

## General

### Association between changes in carbohydrate intake and long term weight changes: prospective cohort study

The role of carbohydrate intake on weight gain and obesity is controversial. In this large prospective cohort study, 136,432 participants aged 65 years or younger with no major chronic medical diseases at baseline were included, and followed up for 24 to 28 years. Data on different forms and types of carbohydrate intake was collected every 2 to 4 years. The primary endpoint was weight change within four-year intervals. The study found that over a 4-year period, a 100g/day increase in added sugar was associated with 0.9kgs greater weight gain on average while a 10g/day increase in fibre consumption was associated with 0.8kg less weight gain. Additionally, increased carbohydrate intake from whole grains, fruits, and non-starchy vegetables was inversely associated with weight gain, while increased consumption of starchy vegetables and refined grains was associated with weight gain. The associations were stronger for those who were overweight or obese. The study revealed that the type of carbohydrate consumed is an important contribution to weight change over time. The researchers concluded that limiting low-quality for high-quality carbohydrates may support efforts to control body weight.

#### Reference

Wan Y et al. (2023): Association between changes in carbohydrate intake and long term weight changes: prospective cohort study *BMJ* 2023; 382:e073939 doi:10.1136/bmj-2022-073939

### Non-erosive gastro-oesophageal reflux disease and incidence of oesophageal adenocarcinoma in three Nordic countries: population based cohort study

Gastro-oesophageal reflux disease (GERD) is the major risk factor of esophageal adenocarcinoma. Although erosive esophagitis has been associated with esophageal adenocarcinoma, it's unclear if non-erosive GERD carries a similar risk. In this large population study, researchers compared the incidence rate of adenocarcinoma among individuals with non-erosive GERD to the general population, and to those with erosive GERD. The researchers found an incidence in non-erosive GERD similar to the general population i.e. 11.0/100,000 person-years and this didn't increase even on longer follow-up up to 31 years. Upon validation, the incidence rate in erosive GERD was higher at 31.0/100,000 person-years. The researchers hence suggested that endoscopically-confirmed non-erosive GERD does not require additional endoscopic monitoring for oesophageal adenocarcinoma.

#### Reference

Holmberg D et al (2023): Non-erosive gastro-oesophageal reflux disease and incidence of oesophageal adenocarcinoma in three Nordic countries: population based cohort study *BMJ* 2023; 382:e076017 doi:10.1136/bmj-2023-076017

### Venous thromboembolism with use of hormonal contraception and non-steroidal anti-inflammatory drugs: nationwide cohort study

Even though hormonal contraceptive and non-steroidal anti-inflammatory drugs (NSAIDs) use have singly been associated with increased risk of venous thromboembolism (VTE), the magnitude of the risk of their concomitant use is not well established. In a nationwide cohort study in Denmark, researchers observed 2 million women aged between 15-49 years, between 1996 and 2017, with no history of VTE events or other VTE risk factors. The study endpoint was a first time discharge diagnosis of lower limb deep venous thrombosis or pulmonary embolism. The researchers found NSAIDs use to be associated with an increased risk of VTE (adjusted incidence rate ratio 7.2). The risk was even higher in those using both NSAIDs and hormonal contraceptives (adjusted incidence rate ratio 7.9 and 11; for medium risk, and high-risk hormonal contraception). The researchers recommended that women needing both hormonal contraception and regular use of NSAIDs be advised accordingly.

#### Reference

Meaidi A et al (2023): Venous thromboembolism with use of hormonal contraception and non-steroidal anti-inflammatory drugs: nationwide cohort study *BMJ* 2023; 382:e074450 doi:10.1136/bmj-2022-074450

### Ferric Carboxymaltose in Heart Failure with Iron Deficiency

In patients with heart failure with reduced ejection fraction (HFrEF) and iron deficiency, ferric carboxymaltose reduces symptoms and improves quality of life. Its impact on other clinical outcomes is, however, not yet established. In this randomized placebo controlled trial, researchers enrolled 3065 patients with HFrEF and iron deficiency and equally randomized them to receive either ferric carboxymaltose or placebo, and followed them up for 1 year for the outcome: a composite of death, hospitalizations and change in 6-minute walk test from baseline. The researchers found the number of events similar in the ferric carboxymaltose and placebo groups (16.0 and 17.3 events per 100 patient-years, respectively). The researchers thus concluded that among ambulatory patients with HFrEF and iron deficiency, there was no apparent difference between ferric carboxymaltose and placebo.

