

### Vitamin D deficiency increases risk of chronic headache

Vitamin D deficiency may increase the risk of chronic headache, according to a new study (Virtanen et al, 2017).

The Kuopio Ischaemic Heart Disease Risk Factor Study analysed serum vitamin D levels and occurrence of headache in about 2600 men aged between 42 and 60 years in 1984–1989. In 68%, the serum vitamin D level was below 50 nmol/litre (threshold for vitamin D deficiency). Chronic headache occurring at least on a weekly basis was reported by 250 men, and men reporting chronic headache had lower serum vitamin D levels than others.

When the study population was divided into four groups based on their serum vitamin D levels, those with the lowest levels had over a twofold greater risk of chronic headache in comparison to those with the highest levels. Chronic headache was also more frequently reported by men when they were examined outside the summer months (June–September).

Virtanen JK, Giniatullin R, Mäntyselkä P et al (2017) Low serum 25-hydroxyvitamin D is associated with higher risk of frequent headache in middle-aged and older men. *Sci Rep* 7: 39697. <https://doi.org/10.1038/srep39697>

### Lung cancer audit finds 7% increase in 1-year survival

The 12th report of the National Lung Cancer Audit on the clinical component (process of care) demonstrates a 7% rise in 1-year survivorship since 2010 ([www.hqip.org.uk/resources/national-lung-cancer-audit-annual-report-2016/](http://www.hqip.org.uk/resources/national-lung-cancer-audit-annual-report-2016/)). The report covers patients with lung cancer first diagnosed in 2015 (36 025 patients in England, 2207 in Wales, 37 in Guernsey and 4884 in Scotland).

Pathological confirmation rates have risen to 72% overall (short of the target of 75%), and the proportion of lung cancers that are not precisely pathologically subtyped has fallen further to 11%. However, there remains wide and unacceptable variation in standards of care between organizations.

## Blood test for gut bacteria accurately predicts risk of death and heart problems in heart attack patients

Gut bacteria digest food and produce metabolites that can have a marked effect on the heart and blood vessels. Measuring the levels of a molecule called trimethylamine N-oxide which is produced by gut bacteria from components of red meat, eggs and dairy products in blood could provide a quick and reliable way of assessing the risk of death and other major heart problems in patients who arrive in hospital emergency departments with chest pains (Li et al, 2017). Furthermore, trimethylamine N-oxide levels could predict this risk not only in the short term (over the first 30 days) but also the risk of death in the longer term (up to 7 years later).

Researchers in Switzerland and the USA examined trimethylamine N-oxide levels in the blood of 530 patients, aged over 18 years, arriving in the emergency department of the Cleveland Clinic, Ohio, USA, with chest pains, and 1683 patients who had coronary angiography within 5 days after being admitted to one of four university hospitals in Switzerland (Zurich, Bern, Lausanne and Geneva) with chest pains.

The patients were followed up for several years to monitor for outcomes such as death from any cause, death from heart and blood vessel problems, heart attack, stroke or revascularization – collectively termed major adverse cardiovascular events.

Professor Thomas Lüscher, Chairman of Cardiology at the University Heart Centre, Zurich, Switzerland, who led the study, said:

**Professor Thomas Lüscher, Chairman of Cardiology, University Heart Centre, Zurich, Switzerland**



‘We found that the Cleveland patients with higher trimethylamine N-oxide levels were more likely to experience a major adverse cardiovascular event at 30 days, 6 months and 7 years after their admittance to hospital. After adjusting for risk factors such as age, smoking, diabetes, cholesterol levels and blood pressure, when compared with patients with the lowest trimethylamine N-oxide levels, those with levels in the top 25% were around six times more likely to die, suffer a heart attack or stroke or require revascularization at 30 days and 6 months, and nearly twice as likely to die within 7 years.’

He added: ‘Interestingly, even in patients who did not appear to have elevated levels of troponin T when they first arrived at hospital, those with trimethylamine N-oxide levels in the top 25% still had a nearly six-fold higher risk of a major adverse cardiovascular event.’

The researchers say that trimethylamine N-oxide levels also suggest new ways to reduce the risk of further heart problems and death, as it offers a better understanding of the clinical impact that our daily diet has on the cardiovascular system. This opens the way for new preventive measures, such as encouraging patients to switch from a diet rich in red meat, dairy products and eggs to a Mediterranean diet rich in green leafy vegetables and fibre, and developing new drugs to target the process by which trimethylamine N-oxide is formed.

