

Screening for type 2 diabetes needs 'careful re-evaluation'

The process for screening for type 2 diabetes or those at high risk of the condition needs 'careful re-evaluation', according to the first study on the effectiveness of testing methods (Khunti et al, 2015).

Diabetes screening has been advocated, yet information on the response and diagnostic rates of different screening strategies is not available.

Researchers at the University of Leicester have now found that 'multi-step' programmes lead to more people responding to screening invitations and the

number of those needing a final test for a definite diagnosis being reduced. This was irrespective of the invitation method, developmental status of the countries and/or whether the location of the programme is in an urban or rural setting.

The study found that the rate of people diagnosed with type 2 diabetes in a one-step programme was 6.6%, 13.1% when two steps were involved, but 27.9% in screening programmes involving three or four steps.

The number needed to be invited to an oral glucose tolerance test (OGTT) to detect one case of type 2 diabetes was 15 people for one-step programmes, 7.6 for two steps and 3.6 for strategies with three or four steps.

Lead researcher Professor Kamlesh Khunti, who is Professor of Primary Care Diabetes and Vascular Medicine at the University of Leicester and Co-Director of the Leicester Diabetes Centre, said: 'We have been able to provide evidence for the overall



Professor Kamlesh Khunti, Professor of Primary Care Diabetes and Vascular Medicine, University of Leicester, Leicester

response rate and yield of diabetes screening in the background of a variety of factors such as geographical area, invitation methods and locality of the population, which influences decision making when undertaking this task.

Professor Khunti added: 'We can conclude that performing a multi-step approach in a population screening increases the yield and decreases the number needed to screen by OGTT and in the two-step approach it even increases the initial response rate to the invitation. In terms of absolute numbers, the highest yield of diabetes, however, is obtained in the one-step studies where an OGTT is offered as a screening test to the population.'

He emphasized: 'The process of screening for type 2 diabetes or those at high risk of diabetes needs careful re-evaluation by local policy makers in each country especially in view of our findings.'

Khunti K, Mani H, Achana F, Cooper N, Gray LJ, Davies MJ (2015) Systematic review and meta-analysis of response rates and diagnostic yield of screening for type 2 diabetes and those at high risk of diabetes. *PLoS ONE* 10(9): e0135702 (doi: 10.1371/journal.pone.0135702)

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Fast-track cancer referral is saving lives

Use of the urgent referral pathway (often called the 2-week wait system) by general practices for patients with suspected cancer is saving lives, according to new research findings (Møller et al, 2015).

The results suggest that use of the urgent referral pathway is effective.

The urgent referral pathway for people with suspected cancer has been available in England since the early 2000s,

Professor Henrik Møller, Cancer Epidemiology and Population Health, King's College London, London



but its use among general practices varies considerably and its impact on cancer survival is unknown.

So a team of researchers, led by Professor Henrik Møller at King's College London, set out to assess the overall effect of the English urgent referral pathway on cancer survival.

Using national records on cancer waiting times, diagnoses and deaths, they analysed data for 215 284 cancer patients from 8049 general practices in England who were diagnosed or first treated in 2009 and followed up to 2013.

Three measures were included: the referral ratio (each practice's use of the 2-week wait system compared with other practices), detection rate (percentage of cancers in a practice that were detected via the 2-week clinics), and conversion rate (proportion of patients who went through the 2-week wait system and who were then shown to have cancer).

The research team found that practices with a high

referral ratio and those with a high detection rate had reduced cancer mortality, although the conversion rate showed no association.

The researchers stress that this is an observational study so no definitive conclusions can be drawn about cause and effect. However, they estimate that an additional 2400 patients from low referring practices might have been alive at the 4-year time point if use of urgent referral had been higher.

These results suggest that use of the urgent referral pathway could be efficacious. The authors conclude: 'General practices that consistently have a low propensity to use urgent referrals could consider increasing the use of this pathway to improve the survival of their patients with cancer.'

Møller H, Gildea C, Meechan D, Rubin G, Round T, Vedsted P (2015) Use of the English urgent referral pathway for suspected cancer and mortality in patients with cancer: cohort study. *BMJ* 351: h5102 (doi: 10.1136/bmj.h5102)

Old age psychiatry services better meet needs of older patients with functional mental illness

A cross-sectional survey was undertaken to compare the extent to which general adult and old age psychiatric services meet the needs of older people with enduring mental illness (Abdul-Hamid et al, 2015).

