (0.78, 0.59–1.03, p=0.08), and no increase in diabetes (0.99, 0.45–2.21, p=0.99). For such individuals, a total of 86 vascular events or deaths were avoided with no new cases of diabetes diagnosed. In analysis limited to the 486 participants who developed diabetes during follow-up (270 on rosuvastatin vs 216 on placebo; HR 1.25, 95% CI 1.05–1.49, p=0.01), the point estimate of cardiovascular risk reduction associated with statin therapy (HR 0.63, 95% CI 0.25–1.60) was consistent with that for the trial as a whole (0.56, 0.46–0.69). By comparison with placebo, statins accelerated the average time to diagnosis of diabetes by 5.4 weeks (84.3 [SD 47.8] weeks on rosuvastatin vs 89.7 [50.4] weeks on placebo). **Interpretation:** In the JUPITER primary prevention trial, the cardiovascular and mortality benefits of statin therapy exceed the diabetes hazard, including in participants at high risk of developing diabetes.

Keywords: Cardiovascular, Diabetes, Primary prevention, Therapy

Child health care and development

A5092: Pulse oximetry screening for critical congenital heart defects in asymptomatic newborn babies: a systematic review and meta-analysis

Author: Shakila Thangaratinam and others

Source: Lancet, 379, 9835 (June 30-July 6, 2012): 2459-2464

Abstract: **Background:** Screening for critical congenital heart defects in newborn babies can aid in early recognition, with the prospect of improved outcome. We assessed the performance of pulse oximetry as a screening method for the detection of critical congenital heart defects in

asymptomatic newborn babies. **Methods:** In this systematic review, we searched Medline (1951–2011), Embase (1974–2011), Cochrane Library (2011), and Scisearch (1974–2011) for relevant citations with no language restriction. We selected studies that assessed the accuracy of pulse oximetry for the detection of critical congenital heart defects in asymptomatic newborn babies. Two reviewers selected studies that met the predefined criteria for population, tests, and outcomes. We calculated sensitivity, specificity, and corresponding 95% CIs for individual studies. A hierarchical receiver operating characteristic curve was fitted to generate summary estimates of sensitivity and specificity with a random effects model. **Findings:** We screened 552 studies and identified 13 eligible studies with data for 229 421 newborn babies. The overall sensitivity of pulse oximetry for detection of critical congenital heart defects was 76.5% (95% CI 67.7–83.5). The specificity was 99.9% (99.7–99.9), with a false-positive rate of 0.14% (0.06–0.33). The false-positive rate for detection of critical congenital heart defects was particularly low when newborn pulse oximetry was done after 24 h from birth than when it was done before 24 h (0.05% [0.02–0.12] vs 0.50 [0.29–0.86]; $p=0.0017$). **Interpretation:** Pulse oximetry is highly specific for detection of critical congenital heart defects with moderate sensitivity, that meets criteria for universal screening.

Keywords: Heart defects, Newborn babies, Pulse oximetry

A5115: Trial of Sugar-free or Sugar-Sweetened Beverages and Body Weight in Children

Author: Janne C. de Ruyter and others

Source: New England Journal of Medicine, 367, 15 (October 11, 2012): 1397-1407

Abstract: **Background:** The consumption of beverages that contain sugar is associated with overweight, possibly because liquid sugars do not lead to a sense of satiety, so the consumption of other foods is not reduced. However, data are lacking to show that the replacement of sugar-containing beverages with noncaloric beverages diminishes weight gain. **Methods:** We conducted an 18-month trial involving 641 primarily normal-weight children from 4 years 10 months to 11 years 11 months of age. Participants were randomly assigned to receive 250 ml (8 oz) per day of a sugar-free, artificially sweetened beverage (sugar-free group) or a similar sugar-containing beverage that provided 104 kcal (sugar group). Beverages were distributed through schools. At 18 months, 26% of the children had stopped consuming the beverages; the data from children who did not complete the study were imputed. **Results:** The z score for the body-mass index (BMI, the weight in kilograms divided by the square of the height in meters) increased on average by 0.02 SD units in the sugar-free group and by 0.15 SD units in the sugar group; the 95% confidence interval (CI) of the difference was –0.21 to –0.05. Weight increased by 6.35 kg in the sugar-free group as compared with 7.37 kg in the sugar group (95% CI for the

difference, -1.54 to -0.48). The skinfold-thickness measurements, waist-to-height ratio, and fat mass also increased significantly less in the sugar-free group. Adverse events were minor. When we combined measurements at 18 months in 136 children who had discontinued the study with those in 477 children who completed the study, the BMI z score increased by 0.06 SD units in the sugar-free group and by 0.12 SD units in the sugar group ($P=0.06$). **Conclusions:** Masked replacement of sugar-containing beverages with noncaloric beverages reduced weight gain and fat accumulation in normal-weight children.

Keywords: Sugar, Sugar-free, Body weight, Child health

Demography & Statistics

A5073: Mortality and Access to Care among Adults after State Medicaid Expansions

Author: Benjamin D. Sommers and others

Source: New England Journal of Medicine, 367, 11 (September 13, 2012): 1025-1034

Abstract: **Background:** Several states have expanded Medicaid eligibility for adults in the past decade, and the Affordable Care Act allows states to expand Medicaid dramatically in 2014. Yet the effect of such changes on adults' health remains unclear. We examined whether Medicaid expansions were associated with changes in mortality and other health-related measures. **Methods:** We compared three states that substantially expanded adult Medicaid eligibility since 2000 (New York, Maine, and Arizona) with neighboring states without expansions. The sample consisted of adults between the ages of 20 and 64 years who were observed 5 years before and after the expansions, from 1997 through 2007. The primary outcome was all-cause county-level mortality among 68,012 year- and county-specific observations in the Compressed Mortality File of the Centers for Disease Control and Prevention. Secondary outcomes were rates of insurance coverage, delayed care because of costs, and self-reported health among 169,124 persons in the Current Population Survey and 192,148 persons in the Behavioral Risk Factor Surveillance System. **Results:** Medicaid expansions were associated with a significant reduction in adjusted all-cause mortality (by 19.6 deaths per 100,000 adults, for a relative reduction of 6.1%; $P=0.001$). Mortality reductions were greatest among older adults, nonwhites, and residents of poorer counties. Expansions increased Medicaid coverage (by 2.2 percentage points, for a relative increase of 24.7%; $P=0.01$), decreased rates of uninsurance (by 3.2 percentage points, for a relative reduction of 14.7%; $P<0.001$), decreased rates of delayed care because of costs (by 2.9 percentage points, for a relative reduction of 21.3%; $P=0.002$), and increased rates of self-reported health status of "excellent" or "very good" (by 2.2 percentage points, for a relative increase of 3.4%; $P=0.04$). **Conclusions:** State Medicaid expansions to cover

low-income adults were significantly associated with reduced mortality as well as improved coverage, access to care, and self-reported health.

Keywords: Mortality, Adults, State Medicaid Expansions

A5088: Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000

Author: Li Liu and others

Source: *Lancet*, 379, 9832 (June 9-15, 2012): 2151 – 2161

Abstract: **Background:** Information about the distribution of causes of and time trends for child mortality should be periodically updated. We report the latest estimates of causes of child mortality in 2010 with time trends since 2000. **Methods:** Updated total numbers of deaths in children aged 0–27 days and 1–59 months were applied to the corresponding country-specific distribution of deaths by cause. We did the following to derive the number of deaths in children aged 1–59 months: we used vital registration data for countries with an adequate vital registration system; we applied a multinomial logistic regression model to vital registration data for low-mortality countries without adequate vital registration; we used a similar multinomial logistic regression with verbal autopsy data for high-mortality countries; for India and China, we developed national models. We aggregated country results to generate regional and global estimates. **Findings:** Of 7·6 million deaths in children younger than 5 years in 2010, 64·0% (4·879 million) were attributable to infectious causes and 40·3% (3·072 million) occurred in neonates. Preterm birth complications (14·1%; 1·078 million, uncertainty range [UR] 0·916–1·325), intrapartum-related complications (9·4%; 0·717 million, 0·610–0·876), and sepsis or meningitis (5·2%; 0·393 million, 0·252–0·552) were the leading causes of neonatal death. In older children, pneumonia (14·1%; 1·071 million, 0·977–1·176), diarrhoea (9·9%; 0·751 million, 0·538–1·031), and malaria (7·4%; 0·564 million, 0·432–0·709) claimed the most lives. Despite tremendous efforts to identify relevant data, the causes of only 2·7% (0·205 million) of deaths in children younger than 5 years were medically certified in 2010. Between 2000 and 2010, the global burden of deaths in children younger than 5 years decreased by 2 million, of which pneumonia, measles, and diarrhoea contributed the most to the overall reduction (0·451 million [0·339–0·547], 0·363 million [0·283–0·419], and 0·359 million [0·215–0·476], respectively). However, only tetanus, measles, AIDS, and malaria (in Africa) decreased at an annual rate sufficient to attain the Millennium Development Goal 4. **Interpretation:** Child survival strategies should direct resources toward the leading causes of child mortality, with attention focusing on infectious and neonatal causes. More rapid decreases from 2010–15 will need accelerated reduction for the most common causes of death, notably pneumonia and

preterm birth complications. Continued efforts to gather high-quality data and enhance estimation methods are essential for the improvement of future estimates.