#### Reference

Mentz, R. J et al. (2023). Ferric Carboxymaltose in Heart Failure with Iron Deficiency. *New England Journal of Medicine*, 389(11), 975–986.

### Global, regional, and national burden of meningitis and its etiologies, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019

Meningitis is an important cause of mortality despite being preventable. WHO has set targets to reduce meningitis cases by 2030. A team of researchers conducted a systematic analysis using data from the Global Burden of Disease Study 2019, to establish the incidence of

cases, death from meningitis by etiology and age from 1990 to 2019. The researchers noted that the burden of meningitis was greatest in children younger than 5 years. Mortality rate decreased by more than twice over 3 decades i.e from 7.5 to 3.3 per 100, 000. Etiology-wise, the highest mortality was attributable to Streptococcus pneumonia (18.1%) followed by Neisseria meningitidis (13.6%) and Klebsiella pneumoniae (12.2%). These findings suggested progress in reducing meningitis and that scaling up immunization would further reduce the burden.

**Reference**

Wunrow, H. Y., et al (2023). Global, regional, and national burden of meningitis and its aetiologies, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Neurology*, 22(8), 685–711.

**Association of high-density lipoprotein cholesterol with all-cause and cause-specific mortality in a Chinese population of 3.3 million adults: a prospective cohort study**

High-density lipoprotein cholesterol (HDL-C) has been known to be inversely related with cardiovascular disease risk. However, new evidence suggests high HDL-C levels could be equally dangerous. Researchers in this large study involving 3,397,547 participants aged 35 to 75 years with a median follow-up of about 4 years examined the associations of HDL-C with all-cause and cause-specific mortality in a Chinese population. They found a U-shaped pattern of association between HDL-C and all-cause, cardiovascular and cancer mortality i.e adjusted hazard ratios of 1.23, 1.33, and 1.18 for HDL-C <30 mg/dL; and 1.10, 1.09, and 1.11 for HDL-C >90 mg/dL respectively. The researchers recommended 50 to 79mg/dL as the optimum range of HDL-C among Chinese adults, and that management of both low and high HDL-C may be beneficial.

**Reference**

Lu, J., et al. (2023). Association of high-density lipoprotein cholesterol with all-cause and cause-specific mortality in a Chinese population of 3.3 million adults: a prospective cohort study. *The Lancet Regional Health - Western Pacific*.

**Expanding HIV clinical monitoring: the role of CD4, CD8, and CD4/CD8 ratio in predicting non-AIDS events**

Despite the success of antiretroviral therapy (ART), people living with HIV (PLWHIV) remain at increased risk of non-AIDS events. A low CD4/CD8 ratio is associated with immunosenescence, but its role in identifying patients at increased risk of clinical events is unclear. Researchers in this cohort study of 4625 PLWHIV evaluated whether CD4 count, CD8 count, and CD4/CD8 ratio at 2 years of ART predicted the risk of serious non-AIDS events (SNAEs) during the next five years. The researchers found that a CD4/CD8 ratio <0.3 was a predictor of an increased risk of SNAEs during the next five years (odds ratio 1.63). This effect was stronger at CD4/CD8 ratio <0.2. The findings support the use of CD4/CD8 ratio as predictors of clinical progression.

**Reference**

Martinez-Sanz, et al. (2023). Expanding HIV clinical monitoring: the role of CD4, CD8, and CD4/CD8 ratio in predicting non-AIDS events. *EBioMedicine*, 95, 104773.

**Comparative effectiveness of interventions for preventing tuberculosis**

Tuberculosis is a leading cause of mortality by a single infectious agent, and despite several efforts to prevent it there is little evidence of their success. The comparative effectiveness of different preventive measures has not been well established. Researchers through this systematic review and meta-analysis compared the effectiveness of preventive interventions including preventive therapy, nutritional intervention, targeted screening, and vaccination in reducing TB incidence. The researchers found preventive therapy as the most effective intervention (Odds ratio 0.44) followed by BCG vaccination (OR 0.62) and TB candidate vaccines (OR 0.67) compared to no intervention. Isoniazid and streptomycin (OR 0.12) was the most effective, while isoniazid plus rifampicin (OR 0.56) was the least effective preventive therapy. The researchers concluded that these findings provide important information to policy makers on preventive strategies.

