

### Taking proton pump inhibitors does not increase the risk of Alzheimer's disease

The use of proton pump inhibitors does not increase the risk of Alzheimer's disease, shows a new study (<https://doi.org/10.1038/ajg.2017.196>). The association between proton pump inhibitors and Alzheimer's disease was studied as two previous studies from Germany had reported an increased risk of dementia. However, these findings were not confirmed by the extensive Finnish study, at least not for the risk of Alzheimer's disease, which is the most common form of dementia.

Proton pump inhibitor use was not associated with an increased risk of Alzheimer's disease, not even in long-term use exceeding 3 years. Furthermore, a higher dose did not increase the risk.

### Immune markers may predict rotavirus vaccine effectiveness

The current approach to predicting vaccine effectiveness against rotavirus gastroenteritis needs to be revisited, according to Liu et al (2017). The research identifies immune correlates predictive of protection against rotavirus gastroenteritis, suggesting a link between vaccine immunogenicity and efficacy. Such linkage, a very important parameter for all vaccines, facilitates further product development and use.

Until now, serum IgA has been considered the best measure predicting the efficacy of the RotaTeq oral rotavirus vaccine, but a clear correlate of protection has not been identified. This new research reveals that a higher level of neutralizing antibodies against the most common rotavirus strain (G1) is a better predictor of protection, which correlates more closely with vaccine efficacy.

Liu GF, Hille D, Kaplan SS, Goveia MG (2017) Postdose 3 G1 serum neutralizing antibody as correlate of protection for pentavalent rotavirus vaccine. *Hum Vaccin Immunother* 1–7. <https://doi.org/10.1080/21645515.2017.1356522>

## Extending liaison psychiatry service improves care and reduces costs for self-harm patients

Extending the operating hours of the liaison psychiatry service at the Bristol Royal Infirmary's emergency department has led to improved care and outcomes for patients who have self-harmed, new research has found (Opmeer et al, 2017). Self-harm is a strong risk indicator for suicide, so getting psychiatric support for these patients has the potential to save lives.

The findings also showed that, over a 3-month period, the initial investment in the extended service may have led to a saving of £36 150 in emergency department and hospital costs for this specific group of patients. This equates to £144 600 annually.

In 2014, Bristol Clinical Commissioning Group commissioned University Hospitals Bristol NHS Foundation Trust, which runs the Bristol Royal Infirmary, to extend the operating hours of its liaison psychiatry service. The service was extended because most emergency department patients who have self-harmed present outside office hours.

The service change, improving levels of liaison psychiatry team cover from 40 hours over 5 days to 98 hours over 7 days a week, needed an additional investment of around £250 000 per year.

The researchers focused on the impact of this service change on self-harm patients because they make up a high proportion of the liaison team's workload, are the patient group at highest risk of suicide and have detailed data collected about their care through the local self-harm register. It was these detailed data that made this evaluation possible. These patients also may have to wait in the emergency department or be admitted to hospital if they can not have a timely psychiatric assessment.

Following the service extension, about 10% more patients received a psychosocial assessment. The waiting time for an assessment decreased by more than 3 hours. In 2015 with the new hours in place, patients were 20% less likely to re-attend for self-harm within 90 days.

However, because the study only covered a short 3-month period and relatively small number of patients, these results are preliminary. A larger study is needed to provide stronger evidence on costs and re-attendance.

Dr Brent Opmeer, who led the research, said: 'While this study was only able to look

at one group of patients over a relatively short period of time, it is promising evidence that investment in psychiatric liaison services not only saves money, but improves outcomes for a vulnerable group of people. We hope to work with the psychiatric liaison team at the Bristol Royal Infirmary to assess the impact more comprehensively.'

Salena Williams, who leads the psychiatric liaison team at the Bristol Royal Infirmary, said: 'It is fantastic to have this evidence to support the investment that we convinced our local commissioners to make. Our team has been collecting data about self-harm patients for several years. The data were telling us that our service was not covering the times when most patients who self-harm present, leading to them falling between the cracks.'

