

Decrease in stroke rates from atrial fibrillation associated with increased use of anticoagulants

A 10-year study was carried out to determine whether changing patterns of anticoagulant use in atrial fibrillation have impacted on stroke rates in England (<https://doi.org/10.1093/eurheartj/ehy411>).

The authors found that between 2006 and 2016, the prevalence of atrial fibrillation and use of anticoagulants in England increased. From 2011, hospitalized atrial fibrillation-related stroke rates declined and this was significantly associated with increased anticoagulant uptake.

Emergency department attendances increased 2% each year in last decade

NHS Digital has released data on accident and emergency activity in English NHS hospitals for the financial year ending March 2018 (<https://digital.nhs.uk/data-and-information/publications/statistical/hospital-accident--emergency-activity/2017-18>). The data sources are Hospital Episode Statistics and A&E Attendances and Emergency Admissions Monthly Situation Reports.

In 2017–18 there were 23.8 million attendances in accident and emergency – an increase of 2% compared with 2016–17 and 22% since 2008–9.

For 2017–18, 88% of patients spent 4 hours or less in accident and emergency. There were around twice as many accident and emergency attendances (3.0 million attendances) for the 10% of the population living in the most deprived areas compared with the least deprived 10% (1.4 million attendances).

England had the second highest reported accident and emergency attendance rate among the home nations with 27 639 attendances per 100 000 population. Northern Ireland was the highest with 34 820 attendances per 100 000 population.

Duration and intensity of exercise unrelated to risk of early natural menopause

A large prospective study has analysed data from 107 275 women in the Nurses' Health Study II, and found no association between physical activity at any age and early natural menopause (Zhao et al, 2018).

Female US registered nurses aged 25–42 years completed questionnaires about their lifestyles and medical conditions every 2 years from 1989 to 2011. They were asked about the time they spent in recreational physical activities and high intensity activities. The researchers also collected information on a range of other factors including the age when the women had their first periods, whether or not they had been pregnant and how often, and use of oral contraceptives and hormone therapy.

In order to assess the frequency, duration and intensity of the activities, the researchers multiplied the hours per week of each activity by its metabolic equivalent (MET) score to create total MET hours per week.

During the 20 years of follow up, 2786 women experienced natural menopause

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before the age of 45 years. The researchers found no significant difference in the risk of early menopause between, for instance, women reporting less than three MET hours a week of physical activity and women reporting 42 or more hours a week (the equivalent to 4 hours or more of running or 8 hours or more of brisk walking per week). Neither the body mass index, smoking status nor the amount of physical activity that the women reported in their teenage years was related to the risk of early menopause.

Dr Elizabeth Bertone-Johnson, Professor of Epidemiology at the University of Massachusetts, USA, who directed the research, said: 'Our results, in conjunction with other studies, provide substantial evidence that physical activity is not importantly associated with early menopause.'

Zhao M, Whitcomb BW, Purdue-Smithe AC, Manson JE, Hankinson SE, Rosner BA, Bertone-Johnson ER. Physical activity is not related to risk of early menopause in a large prospective study. *Hum Reprod.* 2018 Oct 1;33(10):1960–1967. <https://doi.org/10.1093/humrep/dey267>

Coverage declines in nine of the 12 routine child vaccinations in England

The NHS Digital report, Childhood Vaccination Coverage Statistics (<https://digital.nhs.uk/data-and-information/publications/statistical/nhs-immunisation-statistics/england-2017-18>), shows that coverage declined for nine of the 12 routine vaccinations in 2017–18 in England compared to the previous year. The level of coverage increased for one vaccine and remained the same for two.

Coverage for the measles, mumps and rubella vaccine for children reaching their second birthday fell to 91.2% in England in 2017–18 compared to 91.6% in 2016–17 – the fourth consecutive year that measles, mumps and rubella vaccine coverage has decreased. The World Health Organization

target for coverage is 95%. Coverage for this vaccine fell in six of the nine English regions.

The north east had the highest level of coverage at 94.5% (down from 94.9% in 2016–17). London had the lowest level of coverage at 85.1% (unchanged from 2016–17).

The rotavirus vaccine was the only one that had an increase in coverage, from 89.6% in 2016–17 to 90.1% in 2017–18.

This year's report is the first where figures for the meningitis B vaccine are included as a national statistic, having been published as experimental statistics in last year's report. These figures show that national coverage for this vaccine was 92.5%. Eight out of nine regions achieved coverage above 90%.

Striking increase in mental health conditions in children and young people

The proportion of children and young people saying they have a mental health condition has grown six fold in England over two decades and has increased across the whole of Britain in recent years (Pitchforth et al, 2018).