Professor Lüscher concluded: ‘This study shows for the first time that trimethylamine N-oxide levels are associated with both short- and long-term risks of death and other cardiovascular problems among patients coming to hospital emergency departments with chest pain and suspected heart problems. We think that rapid trimethylamine N-oxide testing could now contribute to the identification of higher risk patients, with the potential to speed up the time between initial evaluation and cardiac catheterization. This could help salvage more of the heart muscle that is under stress, as time is muscle.’

Li XS, Obeid S, Klingenberg R et al (2017) Gut microbiota-dependent trimethylamine N-oxide in acute coronary syndromes: a prognostic marker for incident cardiovascular events beyond traditional risk factors. *Eur Heart J* <https://doi.org/10.1093/eurheartj/ehw582>

## Vaginal mesh and graft no more effective than standard repair for female prolapse

Two controversial methods of surgical repair of prolapse in women have been found to be no more effective than the existing standard repair technique, up to 2 years after surgery (Glazener et al, 2016).

A national collaborative research project has compared the outcome of pelvic organ prolapse repairs reinforced by either non-absorbable synthetic mesh or biological grafts against standard native tissue repairs in 1348 women having their first vaginal prolapse operation.

They found the mesh, inserted through the vagina, resulted in a number of complications but did not offer any clear benefits, concluding that its use for these procedures could be considered an ‘unnecessary risk’ until further research was conducted.

The results revealed that there was no significant clinical or statistical difference between those who had the mesh or graft surgery, compared to the standard native tissue repair, at 1 or 2 years after the surgery.

The study also revealed that more than one in ten women who had synthetic (non-absorbable) mesh had a mesh complication – although most were asymptomatic. However,



**Professor Cathryn Glazener,**  
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there were no similar risks with biological grafts.

Researchers stressed that this study has only recorded the outcomes during the first 2 years after the operation. Because half of the prolapse surgeries that fail do so within 12 years, they are following up the same women at regular intervals up to at least 12 years. This is vital to determine whether mesh or graft repairs might prove more durable in the longer term.

Professor Cathryn Glazener, Health Services Research Unit,

University of Aberdeen, Aberdeen, who led the study, said: ‘Our findings provide robust evidence on which to base counselling for surgical decision making. However, these findings are confined to the first 2 years after surgery and only to women having their first repair. Longer-term follow up is required to truly assess any potential benefits or adverse effects of transvaginal mesh or graft.’

Glazener CM, Breeman S, Elders A et al; PROSPECT study group (2016) Mesh, graft, or standard repair for women having primary transvaginal anterior or posterior compartment prolapse surgery: two parallel-group, multicentre, randomised, controlled trials (PROSPECT). *Lancet* [https://doi.org/10.1016/S0140-6736\(16\)31596-3](https://doi.org/10.1016/S0140-6736(16)31596-3)

## Memorandum of Understanding on use of restraint in mental health settings

People restrained in mental health settings will get the care they need ‘rather than control’ under a new Memorandum of Understanding drawn up for police and health-care professionals.

Until now there was no clear national position about when the police can be asked to attend mental health and learning disability settings and for what reasons.

Police officers do not have specific powers to restrain a patient for the purposes of medical treatment regardless of whether the treatment is in the patient’s best interests, but there is significant variance in the extent to which health-care providers call the police for support around restraint and restrictive practices.

The Memorandum of Understanding outlines police powers, the law, what health-care professionals are committed to doing, how to manage uncertainties, restraint and restrictive practices and practical case studies showing good practice.

The memorandum is supported by the Royal College of Psychiatrists, Royal College of Nursing, Mind, The Faculty of Forensic and Legal Medicine and the National Police Chiefs’ Council. Dr Adrian James, Registrar of the Royal College of Psychiatrists, said: ‘We very much value working together with our police colleagues and welcome the focus that the College of Policing has given to this area.’

### Children with asthma at higher risk of becoming obese

A prospective study from the USA has shown that young children with asthma were 51% more likely to become obese over the next decade than children who did not have asthma. The study also found that the use of asthma rescue medications reduced the risk of becoming obese by 43% (<https://doi.org/10.1164/rccm.201608-16910C>).

### Atrial fibrillation more prevalent than expected in haemodialysis patients

The prevalence of atrial fibrillation in haemodialysis patients is significantly higher than previously thought (26.5%, rather than the internationally estimated 10–15%), according to the findings of a multicentre study. Moreover, only half of the patients affected are treated with an anticoagulant (<https://doi.org/10.1371/journal.pone.0169400>).