Keywords: Child mortality, Child survival, Mortality

A5089: National, regional, and worldwide estimates of preterm birth rates in the year 2010 with time trends since 1990 for selected countries: a systematic analysis and implications

Author: Hannah Blencowe and others

Source: *Lancet*, 379, 9832 (June 9-15, 2012): 2162 – 2172

Abstract: **Background:** Preterm birth is the second largest direct cause of child deaths in children younger than 5 years. Yet, data regarding preterm birth (<37 completed weeks of gestation) are not routinely collected by UN agencies, and no systematic country estimates nor time trend analyses have been done. We report worldwide, regional, and national estimates of preterm birth rates for 184 countries in 2010 with time trends for selected countries, and provide a quantitative assessment of the uncertainty surrounding these estimates. **Methods:** We assessed various data sources according to prespecified inclusion criteria. National Registries (563 datapoints, 51 countries), Reproductive Health Surveys (13 datapoints, eight countries), and studies identified through systematic searches and unpublished data (162 datapoints, 40 countries) were included. 55 countries submitted additional data during WHO's country consultation process. For 13 countries with adequate quality and quantity of data, we estimated preterm birth rates using country-level loess regression for 2010. For 171 countries, two regional multilevel statistical models were developed to estimate preterm birth rates for 2010. We estimated time trends from 1990 to 2010 for 65 countries with reliable time trend data and more than 10 000 livebirths per year. We calculated uncertainty ranges for all countries. **Findings:** In 2010, an estimated 14·9 million babies (uncertainty range 12·3–18·1 million) were born preterm, 11·1% of all livebirths worldwide, ranging from about 5% in several European countries to 18% in some African countries. More than 60% of preterm babies were born in south Asia and sub-Saharan Africa, where 52% of the global livebirths occur. Preterm birth also affects rich countries, for example, USA has high rates and is one of the ten countries with the highest numbers of preterm births. Of the 65 countries with estimated time trends, only three (Croatia, Ecuador, and Estonia), had reduced preterm birth rates 1990–2010. **Interpretation:** The burden of preterm birth is substantial and is increasing in those regions with reliable data. Improved recording of all pregnancy outcomes and standard application of preterm definitions is important. We recommend the addition of a data-quality indicator of the per cent of all live preterm births that are under 28 weeks' gestation. Distinguishing preterm births that are spontaneous from those that are provider-initiated is important to monitor

trends associated with increased caesarean sections. Rapid scale up of basic interventions could accelerate progress towards Millennium Development Goal 4 for child survival and beyond.

Keywords: Birth rates, Reproductive Health Surveys, Statistical models, Preterm birth

A5090: Assessment of the 2010 global measles mortality reduction goal: results from a model of surveillance data

Author: Emily Simons and others

Source: Lancet, 379, 9832 (June 9-15, 2012): 2173 – 2178

Abstract: **Background:** In 2008 all WHO member states endorsed a target of 90% reduction in measles mortality by 2010 over 2000 levels. We developed a model to estimate progress made towards this goal. **Methods:** We constructed a state-space model with population and immunisation coverage estimates and reported surveillance data to estimate annual national measles cases, distributed across age classes. We estimated deaths by applying age-specific and country-specific case-fatality ratios to estimated cases in each age-country class. **Findings:** Estimated global measles mortality decreased 74% from 535 300 deaths (95% CI 347 200—976 400) in 2000 to 139 300 (71 200—447 800) in 2010. Measles mortality was reduced by more than three-quarters in all WHO regions except the WHO southeast Asia region. India accounted for 47% of estimated measles mortality in 2010, and the WHO African region accounted for 36%. **Interpretation:** Despite rapid progress in measles control from 2000 to 2007, delayed implementation of accelerated disease control in India and continued outbreaks in Africa stalled momentum towards the 2010 global measles mortality reduction goal. Intensified control measures and renewed political and financial commitment are needed to achieve mortality reduction targets and lay the foundation for future global eradication of measles.

Keywords: Mortality, Surveillance data, Global measles mortality

A5091: Suicide mortality in India: a nationally representative survey

Author: Vikram Patel and others

Source: Lancet, 379, 9834 (June 23-29, 2012): 2343-2351

Abstract: **Background:** WHO estimates that about 170 000 deaths by suicide occur in India every year, but few epidemiological studies of suicide have been done in the country. We aimed to quantify suicide mortality in India in 2010. **Methods:** The Registrar General of India

implemented a nationally representative mortality survey to determine the cause of deaths occurring between 2001 and 2003 in 1.1 million homes in 6671 small areas chosen randomly from all parts of India. As part of this survey, fieldworkers obtained information about cause of death and risk factors for suicide from close associates or relatives of the deceased individual. Two of 140 trained physicians were randomly allocated (stratified only by their ability to read the local language in which each survey was done) to independently and anonymously assign a cause to each death on the basis of electronic field reports. We then applied the age-specific and sex-specific proportion of suicide deaths in this survey to the 2010 UN estimates of absolute numbers of deaths in India to estimate the number of suicide deaths in India in 2010. **Findings:** About 3% of the surveyed deaths (2684 of 95 335) in individuals aged 15 years or older were due to suicide, corresponding to about 187 000 suicide deaths in India in 2010 at these ages (115 000 men and 72 000 women; age-standardised rates per 100 000 people aged 15 years or older of 26.3 for men and 17.5 for women). For suicide deaths at ages 15 years or older, 40% of suicide deaths in men (45 100 of 114 800) and 56% of suicide deaths in women (40 500 of 72 100) occurred at ages 15–29 years. A 15-year-old individual in India had a cumulative risk of about 1.3% of dying before the age of 80 years by suicide; men had a higher risk (1.7%) than did women (1.0%), with especially high risks in south India (3.5% in men and 1.8% in women). About half of suicide deaths were due to poisoning (mainly ingestions of pesticides). **Interpretation:** Suicide death rates in India are among the highest in the world. A large proportion of adult suicide deaths occur between the ages of 15 years and 29 years, especially in women. Public health interventions such as restrictions in access to pesticides might prevent many suicide deaths in India.

Keywords: Suicide, Suicide mortality, Mortality, India

A5094: Maternal deaths averted by contraceptive use: an analysis of 172 countries

Author: Saifuddin Ahmed and others

Source: Lancet, 380, 9837 (July 14-20, 2012): 111 – 125

Abstract: **Background:** Family planning is one of the four pillars of the Safe Motherhood Initiative to reduce maternal death in developing countries. We aimed to estimate the effect of contraceptive use on maternal mortality and the expected reduction in maternal mortality if the unmet need for contraception were met, at country, regional, and world levels. **Method:** We extracted relevant data from the Maternal Mortality Estimation Inter-Agency Group (MMEIG) database, the UN World Contraceptive Use 2010 database, and the UN World Population Prospects 2010 database, and applied a counterfactual modelling approach (model I), replicating the MMEIG (WHO) maternal mortality estimation method, to estimate maternal

deaths averted by contraceptive use in 172 countries. We used a second model (model II) to make the same estimate for 167 countries and to estimate the effect of satisfying unmet need for contraception. We did sensitivity analyses and compared agreement between the models. **Findings:** We estimate, using model I, that 342 203 women died of maternal causes in 2008, but that contraceptive use averted 272 040 (uncertainty interval 127 937—407 134) maternal deaths (44% reduction), so without contraceptive use, the number of maternal deaths would have been 1.8 times higher than the 2008 total. Satisfying unmet need for contraception could prevent another 104 000 maternal deaths per year (29% reduction). **Interpretation:** Numbers of unwanted pregnancies and unmet contraceptive need are still high in many developing countries. We provide evidence that use of contraception is a substantial and effective primary prevention strategy to reduce maternal mortality in developing countries.

Keywords: Maternal deaths, Developing countries

A5112: Perioperative and anaesthetic-related mortality in developed and developing countries: a systematic review and meta-analysis

Author: Daniel Bainbridge and others

Source: Lancet, 380, 9847 (September 22-28, 2012): 1075-1081

Abstract: **Background:** The magnitude of risk of death related to surgery and anaesthesia is not well understood. We aimed to assess whether the risk of perioperative and anaesthetic-related mortality has decreased over the past five decades and whether rates of decline have been comparable in developed and developing countries. **Methods:** We did a systematic review to identify all studies published up to February, 2011, in any language, with a sample size of over 3000 that reported perioperative mortality across a mixed surgical population who had undergone general anaesthesia. Using standard forms, two authors independently identified studies for inclusion and extracted information on rates of anaesthetic-related mortality, perioperative mortality, cardiac arrest, American Society of Anesthesiologists (ASA) physical status, geographic location, human development index (HDI), and year. The primary outcome was anaesthetic sole mortality. Secondary outcomes were anaesthetic contributory mortality, total perioperative mortality, and cardiac arrest. Meta-regression was done to ascertain weighted event rates for the outcomes. **Findings:** 87 studies met the inclusion criteria, within which there were more than 21.4 million anaesthetic administrations given to patients undergoing general anaesthesia for surgery. Mortality solely attributable to anaesthesia declined over time, from 357 per million (95% CI 324—394) before the 1970s to 52 per million (42—64) in the 1970s—80s, and 34 per million (29—39) in the 1990s—2000s ($p < 0.00001$). Total perioperative mortality decreased over time, from 10 603 per million (95% CI 10 423—10 784)

before the 1970s, to 4533 per million (4405—4664) in the 1970s—80s, and 1176 per million (1148—1205) in the 1990s—2000s ($p < 0.0001$). Meta-regression showed a significant relation between risk of perioperative and anaesthetic-related mortality and HDI (all $p < 0.00001$). Baseline risk status of patients who presented for surgery as shown by the ASA score increased over the decades ($p < 0.0001$). **Interpretation:** Despite increasing patient baseline risk, perioperative mortality has declined significantly over the past 50 years, with the greatest decline in developed countries. Global priority should be given to reducing total perioperative and anaesthetic-related mortality by evidence-based best practice in developing countries.