**Reference**

Liyew, A. M., et al (2023). Comparative effectiveness of interventions for preventing tuberculosis: systematic review and network meta-analysis of interventional studies. *EClinicalMedicine*, 64, 102209

**The risk of recurrent venous thromboembolism after discontinuation of anticoagulant therapy in patients with cancer-associated thrombosis: a systematic review and meta-analysis**

The optimal duration of anticoagulation for cancer-associated thrombosis is unclear. Guidelines recommend 3 to 6 months of anticoagulation, and continuation for as long as cancer is active, but systematic reviews are lacking. This study included studies on patients with cancer, first venous thromboembolism (VTE), and had completed 3 months of anticoagulant therapy and followed them up for symptomatic VTE. From 14 studies with 1922 participants, the researchers found a cumulative VTE recurrence rate of 28.3% at 1 year; 31.1% at 2 years; and 35.0% at 5 years after discontinuation of anticoagulant therapy. The researchers concluded that there was a high rate of cancer-associated thrombosis after anticoagulant cessation, findings that support continuation of anticoagulation in patients with active cancer.

**Reference**

Van Hylckama Vlieg, et al (2023). The risk of recurrent venous thromboembolism after discontinuation of anticoagulant therapy in patients with cancer-associated thrombosis: a systematic review and meta-analysis. *EClinicalMedicine*, 64.

### **Burden of sickle cell trait and disease in the Uganda Sickle Surveillance Study (US3): a cross-sectional study**

Sickle cell disease contributes substantially to mortality in children younger than 5 years in sub-Saharan Africa. In Uganda, 20,000 babies per year are thought to be born with sickle cell disease, but accurate data are not available. We did the cross-sectional Uganda Sickle Surveillance Study to assess the burden of disease. The primary objective of the study was to calculate prevalence of sickle cell trait and disease. We obtained punch samples from dried blood spots routinely collected from HIV-exposed infants in ten regions and 112 districts across Uganda for the national Early Infant Diagnosis programme. Haemoglobin electrophoresis by isoelectric focusing was done on all samples to identify those from babies with sickle trait or disease. Between February, 2014, and March, 2015, 99,243 dried blood spots were analysed and results were available for 97,631. The overall number of children with sickle cell trait was 12,979 (13.3%) and with disease was 716 (0.7%). Sickle cell numbers ranged from 631 (4.6%) for trait and 23 (0.2%) for disease of 13,649 in the South Western region to 1306 (19.8%) for trait and 96 (1.5%) for disease of 6581 in the East Central region. Sickle cell trait was seen in all districts. The lowest prevalence was less than 3.0% in two districts. Eight districts had prevalence greater than 20.0%, with the highest being 23.9%. Sickle cell disease was less common in children older than 12 months or who were HIV positive, which is consistent with comorbidity and early mortality. Prevalence of sickle cell trait and disease were high in Uganda, with notable variation between regions and districts. The data will help to inform national strategies for sickle cell disease, including neonatal screening. Funding: Cincinnati Children's Research Foundation.

#### **Reference**

Ndezi Get al. Burden of sickle cell trait and disease in the Uganda Sickle Surveillance Study (US3): a cross-sectional study. *Lancet Glob Health*. 2016 Mar;4(3):e195-200. doi: 10.1016/S2214-109X(15)00288-0. Epub 2016 Jan 29. PMID: 26833239

### **Treat-to-target versus high-intensity statin treatment in patients with or without diabetes mellitus**

The clinical impact of treat-to-target strategy as compared to high-intensity statin therapy in patients with coronary artery disease and diabetes mellitus (DM) is unclear. Researchers in this trial randomized 4400 patients with and without DM to a treat-to-target strategy or high-intensity statin therapy. A primary endpoint of a composite of 3-years all-cause death, myocardial infarction, stroke, or coronary revascularization was used. The researchers found no significant difference in occurrence of outcomes between groups. Among those without diabetes, there was a trend towards reduced risk of new-onset DM in the treat-to-target group than the high-intensity statin group i.e. 8.4% versus 10.4% respectively. The researchers concluded that a treat-to-target LDL-C strategy of 50-

70mg/dl was comparable to high-intensity statin group in efficacy and safety regardless of DM status.