A total of 74 elderly patients with functional psychiatric disorders were identified by reviewing the notes of patients over the age of 60 years living in a defined inner urban catchment area. Data were collected on the morbidity and needs of the sample. Needs were assessed using the Elderly Psychiatric Needs Schedule.

The participants in contact with old age psychiatry had

significantly fewer unmet needs compared with those in contact with general adult psychiatry (2.8 *vs* 5.6, $t = 2.2$, $P < 0.03$). Total needs were not significantly different between those managed by old age and general adult services (8.0 *vs* 6.5 respectively, $t = 1.2$, $P = 0.2$).

There has been a growing trend in recent years for older people to be treated in 'ageless' mental health services which serve everyone, whether they are 18 or 80 years old. However, this study adds to growing evidence that older people with mental illness are disadvantaged if they are cared for in ageless services.

The authors concluded that: 'In spite of the limitations of this paper it is safe to conclude that the assumption implicit in the construction of "ageless" services, in that working-age adult teams caring for people with enduring mental health problems in later life might be better than old age psychiatry services, is not supported.'

Abdul-Hamid WK, Lewis-Cole K, Holloway F, Silverman AM (2015) Comparison of how old age psychiatry and general adult psychiatry services meet the needs of elderly people with functional mental illness: cross-sectional survey. *Br J Psychiatry* (doi: 10.1192/bjp.bp.114.145706)

Vaccinating children may be cost effective for tackling flu

Extending flu vaccine administration to UK children aged 5–16 years may be a cost-effective way to both reduce the burden on the individual children and to reduce disease burden in the general population (doi: 10.1186/s12916-015-0452-y).

Risks and benefits of hysterectomy with electric power morcellation

An American study to assess the risks and benefits of three types of hysterectomy procedures has found that laparoscopic hysterectomy without morcellation was the most effective and least costly of the three procedures (doi: 10.1093/jnci/djv251).

National Audit of Inpatient Falls shows discrepancy between policies and care

The National Audit of Inpatient Falls, managed by the Royal College of Physicians, reveals that many trusts have suitable policies covering the main areas of falls prevention. However, there is often no association between these policies and the care patients receive once admitted to hospital.

New layer of visual brain imaging uncovered

Neuroscientists have gained new insight into how the brain perceives the world by using high resolution high field magnetic resonance imaging to study activity in different layers of the visual cortex in great detail (Muckli et al, 2015).

The visual cortex processes sight by receiving feedforward input from the eyes, but feedback is also required from parts of the brain that conceptualize and contextualize in

order for us to fully comprehend what we are seeing.

Scientists eager to study the feedback system in more detail had not been able to isolate the contextual feedback signal in human cortical layers, until now. Researchers at the University of Glasgow have come up with a solution by taking advantage of the fact that input from the retina is mapped out in the visual cortex.

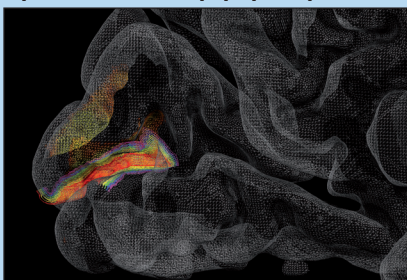
In order to study the feedback signal, the researchers showed subjects a picture – for example a car – part of which was obscured by a white square. This enabled them to identify and isolate the area of the brain that responded only to the occluded portion of the scene, and thus quieten the feedforward signal.

Even in the absence of sensory input the visual cortex communicates with other brain areas. By measuring the activity in this part, the researchers could see where feedback and feedforward activity took place across the six different layers of the cortex as the brain tried to complete the picture by inferring what the whole scene looked like.

Professor Lars Muckli, of the Institute of Neuroscience and Psychology, commented: 'Understanding the brain's feedback system is important if we are to develop more powerful computers and artificial intelligence systems, but it might also help us to better understand mental illnesses such as schizophrenia and autism.'

Muckli L, De Martino F, Vizioli L et al (2015) Contextual Feedback to Superficial Layers of V1. *Curr Biol* 25(20): 2690–5 (doi: 10.1016/j.cub.2015.08.057)

Cortical surface reconstruction overlaid with grid lines depicting cortical depths from superficial (red) to deep (purple) layers.



