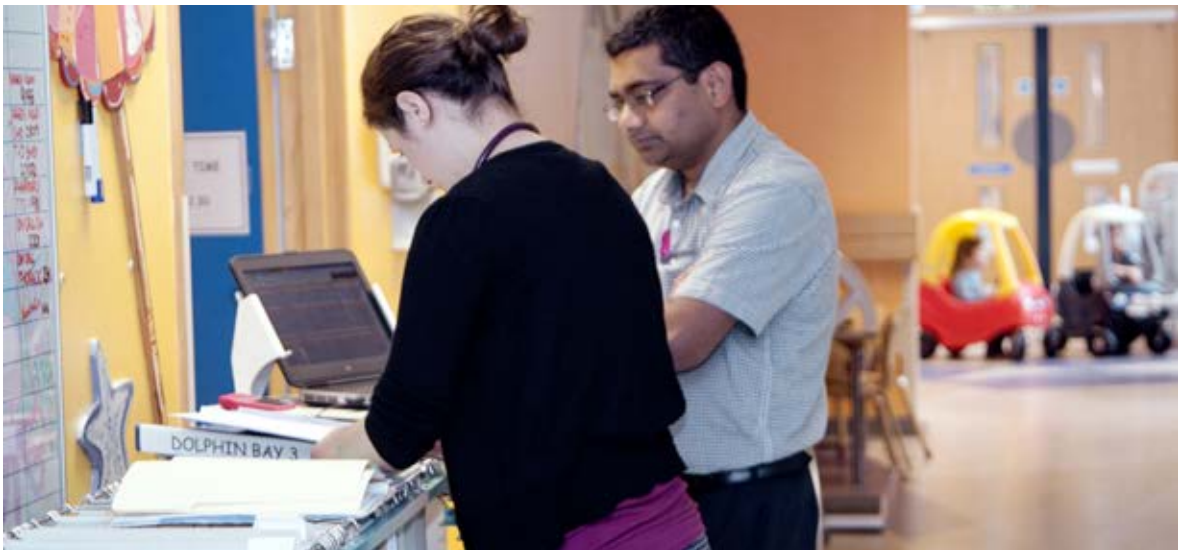
this week

PAGE 297 60 seconds on…psilocybin • **PAGE 298** Tests to rule out pre-eclampsia



LIFE IN VIEW/SPL

Joint training improves child health

Two royal colleges have urged GPs and paediatricians to train together to boost their skills and help improve standards of care for children.

Interprofessional training will help clinicians, increase the quality of child care, and reduce strain on services, claimed the Royal College of Paediatrics and Child Health and the Royal College of General Practitioners in a joint position paper, published on 13 May.

The colleges cited the success of a pilot scheme that brought together trainee GPs and paediatricians, which showed a reduction in parents taking their children to the emergency department, fewer referrals to specialist children's services, and better adherence to national guidance.

The new report, *Learning Together to Improve Child Health*, detailed the Learning Together scheme in London, which involved GP and paediatric registrars in their final years of training working in child health training clinics together.

Most of the children in the pilot had long term conditions such as asthma, were frequent general practice attenders, or needed follow-up after attendance in hospital. The scheme has led to referral or emergency department visits being avoided in 55% of appointments and saw compliance with clinical guidelines increase from 57% to 76%. Nearly all (98%) of 125 parents and carers interviewed said that they had not made an unplanned visit to hospital for their child's condition during the one to two months since their clinic visit because they had learnt how to manage their child's condition more effectively.

Exposing trainee paediatricians and GPs to more children outside their traditional healthcare setting enables them to learn from one another, improves health outcomes among children, and reduces costs, argued the report.

Nigel Mathers, honorary secretary for the RCGP, said, "A quarter of patients in general practice are under 19 years of age, so it is important that GPs are able to share knowledge and skills with our paediatrician colleagues in order to ensure that our young patients receive the best possible care."

David Evans, lead for training and assessment at the RCPCH, said, "Despite the high quality of specialist GP and paediatric training in the UK, children still face relatively poor health outcomes" when compared with those in similar countries.

