**Prebirth steroids and baby lungs**

Most of you will be familiar with the logo of the Cochrane Collaboration, consisting of a blue circle with a vertical line crossed by some bars with a diamond shape at the bottom. This is the Forest plot of a meta-analysis carried out by Iain Chalmers et al of trials concerning prenatal corticosteroids to improve outcomes in very premature infants. All of it was groundbreaking at the time: the idea of meta-analysis, this way of visualising its results, and the fact that giving steroids to mothers could save thousands of tiny babies. These methods are still basic to evidence based medicine, but so is the principle that a single well conducted and adequately powered randomised trial can give a reliable answer in one go. Here is one such, and again it relates to giving mothers a corticosteroid to prevent respiratory distress in premature babies. But this time the babies were further on in gestation: 34-37 weeks, and the steroid given was parenteral betamethasone. The effect was modest—a 2.8% absolute reduction in the composite outcome of severe events. But a definite benefit from a cheap and harm-free intervention.


**Bariatric blessings last**

The “objective” benefits of bariatric surgery, such as remission of diabetes and increase in life expectancy, tend to dominate academic discussion, whereas for patients the immediate subjective benefits (or problems) are all important. There is no doubt that these procedures are life changing, and overwhelmingly for the better. In an observational cohort study at 10 US hospitals, clinically meaningful improvements were shown in 57.6% of participants for bodily pain, 76.5% for physical function, and 59.5% for walk time at one year. Additionally, among participants with severe knee pain or disability (n=633) or hip pain or disability (n=500) at baseline, more than three quarters experienced joint specific improvements in knee pain and in hip function. Over the next two years, there was a slight decrease in the effect on pain and function but not on walk time and joint symptoms.


**The walk-friendly city**

Walking deficiency disorder is Muir Gray’s pet target at the moment. I may be perverse in believing that country life is the great enemy of walking. You only have the same paths to go on, and they are generally muddy; you need a lot of motivation to make walking part of your life. In a city such as London, you routinely have to travel miles on foot unless you go everywhere by taxi. But the International Physical activity and Environment Network (IPEN) finds that not all cities are equal. Across 14 cities on five continents, the difference in physical activity between participants living in the most and least activity-friendly neighbourhoods ranged from 68 min/week to 89 min/week, which represents 45-59% of the 150 min/week recommended by guidelines.


**Pred for gout**

In case any of you didn’t know, a short course of steroids relieves gout very effectively. In this simple head-on comparison with indometacin, patients were selected by clinical criteria for the diagnosis of acute gout, and as the study was conducted in the former British colony of Hong Kong, the steroid used was prednisolone, rather than prednisone, which features in all US studies. Fortunately, the two drugs do much the same at the same doses. This may be the first adequate trial, but I used prednisolone in practice for gout over two decades in patients who could not take non-steroidal anti-inflammatory drugs, mostly because they had heart failure and could not tolerate colchicine. Safety trials in this population would be welcome.


**All the fruit in China**

I regard the civilisation of China with distant awe and wonder and I eat its food with pleasure, but I have never eaten any distinctively Chinese fruit except for the lychee and the “Chinese gooseberry,” which changed nationality and became the Kiwi fruit three decades ago. I have to say that if these were the only fruits, I would probably eat as little fresh fruit as the average person in China, where only 18% of the population eat any on a daily basis. Such highly atypical people are described in a big epidemiological survey overseen by luminaries from Oxford. The adjusted hazard ratios for daily consumption versus non-consumption were 0.60 for cardiovascular death and 0.66, 0.75, and 0.64, respectively, for incident major coronary events, ischaemic stroke, and haemorrhagic stroke. There was a strong log-linear dose-response relation between the incidence of each outcome and the amount of fresh fruit consumed. Perhaps the best way to improve the cardiovascular health of Chinese people would be to plant orchards and vineyards on every plain and every mountain that rises through the mists of the Middle Kingdom. I’d be happy to volunteer.


---

**FROM THE JOURNALS** Edited highlights of Richard Lehman’s blog on http://bmj.co/Lehman
Changes in mortality inequalities over two decades

Mackenbach JP, Kuhlnová I, Artnik B, et al

Cite this as: BMJ 2016;353:i1732

Find this at: http://dx.doi.org/10.1136/bmj.i1732

Study question Have government efforts to reduce socioeconomic inequalities in health in European countries actually made a difference?