#### **Reference**

Lee, S. J., et al (2023). Treat-to-target versus high-intensity statin treatment in patients with or without diabetes mellitus: a pre-specified analysis from the LODESTAR trial. *EClinicalMedicine*, 64, 102227

### **Effectiveness of a dietician-led intervention in reducing glycated haemoglobin among people with type 2 diabetes in Nepal**

Multidisciplinary approaches in chronic disease management potentially carry benefits for patients. Researchers in this study evaluated the impact of a dietician-led approach among 156 adult patients aged 24 to 64 years with type 2 diabetes with HbA1c >6.5%. The researchers found that at 6 months, the mean HbA1c (%) level decreased in the intervention group by 0.61 while it increased in the control group by 0.22. Fasting blood glucose as well as other clinical measurements also decreased by 18.96 mg/dL after the intervention. The researchers thus concluded that the dietician-led approach improves glycemic control and several other clinical outcomes among type 2 diabetes patients and recommended its use especially in low and middle income countries.

#### **Reference**

Sunuwar, D. R et al (2023). Effectiveness of a dietician-led intervention in reducing glycated haemoglobin among people with type 2 diabetes in Nepal: a single centre, open-label, randomised controlled trial. *The Lancet Regional Health - Southeast Asia*,

### **Pitavastatin to Prevent cardiovascular disease in HIV Infection**

Persons with HIV infection have twice the risk of atherosclerotic cardiovascular disease compared to the general population yet primary prevention strategies are lacking. Researchers in this trial evaluated the safety and efficacy of pitavastatin for prevention of adverse cardiovascular events. A total of 7769 participants with HIV receiving stable antiretroviral therapy, at low-to-moderate cardiovascular risk were randomized to receive pivastatin 4mg or placebo daily. The primary endpoint was occurrence of a major adverse cardiovascular event. After a median follow-up of 5 years, the trial was stopped for efficacy. Incidence rate of outcome was lower in the pitavastatin group than placebo i.e. 4.81 Versus 7.32 per 1000 person-Years respectively (hazard ratio, 0.65). The authors concluded that in at-risk patients with HIV infection, daily pitavastatin lowers risk of cardiovascular events.

#### **Reference**

Grinspoon, S. K., et al (2023). Pitavastatin to Prevent Cardiovascular Disease in HIV Infection. *New England Journal of Medicine*, 389(8), 687–699.

### **Semaglutide in Heart Failure with Obesity**

Patients with heart failure with preserved ejection fraction (HFpEF) are often obese. It is unknown if treatments that target obesity can reduce heart failure symptoms and physical limitations in these patients. Researchers in this study assessed if semaglutide (a glucagon-like peptide-1 receptor agonist) would reduce heart failure symptoms and physical limitations. A total of 529 obese participants with HFpEF were randomized to receive either



semaglutide or placebo once weekly for 52 weeks. The outcome measures were change from baseline in a heart-failure symptoms score and body weight. The researchers found that both changes in symptoms score and body weight favored semaglutide with treatment differences of 7.8 and -10.7 percentage points respectively. The authors concluded that semaglutide improved heart failure symptoms and weight in obese patients with HFpEF.

#### Reference

Kosiborod, et al (2023). Semaglutide in Patients with Heart Failure with Preserved Ejection Fraction and Obesity. *New England Journal of Medicine*.

#### Zilebesiran, an RNA Interference Therapeutic Agent for Hypertension

Zilebesiran is an investigational new drug for the management of hypertension. It inhibits hepatic angiotensinogen synthesis, a key pathophysiological step in hypertension. Researchers conducted a phase 1 trial to determine the safety and tolerability of zilebesiran among patients with hypertension. A total of 107 participants were randomized in a 2:1 ratio to receive either a single subcutaneous dose of zilebesiran or placebo and followed up for 24 weeks. A change in blood pressure was also monitored for. The researchers noted only 5 mild, transient injection-site reactions, a dose-dependent decrease in serum angiotensinogen levels after zilebesiran administration and a 24-hour ambulatory blood pressure reduction that was sustained up to 24 weeks. These preliminary findings represent a potentially promising addition to the treatment of hypertension.

#### Reference

Desai, A. S., et al. (2023). Zilebesiran, an RNA Interference Therapeutic Agent for Hypertension. *New England Journal of Medicine*, 389(3), 228–238.