A study analysed data from 140 830 participants aged between 4 and 24 years, in 36 national surveys from England, Scotland and Wales.

The researchers analysed responses to questions asking children and young people (or parents for 4–12-year-olds) for a yes/no answer on whether they had any ‘longstanding mental health condition’ and compared this to general longstanding health conditions (both physical and mental). They also looked at questions where responses indicated emotional or psychological distress.

In 1995, just 0.8% of 4–24-year-olds in England reported a longstanding mental health condition. By 2014 this had increased to 4.8%. Across England, Scotland and Wales, using data between 2008 and 2014, reports of a mental health condition in England and Scotland, and



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reports of treatment for one in Wales, grew by 60%, 75% and 41% respectively.

Commenting on the findings, Dr Dougal Hargreaves of Imperial College London and a Visiting Research Analyst at the Nuffield Trust said: ‘We know that there is already a growing crisis in the availability of child and adolescent mental health services, with many more children and young people needing treatment than there are services to provide it. Our study suggests that this need is likely

to continue to grow in future.

However, he highlighted that: ‘The increase in reports of longstanding mental health conditions may also mean that children and young people are more willing to open up about their mental health, suggesting that we have made some progress in reducing the stigma associated with mental ill health.’

Pitchforth J, Fahy K, Ford T, Wolpert M, Viner RM, Hargreaves DS. Mental health and well-being trends among children and young people in the UK, 1995–2014: analysis of repeated cross-sectional national health surveys. *Psychol Med.* 2018 Sep 11:1–11. <https://doi.org/10.1017/S0033291718001757>

Gestational diabetes may predispose mothers to developing symptoms of postpartum depression

Mothers diagnosed with gestational diabetes mellitus have an elevated risk of developing postpartum depression symptoms, according to a new study (Ruohomäki et al, 2018).

The study pooled data from Kuopio Birth Cohort, which is an ongoing follow-up of women from the beginning of their pregnancy. A total of 1066 mothers with no previous mental health issues were included.

Postpartum depression symptoms are experienced by 10–15% of mothers after childbirth. This study used the Edinburgh Postnatal Depression Scale to assess depression symptoms during the third trimester of pregnancy and 8 weeks after delivery.

Postpartum depression symptoms were observed in 16% of mothers diagnosed with gestational diabetes mellitus, and in

approximately 9% of mothers without gestational diabetes mellitus. The researchers used statistical methods to adjust the results for other factors contributing to the risk of gestational diabetes mellitus and postpartum depression symptoms, such as maternal age at delivery, body mass index and depression symptoms experienced during pregnancy.

First author and PhD student Aleksu Ruohomäki, commented: ‘Being diagnosed during pregnancy with a disease that might harm the fetus can be a stressful experience, which may predispose to depression symptoms.’

Ruohomäki A, Toffol E, Upadhyaya S et al. The association between gestational diabetes mellitus and postpartum depressive symptomatology: A prospective cohort study. *J Affect Disord.* 2018 Dec 1;241:263–268. <https://doi.org/10.1016/j.jad.2018.08.070>

Dementia predicted to overtake heart disease as biggest killer of men by 2020

In 2016 the most common cause of death in men was heart disease (13.6% of deaths) and in women was dementia and Alzheimer’s disease (15.8% of deaths). Mortality rates from dementia and Alzheimer’s are expected to continue to increase for both men and women. For men, it is estimated that the rate may overtake heart disease as early as 2020 (<https://www.gov.uk/government/publications/health-profile-for-england-2018>).

Obstructive sleep apnoea linked with higher risk of developing gout

A matched cohort study has shown that people with obstructive sleep apnoea have a higher risk of developing gout, even beyond the first years after being diagnosed with the sleep disorder (<https://doi.org/10.1002/art.40662>).

Predicting survival and disease control of patients with HPV-negative head and neck cancer

A study which used retrospective miRNA expression profiling found that a five-miRNA signature is a strong, independent prognostic factor for disease recurrence and survival of patients with human papillomavirus (HPV)-negative head and neck squamous cell carcinoma (<https://doi.org/10.1158/1078-0432.CCR-18-0776>).

Electroencephalograms could detect pre-clinical neurological signs

Patients suffering from mental and neurological disorders, including autism, attention deficit-hyperactivity disorder and dementia, could benefit from new developments in brain scanning technology (<https://doi.org/10.1080/21646821.2018.1508983>).

Easy-to-use, lower-cost electroencephalography sensors are now widely available. This new generation of portable electroencephalography devices makes functional brain measurement possible during primary care check-ups for the first time.