She added: 'As self-harm is a strong indicator for suicide, it is vital that we help these people at the first available opportunity. The service extension has allowed us to do just that – and this evidence shows that there are potential financial savings too.'

Opmeer BC, Hollingworth W, Marques EMR, Margelyte R, Gunnell D (2017) Extending the liaison psychiatry service in a large hospital in the UK: a before and after evaluation of the economic impact and patient care following ED attendances for self-harm. *BMJ Open* 7(8): e016906. <https://doi.org/10.1136/bmjopen-2017-016906>

**Dr Brent Opmeer, Senior Research Fellow, Consultant Health Care Evaluation Research, NIHR CLAHRC West, University Hospitals Bristol NHS Foundation Trust, Bristol**



## Tuberculosis in top ten causes of deaths worldwide in children under 5 years of age

Tuberculosis is thought to have affected more than 1 million children under 15 years of age worldwide in 2015. Diagnosis of tuberculosis in children can be challenging, partly as a result of insensitive tests and non-specific symptoms.

New modelling by an international team of researchers (Dodd et al, 2017) estimates that in 2015 239 000 children aged 14 years and under died from tuberculosis in 217 countries worldwide.

Lead author, Dr Pete Dodd from the School of Health and Related Research, University of Sheffield, said: '80% of these were children under 5 years of age. This makes tuberculosis a top 10 cause of death in the age group.'

He added: 'The vast majority of deaths – over 96% – were in children not receiving



**Dr Pete Dodd, School of Health and Related Research, University of Sheffield, Sheffield**

treatment for the disease. Given excellent treatment outcomes, this highlights the scope to reduce this toll by improving treatment coverage.'

Under-five mortality was a key indicator in the Millennium Development Goals, although this did not explicitly include tuberculosis. Dr Dodd commented:

'Historically, tuberculosis in children has not received the attention that it might have done. The World Health

Organization has been encouraging countries to report the number of tuberculosis cases they find in children by age group.'

Dodd PJ, Yuen CM, Sismanidis C, Seddon JA, Jenkins HE (2017) The global burden of tuberculosis mortality in children: a mathematical modelling study. *Lancet Glob Health* 5(9): e898–e906. [https://doi.org/10.1016/S2214-109X\(17\)30289-9](https://doi.org/10.1016/S2214-109X(17)30289-9)

## Do kidney transplants save money?

The health care costs of kidney transplantation and dialysis are generally unknown. A study has estimated the Swedish health-care costs of kidney transplantation and dialysis over 10 years (Jarl et al, 2017).

A before–after design was used, in which the patients served as their own controls. Health-care costs the year before transplantation were assumed to continue in the absence of a transplant, so cost savings were calculated as the difference between the expected costs and the actual costs during the 10-year follow-up period.

Altogether 66–79% of the expected health care costs over 10 years were avoided through kidney transplantation, resulting in a cost savings of €380 000 (2012 price-year) per patient. Savings were the highest for successful transplantations, but the treatment also was cost saving for patients who returned to dialysis. No gender or age differences were found, with the exception of a higher cost of transplantation for children and a generally higher cost for younger compared with older

patients on dialysis. A negative association was also found between age at the time of transplantation and the size of the cost savings for the younger part of the sample.

Kidney transplantations have led to substantial cost savings for the Swedish health care system. An increase in donated kidneys has the potential to further reduce the cost of renal replacement therapy.

Dr Johan Jarl, Postdoctoral Fellow in Health Economics, Department of Clinical Sciences-Malmö, Lund University, Lund, Sweden, commented: 'The results, together with positive health outcomes, indicate that renal transplantation as currently conducted in Sweden is a cost-effective option compared to dialysis, and potentially even a better option, although a proper economic evaluation is necessary in order to ascertain this.'