## MCH

#### Intra-uterine packing: an effective and affordable tool in the management of post-partum hemorrhage.

Globally, post-partum hemorrhage (PPH) is the major cause of maternal mortality. Uterine balloon packing is a proven second-line option in the management of PPH, but its use in low and middle income countries is limited by its cost. Uterine packing with gauze is a more cost-effective alternative but its safety and efficacy are unclear. Researchers in this small retrospective observational study included 63 patients with PPH due to uterine atony following vaginal delivery with no response to medical treatment. The primary outcome was total arrest of hemorrhage following the procedure. The researchers found a success rate of 95% with the intervention, with only 3 patients requiring a laparotomy for conservative surgical interventions. No maternal deaths were reported. The researchers concluded that uterine packing is a valuable alternative for the management of PPH due to uterine atony.

#### Reference

Ahmed Halouani et al. Intra-uterine packing: an effective and affordable tool in the management of post-partum hemorrhage - cohort study. *Pan African Medical Journal*. 2023;45:192. [doi: 10.11604/pamj.2023.45.192.39441]

#### Parasitic etiology of diarrhea and associated factors among under-five year children attending Mizan-Tepi University Teaching Hospital, Southwest Ethiopia

Diarrheal diseases are a significant cause of morbidity and mortality among under-five year old children in developing countries. In sub-Saharan Africa, these diseases are usually caused by bacterial and parasitic pathogens. The parasitic etiologies are not well studied and children are often managed clinically. Researchers in this study determined the parasitic etiologies of diarrhea among 300 children presenting with diarrhoea to an Ethiopian teaching hospital. They found 22.67% positive for at least one intestinal parasite; *Entamoeba histolytica* 23(7.67%) and *Giardia lamblia* 17(5.67%) being the most predominant. About 28(9.33%) were positive for intestinal helminthic parasites; 11(3.67%) *Ascaris lumbricoides*, and 10(3.33%) *Trichuris trichiura*. The researchers also found that caregivers' educational status and use of unprotected water for drinking were associated with intestinal parasite infestation.

#### Reference

Teshale Worku et al. Parasitic etiology of diarrhea and associated factors among under-five year children attending Mizan-Tepi University Teaching Hospital, Southwest Ethiopia. *Pan African Medical Journal*. 2023;45:187. [doi: 10.11604/pamj.2023.45.187.38263]

#### Effectiveness and safety of intermittent preventive treatment with dihydroartemisinin-piperazine or artesunate-amodiaquine for reducing malaria and related morbidities in school children in Tanzania: a randomised controlled trial

Malaria remains a significant cause of mortality and morbidity in sub-Saharan Africa and hence a need preventive measures. Researchers in this study evaluated the safety and effectiveness of an intermittent preventive treatment in school-aged children (IPTsc). They enrolled 1566 school children in Tanzania, and randomized them to receive dihydroartemisinin-piperazine, artesunate-amodiaquine, and standard of care (control) in a ratio of 1:1:1. Hemoglobin concentration changes from baseline, incidence of clinical malaria, and prevalence of parasitemia were the outcomes of interest. The researchers found that prevalence of malaria parasitaemia increased in the control group, but decreased in both dihydroartemisinin-piperazine and artesunate-amodiaquine groups with comparable protective effects against clinical malaria in the latter (20% and 19% respectively). The researchers concluded that IPTsc was a safe, effective and feasible strategy.

#### Reference

Philippa Bird et al. *Health Policy and Planning*, Volume 26, Issue 5, September 2011, Pages 357–365, <https://doi.org/10.1093/heapol/czq078>

## General Surgery

### Timing of cleft lip surgery

The optimum timing for primary surgery among patients with isolated cleft palate is unclear. Researchers in this trial equally randomized 558 infants with isolated cleft palate to closure of the cleft surgery at 6 months or 12 months, and followed them up to 5 years for velopharyngeal insufficiency as well as speech development, postoperative complications, hearing sensitivity, and other outcomes. The researchers found insufficient velopharyngeal function in more infants in the 12-months group compared to 6-months group i.e. 15% versus 8.9% respectively, with no significant differences in the other outcomes. The researchers thus concluded that infants who underwent primary surgery for cleft palate at 6 months were less likely to develop velopharyngeal insufficiency at 5 years compared to their 12-months counterparts.