Keywords: Mortality, Developing countries, Anaesthetic, Systematic review

Diabetes

A5110: Risk of coronary events in people with chronic kidney disease compared with those with diabetes: a population-level cohort study

Author: Marcello Tonelli and others

Source: *Lancet*, 380, 9844 (September 1-7, 2012): 807 – 814

Abstract: **Background:** Diabetes is regarded as a coronary heart disease risk equivalent—ie, people with the disorder have a risk of coronary events similar to those with previous myocardial infarction. We assessed whether chronic kidney disease should be regarded as a coronary heart disease risk equivalent. **Methods:** We studied a population-based cohort with measures of estimated glomerular filtration rate (eGFR) and proteinuria from Alberta, Canada. We used validated algorithms based on hospital admission and medical-claim data to classify participants with baseline history of myocardial infarction or diabetes and to ascertain which patients were admitted to hospital for myocardial infarction during follow-up (the primary outcome). For our primary analysis, we defined baseline chronic kidney disease as eGFR 15—59.9 mL/min per 1.73 m² (stage 3 or 4 disease). We used Poisson regression to calculate unadjusted rates and relative rates of myocardial infarction during follow-up for five risk groups: people with previous myocardial infarction (with or without diabetes or chronic kidney disease), and (of those without previous myocardial infarction), four mutually exclusive groups defined by the presence or absence of diabetes and chronic kidney disease. **Findings:** During a median follow-up of 48 months (IQR 25—65), 11 340 of 1 268 029 participants (1%) were admitted to hospital with myocardial infarction. The unadjusted rate of myocardial infarction was highest in people with previous myocardial infarction (18.5 per 1000 person-years, 95% CI 17.4—19.8). In people without previous myocardial infarction, the rate of myocardial infarction was lower in those with diabetes (without chronic kidney disease) than in those with chronic

kidney disease (without diabetes; 5.4 per 1000 person-years, 5.2—5.7, vs 6.9 per 1000 person-years, 6.6—7.2; $p < 0.0001$). The rate of incident myocardial infarction in people with diabetes was substantially lower than for those with chronic kidney disease when defined by eGFR of less than 45 mL/min per 1.73 m² and severely increased proteinuria (6.6 per 1000 person-years, 6.4—6.9 vs 12.4 per 1000 person-years, 9.7—15.9). **Interpretation:** Our findings suggest that chronic kidney disease could be added to the list of criteria defining people at highest risk of future coronary events.

Keywords: Kidney disease, Diabetes, Cohort study, Kidney

Disability

A5111: Prevalence and risk of violence against children with disabilities: a systematic review and meta-analysis of observational studies

Author: Lisa Jones and others

Source: Lancet, 380, 9845 (September 08-14, 2012): 899 – 907

Abstract: **Background:** Globally, at least 93 million children have moderate or severe disability. Children with disabilities are thought to have a substantially greater risk of being victims of violence than are their non-disabled peers. Establishment of reliable estimates of the scale of the problem is an essential first step in the development of effective prevention programmes. We therefore undertook a systematic review and meta-analysis to synthesise evidence for the prevalence and risk of violence against children with disabilities. **Methods:** For this systematic review and meta-analysis, we searched 12 electronic databases to identify cross-sectional, case-control, or cohort studies reported between Jan 1, 1990, and Aug 17, 2010, with estimates of prevalence of violence against children (aged ≤ 18 years) with disabilities or their risk of being victims of violence compared with children without disabilities. **Findings:** 17 studies were selected from 10 663 references. Reports of 16 studies provided data suitable for meta-analysis of prevalence and 11 for risk. Pooled prevalence estimates were 26.7% (95% CI 13.8—42.1) for combined violence measures, 20.4% (13.4—28.5) for physical violence, and 13.7% (9.2—18.9) for sexual violence. Odds ratios for pooled risk estimates were 3.68 (2.56—5.29) for combined violence measures, 3.56 (2.80—4.52) for physical violence, and 2.88 (2.24—3.69) for sexual violence. Huge heterogeneity was identified across most estimates ($I^2 > 75\%$). Variations were not consistently explained with meta-regression analysis of the characteristics of the studies. **Interpretation:** The results of this systematic review confirm that children with disabilities are more likely to be victims of violence than are their peers who are not disabled. However, the continued scarcity of robust evidence, due to a lack of well designed research studies, poor

standards of measurement of disability and violence, and insufficient assessment of whether violence precedes the development of disability, leaves gaps in knowledge that need to be addressed.

Keywords: Observational studies, Children, Disabilities, Risk of violence

Epidemiology

A5093: Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study

Author: Karen Barnett and others

Source: *Lancet*, 380, 9836 (July 7-13, 2012): 37 – 43

Abstract: **Background:** Long-term disorders are the main challenge facing health-care systems worldwide, but health systems are largely configured for individual diseases rather than multimorbidity. We examined the distribution of multimorbidity, and of comorbidity of physical and mental health disorders, in relation to age and socioeconomic deprivation. **Methods:** In a cross-sectional study we extracted data on 40 morbidities from a database of 1 751 841 people registered with 314 medical practices in Scotland as of March, 2007. We analysed the data according to the number of morbidities, disorder type (physical or mental), sex, age, and socioeconomic status. We defined multimorbidity as the presence of two or more disorders. **Findings:** 42·2% (95% CI 42·1—42·3) of all patients had one or more morbidities, and 23·2% (23·08—23·21) were multimorbid. Although the prevalence of multimorbidity increased substantially with age and was present in most people aged 65 years and older, the absolute number of people with multimorbidity was higher in those younger than 65 years (210 500 vs 194 996). Onset of multimorbidity occurred 10—15 years earlier in people living in the most deprived areas compared with the most affluent, with socioeconomic deprivation particularly associated with multimorbidity that included mental health disorders (prevalence of both physical and mental health disorder 11·0%, 95% CI 10·9—11·2% in most deprived area vs 5·9%, 5·8%—6·0% in least deprived). The presence of a mental health disorder increased as the number of physical morbidities increased (adjusted odds ratio 6·74, 95% CI 6·59—6·90 for five or more disorders vs 1·95, 1·93—1·98 for one disorder), and was much greater in more deprived than in less deprived people (2·28, 2·21—2·32 vs 1·08, 1·05—1·11). **Interpretation:** Our findings challenge the single-disease framework by which most health care, medical research, and medical education is configured. A complementary strategy is needed, supporting generalist clinicians to provide personalised, comprehensive continuity of care, especially in socioeconomically deprived areas.

Keywords: Epidemiology, Health care, Medical education, Morbidity

Fertility

A5098: Are children born after infertility treatment at increased risk of retinoblastoma?

Author: L Foix-L Helias and others

Source: Human Reproduction, 27, 7 (July, 2012): 2186-2192

Abstract: **BACKGROUND:** Retinoblastoma (RB) is the most frequent eye tumour in children, with an incidence of 1 in 15–20 000 births. It accounts for 11% of all cancers in the first year of life. Except for the hereditary forms, its causes are not well-known. Studies have recently suggested an increased risk of RB among children born after IVF, but the relevant literature is sparse. We assessed the association between infertility treatment, subfertility and RB. **METHODS:** We included all children living in France diagnosed with RB between 1 January 2000 and 31 December 2006 at the Institut Curie, the national reference centre for RB diagnosis and treatment. We used multiple logistic regression to compare them with a national sample of births in France in 1998 and 2003 (n = 28 170). **RESULTS:** The study included 244 non-familial RB cases. The risk of RB increased with maternal age [adjusted odds ratio (adj OR) = 2.07, 95% confidence interval (CI) 1.33–3.22 at 35–39 years compared with younger than 25 years and adj OR = 2.42, 95% CI 1.22–4.81 at 40 years or older], but the associations with IVF (adj OR = 1.37, 95% CI 0.64–2.95) and ovarian stimulation or intrauterine insemination (adj OR = 1.35, 95% CI 0.77–2.38) were not statistically significant after adjustment for maternal age and tobacco use. Among women who had no infertility treatment, the risk of RB was significantly increased when time to pregnancy exceeded 24 months (adj OR = 2.02, 95% CI 1.17–3.48) compared with time to pregnancy \leq 24 months. **CONCLUSIONS:** Our study did not observe a significantly increased risk of RB associated with infertility treatment, in particular with IVF. But we did find an increased risk for women for whom time to pregnancy exceeded 24 months.

Key words: Retinoblastoma, Infertility treatments, France

A5096: Guidelines for infertility counselling in different countries: Is there an emerging trend?