Adrian O'Dowd, London

Cite this as: *BMJ* 2016;353:i2715

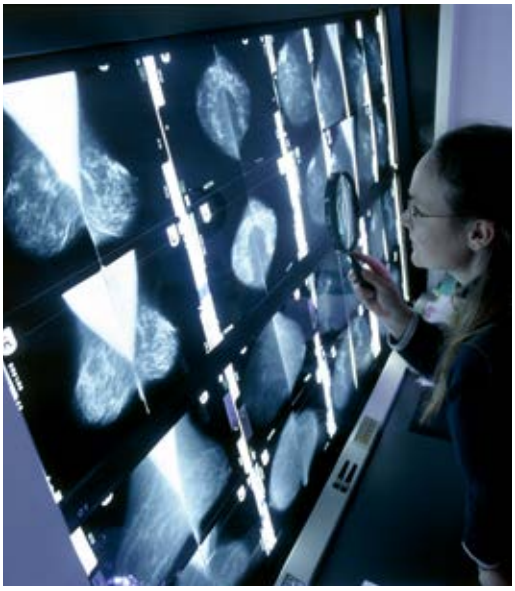
Children in the UK have worse health outcomes than children in similar countries, said David Evans from the Royal College of Paediatrics and Child Health

NEWS ONLINE

- High level of scrutiny is crushing innovation in NHS
- Irish medical school in Bahrain may breach international law over human rights concerns

- Pfizer blocks sales of its drugs for executions

SEVEN DAYS IN



SPL

Better cancer care at risk from lack of radiologists

The Royal College of Radiologists has warned that a shortage of radiologists could hamper NHS England's plans to provide fast tracked cancer diagnosis.

The national cancer strategy, launched by the National Cancer Transformation Board, unveiled plans for patients with suspected cancer to have cancer diagnosed or ruled out within four weeks of initial referral by a GP. From 2017 five areas will test the four week diagnosis standard.

NHS England will invest £15m in a bid to provide "world class" cancer care by speeding up diagnosis, improving the experience of patients, and helping people living with and beyond cancer.

However, Giles Maskell, president of the Royal College of Radiologists, said that there were not enough radiologists to carry out the increased number of tests.

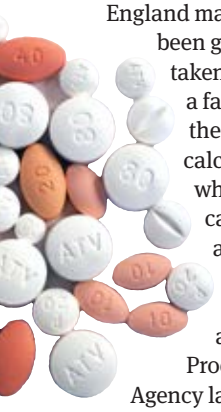
"The number of radiologists entering training this year has actually dropped due to a lack of funded training places. Unless this is addressed…the ambition will not be realised," he said.

The strategy also unveiled a new diagnostics fund to test initiatives to improve diagnostic services and set up a two year trial of six new multidisciplinary diagnostic centres. From September, the NHS would also set up cancer alliances made up of clinical and other leaders who would review outcomes in their area.

Helen Mooney, London Cite this as: *BMJ* 2016;353:i2718

General practice

Computer error may have led to incorrect statins



ALAMY

Thousands of patients in England may have incorrectly been given statins or taken off them after a fault found in the digital QRISK2 calculator in SystmOne, which assesses cardiovascular risk and is run by the software company TPP. The Medicines and Healthcare Products Regulatory Agency launched an investigation and warned that a third of GP surgeries may have been affected. It told practices to contact patients who may have had an inaccurate risk assessment and warned them not to run the calculator "until further notice." Practices can still use the QRISK2-2016 calculator at www.qrisk.org.

NHS

Filling gaps in NHS workforce

Extending the skills of NHS support staff, such as healthcare assistants, is the best way to build capacity in the health service workforce, said the Nuffield Trust think tank. Evidence has shown that support workers can provide good quality, patient focused care and reduce the workload of more highly qualified staff. Also, nurses, pharmacists, physiotherapists, and paramedics can be trained to manage the growing burden of chronic disease more effectively, and nurses with advanced training, such as a masters degree, can help to fill gaps in the medical workforce by providing mentoring and training for less experienced staff, the trust said.

Air pollution

Most cities breach air quality guidelines

Global urban air pollution levels rose by 8% from 2008 to 2013, the World Health Organization warned. Nearly all cities (98%) with more than 100 000 inhabitants in low and middle income countries breached WHO air quality guidelines (20 micrograms/m^3 of PM10), compared with 56% in high income countries. The world's most polluted city is Onitsha in Nigeria, with an annual mean PM10 concentration of 594 micrograms/m^3. The UK's most polluted city is Port Talbot in south Wales, with 25 micrograms/m^3. London recorded 22 micrograms/m^3 (full story doi:10.1136/bmj.i2730).