The data the electroencephalograms produce, stored in patients' electronic health records, can be analysed by computer algorithms. Growing evidence suggests that new analytical methods can effectively detect subtle signs of atypical brain changes before they can be spotted clinically.

Professor William Bosl, Associate Professor of Health Informatics and Clinical Psychology, Programs University of San Francisco, San Francisco, California, said: 'Neuroscience research suggests that electroencephalography analysis may reveal information about a wide range of neurological and mental disorders, thus opening up a new approach based on early detection and prevention.'

Understanding the physiological adaptations of Sherpas might inform intensive care treatments

A research expedition to Mount Everest has shed light on the unique physiological basis of adaptations seen in the native Sherpa people, which make them better suited to life at high altitude (Davies et al, 2018). This improved understanding could help improve the treatment of patients with conditions related to reduced levels of oxygen in the blood and tissues.

The team compared Sherpas with an altitude naive population of lowlanders. Baseline measurements were obtained in London (50 m altitude) and Kathmandu (1300 m altitude) for the lowlander and Sherpa participants respectively, and then repeated study measurements were taken as participants ascended to the base camp of Mount Everest (5300 m altitude). Individuals followed an identical ascent profile, which ensured that the physiological challenge, environmental oxygen content and temperature were matched for all participants.

As the amount of surrounding environmental oxygen decreased, Sherpas were able to maintain a greater degree of blood flow and oxygen delivery to the working tissues.



Dr Edward Gilbert-Kawai, Research Leader, Xtreme Everest 2 and Anaesthetic and Intensive Care Medicine Specialist Registrar, University College London Centre for Altitude Space and Extreme Environment Medicine, UCLH NIHR Biomedical Research Centre, Institute of Sport and Exercise Health, London

In essence, this shows that Sherpas are able to deliver more oxygen around their bodies. These novel findings might also explain how Sherpas thrive at altitude without increasing the haemoglobin content of their blood.

Co-author Dr Edward Gilbert-Kawai commented on the findings: 'The mechanisms identified in this study, such as increased blood flow and oxygen delivery to working tissue, feasibly describe an alternative means to aid oxygen delivery in critically ill patients. Future research should establish the underlying cellular mechanisms behind this response.'

He concluded: 'Identifying such differences and mimicking

those in humans most highly adapted to reduced environmental oxygen may thus reveal novel target pathways that are amenable to drug treatment in the critically ill, and could provide new directions in critical care medicine.'

Davies T, Gilbert-Kawai E, Wythe S et al; Xtreme Everest 2 Research Group. Sustained vasomotor control of skin microcirculation in Sherpas versus altitude-naive lowlanders: Experimental evidence from Xtreme Everest 2. *Exp Physiol*. 2018 Sep 4. <https://doi.org/10.1113/EP087236>

International guideline for diagnosis of idiopathic pulmonary fibrosis

New guidelines give clinical recommendations for the diagnosis of idiopathic pulmonary fibrosis, representing a collaborative effort between the American Thoracic Society, European Respiratory Society, Japanese Respiratory Society and Latin American Thoracic Society (<https://doi.org/10.1164/rccm.201807-1255ST>).

The guideline panel updated the diagnostic criteria for idiopathic pulmonary fibrosis. Previously defined patterns of usual interstitial pneumonia were refined to usual interstitial pneumonia, probable usual interstitial

pneumonia, indeterminate for usual interstitial pneumonia, and alternate diagnosis.

For patients with newly detected interstitial lung disease who have a high-resolution computed tomography scan pattern of one of the latter three, conditional recommendations were made for performing bronchoalveolar lavage and surgical lung biopsy; because of lack of evidence, no recommendation was made regarding transbronchial lung biopsy or lung cryobiopsy.

In contrast, for patients with a high-resolution computed tomography scan

pattern of usual interstitial pneumonia, strong recommendations were made against performing surgical lung biopsy, transbronchial lung biopsy and lung cryobiopsy, and a conditional recommendation was made against performing bronchoalveolar lavage.

Additional recommendations included a conditional recommendation for multidisciplinary discussion and a strong recommendation against measurement of serum biomarkers for the sole purpose of distinguishing idiopathic pulmonary fibrosis from other interstitial lung diseases.

Which treatable traits predict future attacks in patients with severe asthma?

Investigators have assessed the prevalence of treatable traits in severe asthma and have determined which specific traits are predictive of future asthma attacks (McDonald et al, 2018). Their findings are the result of an extensive national collaborative study in Australia.

The Australasian Severe Asthma Web-Based Database enrolled 434 participants with severe asthma and a comparison group of 102 participants with non-severe asthma. Published treatable traits were mapped to registry data fields and their prevalence was described.

Participants were characterized at baseline and every 6 months for 24 months.