Author: Eric Blyth

Source: Human Reproduction, 27, 7 (July, 2012): 2046-2057

Abstract: **Background:** It is widely accepted that infertility and involuntary childlessness, and the decision to engage with assisted reproduction technology (ART) services as a patient, donor or surrogate can entail wide-ranging psychosocial issues. Psychosocial counselling has, therefore, become valued as an integral element of ART services. The objective of this study was to begin to map out what exists globally by the way of guidelines for infertility counselling. **Methods:** Data were analysed from formal guidelines produced by seven national infertility counselling bodies, onetransnational infertility counselling organization, reports of the American Society for Reproductive Medicine Ethics Committee and Practice Committee and the ESHRE Task Force on Ethics and Law. Additional sources of data were the International Infertility Counseling Organization and counselling colleagues internationally. **Results:** Four broad areas concerning contemporary practice in infertility counselling are identified: (i) the legal mandate for counselling; (ii) eligibility credentials for individuals carrying out professional counselling activities; (iii) different forms of counselling and (iv) counselling practice in relation to specific elements of assisted reproduction treatment. **Conclusions:** Internationally, the development of infertility guidelines is best described as a 'work in progress', although key trends are evident.

Key words: Counselling, Ethics, Psychology

Health Care

A5082: Heterogeneity in Depression Symptoms and Health Status Among Older Adults

Author: Pablo A. Mora and others

Source: Journal of Aging and Health, 24, 5 (August, 2012): 879-896

Abstract: **Objectives:** We assessed whether distinct classes of depression symptoms could be identified. In addition, we determined how these classes differed in terms of health status. **Methods:** Data were analyzed with latent profile analysis. MANOVA tests were used to compare the health status of the various classes. **Results:** A four-class model had the best fit. Classes were labeled according to participants' responses to the Center for Epidemiologic Studies–Depression Scale (CES-D) items and their overall score: low depression symptoms, high depression symptoms, subthreshold with anhedonia, and subthreshold with anhedonia and negative interpersonal feelings. Cross-sectional and longitudinal analyses showed that health status differed across classes. **Conclusions:** The results provide support for the idea that there is heterogeneity in the presentation of depression symptoms among older adults. These data showed that about a third of our sample of older adults reported increased levels of anhedonia and that negative interpersonal feelings were uncommon.

Keywords: Depression symptoms, Heterogeneity, Older adults, Latent profile analysis, Health status

A5084: Body Perceptions and Health Behaviors in an Online Bodybuilding Community

Author: Aaron C. T. Smith and Bob Stewart

Source: Qualitative Health Research, 22, 7 (July, 2012): 971-985

Abstract: In this article we explore the social constructions, body perceptions, and health experiences of a serious recreational and competitive bodybuilder and powerlifter community. Data were obtained from a discussion forum appearing within an online community dedicated to muscular development. Forum postings for a period of 36 months were transposed to QSR NVivo, in which a narrative-based analytical method employing Gee's coding approach was employed. We used a priori codes based on Bourdieu's multipronged conceptual categories of social field, habitus, and capital accumulation as a theoretical frame. Our results expose an extreme social reality held by a devoted muscle-building community with a fanatical obsession with muscular hypertrophy and any accouterment helpful in its acquisition, from nutrition and supplements to training regimes and anabolic androgenic substances. Few health costs were considered too severe in this muscular meritocracy, where the strong commanded deference and the massive dominated the social field.

Keywords: Body image, Ethnography, Health behaviors, Longitudinal studies, Social identity, Community

A5087: Patterns of Dating Violence across Adolescence

Author: Donna S. Martzolf and others

Source: Qualitative Health Research, 22, 9 (September, 2012): 1271-1283

Abstract: Adolescent dating violence (ADV) is a prevalent social and health problem associated with a number of adolescent risk behaviors and negative outcomes. The purpose of this study was to identify patterns of dating violence across adolescence. We used cross-case analysis to analyze interviews with 88 young adults (men and women aged 18 to 21) who were involved in violent dating relationships as teens. We identified four patterns of dating violence throughout adolescence. We also identified two patterns for adolescents who had only one violent relationship based on the length of the relationship—contained ADV and prolonged ADV—and two patterns for those who had multiple violent relationships based on the level of violence

severity—repetitive ADV and escalating ADV. Knowledge of these four patterns can be used to guide therapeutic interactions with teens and to develop pattern-specific prevention and intervention strategies.

Keywords: Adolescents, youth, Relationships, Primary partner, Violence

A5100: Challenges to changing health behaviours in developing countries: A critical overview

Author: Frances E. Aboud and Daisy R. Singla

Source: *Social Science & Medicine*, 75, 4 (August, 2012): 589–594

Abstract: This overview of recent research on health behaviour change in developing countries shows progress as well as pitfalls. In order to provide guidance to health and social scientists seeking to change common practices that contribute to illness and death, there needs to be a common approach to developing interventions and evaluating their outcomes. Strategies forming the basis of interventions and programs to change behaviour need to focus on three sources: theories of behaviour change, evidence for the success and failure of past attempts, and an in-depth understanding of one's audience. Common pitfalls are a lack of attention to the wisdom of theories that address strategies of change at the individual, interpersonal, and community levels. Instead, programs are often developed solely from a logic model, formative qualitative research, or a case-control study of determinants. These are relevant, but limited in scope. Also limited is the focus solely on one's specific behaviour; regardless of whether the practice concerns feeding children or seeking skilled birth attendants or using a latrine, commonalities among behaviours allow generalizability. What we aim for is a set of guidelines for best practices in interventions and programs, as well as a metric to assess whether the program includes these practices. Some fields have approached closer to this goal than others. This special issue of behaviour change interventions in developing countries adds to our understanding of where we are now and what we need to do to realize more gains in the future.

Keywords: Health behaviour change, Developing countries, Theories of behaviour change

A5101: Behaviour change communication targeting four health behaviours in developing countries: A review of change techniques

Author: Ciara Briscoe and Frances Aboud

Source: *Social Science & Medicine*, 75, 4 (August, 2012): 612–621

Abstract: Behaviour change communication is vital for increasing the enactment of particular behaviours known to promote health and growth. The techniques used to change behaviour are important for determining how successful the intervention is. In order to integrate findings from different interventions, we need to define and organize the techniques previously used and connect them to effectiveness data. This paper reviews 24 interventions and programs implemented to change four health behaviours related to child health in developing countries: the use of bed nets, hand washing, face washing and complementary feeding. The techniques employed are organized under six categories: information, performance, problem solving, social support, materials, and media. The most successful interventions use three or even four categories of techniques, engaging participants at the behavioural, social, sensory, and cognitive levels. We discuss the link between techniques and theories. We propose that program development would be more systematic if researchers considered a menu of technique categories appropriate for the targeted behaviour and audience when designing their studies.

Keywords: Behaviour change communication, Developing countries, Behaviour change techniques, Health behavior, Child health

A5102: Consumer preferences for household water treatment products in Andhra Pradesh, India

Author: Christine Poulos and others

Source: Social Science & Medicine, 75, 4 (August, 2012): 738–746

Abstract: Over 5 billion people worldwide are exposed to unsafe water. Given the obstacles to ensuring sustainable improvements in water supply infrastructure and the unhygienic handling of water after collection, household water treatment and storage (HWTS) products have been viewed as important mechanisms for increasing access to safe water. Although studies have shown that HWTS technologies can reduce the likelihood of diarrheal illness by about 30%, levels of adoption and continued use remain low. An understanding of household preferences for HWTS products can be used to create demand through effective product positioning and social marketing, and ultimately improve and ensure commercial sustainability and scalability of these products. However, there has been little systematic research on consumer preferences for HWTS products. This paper reports the results of the first state-of-the-art conjoint analysis study of HWTS products. In 2008, we conducted a conjoint analysis survey of a representative sample of households in Andhra Pradesh (AP), India to elicit and quantify household preferences for commercial HWTS products. Controlling for attribute non-attendance in an error components mixed logit model, the study results indicate that the most important

features to respondents, in terms of the effect on utility, were the type of product, followed by the extent to which the product removes pathogens, the retail outlet and, the time required to treat 10 L. Holding all other product attributes constant, filters were preferred to combination products and chemical additives. Department stores and weekly markets were the most favorable sales outlets, followed by mobile salespeople. In general, households do not prefer to purchase HWTS products at local shops. Our results can inform the types of products and sales outlets that are likely to be successful in commercial HWTS markets in AP, as well as the influence of different pricing and financing strategies on product demand and uptake.