### Acid suppressants linked to serious gastrointestinal infections

In a population-based study from Scotland, use of commonly-prescribed acid suppression medications such as proton pump inhibitors and histamine-2 receptor antagonists was linked with an increased risk of intestinal infections with *Clostridium difficile* and *Campylobacter*, which can cause considerable illness (<https://doi.org/10.1111/bcp.13205>).

## Role of triclosan-coated sutures in preventing surgical site infection

Triclosan-coated sutures were developed to reduce the risk of surgical site infection. However, there have been varying rates of success in trying to prove or otherwise their efficacy. Meta-analysis and trial sequential analysis were undertaken to more accurately assess the effectiveness of triclosan-coated sutures in the prevention of surgical site infection (<https://doi.org/10.1002/bjs.10445>).

Twenty-one randomized controlled trials including 6462 patients were included. These trials compared triclosan-coated sutures with sutures that were exactly the same, but uncoated, in the prevention of surgical site infection. Risk of bias was serious. Pooled effects showed a relative risk of 0.72 (95% confidence interval 0.60–0.86;  $P < 0.001$ ) for all publications.

At a risk of 138 surgical site infections per 1000 procedures, the use of triclosan-coated sutures reduced this by 39 (95% confidence interval 19–55). Trial sequential analysis confirmed a relative risk reduction of 15% for the use of triclosan-coated sutures.

There is moderate-quality evidence that triclosan-coated sutures are effective in reducing surgical site infection. Analysis indicates that the effect is robust, and additional data are unlikely to alter the summary effect.

## Mortality rates from cervical cancer may be underestimated

A new analysis reveals that for most women, the risk of dying from cervical cancer is higher than previously thought. Unlike prior estimates that also included women who had undergone a hysterectomy and were therefore no longer at risk, this analysis only included women with a cervix. The study also revealed significant racial differences in the risk of dying from cervical cancer (Beavis et al, 2017).

To re-examine cervical cancer mortality rates from 2002–2012 in the United States, researchers obtained estimates from the National Center for Health Statistics and the

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NCI Surveillance, Epidemiology, and End Results Mortality Database. Information on hysterectomy prevalence was gathered from the Behavioral Risk Factor Surveillance System survey to remove the large fraction of women who were not at risk of dying from cervical cancer.

The researchers found that black women in the United States are dying from cervical cancer at a rate 77% higher than previously thought, while white women are dying at a rate 47% higher. Without the correction, the disparity in mortality between races was underestimated by 44%. In addition, an analysis of the corrected rates over the decade revealed that white women's rates of death from cervical cancer decreased by 0.8% per year, compared with an annual decrease of 3.6% in black women.

'Although trends over time show that the racial disparity in cervical cancer mortality is closing, these data emphasize that it should remain a priority area,' said Dr Anne Rositch, of the Johns Hopkins Bloomberg School of Public Health. 'In addition, many of those who are dying are over the age of 65 years, a cutoff point where guidelines generally no longer recommend women with cervixes be regularly screened for cervical cancer,' she added.

Beavis A, Gravitt P, Rositch A (2017) Hysterectomy-corrected cervical cancer mortality rates reveal a larger racial disparity in the United States. *Cancer* <https://doi.org/10.1002/cncr.30507>

## Increasing deceased organ donation rates: learning from Spain's success

Spain leads the world in deceased organ donation. A new article could help other countries learn from the success of the Spanish system to help address the worldwide problem of transplant organ shortages (Matesanz et al, 2017).

In 1989, the Spanish Ministry of Health created the Organización Nacional de Trasplantes, a technical agency in charge of the coordination and oversight of donation and transplantation activities in Spain. The so-called Spanish model relies on the designation of appropriate professionals (mostly intensive care doctors) to make donation happen when a patient dies in

conditions that allow organ donation. These professionals are supported in their work by Organización Nacional de Trasplantes and regional coordination offices.

The Spanish model makes it a priority to identify donation opportunities not only in intensive care units, but also in emergency departments and hospital wards. In addition, it considers organ donation from persons over the age of 65 years (10% of organ donors in Spain are over the age of 80 years). Furthermore, the model considers donation after circulatory death, as opposed to just brain death. The authors

emphasized the importance of committed clinicians and good organizational processes in their success.

Co-author Dr Beatriz Domínguez-Gil, from the Organización Nacional de Trasplantes, commented: 'The most important success is that the system has made organ donation be routinely considered when a patient dies, regardless of the circumstances of death.'