A total of 24 treatable traits were identified in three domains: pulmonary, extrapulmonary and behavioural/risk factors. Patients with severe asthma expressed more pulmonary and extrapulmonary treatable traits than those with non-severe asthma. Ten traits predicted future asthma attacks, with the strongest ones



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being a patient who is prone to exacerbations, depression, inhaler device polypharmacy, vocal cord dysfunction and obstructive sleep apnoea. The findings may help clinicians develop individualized management strategies for patients with severe asthma.

‘We report the higher burden experienced by patients with severe asthma compared to non-severe and importantly identify which treatable traits are predictive of future asthma attacks. This highlights the usefulness of the treatable traits approach in severe asthma and identifies important targets for treatment,’ said lead author Dr Vanessa McDonald,

from the Centre of Excellence in Severe Asthma and Priority Research Centre for Healthy Lungs, Faculty of Health, University of Newcastle, Callaghan, NSW, Australia.

McDonald VM, Hiles SA, Godbout K et al. Treatable traits can be identified in a severe asthma registry and predict future exacerbations. *Respirology*. 2018 Sep 19. <https://doi.org/10.1111/resp.13389>

Mandated public reporting for severe sepsis reduces risk-adjusted mortality

In 2013, the New York State Department of Health began a mandatory, state-wide initiative to improve early recognition and treatment of severe sepsis and septic shock. It required all hospitals to submit and follow evidenced-informed protocols for early identification and treatment of severe sepsis or septic shock.

Levy et al (2018) examined protocol initiation, 3-hour and 6-hour sepsis bundle completion, and risk-adjusted hospital mortality among adult patients with severe sepsis and septic shock. They performed a cohort analysis of all patients from all 185 hospitals in New York State from 1 April 2014 to 30 June 2016. A total of 113 380 cases were submitted of which 91 357 hospitalizations from 183 hospitals met the study inclusion criteria.

Of these patients, 74 293 (81.3%) had the sepsis protocol initiated. Among these, 3-hour bundle compliance increased from

53.4% to 64.7% during the study period ($P<0.001$), while among those eligible for the 6-hour bundle ($n=35\,307$) compliance increased from 23.9% to 30.8% ($P<0.001$). Risk-adjusted mortality decreased from 28.8% to 24.4% ($P<0.001$) in patients among whom a sepsis protocol was initiated. Greater hospital compliance with 3-hour and 6-hour bundles was associated with shorter length of stay and lower risk and reliability-adjusted mortality.

This initiative increased compliance with sepsis-performance measures. Risk-adjusted sepsis mortality decreased during the initiative and was associated with increased hospital-level compliance.

Levy MM, Gesten FC, Phillips GS et al. Mortality changes associated with mandated public reporting for sepsis: the results of the New York State Initiative. *Am J Respir Crit Care Med*. 2018 Sep 7. <https://doi.org/10.1164/rccm.201712-2545OC>

Perivascular fat attenuation index enhances cardiac risk prediction

Coronary artery inflammation inhibits fatty tissue formation surrounding the blood vessels, known as perivascular fat. Researchers developed the perivascular fat attenuation index as an imaging biomarker to quantify inflammation-induced changes in perivascular fat. An international team of researchers undertook a post-hoc analysis of outcome data to assess the prognostic value of perivascular fat attenuation mapping for all-cause and cardiac mortality (Oikonomou et al, 2018).

The team behind the Cardiovascular Risk Prediction using Computed Tomography (CRISP-CT) study collected data from two cohorts of consecutive patients undergoing coronary computed tomography angiography – 1872 patients in Germany from 2005–9 (derivation cohort) and 2040 patients at Cleveland Clinic from 2008–16 (validation cohort). The median patient age of the cohorts was 62 and 53 years.

In both cohorts, higher perivascular fat attenuation index values – indicating greater coronary inflammation – were associated with significantly higher rates of death from any cause and death from cardiac causes.

‘This is an exciting new technology which has the potential to provide a simple, non-invasive answer to detect patients at risk for future fatal heart attacks’, said co-first author Professor Milind Desai, a cardiologist at Ohio-headquartered Cleveland Clinic. ‘More importantly, it highlights the incredible value of cross-continent collaboration to validate the findings in different populations.’

Oikonomou EK, Marwan M, Desai MY et al. Non-invasive detection of coronary inflammation using computed tomography and prediction of residual cardiovascular risk (the CRISP CT study): a post-hoc analysis of prospective outcome data. *Lancet*. 2018 Sep 15;392(10151):929-939. [https://doi.org/10.1016/S0140-6736\(18\)31114-0](https://doi.org/10.1016/S0140-6736(18)31114-0)