AP/PA

Compensation award

Man born from incestuous rape wins right to costs

A 29 year old man who was born with serious disabilities after an incestuous rape won the right to criminal injuries compensation and is expected to receive as much as £500 000, in the first UK case of its kind. The man, referred to as Y, has severe learning difficulties, developmental delay, a heart murmur, hearing and sight problems, lax joints, epilepsy, and no sense of danger. He was born as a result of his mother's rape by her father, who was later convicted of incest.

Research news

Tai chi reduces pain of knee arthritis

Tai chi produced beneficial effects similar to a standard course of physical therapy in treating knee osteoarthritis, a randomised trial showed. Research published in the *Annals of Internal Medicine* included 204 patients with symptomatic knee osteoarthritis who were randomly assigned to tai chi twice a week for 12 weeks or to physical therapy. At the end of the trial, pain scores were the same in both groups, as was physical function,

MEDICINE

drug use, and quality of life. But patients in the tai chi group showed significantly greater improvements in depression and the physical component of quality of life (full story doi:10.1136/bmj.i2726).

Physical activity may reduce cancer risk

Higher levels of physical activity are associated with a lower risk of 13 types of cancer, showed a review of studies including more than a million people. People with activity levels in the top 10% had a 7% lower cancer risk overall, while the risk for oesophageal cancer was 42% lower and liver cancer was 27% lower. Adjusting for body mass index modestly reduced the association with several cancers, but 10 cancers remained significantly associated with physical activity level.

Bariatric surgery boosts physical activity

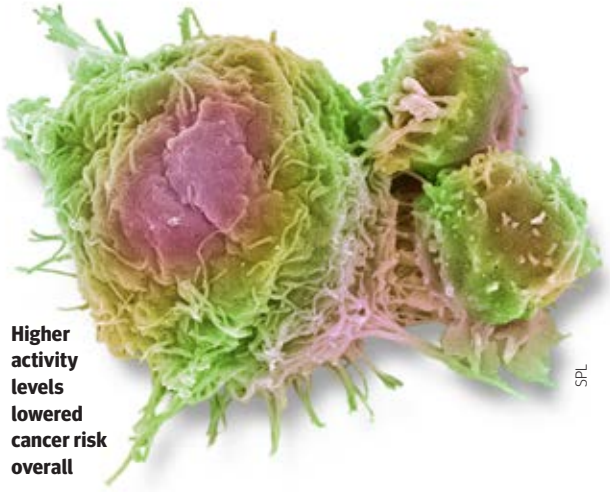
Physical activity rises in the 12 months after bariatric surgery, showed a systematic review of 50 studies published in *Obesity Reviews*. The review found increases in objectively recorded physical activity, as assessed by treadmill tests or timed walking tests, and in self reported physical activity 12 months after surgery. People showed a fall in moderate to vigorous activity but an increase in daily step count (full story doi:10.1136/bmj.i2731).

Overseas news

SPL

$121m for microbiome research in US

The US will use $121m (£83.5m) over the next two years to promote microbiome research and expand its workforce, the White House said. The National Microbiome Initiative will fund research into communities of micro-organisms that make up the microbiomes of a variety of ecosystems—such as those in plants, soil, and oceans, as well as in humans. Interest is rising as to the role microbiomes may play in disorders such as obesity, diabetes, and asthma.



SPL

Higher activity levels lowered cancer risk overall

Harvard relaxes COI rules for clinical researchers

ALAMY

Harvard Medical School relaxed its conflicts of interest (COI) rules for clinical researchers, to allow faculty members to receive $25 000 (£17 250) from each company whose technology they are studying, up from $10 000. Jeffrey S Flier, dean of the faculty of medicine at Harvard, said that strict COI policies may "stifle" clinical research. But Robert Steinbrook, from Yale University School of Medicine, said that Harvard had taken "a big step backwards" (full story doi:10.1136/bmj.i2746).

Cite this as: *BMJ* 2016;353:i2786

ABORTION

38%
of the
185 824
abortions carried out in England and Wales in 2015 were to women who had already had one or more abortions

SIXTY SECONDS ON . . .
PSILOCYBIN

SHADES OF ALDOUS HUXLEY AND TIMOTHY LEARY—ARE MAGIC MUSHROOMS BACK ON THE MENU?