Keywords: Conjoint analysis; In-home water treatment, Safe drinking water, Water treatment, Andhra Pradesh, India

A5117: Application of standard treatment guidelines in rural community health centres, Timor-Leste

Author: Michiyo Higuchi and others

Source: Health Policy and Planning, 27, 5 (August, 2012): 396-404

Abstract: **Objective:** To analyse nurses' and midwives' knowledge of and attitudes towards standard treatment guidelines (STGs), which were developed to help their practices at rural community health centres (CHCs) in Timor-Leste. **Methods:** Fifty-five nurses and midwives were individually interviewed. Data were analysed qualitatively using the Framework approach. **Results:** Overall, the standard treatments for acute respiratory tract infections, malaria and diarrhoea were well known by the respondents. Clinical nurses showed precise and detailed knowledge, especially for antibiotic use. The respondents were willing to use STGs and believed that they 'should' follow them. This feeling arose due to their self-awareness as frontline health workers and, at the same time, as peripheral civil servants. The changes brought about by the introduction of STGs were positively perceived. Three components of the change were observed: the concept, daily practice and perceived patient satisfaction. The respondents had previously felt a lack of confidence and hoped to improve their capacity as health care workers; they became confident in their practices by using STGs. Self-confidence was identified more clearly in the clinical nurse interviews. Few difficulties in using STGs were indicated, and the respondents suggested ways to deal with these difficulties. **Discussion:** By using the STGs, the nurses/midwives gained knowledge and self-confidence. The positive perception of the changes promoted further use of the STGs. Clinical nurse training positively influenced the knowledge of and attitudes towards the STGs. Few difficulties in applying STGs in daily practice were identified, which is contrary to previous studies that targeted physicians in the Western world. Development of STGs within a health policy framework was considered a key factor. The STGs

exist across related policies and various programmes, which are interconnected. The Timor-Leste experience indicates the value of STGs for non-physician health care providers at the primary health care level.

Key words: Standard treatment guidelines, Primary health care, Nurses, Health policy framework, Timor-Leste, Qualitative study

Health care technology and management

A5079: Public health systems analysis—the transfer of learning between developed and developing countries

Author: Colin Thunhurst

Source: Health Care Management Science, 15, 3 (September, 2012): 283-291

Abstract: This paper explores the role of systems thinking and operational research in furthering our understanding of and our control over complex public health systems. First, it tracks the evolution of our current perception and conceptual modelling of public health systems and the emerging recognition of the need for a whole systems approach. It gives examples of how methods of operational research, particularly those derivative of problem structuring methods, have been used to assist in clarifying the nature of the complexities that surround public health systems, identifying key change agents within public health systems, supporting these agents in making a meaningful contribution, and thereby planning and implementing effective interventions. These examples are drawn from work conducted within the public health systems of both developed and developing countries highlighting the importance of viewing the transfer of 'soft systems' technology as a two-way street with developed nations having (at least) as much to learn from their developing counterparts as they have to teach.

Keywords: Complex systems analysis, Public health systems, Whole systems approach, Problem structuring methods

Health policy and planning

A5074: Lessons from two decades of health reform in Central Asia

Author: B Rechel and others

Source: Health Policy and Planning, 27, 4 (July, 2012): 281-287

Abstract: Since becoming independent at the break-up of the Soviet Union in 1991, the countries of Central Asia have made profound changes to their health systems, affecting organization and governance, financing and delivery of care. The changes took place in a context of adversity, with major political transition, economic recession, and, in the case of Tajikistan, civil war, and with varying degrees of success. In this paper we review these experiences in this rarely studied part of the world to identify what has worked. This includes effective governance, the co-ordination of donor activities, linkage of health care restructuring to new economic instruments, and the importance of pilot projects as precursors to national implementation, as well as gathering support among both health workers and the public.

Key words: Health systems, Health policy, Health reform, Central Asia

A5075: Strategies for coping with the costs of inpatient care: a mixed methods study of urban and rural poor in Vadodara District, Gujarat, India

Author: Michael Kent Ranson

Source: Health Policy and Planning, 27, 4 (July, 2012): 326-338

Abstract: **Background:** In India, coping mechanisms for inpatient care costs have been explored in rural areas, but seldom among urbanites. This study aims to explore and compare mechanisms employed by the urban and rural poor for coping with inpatient expenditures, in order to help identify formal mechanisms and policies to provide improved social protection for health care. **Methods:** A three-step methodology was used: (1) six focus-group discussions; (2) 800 exit survey interviews with users of public and private facilities in both urban and rural areas; and (3) 18 in-depth interviews with poor (below 30th percentile of socio-economic status) hospital users, to explore coping mechanisms in greater depth. **Results:** Users of public hospitals, in both urban and rural areas, were poor relative to users of private hospitals. Median expenditures per day were much higher at private than at public facilities. Most respondents using public facilities (in both urban and rural areas) were able to pay out of their savings or income; or by borrowing from friends, family or employer. Those using private facilities were more likely to report selling land or other assets as the primary source of coping (particularly in rural areas) and they were more likely to have to borrow money at interest (particularly in urban areas). Poor individuals who used private facilities cited as reasons their closer proximity and higher perceived quality of care. **Conclusions:** In India, national and state governments should invest in improving the quality and access of public first-referral hospitals. This should be done selectively—with a focus, for example, on rural areas and urban slum

areas—in order to promote a more equitable distribution of resources. Policy makers should continue to explore and support efforts to provide financial protection through insurance mechanisms. Past experience suggests that these efforts must be carefully monitored to ensure that the poorer among the insured are able to access scheme benefits, and the quality and quantity of health care provided must be monitored and regulated.

Key words: Hospitalization, Expenditures, Coping strategies, Insurance

HIV/AIDS

A5076: Assessing the efficiency of mother-to-child HIV prevention in low- and middle-income countries using data envelopment analysis

Author: Sergio P. Santos and others

Source: Health Care Management Science, 15, 3 (September, 2012): 206-222

Abstract: AIDS is one of the most significant health care problems worldwide. Due to the difficulty and costs involved in treating HIV, preventing infection is of paramount importance in controlling the AIDS epidemic. The main purpose of this paper is to explore the potential of using Data Envelopment Analysis (DEA) to establish international comparisons on the efficiency of implementation of HIV prevention programmes. To do this we use data from 52 low- and middle-income countries regarding the prevention of mother-to-child transmission of HIV. Our results indicate that there is a remarkable variation in the efficiency of prevention services across nations, suggesting that a better use of resources could lead to more and improved services, and ultimately, prevent the infection of thousands of children. These results also demonstrate the potential strategic role of DEA for the efficient and effective planning of scarce resources to fight the epidemic.

Keywords: HIV prevention, DEA, Mother-to-Child HIV transmission

Hypertension

A5080: Loneliness as a Risk Factor for Hypertension in Later Life

Author: Yadollah Abolfathi Momtaz and others

Source: Journal of Aging and Health, 24, 4 (June, 2012): 696-710

Abstract: **Objective:** The present study aims to determine the impact of loneliness on hypertension in later life. **Method:** Data for this study are derived from a sample of 1,880 older Malaysians via a cross-sectional survey entitled "Patterns of Social Relationships and Psychological Well-Being Among Older Persons in Peninsular Malaysia." Loneliness is assessed by the PGCMS item, "How much do you feel lonely?" Data analysis is carried out using the Statistical Package for Social Sciences (SPSS) version 19.0. **Results:** Nearly one third of respondents report high level of loneliness. The overall prevalence of hypertension is 39% (95% CI = 36.9-41.3). Logistic regression, controlling for sociodemographic factors and several chronic medical conditions, shows that loneliness significantly increases likelihood of hypertension in later life (OR = 1.31, $p \leq .05$, 95% CI = 1.04-1.66). **Discussion:** The results show loneliness as a major risk factor for hypertension and call for health care professionals to be aware of the negative physiological effects of loneliness in old age.

Keywords: Aged, Hypertension, Loneliness, Malaysia

Influenza

A5118: Existing health inequalities in India: informing preparedness planning for an influenza pandemic

Author: Supriya Kumar and Sandra C Quinn

Source: Health Policy and Planning, 27, 6 (September, 2012): 516-526

Abstract: On 11 June 2009, the World Health Organization (WHO) declared that the world was in phase 6 of an influenza pandemic. In India, the first case of 2009 H1N1 influenza was reported on 16 May 2009 and by August 2010 (when the pandemic was declared over), 38 730 cases of 2009 H1N1 had been confirmed of which there were 2024 deaths. Here, we propose a conceptual model of the sources of health disparities in an influenza pandemic in India. Guided by a published model of the plausible sources of such disparities in the United States, we reviewed the literature for the determinants of the plausible sources of health disparities during a pandemic in India. We find that factors at multiple social levels could determine inequalities in the risk of exposure and susceptibility to influenza, as well as access to treatment once infected: (1) religion, caste and indigenous identity, as well as education and gender at the individual level; (2) wealth at the household level; and (3) the type of location, ratio of health care practitioners to population served, access to transportation and public spending on health care in the geographic area of residence. Such inequalities could lead to unequal levels of disease and death. Whereas causal factors can only be determined by testing the model when incidence and mortality data, collected in conjunction with socio-economic and geographic

factors, become available, we put forth recommendations that policy makers can undertake to ensure that the pandemic preparedness plan includes a focus on social inequalities in India in order to prevent their exacerbation in a pandemic.

Key words: India, Health inequalities, Disparities, Pandemic planning.