Jarl J, Desatnik P, Peetz Hansson U, Prütz KG, Gerdtham U-G (2017) Do kidney transplantations save money? A study using a before–after design and multiple register-based data from Sweden. *Clinical Kidney Journal* sfx088. <https://doi.org/10.1093/ckj/sfx088>

## Oral steroids should not be used for acute lower respiratory tract infections

Oral steroids should not be used for treating acute lower respiratory tract infections in adults who do not have asthma or other chronic lung disease, as they do not reduce the duration or severity of symptoms (<https://doi.org/10.1001/jama.2017.10572>). These were the findings of a randomized trial of 401 adults comparing oral prednisolone with placebo.

## Diarrhoea still leading global cause of morbidity and mortality

Diarrhoeal mortality by age, sex, geography and year was estimated using the Cause of Death Ensemble Model in the Global Burden of Diseases 2015 study ([https://doi.org/10.1016/S1473-3099\(17\)30276-1](https://doi.org/10.1016/S1473-3099(17)30276-1)). Globally, diarrhoea was estimated to be a leading cause of death among all ages (1.31 million deaths), as well as a leading cause of diarrhoeal disability-adjusted life-years because of its disproportionate impact on young children.

## Updated guidelines for managing hypertension in people with diabetes

On behalf of the American Diabetes Association, nine diabetes experts have reviewed and updated guidelines on the assessment and treatment of hypertension in people with diabetes (<https://doi.org/10.2337/dci17-0026>).

## Changes to bone marrow fat after gastric bypass surgery linked with loss of bone mass

Bone marrow fat is thought to regulate bone metabolism, and high levels of marrow fat are seen in states of low bone mass, severe underweight, and diabetes. In a study of obese women undergoing gastric bypass surgery, increases in bone marrow fat were associated with a greater decline in bone density (Kim et al, 2017). Furthermore, in diabetic women undergoing the surgery, improvements in blood sugar control were associated with decreased marrow fat. The findings suggest that blood sugar metabolism and weight loss may influence marrow fat, which may affect bone health.

'This longitudinal study adds evidence that marrow fat is a unique fat depot that may influence bone. Ultimately, better understanding of bone marrow fat could lead to strategies targeted to the prevention and treatment of osteoporosis, skeletal complications of bariatric surgery, and diabetic bone fragility,' said lead author Dr Tiffany Kim, from the Department of Medicine, University of California, San Francisco.

Kim TY, Schwartz AV, Li X et al (2017) Bone marrow fat changes after gastric bypass surgery are associated with loss of bone mass. *J Bone Miner Res* <https://doi.org/10.1002/jbmr.3212>

## Occupational links to increased risk of developing rheumatoid arthritis

New research indicates that certain occupations may put workers at an elevated risk of developing rheumatoid arthritis (Ilar et al, 2017). The findings suggest that work-related factors, such as noxious airborne agents, may contribute to the pathogenesis of rheumatoid arthritis.

Anna Ilar, of the Karolinska Institutet in Sweden, and her colleagues analysed information from 3522 individuals with rheumatoid arthritis and 5580 controls from the Swedish population-based EIRA (Epidemiological Investigation of Rheumatoid Arthritis) study. They gathered information on environmental, genetic and immunological factors collected from blood samples and questionnaires between 1996 and 2014.

The team found that male workers in the manufacturing sector had a higher risk of developing rheumatoid arthritis than workers within the professional, administrative and technical sectors (the reference group). Within the manufacturing sector, male electrical and electronics workers and material handling operators had a twofold increased risk of rheumatoid arthritis than the reference group. Bricklayers and concrete workers had a threefold increased risk.



Anna Ilar, Institute of Environmental Medicine, Karolinska Institutet, Stockholm

Among women, assistant nurses and attendants had a slightly increased risk of rheumatoid arthritis. Those in the manufacturing sector did not, although this might be because a relatively small number of women work in this sector.