Not so fast. There's a long way to go. But a study in London has shown that the active ingredient in magic mushrooms, psilocybin, may be effective against treatment resistant depression. Its effects were quick—within a week—and more than 40% of the patients treated were in remission three months later.

GOOD NEWS, SURELY?

Yes, as far as it goes. These were people whose depression had not lifted despite trying at least two conventional therapies. Some had been depressed for decades; half were unemployed.

"AS FAR AS IT GOES"?

Never bet your money on an open label trial. There were only 12 participants, mostly self selected. The procedure was complex, with pre-enrolment screening, briefings, psychiatrists and others in attendance, and music played as the drug was taken. So confounding could be present: by selection or a powerful placebo effect (or both).

A RANDOMISED CONTROLLED TRIAL MIGHT BE MORE PERSUASIVE?

Yes, and the researchers, from Imperial College London and the Beckley Foundation, are keen to do one. But even this preliminary trial took years to arrange, so it's no small ask. The ethical and bureaucratic obstacles are substantial. There's also the issue of the placebo: a sugar pill would quickly unblind the trial, so they might have to give the control group another psychoactive drug.

PSYCHEDELIC DRUGS HAVE A BAD REPUTATION, DON'T THEY?

Unwarranted, says David Nutt, the study's senior author and former chairman of the government's Advisory Council on the Misuse of Drugs. He says that psilocybin is safe, rarely causing psychosis. The worst adverse effects found were headache and nausea.

PA

WHAT'S NEXT?

The team is due to publish results from brain scans soon. If they show changes in brain function consistent with the clinical findings, it would enhance the chance of funding a randomised controlled trial.

Nigel Hawkes, London

Cite this as: *BMJ* 2016;353:i2775

GP practices rated "outstanding" are better funded, finds BMA

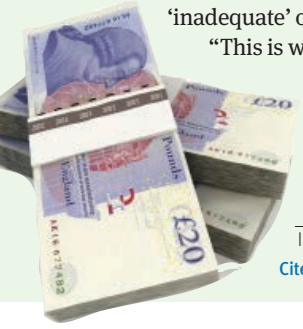
General practices rated as "outstanding" or "good" by England's Care Quality Commission receive more funding per patient than those rated "inadequate" or "needs improvement," research by the BMA indicates.[1]

The research looked at 2814 general practices rated by the CQC in 2015, cross matching their ratings against their funding. The results showed that practices rated as "outstanding" or "good" by the CQC received £152 and £140 per patient, respectively, whereas practices receiving the lowest rating of "inadequate" received an average of only £128 per patient, while those marked as "needs improvement" were allocated £111 per patient.

Chaand Nagpaul, chair of the BMA's General Practitioners Committee, said, "This analysis shows there is a clear link between the amount of funding a GP practice receives and the rating they are allocated by the CQC.

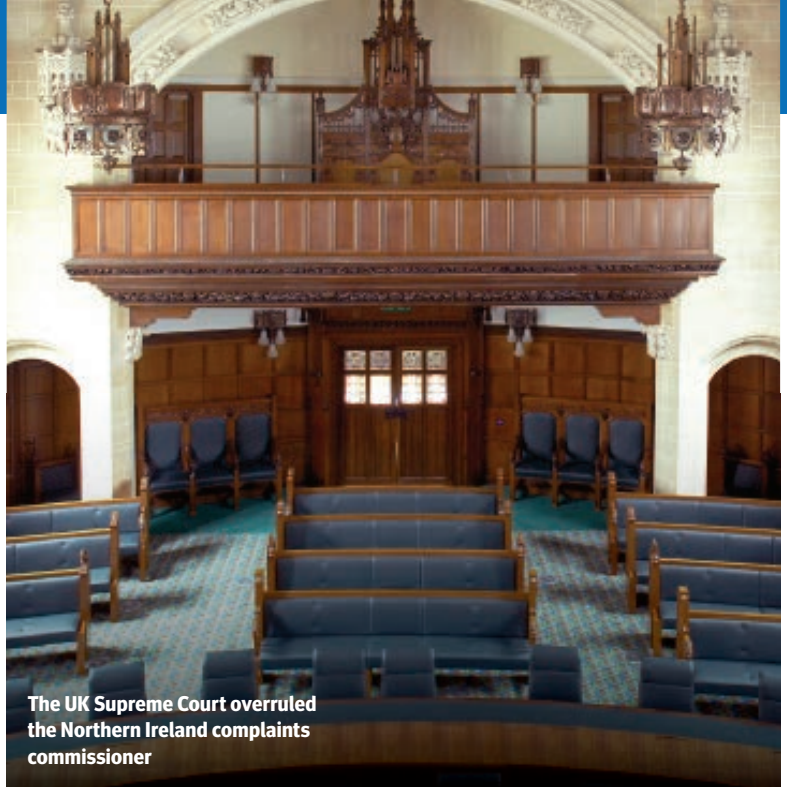
"Despite this, the CQC takes no account of resources available to a GP practice when they grade their care, even if this leads to GPs and their staff being publicly shamed with an 'inadequate' or 'needs improvement' rating.