Sleep apnoea increases the risk of developing gout

Sleep apnoea is associated with hyperuricaemia caused by hypoxia-induced nucleotide turnover. Using data from The Health Improvement Network in the UK researchers have identified individuals with a first-ever physician diagnosis of sleep apnoea and assessed the relationship of incident sleep apnoea to the risk of incident gout (Zhang et al, 2015).

For each patient with sleep apnoea, up to five non-sleep apnoea individuals were matched. The incidence rate of gout was estimated and the relation of sleep apnoea to the risk of incident gout was examined, and the rate difference in gout caused by sleep apnoea was assessed.

Among 9865 patients with newly-diagnosed sleep apnoea

and 43598 comparators 270 incident cases of gout were identified over 1 year of follow-up, resulting in incidence rates of 8.4/1000 and 4.8/1000 person-years respectively. The crude and multivariate rate ratios of incident gout for sleep apnoea were 1.7 (95% confidence interval 1.3–2.2) and 1.5 (95% confidence interval 1.1–2.1) respectively. The effect of sleep apnoea persisted across subgroups.

This indicates that sleep apnoea is independently associated with an increased risk of incident gout. Future research should examine potential benefits of correcting sleep apnoea-induced hypoxia on the risk of hyperuricaemia and gout flares.

Lead author Dr Yuqing Zhang commented: ‘Since



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sleep apnoea-associated hypoxia is treatable, these findings may have both important clinical and public health implications in the prevention and management of gout.’

Zhang Y, Peloquin C, Dubreuil M, Roddy E, Lu N, Neogi T, Choi HK (2015) Sleep apnea and the risk of incident gout: a population-based body mass index-matched cohort study. *Arthritis Rheumatol* (doi: 10.1002/art.39330)

People with mental ill health have ‘striking’ disparity in use of emergency care

People with mental ill health had almost five times more emergency hospital admissions last year than people without, yet the vast majority (four fifths) of these admissions were not explicitly to support mental health needs. People with mental ill health also had 3.6 times more potentially preventable emergency admissions than those without but slightly fewer planned inpatient admissions.

Drawing on over 100 million hospital records per year, the analysis, from a study published by the Nuffield Trust and Health Foundation (www.quality-watch.org.uk/focus-on/physical-and-mental-health), looks at patterns of emergency and planned hospital use between 2009–10 and 2013–14.

The findings of this analysis suggest that the physical health of people with mental ill health is not being adequately managed.

Dying at home leads to more peace and less grief for patients with cancer and their relatives

Dying at home could be beneficial for terminally ill cancer patients and their relatives, according to research into the views of relatives (Gomes et al, 2015).

According to questionnaires completed by relatives, cancer patients who die at home experience more peace and a similar amount of pain compared to those who die in hospital, and their relatives also experience less grief. However, this requires discussion of preferences and access to a comprehensive home care package.

Despite differing trends, the most frequent location of death for cancer patients remains hospital. Evidence regarding

whether dying at home is better or worse than in hospital has, however, been inconsistent.

The new study took place in four health districts in London covering 1.3 million residents. A total of 352 bereaved relatives of cancer patients completed questionnaires after their death – 177 patients died in hospital and 175 died at home. The questionnaires included validated measures of the patient’s pain and peace in the last week of life and the relative’s own grief intensity.

Lead author Barbara Gomes, from the Cicely Saunders Institute at King’s College London, said: ‘This is the most comprehensive population-based study to date of

factors and outcomes associated with dying at home compared to hospital. We know that many patients fear being at home believing they place an awful burden on their family. However, we found that grief was actually less intense for relatives of people who died at home.’

The researchers also highlight the crucial role of families in caring for patients at home and in decision-making processes, and the need to facilitate family caregiving.

Gomes B, Calanzani N, Koffman J, Higginson IJ (2015) Is dying in hospital better than home in incurable cancer and what factors influence this? A population-based study. *BMC Medicine* 13: 235 (doi: 10.1186/s12916-015-0466-5)

INFECTIOUS DISEASE WEEK SAN DIEGO, CALIFORNIA, 7–11 OCTOBER

Monoclonal antibody prevents *Clostridium difficile* recurrence

A monoclonal antibody may represent a new weapon in the treatment arsenal for *Clostridium difficile* infection.