The analyses took into account factors associated with rheumatoid arthritis, including participants' smoking habits, alcohol use, educational level and body mass index. 'Previous studies have not considered

these lifestyle-related risk factors to the same extent. Our findings indicate that work-related factors, such as airborne harmful exposures, may contribute to disease development,' said Ms Ilar. 'It is important that findings on preventable risk factors are spread to employees, employers and decision-makers in order to prevent disease by reducing or eliminating known risk factors,' she added.

More research is needed to pinpoint the exposures that may be involved. Potential suspects include silica, asbestos, organic solvents and motor exhaust fumes.

Ilar A, Alfredsson L, Wiebert P, Klareskog L, Bengtsson C (2017) Occupation and risk of developing rheumatoid arthritis: results from a population-based case-control study. *Arthritis Care Res (Hoboken)* <https://doi.org/10.1002/acr.23321>

## Self-reported walking pace is a good predictor of heart-related deaths

A team of researchers has concluded that middle-aged people who report that they are slow walkers could be at higher risk of heart disease compared to the general population (Yates et al, 2017).

The data were collected between 2006 and 2010 by the UK Biobank from 420 727 middle-aged people across the UK. In the 6.3 years after the data were collected there were 8598 deaths in the population being studied: 1654 from cardiovascular disease and 4850 from cancer.

Principal investigator Professor Tom Yates, Reader in Physical Activity, Sedentary Behaviour and Health at the University of Leicester, said: 'Slow walkers were around

twice as likely to have a heart-related death compared to brisk walkers. This finding was seen in both men and women and was not explained by related risk factors... This suggests habitual walking pace is an independent predictor of heart-related death.

He added: 'We also found that self-reported walking pace was strongly linked to an individual's objectively measured exercise tolerance, further suggesting walking pace is a good measure of overall physical fitness. Therefore, self-reported walking pace could be used to identify individuals who have low physical fitness and high mortality risk that would benefit from targeted physical exercise interventions.'

The team also analysed actual handgrip strength as measured by a dynamometer to see if it was a good predictor of cancer or heart-related deaths. Handgrip strength appeared to be only a weak predictor of heart-related deaths in men and could not be generalized across the population. Associations between self-reported walking pace and handgrip strength and cancer-related deaths were not consistent.

Yates T, Zaccardi F, Dhalwani NN et al (2017) Association of walking pace and handgrip strength with all-cause, cardiovascular, and cancer mortality: a UK Biobank observational study. *Eur Heart J* [ehx449](https://doi.org/10.1093/eurheartj/ehx449) <https://doi.org/10.1093/eurheartj/ehx449>

## Use of opioid prescriptions is more common in people who have survived cancer



**Dr Rinku Sutradhar, Senior Scientist, Institute for Clinical Evaluative Sciences, Toronto and Associate Professor, University of Toronto**

A new study found that opioid prescription use is more common in cancer survivors than in individuals without a history of cancer (Sutradhar et al, 2017). The findings come at a time of rising rates of opioid overdose and addiction that experts have categorized as an epidemic.

Dr Rinku Sutradhar, a senior

scientist at the Institute for Clinical Evaluative Sciences in Toronto and an associate professor with the University of Toronto in Canada, and her colleagues analysed information dating back to 2010 on 8601 adults at least 5 years past a cancer diagnosis who were matched with 8601 individuals without a prior cancer diagnosis. Follow up was stopped at any indication of cancer recurrence, second malignancy, or new cancer diagnosis. The

researchers looked for opioid prescriptions filled at a pharmacy for each individual.

The rate of opioid prescribing was 1.22 times higher among survivors than matched controls. Over a 36-month period, the average number of opioid prescriptions filled by survivors was 7.7, compared with 6.3 for controls. This increased rate of opioid prescribing was also seen among survivors who were 10 or more years past their cancer diagnosis. Individuals with lower income, and those who were younger, from rural neighbourhoods and with more comorbidities had significantly higher prescribing rates. Gender was not associated with prescribing rates.