"This is wholly unfair given the obvious impact that funding has on the ability of GPs and staff to run their practices, and which will impact on the CQC's own rating system."



Ingrid Torjesen, London

Cite this as: *BMJ* 2016;353:i2769



The UK Supreme Court overruled the Northern Ireland complaints commissioner

UK SUPREME COURT

Court backs GP who refused to pay £10 000 compensation

The Northern Ireland complaints commissioner was acting beyond his powers when he recommended that a GP give the widow of a patient who died from a heart attack a consolatory payment of £10 000, the United Kingdom's Supreme Court has ruled.

The unnamed GP apologised but refused to pay the £10 000, even though the commissioner threatened to lay a special report about the case before the Northern Ireland Assembly if he failed to pay.

The GP mounted a legal challenge to the commissioner's decision, which initially failed but was successful in the Northern Ireland Court of Appeal in 2014. The appeal court judges ruled by two to one that, although the commissioner had power to recommend that a public body such as a health trust pay a sum of money to a complainant, there was no such power in the case of GPs.

Two new blood tests will help rule out pre-eclampsia

"These tests represent a great stride forward in the management and treatment of pre-eclampsia" Jenny Myers, consultant obstetrician

The National Institute for Health and Care Excellence (NICE) has recommended two new blood tests to help doctors rule out pre-eclampsia in women between the 20th and 35th week of pregnancy.

At the moment women with suspected pre-eclampsia often have to be admitted to hospital for 24 to 36 hours so that a diagnosis can be made.

Pre-eclampsia and associated eclampsia are the second leading cause of direct maternal deaths in the United Kingdom. About a third of women with pre-eclampsia have it diagnosed before the 35th week of pregnancy.

The Triage PlGF test (Alere) and the Elecsys immunoassay sFlt-1/PlGF ratio (Roche Diagnostics) measure levels of placental growth factor (PlGF) in the blood. PlGF is a protein that helps the development of new blood vessels in the placenta. In normal pregnancy, PlGF levels rise and peak at 26 to 30 weeks. If PlGF levels do not rise during pregnancy this can indicate that the placenta is not developing properly.

The Elecsys immunoassay sFlt-1/PlGF ratio also measures a protein called soluble FMS-like tyrosine kinase-1 (sFlt-1), which disables other proteins associated with vessel formation, such as PlGF. In women who develop pre-eclampsia the levels of sFlt-1 are higher than those normally seen in pregnancy.

The tests are designed to be used alongside a doctor's clinical judgment for pregnant women with new hypertension presenting after 20 weeks of pregnancy who have significant protein in their urine. If the new tests show that they have high levels of PlGF, pre-eclampsia can be ruled out. If, however, they have low PlGF levels, they should be admitted to hospital so that a firm diagnosis of pre-eclampsia can be made.

Currently, the two tests can be used only to help rule out pre-eclampsia. If placental disease is suspected, NICE said;

The appeal court judgment has now been upheld unanimously by the UK Supreme Court. The five judges in the country's highest court held that the complaints commissioner had no power either to recommend that the GP make the payment or to lay a report before the assembly in default of payment.

The figure of £10 000 seemed "to have been plucked out of the air"

The commissioner's powers were laid down by legislation in 1996. The role has now been abolished and taken over by a new Northern Ireland public services ombudsman, who was given specific powers in a law enacted in February 2016 to recommend payments by GPs.

A spokesperson for the ombudsman was unable to provide figures for the number of GPs who had been asked to make a payment in the past but said that no special reports had been laid before the assembly because the doctors had always complied with the recommendations.

Annual reports published on the ombudsman' s website, which cover 2012-15, give details of only two GPs who were asked to make a payment, one of £2000 and another of £500.