Integrated results of two phase 3 studies known as MODIFY I and MODIFY II demonstrate about a one third reduction in the rate of *C. difficile* recurrence using bezlotuxumab, a fully human monoclonal antibody that neutralizes *C. difficile* toxin B, said Professor Mark Wilcox, from

Leeds Teaching Hospital, Leeds, UK.

The two phase 3 studies were randomized, double-blind, placebo-controlled trials conducted in a total of 2413 adults (mean age 63.2 years) with a diagnosis of *C. difficile* infection who were receiving a 10–14-day course of standard-of-care antibiotics (oral metronidazole, oral vancomycin with or without intravenous metronidazole or oral fidaxomicin

with or without intravenous metronidazole). Patients were randomized to saline infusion or a single intravenous infusion of either actotuxumab (only in MODIFY I) (an IgG1 antibody directed against *C. difficile* toxin A), bezlotuxumab or both, given as soon as possible after the start of antibiotic therapy.

About one quarter of patients enrolled had a *C. difficile* episode in the previous 6 months, and about 15% had two or more previous episodes.

In the combined data, *C. difficile* recurred in 27% of patients

randomized to placebo compared with 17% randomized to bezlotuxumab alone ($P<0.0001$) and 15% randomized to both bezlotuxumab and actotuxumab ($P<0.0001$). The efficacy of bezlotuxumab in preventing recurrence was sustained over 12 weeks of follow up.

Global cure, a secondary endpoint, was achieved in 54% of the placebo group, 64% of the bezlotuxumab alone group ($P=0.0001$) and 58% of the bezlotuxumab and actotuxumab group.

Wayne Kuznar

Antimicrobial stewardship cuts infection rate and saves money

Implementation of an antibiotic stewardship programme at the University of California (UC) Davis Children's Hospital, Sacramento, resulted in antimicrobial cost savings and a significant reduction in the incidence of *Clostridium difficile* infection.

Hospitalized children 1–17-years-old were over three times less likely to develop *C. difficile* infection after implementation of the antibiotic stewardship programme during 2011–14 compared with 2008–10, the era before the antibiotic stewardship programme (2.8 vs 9.2 per 10 000 patient days; $P=0.003$).

Antibiotic-related costs at the 110-bed paediatric facility over the two periods decreased from \$277 620 annually to \$221 590 annually, for a yearly cost savings of \$56 030.

The antibiotic stewardship programme used multiple forms of intervention, including audit of charts and requir-

ing preauthorization for use of restricted antimicrobials.

Interventions performed during the implementation phase of the programme were stopping or limiting the duration of antimicrobial use about two thirds of the time, de-escalating therapy in approximately 10%, escalating or increasing the duration of therapy in 14% (intravenous antimicrobials) to 23% (oral antimicrobials) and converting from intravenous to oral antimicrobial in 9% of patients started on intravenous administration.

'When physicians call for approval of restricted antimicrobials, it does require one of our infectious disease physicians to be available, and they are available 7 days a week, 24 hours a day,' said Dr Jean Wiedeman, study co-author and medical director of pediatric antimicrobial stewardship at UC Davis Medical Center.

Wayne Kuznar

Reducing invasive aspergillosis rates in chemotherapy patients

An antifungal prophylaxis protocol reduces the incidence of invasive aspergillosis in patients undergoing induction chemotherapy for the treatment of acute leukaemia. Following implementation of the prophylaxis protocol at Hôpital du Sacré-Coeur de Montréal, the incidence of proven or probable invasive aspergillosis was more than halved in patients with leukaemia, reported Dr Ariane Morin-Quintal.

The mortality rate can be as high as 40% when patients with haematological malignancies develop invasive aspergillosis.

Medical charts of all adult patients admitted to the institution's haematology ward for acute leukaemia between October 2011 and September 2014 were reviewed. The rates of invasive aspergillosis were compared between two

periods: the first 18 months when anti-aspergillus preemptive therapy was used and a second 18-month period during which patients received posaconazole prophylaxis.

Records were retrieved for 65 patients who had a total of 105 courses of induction chemotherapy. The incidence of proven or probable invasive aspergillosis was 9.7% during the preemptive period and 4.3% during the prophylaxis period, resulting in a number needed to treat to prevent one infection of 19. When including cases of possible invasive aspergillosis, the incidence decreased from 16.1% to 8.7% with posaconazole prophylaxis.

Physicians adhered to protocol in 82.0% of treatments during the preemptive period compared with 93.2% during the prophylaxis protocol.

Wayne Kuznar