‘Our findings raise concerns about the diagnosis and management of chronic pain problems among survivors stemming from their cancer diagnosis or treatment,’ said Dr Sutradhar. ‘Physicians providing primary care to cancer survivors should consider close examination of reasons for continued opioid use to differentiate chronic pain from dependency.’

Sutradhar R, Lokku A, Barbera L (2017) Cancer survivorship and opioid prescribing rates: A population-based matched cohort study among individuals with and without a history of cancer. *Cancer* <https://doi.org/10.1002/cncr.30839>

## Telemedicine shows benefits in managing patients with inflammatory bowel disease

Tight, personalized control of inflammatory bowel disease is challenging because of the disease complexity, high pressure on outpatient clinics, and rising incidence. A pragmatic, randomized trial compared self-management with a telemedicine system, developed for all subtypes of inflammatory bowel disease, on health-care use and patient-reported quality of care *vs* standard care (de Jong et al, 2017).

Outpatients aged 18–75 years in two academic and two non-academic hospitals in the Netherlands were randomly assigned to care via a telemedicine system (myIBDcoach) that monitors and registers disease activity or standard care and followed up for 12 months. Participants had inflammatory bowel disease without an ileoanal or ileorectal pouch anastomosis, had internet access and were proficient in Dutch.

A total of 909 patients were randomly assigned to telemedicine ( $n=465$ ) or standard care ( $n=444$ ). At 12 months, the mean number of outpatient visits to the gastroenterologist or nurse was significantly lower in the telemedicine group, as was the mean number of hospital admissions. The mean numbers of flares, corticosteroid courses, emergency visits and surgeries did not differ between groups.

The authors concluded that this tool might be useful for reorganizing care of inflammatory bowel disease towards personalized and value-based health care.

de Jong MJ, van der Meulen-de Jong AE, Romberg-Camps MJ et al (2017) Telemedicine for management of inflammatory bowel disease (myIBDcoach): a pragmatic, multicentre, randomised controlled trial. *Lancet* pii: S0140-6736(17)31327-2. [https://doi.org/10.1016/S0140-6736\(17\)31327-2](https://doi.org/10.1016/S0140-6736(17)31327-2)

## Hyper-resistant and hypervirulent *Klebsiella pneumoniae* discovered

A newly emerged ‘superbug’, hyper-resistant and hypervirulent *Klebsiella pneumoniae*, has been identified by a team from Hong Kong and China. This pathogen may cause untreatable and fatal infections in relatively healthy individuals and could pose an considerable threat to human health (Gu et al, 2017).

Hypervirulent *K. pneumoniae* strains often cause life-threatening community-acquired infections in young and healthy hosts, but are usually sensitive to antibiotics. The authors investigated a fatal outbreak of ventilator-associated pneumonia caused by a new emerging hypervirulent *K. pneumoniae* strain.

The outbreak occurred in the integrated intensive care unit of a new branch of the Second Affiliated Hospital of Zhejiang University, Hangzhou, China. A total of 21 carbapenem-resistant *K. pneumoniae* strains were collected from five patients and characterized.

All five patients had undergone surgery for multiple trauma and subsequently received mechanical ventilation. The patients were aged 53–73 years and were admitted to the intensive care unit between late February and April 2016. They all had severe pneumonia, carbapenem-resistant *K. pneumoniae* infections, and poor responses to antibiotic treatment, and died as a result of severe lung infection, multiorgan failure or septic shock.

The authors concluded that the ST11 carbapenem-resistant hypervirulent *K. pneumoniae* strains pose a substantial threat to human health because they are simultaneously hypervirulent, multidrug resistant and highly transmissible.

Gu D, Dong N, Zheng Z et al (2017) A fatal outbreak of ST11 carbapenem-resistant hypervirulent *Klebsiella pneumoniae* in a Chinese hospital: a molecular epidemiological study. *Lancet Infect Dis* [https://doi.org/10.1016/S1473-3099\(17\)30489-9](https://doi.org/10.1016/S1473-3099(17)30489-9)