Matesanz R, Domínguez-Gil B, Coll E, Mahillo B, Marazuela R (2017) How Spain Reached 40 Deceased Organ Donors per Million Population. *Am J Transplant* <https://doi.org/10.1111/ajt.14104>

## Guidance addresses difficulties anaesthetists face in obtaining patient consent to anaesthesia

The Association of Anaesthetists of Great Britain and Ireland has published new guidance on patient consent for anaesthesia (Yentis et al, 2017).

This latest revision of the guidance incorporates recent case law and other changes in the legal system, providing guidance and advice to anaesthetists about consent before anaesthesia. Importantly, it recognizes the differences between the legal frameworks in England & Wales, Scotland, Northern Ireland and the Republic of Ireland.

Taking over a year to develop, the guidance has had legal, medical and lay input, and has undergone extensive consultation within the UK and Ireland. The new guidance addresses the particular difficulties faced by anaesthetists compared with other doctors.

Commenting on the new guidance, Dr Steve Yentis, Consultant Anaesthetist, Chelsea & Westminster Hospital and Honorary Reader, Imperial College London, said:



‘Anaesthetists are in an unusual position when it comes to consent for anaesthesia because in most cases, anaesthesia facilitates the treatment (surgery) rather than constituting “treatment” itself. Also, since anaesthetists rarely have access to patients for detailed discussions far in advance of the surgery itself, and for any one operation there are many subtly different ways in which anaesthesia can be provided, it isn’t always clear how much needs to be discussed beforehand.’

He added: ‘We hope our guidance, which takes account of these difficulties and of recent changes in the legal/ethical frameworks in England, Wales, Scotland, Northern Ireland and the Republic of Ireland, will support good consenting practice and thus assist both anaesthetists and their patients.’

Yentis SM, Hartle AJ, Barker IR et al (2017) AAGBI: Consent for anaesthesia 2017: Association of Anaesthetists of Great Britain and Ireland. *Anaesthesia* 72(1): 93–105. <https://doi.org/10.1111/anae.13762>

## Measuring troponin level has potential to predict cardiovascular risk and monitor response to therapy

A high-sensitivity blood test could predict which patients are at risk of a heart attack according to new research (Mills et al, 2016).

In a study of over 3000 men with high cholesterol but no history of heart disease, the team found that changes in blood levels of troponin accurately predicted the risk of a person suffering a heart attack or dying of coronary heart disease up to 15 years later.

The troponin test – currently used to help diagnose a heart attack – could also be a more effective way of assessing future heart disease risk than blood pressure or cholesterol. As a result, the researchers say the test could more precisely identify people who will benefit

from statins, and also assess the impact that statins are having in lowering someone’s heart disease risk.

Professor Nicholas Mills, BHF Senior Clinical Research Fellow at the University of Edinburgh, who led the research, said: ‘Troponin testing will help doctors to identify apparently healthy individuals who have silent heart disease so we can target preventative treatments to those who are likely to benefit most.’

Ford I, Shah AS, Zhang R et al (2016) High-sensitivity cardiac troponin, statin therapy, and risk of coronary heart disease. *J Am Coll Cardiol* 68(25): 2719–2728. <https://doi.org/10.1016/j.jacc.2016.10.020>

## Improving visual neglect in stroke survivors

Up to a third of all stroke survivors with visual neglect can show signs of it more than a year after their stroke. However, a small study by researchers at the University of East Anglia and the University of Glasgow has found that a low-cost therapy can improve the lives of stroke patients with vision problems (<https://doi.org/10.1080/09602011.2016.1273119>).

The study tested the effectiveness of visuomotor feedback training in treating the most common vision problem, visual neglect, which happens when the brain does not process the information about what is seen on one side of space.

Using a simple treatment of grasping, lifting and balancing wooden rods of different sizes, the idea is that by repeatedly grasping the rod so that it is balanced when lifted, the patients receive different sources of feedback from their senses – seeing, touching and feeling the rod tilting – which helps reduce the visual neglect.

The study compared the effects of visuomotor feedback training with the effects of a control training (10 stroke survivors in each group). The effects were tested after two sessions over 2 days totaling an hour, after 10 sessions over 2 weeks, and then again 4 months after the therapy ended. Importantly, the improvements seen after visuomotor feedback training were above the ones observed after the control training.

Lead author Dr Stephanie Rossit, Lecturer in Psychology at the University of East Anglia, said: ‘Visual neglect is a severe disorder and rehabilitation remains a challenge, as currently no approach has been recommended for clinical use. However, this study shows that visuomotor feedback training is an extremely promising therapy for large-scale implementation. In contrast to most available techniques, visuomotor feedback training can be easily taught and administered, it is non-invasive, cost-effective and can be conducted by the patients themselves in their own homes.’