#### Reference

Gamble, C et al (2023). Timing of Primary Surgery for Cleft Palate. *New England Journal of Medicine*, 389(9), 795–807

### Salpingectomy for the Primary Prevention of Ovarian Cancer

Most ovarian cancers originate in the fimbriated end of the fallopian tube, and thus opportunistic bilateral salpingectomy has been suggested as a potential strategy to prevent ovarian cancer development. Researchers in this study conducted a systematic review of studies examining salpingectomy for ovarian cancer prevention. A total of 158 publications were included in the final analysis. The researchers found that salpingectomy reduced ovarian cancer risk by approximately 80%, and ovarian cancer mortality by 15%. They thus suggested that as a safe and cost-effective procedure, bilateral salpingectomy could help reduce the burden of ovarian cancer and recommended increasing its awareness.

#### Reference

Kahn, R. M., et al. (2023). Salpingectomy for the Primary Prevention of Ovarian Cancer: A Systematic Review. *JAMA Surgery*.

### Craniotomy or craniectomy for acute subdural hematoma

Acute subdural hematoma (SDH) is managed by surgical evacuation with either craniotomy (bone flap is replaced) or craniectomy (bone flap is not replaced). It is unclear which of the two approaches is better. Four hundred fifty (450) patients with acute SDH undergoing surgical evacuation were enrolled, and equally randomized to either approach. The primary end-point was the Extended Glasgow Outcome Scale (GOSE) score at 12 months. No significant difference in outcome was found between groups; death at 12 months occurred in 30.2% of the patients in the craniotomy group and 32.2% of those in the craniectomy group. Additional surgery at 2 weeks was twice more in the craniotomy group than in the craniectomy group. The results support the use of either technique

#### Reference

P. J., Adams, H., et al. (2023). Decompressive Craniectomy versus Craniotomy

for Acute Subdural Hematoma. *The New England Journal of Medicine*, 388(24). <https://doi.org/10.1056/NEJMOA2214172>

## Mental Health

### Effect of a smartphone intervention as a secondary prevention for use among university students with unhealthy alcohol use: randomized controlled trial

Unhealthy alcohol use is a major public health concern especially among young adults because of their peculiar social and academic demands. They represent a crucial target group for alcohol misuse prevention strategies. This study evaluated the utility of a smartphone intervention in 1770 participants equally randomized into an intervention and control arm, followed up for 1 year. The intervention incorporated in call to action, ongoing feedback and monitoring, data-driven content, and rewards. The researchers found that the intervention resulted in lower drinking outcomes than control (incidence rate ratio 0.90, 0.89, 0.96 for number of standard drinks/week, heavy drinking days, and drinks consumed at one occasion respectively). The authors thus concluded that access to the smartphone application limited alcohol drinking volume of university students.

#### Reference

Bertholet N et al (2023): Effect of a smartphone intervention as a secondary prevention for use among university students with unhealthy alcohol use: randomised controlled trial *BMJ* 2023; 382:e073713 doi:10.1136/bmj-2022-073713

### Increasing the priority of mental health in Africa: findings from qualitative research in Ghana, South Africa, Uganda and Zambia

Despite the high prevalence of mental illness, mental health remains a low priority in Africa. There has been no investigation of the views of stakeholders in Africa on why this is and what can be done. This paper reports a comparison of the views of stakeholders in Ghana, South Africa, Uganda and Zambia, focusing on the priority given to mental health by the government at the national and regional/province levels. We conducted semi-structured interviews with key stakeholders and used a two-stage approach to analysis: firstly framework analysis in each study country, followed by comparative analysis of the country data. Mental health was largely considered a low priority at national and regional/provincial levels in all four countries. We identified nine factors affecting the priority of mental health, which were grouped into three categories: legitimacy of the problem, feasibility of response and support for response. Respondents put forward a range of experiences and suggestions for increasing the priority given to mental health. We conclude with broad suggestions to raise the priority of mental health. These suggestions are particularly relevant as mental health increases in priority on the international agenda, in order to inform advocacy for increased priority for mental health in Africa.

#### Reference

Philippa Bird et al. *Health Policy and Planning*, Volume 26, Issue 5, September 2011, Pages 357–365, <https://doi.org/10.1093/heapol/czq078>