Methods In a register based study, mortality data were harmonised by level of education and occupational class, usually collected in a census linked longitudinal study design. For this analysis, we selected all European countries for which data on socioeconomic inequalities in mortality were available for the approximate period between years 1990 and 2010. These included Finland, Norway, Sweden, Scotland, England and Wales (data applied to both together), France, Switzerland, Spain (Barcelona), Italy (Turin), Slovenia, and Lithuania. Changes in mortality were compared between the lowest and highest socioeconomic groups, and their effect on absolute and relative inequalities in mortality was calculated.

Study answer and limitations Substantial reductions in mortality were seen in lower socioeconomic groups in most of the countries covered by this study. Relative inequalities in mortality widened almost universally, because percentage declines were usually smaller in lower socioeconomic groups. However, as absolute declines were often smaller in higher socioeconomic groups, absolute inequalities narrowed by up to 35%, particularly among men. Narrowing of inequalities was partly driven by ischaemic heart disease, smoking related causes, and causes amenable to medical intervention. Progress in reducing absolute inequalities was greatest in Spain (Barcelona), Scotland, England and Wales, and Italy (Turin), and absent in Finland and Norway. More detailed studies preferably using individual level data are necessary to identify the causes of these variations.

What this study adds Over the past two decades, trends in inequalities in mortality have been more favourable in most European countries than is commonly assumed. Absolute inequalities have reduced in several countries, probably more as a side effect of population wide behavioural changes and improvements in prevention and treatment, than as an effect of policies explicitly aimed at reducing health inequalities.

Funding, competing interests, data sharing This study was supported by a grant (FP7-CF-FP grant no 278511) from the European Commission Research and Innovation Directorate General, as part of the “Developing methodologies to reduce inequalities in the determinants of health” (DEMETRIQ) project. The authors declare no other competing interests. Further data can be found at the project’s website at www.demetriq.eu.
Clinical features and neuroimaging findings (CT and MRI) in presumed Zika virus related congenital infection and microcephaly

de Fatima Vasco Aragao M, Van der Linden V, Brainer-Lima AM, et al

Cite this as: BMJ 2016;353:i1901
Find this at: http://dx.doi.org/10.1136/bmj.i1901

Study question What are the radiological findings observed in computed tomography (CT) and magnetic resonance imaging (MRI) scans of children with presumed Zika virus related congenital infection and microcephaly?

Methods The CT or MRI scans, or both of 23 children with a diagnosis of presumed Zika virus related congenital infection, during the Brazilian microcephaly epidemic, were retrospectively reviewed to identify radiological abnormalities characteristic of this congenital infection.

Study answer and limitations Of the 22 patients who underwent CT, all had calcifications in the junction between cortical and subcortical white matter, 21 (95%) had malformations of cortical development, 20 (91%) had decreased brain volume, 19 (86%) had ventriculomegaly, and 11 (50%) had cerebellum or brainstem hypoplasia. Of the eight children who underwent MRI, all had calcifications in the junction between cortical and subcortical white matter, malformations of cortical development (predominantly in the frontal lobes), and ventriculomegaly. Seven of eight children (88%) had enlarged cisterna magna, seven (88%) delayed myelination, and six each (75%) had a moderate to severe decrease in brain volume, a simplified gyral pattern, and abnormalities of the corpus callosum (38% hypogenesis and 38% hypoplasia).

The severity of microcephaly and the age of the children sometimes made it difficult to interpret the small brain structures on imaging. Only a third of the children underwent MRI, mainly because of the costs of this procedure and because it was not in the Brazilian Health Ministry’s protocol, being performed only when indicated.

What this study adds The radiological pattern was characterised by brain calcifications mainly at the junction between cortical and subcortical white matter associated with malformations of cortical development, with predominance of pachygyria or polymicrogyria (malformations of cerebral cortical development) in the frontal lobes. Other common findings were an enlarged cisterna magna, corpus callosum abnormalities, ventriculomegaly, delayed myelination, and cerebellum and brainstem hypoplasia.