Maternal and Child Health

A5072: Waning Protection after Fifth Dose of Acellular Pertussis Vaccine in Children

Author: Nicola P. Klein and others

Source: New England Journal of Medicine, 367, 11 (September 13, 2012): 1012-1019

Abstract: **Background:** In the United States, children receive five doses of diphtheria, tetanus, and acellular pertussis (DTaP) vaccine before 7 years of age. The duration of protection after five doses of DTaP is unknown. **Methods:** We assessed the risk of pertussis in children in California relative to the time since the fifth dose of DTaP from 2006 to 2011. This period included a large outbreak in 2010. We conducted a case-control study involving members of Kaiser Permanente Northern California who were vaccinated with DTaP at 47 to 84 months of age. We compared children with pertussis confirmed by a positive polymerase-chain-reaction (PCR) assay with two sets of controls: those who were PCR-negative for pertussis and closely matched controls from the general population of health-plan members. We used logistic regression to examine the risk of pertussis in relation to the duration of time since the fifth DTaP dose. Children who received whole-cell pertussis vaccine during infancy or who received any pertussis-containing vaccine after their fifth dose of DTaP were excluded. **Results:** We compared 277 children, 4 to 12 years of age, who were PCR-positive for pertussis with 3318 PCR-negative controls and 6086 matched controls. PCR-positive children were more likely to have received the fifth DTaP dose earlier than PCR-negative controls ($P < 0.001$) or matched controls ($P = 0.005$). Comparison with PCR-negative controls yielded an odds ratio of 1.42 (95% confidence interval, 1.21 to 1.66), indicating that after the fifth dose of DTaP, the odds of acquiring pertussis increased by an average of 42% per year. **Conclusions:** Protection against pertussis waned during the 5 years after the fifth dose of DTaP.

Keywords: Children, Vaccine, Fifth Dose, Acellular Pertussis Vaccine

A5099: Linkages between maternal education and childhood immunization in India

Author: Kriti Vikram and others

Source: Social Science & Medicine, 75, 2 (July, 2012): 331–339

Abstract: While correlations between maternal education and child health have been observed in diverse parts of the world, the causal pathways explaining how maternal education improves child health remain far from clear. Using data from the nationally representative India Human Development Survey of 2004–5, this analysis examines four possible pathways that may mediate the influence of maternal education on childhood immunization: greater human, social, and cultural capitals and more autonomy within the household. Data from 5287 households in India show the familiar positive relationship between maternal education and childhood immunization even after extensive controls for socio-demographic characteristics and village- and neighborhood-fixed effects. Two pathways are important: human capital (health knowledge) is an especially important advantage for mothers with primary education, and cultural capital (communication skills) is important for mothers with some secondary education and beyond.

Keywords: Maternal education, Childhood immunization, Health knowledge, Social capital, Autonomy, India

A5113: How changes in coverage affect equity in maternal and child health interventions in 35 Countdown to 2015 countries: an analysis of national surveys

Author: Cesar G. Victora and others

Source: Lancet, 380, 9848 (September 29-October 05, 2012): 1149-1156

Abstract: **Background:** Achievement of global health goals will require assessment of progress not only nationally but also for population subgroups. We aimed to assess how the magnitude of socioeconomic inequalities in health changes in relation to different rates of national progress in coverage of interventions for the health of mothers and children. **Methods:** We assessed coverage in low-income and middle-income countries for which two Demographic Health Surveys or Multiple Indicator Cluster Surveys were available. We calculated changes in overall coverage of skilled birth attendants, measles vaccination, and a composite coverage index, and examined coverage of a newly introduced intervention, use of insecticide-treated bednets by children. We stratified coverage data according to asset-based wealth quintiles, and calculated relative and absolute indices of inequality. We adjusted correlation analyses for time between surveys and baseline coverage levels. **Findings:** We included 35 countries with surveys

done an average of 9·1 years apart. Pro-rich inequalities were very prevalent. We noted increased coverage of skilled birth attendants, measles vaccination, and the composite index in most countries from the first to the second survey, while inequalities were reduced. Rapid changes in overall coverage were associated with improved equity. These findings were not due to a capping effect associated with limited scope for improvement in rich households. For use of insecticide-treated bednets, coverage was high for the richest households, but countries making rapid progress did almost as well in reaching the poorest groups. National increases in coverage were primarily driven by how rapidly coverage increased in the poorest quintiles. **Interpretation:** Equity should be accounted for when planning the scaling up of interventions and assessing national progress.

Keywords: National surveys, Maternal health, Child health

A5114: Countdown to 2015: changes in official development assistance to maternal, newborn, and child health in 2009—10, and assessment of progress since 2003

Author: Justine Hsu and others

Source: Lancet, 380, 9848 (September 29-October 05, 2012): 1157-1168

Abstract: **Background:** Tracking of financial resources to maternal, newborn, and child health provides crucial information to assess accountability of donors. We analysed official development assistance (ODA) flows to maternal, newborn, and child health for 2009 and 2010, and assessed progress since our monitoring began in 2003. **Methods:** We coded and analysed all 2009 and 2010 aid activities from the database of the Organisation for Economic Co-operation and Development, according to a functional classification of activities and whether all or a proportion of the value of the disbursement contributed towards maternal, newborn, and child health. We analysed trends since 2003, and reported two indicators for monitoring donor disbursements: ODA to child health per child and ODA to maternal and newborn health per livebirth. We analysed the degree to which donors allocated ODA to 74 countries with the highest maternal and child mortality rates (Countdown priority countries) with time and by type of donor. **Findings:** Donor disbursements to maternal, newborn, and child health activities in all countries continued to increase, to \$6511 million in 2009, but slightly decreased for the first time since our monitoring started, to \$6480 million in 2010. ODA for such activities to the 74 Countdown priority countries continued to increase in real terms, but its rate of increase has been slowing since 2008. We identified strong evidence that targeting of ODA to countries with high rates of maternal mortality improved from 2005 to 2010. Targeting of ODA to child health also improved but to a lesser degree. The share of multilateral funding continued to decrease but, relative to bilaterals and global health initiatives, was better targeted. **Interpretation:** The

recent slowdown in the rate of funding increases is worrying and likely to partly result from the present financial crisis. Tracking of donor aid should continue, to encourage donor accountability and to monitor performance in targeting aid flows to those in most need.

Keywords: Maternal health, Newborn, Child health

Non-communicable Disease

A5095: Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy

Author: I-Min Lee and others

Source: Lancet, 380, 9838 (July 21-27, 2012): 219 – 229

Abstract: **Background:** Strong evidence shows that physical inactivity increases the risk of many adverse health conditions, including major non-communicable diseases such as coronary heart disease, type 2 diabetes, and breast and colon cancers, and shortens life expectancy. Because much of the world's population is inactive, this link presents a major public health issue. We aimed to quantify the effect of physical inactivity on these major non-communicable diseases by estimating how much disease could be averted if inactive people were to become active and to estimate gain in life expectancy at the population level. **Methods:** For our analysis of burden of disease, we calculated population attributable fractions (PAFs) associated with physical inactivity using conservative assumptions for each of the major non-communicable diseases, by country, to estimate how much disease could be averted if physical inactivity were eliminated. We used life-table analysis to estimate gains in life expectancy of the population. **Findings:** Worldwide, we estimate that physical inactivity causes 6% (ranging from 3·2% in southeast Asia to 7·8% in the eastern Mediterranean region) of the burden of disease from coronary heart disease, 7% (3·9–9·6) of type 2 diabetes, 10% (5·6–14·1) of breast cancer, and 10% (5·7–13·8) of colon cancer. Inactivity causes 9% (range 5·1–12·5) of premature mortality, or more than 5·3 million of the 57 million deaths that occurred worldwide in 2008. If inactivity were not eliminated, but decreased instead by 10% or 25%, more than 533 000 and more than 1·3 million deaths, respectively, could be averted every year. We estimated that elimination of physical inactivity would increase the life expectancy of the world's population by 0·68 (range 0·41–0·95) years. **Interpretation:** Physical inactivity has a major health effect worldwide. Decrease in or removal of this unhealthy behaviour could improve health substantially.

Keywords: Non-communicable diseases, Worldwide, Diseases

Pregnancy

A5104: Anaemia in Pregnancy: Magnitude of Problem and issues related to the low compliance of Iron-Folic Acid (IFA) tablets in slums of Vadodara city, Gjarat

Author: Shah A. R. and others

Source: Indian Practitioner, 65, 9 (September, 2012):548-552

Abstract: **Objective:** 1. To determine magnitude and severity of anaemia in pregnancy in study population (slums of Vadodara Municipal Corporation). 2. To determine the compliance of IFA tablets consumption in pregnant women and to find the causes of low compliance both social and clinical. 3. To identify the behavioural aspects of the problems- current practices and reasons behind the same. (Behavioural issues) **Research Questions:** 1. what is the severity of anaemia in pregnant women in slums of Vadodara City? 2. What are the behaviours or reasons for low compliance of IFA tablet consumption? **Material and Methods:** 60 anganwadies were selected from the total existing 137 anganwadies run by the Vadodara Municipal Corporation under ICDS. 566 pregnant women of second trimester were selected from above 60 anganwadies for interview and haemoglobin estimation. Pre-tested semi-structured proformae was canvassed to these 266 pregnant women and Haemoglobin was estimated by using Haemo-Cue. **Results:** Overall prevalence of anaemia in the studied women was observed to be 69.2% mostly in the second trimester of pregnancy. Only 72.6% of the studied women had taken and consumed IFA tablets. Others had not consumed IFA tablets because of so many reasons like lack of awareness of IFA tablets, side effects of IFA tablets, laziness to take IFA tablets, lack of time to take IFA tablets, lack of ANC, migration (arriving to new place) etc.