Funding, competing interests, data sharing This study received no funding and there are competing interests. The full dataset is available from the corresponding author (fatima.vascoaragao@gmail.com).
Dietary fats: a new look at old data

Re-evaluation of the traditional diet-heart hypothesis

Ramsden CR, Zamora D, Majchrzak-Hong S, et al

Methods The Minnesota Coronary Experiment (MCE; n=9570) was a double blind randomised controlled trial conducted in 1968-73. Participants from state mental hospitals and a nursing home were followed for up to 4.5 years. The intervention group diet replaced saturated fat with vegetable oil rich in linoleic acid; the control group diet was high in saturated fat. MCE unpublished documents and raw data were recovered and analyzed according to hypotheses prespecified by original investigators. A systematic review and meta-analyses of randomised controlled trial that lowered serum cholesterol by providing vegetable oil rich in linoleic acid in place of saturated fat (without confounding by concomitant interventions) was also carried out.

Study answer and limitation Although the intervention diet lowered serum cholesterol, there was no benefit on coronary events or deaths. Serum cholesterol lowering was associated with higher, rather than lower, risk of death. In meta-analysis (n=10808), there was no indication of benefit from replacing saturated fat with vegetable oils rich in linoleic acid. The MCE design and generalisability considerations preclude strong conclusions. Only five randomised controlled trials have specifically tested whether replacing saturated fat with vegetable oil rich in linoleic acid reduces coronary events and deaths.

What this study adds Available evidence from randomised controlled trials does not provide support for the central diet-heart tenet that the serum cholesterol lowering effects of replacing saturated fat with linoleic acid translate to reduced risks of coronary heart disease and death.

Funding, competing interests, data sharing The MCE was funded by the US Public Health Service and the National Heart Institute. The National Institutes of Health and the University of North Carolina Program on Integrative Medicine supported data recovery and evaluation. No competing interests reported. Send data requests to corresponding author.

COMMENTARY Replacing saturated fat with polyunsaturated fat might not prolong life

It is widely accepted that diets rich in polyunsaturated fats protect against heart disease. Recently, the Global Burden of Disease team reported that each year insufficient intake of omega-6 polyunsaturated fats, the most common subgroup of polyunsaturated fats, results in over 700 000 deaths from coronary heart disease.1 Or does it? A linked study by Ramsden and colleagues (doi:10.1136/bmj.i1246) adds to the doubts around the health benefits of replacing saturated fat with polyunsaturated fats.2

Their re-examination of 45 year old data showed that a diet enriched with linoleic acid lowered serum cholesterol concentration. But it did not reduce mortality; in fact participants in the intervention group had a higher mortality than controls. The pooled results of the MCE and four similar trials failed to find any reduction in mortality from coronary heart disease.3-6 These unexpected results proved difficult to stomach for researchers at the time. The trial ended in 1973, but it took until 1989 for the results to be published.2 The authors reported no differences between the treatment and control groups for cardiovascular events, cardiovascular deaths, or total mortality, but immediately added that “a favorable trend for all these end-points occurred in some younger age groups.” In contrast, Ramsden and colleagues now suggest the possibility of increased risk of death in older adults among the participants given more linoleic acid.2 The findings of the two teams of authors do not differ fundamentally, but their interpretation does.

In the past decade, old certainties regarding dietary fats have been questioned, and some have been abandoned. Last year, US dietary guidelines removed dietary cholesterol and total fat as risk factors worth worrying about.7 With these new findings,2,9 the recommendation to consume less than 10% of calories per day from saturated fats will be under increased scrutiny.10 How did researchers come to believe so firmly in the “diet-heart hypothesis,” which holds that eating foods high in cholesterol and saturated fat leads to heart disease? In the first half of the 20th century, experiments with rabbits and international comparative studies led to the belief that diets low in fat were good for heart health. In the 1950s and 1960s it became clear that not all fats were equal. Experiments showed that saturated fat increased and polyunsaturated fat decreased plasma cholesterol concentrations. Higher concentrations were associated with a greater risk of heart disease. It followed that polyunsaturated fats were good and saturated fat was bad for the heart. Effects on serum concentrations of low density lipoprotein and high density lipoprotein cholesterol were paramount in decisions on dietary guidelines.8-11 But if blood cholesterol values are not a reliable indicator of cardiovascular risk, then a careful review of the evidence that underpins dietary recommendations is warranted. Ideally, recommendations should be based on clinical outcomes, not surrogates such as cholesterol concentration.11

Unfortunately, clinical outcomes do not point uniformly in the same direction in all studies.2,13 The benefits of choosing polyunsaturated fat over saturated fat now seem a little less certain than we thought. While we wait for further clarification, we should continue to eat more fish, fruits, vegetables, and whole grains while avoiding salt, sugar, and industrial trans fats. We should also avoid overeating.