Keywords: Anaemia, Pregnant women, IFA tablets.

Psychology

A5085: When the Risks Are High: Psychological Adjustment among Melanoma Survivors at High Risk of Developing New Primary Disease

Author: Jordana McLoone and others

Source: Qualitative Health Research, 22, 8 (August, 2012): 1102-1113

Abstract: In this study we explored the psychosocial experiences of melanoma survivors at high risk of developing new primary disease. A total of 20 survivors (9 men, 11 women, mean age 57.6 years) completed a semistructured telephone interview, exploring melanoma-related

beliefs and experiences, psychological adjustment to melanoma risk, and supportive care needs. Participants perceived melanoma as potentially terminal and reported persistent worries about the possibility of developing new or metastatic disease. Fear of developing a new melanoma endured for years after treatment completion and, for some, created a pervasive sense of uncertainty. Still, not a single participant sought formal emotional support to address his or her melanoma-related concerns. Belief in the benefits of early intervention, including self- and clinical skin examination, provided a sense of control and a recommended course of action in an otherwise uncontrollable situation. The expertise of the High Risk Clinic physicians was perceived as instrumental in creating a sense of reassurance.

Keywords: Cancer-Psychosocial aspects, Cancer- screening and prevention, Primary disease, Uncertainty, Melanoma Survivors

Tuberculosis

A5077: Worldwide investigation of tuberculosis epidemics

Author: Christine S. M. Currie and Kathryn A. Hoad

Source: Health Care Management Science, 15, 3 (September, 2012): 223-238

Abstract: We analyse the tuberculosis (TB) epidemics of 211 countries with a view to proposing more efficient and targeted TB control strategies. Countries are classified by how their TB case notification rates have evolved over time and the age distribution of those suffering from active TB disease in 2008. Further analysis of key statistics associated with each of the countries shows the impact of different indicators. As expected, HIV is a key driver of TB epidemics and affects their age-distribution and their scale. The level of development of a country and its wealth also vary with the shape and scale of a country's TB epidemic. Immigration has an influence on the shape of TB epidemics, which is particularly pronounced in highly developed countries with low levels of TB disease in the native population. We conclude by proposing how the TB control programme in each country analysed should prioritise its efforts.

Keywords: Health service, Statistics, Cluster analysis, Resource management, Tuberculosis

A5078: Modelling the impacts of new diagnostic tools for tuberculosis in developing countries to enhance policy decisions

Author: Ivor Langley and others

Source: Health Care Management Science, 15, 3 (September, 2012): 239-253

Abstract: The introduction and scale-up of new tools for the diagnosis of Tuberculosis (TB) in developing countries has the potential to make a huge difference to the lives of millions of people living in poverty. To achieve this, policy makers need the information to make the right decisions about which new tools to implement and where in the diagnostic algorithm to apply them most effectively. These decisions are difficult as the new tools are often expensive to implement and use, and the health system and patient impacts uncertain, particularly in developing countries where there is a high burden of TB. The authors demonstrate that a discrete event simulation model could play a significant part in improving and informing these decisions. The feasibility of linking the discrete event simulation to a dynamic epidemiology model is also explored in order to take account of longer term impacts on the incidence of TB. Results from two diagnostic districts in Tanzania are used to illustrate how the approach could be used to improve decisions.

Keywords: Developing Countries, Simulation, Transmission modeling, Cost effectiveness, Tuberculosis

A5116: Linezolid for Treatment of Chronic Extensively Drug-Resistant Tuberculosis

Author: Myungsun Lee and others

Source: New England Journal of Medicine, 367, 16 (October 18, 2012): 1508-1518

Abstract: **Background:** Linezolid has antimycobacterial activity in vitro and is increasingly used for patients with highly drug-resistant tuberculosis. **Methods:** We enrolled 41 patients who had sputum-culture-positive extensively drug-resistant (XDR) tuberculosis and who had not had a response to any available chemotherapeutic option during the previous 6 months. Patients were randomly assigned to linezolid therapy that started immediately or after 2 months, at a dose of 600 mg per day, without a change in their background regimen. The primary end point was the time to sputum-culture conversion on solid medium, with data censored 4 months after study entry. After confirmed sputum-smear conversion or 4 months (whichever came first), patients underwent a second randomization to continued linezolid therapy at a dose of 600 mg per day or 300 mg per day for at least an additional 18 months, with careful toxicity monitoring. **Results:** By 4 months, 15 of the 19 patients (79%) in the immediate-start group and 7 of the 20 (35%) in the delayed-start group had culture conversion ($P=0.001$). Most patients (34 of 39 [87%]) had a negative sputum culture within 6 months after linezolid had been added to their drug regimen. Of the 38 patients with exposure to linezolid, 31 (82%) had clinically significant adverse events that were possibly or probably related to linezolid, including 3

patients who discontinued therapy. Patients who received 300 mg per day after the second randomization had fewer adverse events than those who continued taking 600 mg per day. Thirteen patients completed therapy and have not had a relapse. Four cases of acquired resistance to linezolid have been observed. **Conclusions:** Linezolid is effective at achieving culture conversion among patients with treatment-refractory XDR pulmonary tuberculosis, but patients must be monitored carefully for adverse events.

Keywords: Tuberculosis, Linezolid, Drug-resistant tuberculosis, Antimycobacterial

Women Health

A5086: Experience of Emotional Distress among Women with Scleroderma

Author: Evan G. Newton and others

Source: Qualitative Health Research, 22, 9 (September, 2012): 1195-1206

Abstract: Emotional distress is common among patients with chronic medical illnesses, but the nature of the distress is not well understood. Our objective was to understand patients' experiences of emotional distress by conducting in-depth interviews using the McGill Illness Narrative Interview with women affected by scleroderma (N = 16). We sought to determine how participants described their distress, what they believed caused it, and how they coped. We analyzed interview transcripts using thematic analysis. Many participants described distress associated with scleroderma, but the term depression was reserved for extraordinary, severe experiences. Instead, participants preferred more normal mood descriptors and often viewed their distress in keeping with the definition of "demoralization." Participants listed concrete symptoms and experiences that caused distress, and some added that stress could exacerbate scleroderma. Participants dealt with distress by not dwelling on their circumstances and working to maintain autonomy. Most preferred to not rely on psychologists and support groups.

Keywords: Coping and adaptation, Depression, Disfigurement, Illness and disease, Emotional Distress, psychiatry

A5097: Effect of diet and exercise on markers of endothelial function in overweight and obese women with polycystic ovary syndrome

Author: R.L. Thomson and others

Source: Human Reproduction, 27, 7 (July, 2012): 2169-2176

Abstract: **Background:** Women with polycystic ovary syndrome (PCOS) present with vascular abnormalities, including elevated markers of endothelial dysfunction. There is limited evidence for the effect of lifestyle modification and weight loss on these markers. The aim of this study was to determine if 20 weeks of a high-protein energy-restricted diet with or without exercise in women with PCOS could improve endothelial function. **Methods:** This is a secondary analysis of a subset of 50 overweight/obese women with PCOS (age: 30.3 ± 6.3 years; BMI: 36.5 ± 5.7 kg/m²) from a previous study. Participants were randomly assigned by computer generation to one of three 20-week interventions: diet only (DO; n = 14, ~6000 kJ/day), diet and aerobic exercise (DA; n = 16, ~6000 kJ/day and five walking sessions/week) and diet and combined aerobic-resistance exercise (DC; n = 20, ~6000 kJ/day, three walking and two strength sessions/week). At Weeks 0 and 20, weight, markers of endothelial function [vascular cell adhesion molecule-1 (sVCAM-1), inter-cellular adhesion molecule-1 (sICAM-1), plasminogen activator inhibitor-1 (PAI-1) and asymmetric dimethylarginine (ADMA)], insulin resistance and hormonal profile were assessed. **Results:** All three treatments resulted in significant weight loss (DO $7.9 \pm 1.2\%$, DA $11.0 \pm 1.6\%$, DC 8.8 ± 1.1 ; $P < 0.001$ for time; $P = 0.6$ time \times treatment). sVCAM-1, sICAM-1 and PAI-1 levels decreased with weight loss ($P \leq 0.01$), with no differences between treatments ($P \geq 0.4$). ADMA levels did not change significantly ($P = 0.06$). Testosterone, sex hormone-binding globulin and the free androgen index (FAI) and insulin resistance also improved ($P < 0.001$) with no differences between treatments ($P \geq 0.2$). Reductions in sVCAM-1 were correlated to reductions in testosterone ($r = 0.32$, $P = 0.03$) and FAI ($r = 0.33$, $P = 0.02$) as well as weight loss ($r = 0.44$, $P = 0.002$). Weight loss was also associated with reductions in sICAM-1 ($r = 0.37$, $P = 0.008$). **Conclusions:** Exercise training provided no additional benefit to following a high-protein, hypocaloric diet on markers of endothelial function in overweight/obese women with PCOS.

Keywords: Polycystic ovary syndrome, Endothelial, Vascular, Cardiovascular, Diet

A5103: Menopause in Mumbai- Where are we today?

Author: Ankita Gupta and Reena J. Wani

Source: Indian Practitioner, 65, 9 (September, 2012):535-539

Abstract: **Objective:** To identify the awareness and source of awareness regarding menopause and its treatment options among women in Mumbai, India. Also to determine whether women in Mumbai are willing to accept treatment, the type of treatment they are willing to accept and the reasons for declining treatment for menopause. **Methods:** 400 self constructed, semi

structured questionnaires were distributed to women in the outpatient department of a tertiary hospital as well as residences all over Mumbai, India as part of a cross sectional study. **Result:** This study found that the average age of menopause was 45.78 years. 42% of subjects had received knowledge about menopause from family members, 33% from peers and less than 20% from doctors, media and other sources. While 54% of subjects were aware about treatment options for menopause, 58% said they would accept treatment, if advised. More than ½ the subjects were willing to eat calcium tablets while less than 20% were willing to try lifestyle changes and hormone replacement therapy. 55% of subjects had received their knowledge about treatment options from their family physician with peers and family members playing a less significant role. Of the 40% who refused treatment, majority felt that menopause is a natural process and does not require treatment while 30% were afraid of side effects of the drugs. **Conclusion:** In Mumbai, the most common source of awareness about menopause is family member while physicians spread the most awareness about treatment options about menopause. Most women will be willing to eat calcium tablets as compared to other treatment modalities and the most frequent reason to avoid treatment is due to the perception of menopause as a natural process that does not require treatment.

Keywords: Source of awareness, Menopause, Treatment, Age

A5106: Psychological stress and reproductive aging among pre-menopausal women

Author: M.E. Bleil and others

Source: Human Reproduction, 27, 9 (September, 2012): 2720-2728

Abstract: **Background:** Life history models suggest that biological preparation for current versus longer term reproduction is favored in environments of adversity. In this context, we present a model of reproductive aging in which environmental adversity is proposed to increase the number of growing follicles at the cost of hastening the depletion of the ovarian reserve over time. We evaluated this model by examining psychological stress in relation to reproductive aging indexed by antral follicle count (AFC), a marker of total ovarian reserve. We hypothesized that stress would be related to (i) higher AFC in younger women, reflecting greater reproductive readiness as well as (ii) greater AFC loss across women, reflecting more accelerated reproductive aging. **Methods:** In a multi-ethnic, community sample of 979 participants [ages 25–45 (mean (standard deviation) = 35.2 (5.5)); 27.5% Caucasian] in the Ovarian Aging study, an investigation of the correlates of reproductive aging, the interaction of age-x-stress was assessed in relation to AFC to determine whether AFC and AFC loss varied across women experiencing differing levels of stress. Stress was assessed by the perceived stress scale and AFC was assessed by summing the total number of antral follicles visible by

transvaginal ultrasound. **Results:** In linear regression examining AFC as the dependent variable, covariates (race/ethnicity, socio-economic status, menarcheal age, hormone-containing medication for birth control, parity, cigarette smoking, bodymass index, waist-to-hip ratio) and age were entered on step 1, stress on step 2 and the interaction term (age-x-stress) on step 3. On step 3, significant main effects showed that older age was related to lower AFC ($b = -0.882$, $P = 0.000$) and greater stress was related to higher AFC ($b = 0.545$, $P = 0.005$). Follow-up analyses showed that the main effect of stress on AFC was present in the younger women only. A significant interaction term ($b = -0.036$, $P = 0.031$) showed the relationship between age and AFC varied as function of stress. When the sample was divided into tertiles of stress, the average follicle loss was -0.781 , -0.842 and -0.994 follicles/year in the low-, mid- and high-stress groups, respectively. **Conclusions:** Psychological stress was related to higher AFC among younger women and greater AFC decline across women, suggesting that greater stress may enhance reproductive readiness in the short term at the cost of accelerating reproductive aging in the long term. Findings are preliminary, however, due to the cross-sectional nature of the current study.

Key words: Life history theory, Psychological stress, Reproductive aging, Ovarian reserve, Antral follicle count

A5120: Biological characterization of non-steroidal progestins from botanicals used for women's health

Author: M.F. Toh and others

Source: *Steroids*, 77, 7 (June, 2012): 765–773

Abstract: Progesterone plays a central role in women's reproductive health. Synthetic progestins, such as medroxyprogesterone acetate (MPA) are often used in hormone replacement therapy (HRT), oral contraceptives, and for the treatment of endometriosis and infertility. Although MPA is clinically effective, it also promiscuously binds to androgen and glucocorticoid receptors (AR/GR) leading to many undesirable side effects including cardiovascular diseases and breast cancers. Therefore, identifying alternative progestins is clinically significant. The purpose of this study was to biologically characterize non-steroidal progestins from botanicals by investigating their interaction and activation of progesterone receptor (PR). Eight botanicals commonly used to alleviate menopausal symptoms were investigated to determine if they contain progestins using a progesterone responsive element (PRE) luciferase reporter assay and a PR polarization competitive binding assay. Red clover extract stimulated PRE-luciferase and bound to PR. A library of purified compounds previously isolated from red clover was screened using the luciferase reporter assay. Kaempferol identified

in red clover and a structurally similar flavonoid, apigenin, bound to PR and induced progestogenic activity and P4 regulated genes in breast epithelial cells and human endometrial stromal cells (HESC). Kaempferol and apigenin demonstrated higher progestogenic potency in the HESC compared to breast epithelial cells. Furthermore, phytoprogestins were able to activate P4 signaling in breast epithelial cells without downregulating PR expression. These data suggest that botanical extracts used for women's health may contain compounds capable of activating progesterone receptor signaling.

Keywords: Progesterone receptor, Red clover, Flavonoid, Kaempferol, Apigenin, Naringenin

A5121: Differential expression of placental 11 β -hydroxysteroid dehydrogenases in pregnant women with diet-treated gestational diabetes mellitus

Author: Rong Ma and others

Source: *Steroids*, 77, 7 (June, 2012): 798–805

Abstract: Fetal exposure to excess glucocorticoid is one of the critical factors for the fetal origins of adult diseases. However, the mechanism of the local regulation of glucocorticoid activity in the human placenta of pregnancies complicated with gestational diabetes mellitus (GDM) has not been fully understood. We investigated placental 11 β -hydroxysteroid dehydrogenases (11 β -HSDs) expression, and analyzed their relationship with cortisol levels in maternal and umbilical vein. Pregnant women with GDM after diet intervention (n = 23) or normal glucose tolerance (NGT, n = 22) were studied at the community-based hospital. We collected maternal and umbilical venous cord blood and placental tissues from both groups. Explanted placentas from NGT were cultured with palmitic acid, dexamethasone, insulin or their mixture for 24-h. We examined plasma cortisol, cortisone to cortisol ratio, insulin, the homeostasis model assessment of insulin resistance index (HOMA-IR) and the insulin secretion index. Quantitative real-time PCR, Western blot and immunohistochemical assay were applied for the measurement of 11 β -HSD1 and 11 β -HSD2 mRNA and protein. GDM had higher maternal cortisol levels, HOMA-IR, insulin secretion index and higher cortisone to cortisol ratio in umbilical vein. No significant change in cortisol levels in umbilical vein and newborn weight was found. GDM placental 11 β -HSD1 levels decreased while 11 β -HSD2 increased. Treatment of placenta explants from NGT with palmitic acid, dexamethasone, insulin or their combination resulted in a significant drop of 11 β -HSD1 and increase in 11 β -HSD2. Differential expression of 11 β -HSDs in diet-treated GDM placenta provides a protective mechanism for the fetus throughout the adverse environment of pregnancy by limiting excessive exposure of the fetus to glucocorticoid.

Keywords: Cortisol, Glucocorticoid barriers, Fetal environment, Insulin resistance, Metabolic syndrome

A5122: Cooking with biomass increases the risk of depression in pre-menopausal women in India

Author: Madhuchhanda Banerjee and others

Source: *Social Science & Medicine*, 75, 3 (August, 2012): 565–572

Abstract: Cooking with biomass fuel, a common practice in rural India, is associated with a high level of indoor air pollution (IAP). The aim of this study was to investigate whether IAP from biomass burning increases the risk of depression. For this cross-sectional study, we enrolled a group of 952 women (median age 37 years) who cooked regularly with biomass and a control group of 804 age-matched women who cooked with cleaner fuel (liquefied petroleum gas). Depression was assessed using the second edition of Beck's depression inventory (BDI-II). Platelet P-selectin expression was assessed by flow cytometry and platelet serotonin was measured by ELISA. Particulate matter having diameter of less than 10 and 2.5 μm (PM10 and PM2.5, respectively) in indoor air was measured by real-time aerosol monitor. Carbon monoxide (CO) in exhaled breath was measured by CO monitor. Compared with the control group, women who cooked with biomass had a higher prevalence of depression and depleted platelet serotonin, suggesting altered serotonergic activity in the brain. In addition, P-selectin expression on platelet surface was up-regulated implying platelet hyperactivity and consequent risk of cardiovascular disease. Biomass-using households had increased levels of PM10 and PM2.5, and biomass users had elevated levels of CO in expired air. Controlling potential confounders, cooking with biomass was found to be an independent and strong risk factor for depression. IAP from cooking with biomass is a risk for depression among rural women in their child-bearing age.

Keywords: Biomass, Cooking, Depression, Pre-menopausal women, India

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