In the case that went to the Supreme Court the commissioner found that the GP's practice had failed to provide a reasonable level of care and treatment and was guilty of maladministration. The patient, at that time without symptoms, had been referred by the GP for an electrocardiogram in July 2008, which was reported negative for ischaemic heart disease.

The patient complained of chest pains to a locum doctor on 10 December 2008. He was referred to a chest pain clinic, which refused to see him because of the earlier negative test and sent a report to the practice on 20 December. The report was not marked urgent or reviewed. The patient asked on 6 January why he had not received an appointment and was referred for another electrocardiogram but died of a heart attack later that day.

The GP apologised to the patient's widow and changed procedures at the practice, as recommended by the commissioner, but refused to make the payment. Not only was there no power for the commissioner to recommend it, said the Supreme Court judge Jonathan Sumption, delivering the judgment, but the figure of £10 000 seemed "to have been plucked out of the air."

Clare Dyer, *The BMJ*

Cite this as: *BMJ* 2016;353:i2743

clinicians should follow its existing guidelines to make a diagnosis.

Jenny Myers, consultant obstetrician at Central Manchester Foundation Trust, said, "Doctors will need to be clear with patients, depending on which test is used, [that] the result is only valid for 7-14 days and neither test definitively rules out pre-eclampsia for the rest of the pregnancy. However, these tests represent a great stride forward in the management and treatment of pre-eclampsia."

Jacqui Wise, London

Cite this as: *BMJ* 2016;353:i2690

FIVE MINUTES WITH . . .

David Field

The professor of neonatal medicine and co author of the new MBRRACE study on UK perinatal deaths describes what is needed to reduce mortality

"The two things that surprised me most [about the study] are the high proportion of stillbirths that occur in premature babies as opposed to babies born after 37 weeks and the extent of the north-south divide when looking at the performance of neonatal networks.

"Analysis of figures for all 2014 births across the UK show that two thirds of stillbirths and neonatal deaths were preterm.

"The high proportion of stillbirths that are born preterm may mean that the new initiative announced by the secretary of state for health in November 2015 with the aim of halving stillbirths and neonatal deaths in England by 2030 may need additional measures focused on this group. Funding for work into the reduction of preterm birth is vital in the battle to reduce these numbers.

"In terms of regional variations, we used 'traffic light' colour coding figures for neonatal mortality rates for neonatal networks based on the place in which a woman gave birth. There is a clear north-south divide, with networks achieving neonatal mortality rates below the UK average all in the southern half of England and Wales and those with rates up to 10% or greater than the average all in the northern half of England and in Scotland."

"Pregnancies to women living in areas with the highest level of social deprivation in the UK are over 50% more likely to end in stillbirth or neonatal death [when] compared with births from the least deprived areas.

"I think the key steps to reduce this variation are to see what the individual cases have to tell us in terms of patterns of problems that might be managed differently. We are looking at groups of babies, and it's the more detailed information from individual cases that will tell us whether it's problems with the care pathway, transfer, organisation of care, or inadequacy of care delivery, such as from poor staffing, which is the major issue. Of course, it is likely to vary from place to place, but our report should at least indicate where to look first.

"Looking to the future, MBRRACE-UK will be working closely with all UK NHS and relevant professional organisations to set aspirational targets for stillbirths and neonatal mortality."

Susan Mayor, London **Cite this as: *BMJ* 2016;353:i2790**

thebmj.com

News: 2016;353:i2778

The perils of motherhood at age 14

Keya, aged 14, with her 2 month old son Rahim, is shown at home in an urban slum in Bangladesh. Keya, who lives with her 21 year old husband and his parents, almost died as a result of a postpartum haemorrhage.

"When I got married at 13 I was happy," Keya says. "I went to school for only one year because my family was so poor. I became pregnant two months [after marriage]. I wanted to have a child. When I first felt the labour pains, I didn't tell anyone.

"My mother-in-law asked me if I was feeling sick and I said I was. She tried her best to deliver my baby for me, but she couldn't do it by herself. Then my mother came and took me to the local clinic."

This photograph is one of a series called #childmothers, taken by the photographer Pieter ten Hoopen and funded jointly by Plan International (a not-for-profit organisation concerned with safeguarding children) and the United Nations Population Fund, to highlight very early motherhood.

Girls who give birth before their 15th birthday have a greater risk of complications and death from pregnancy and childbirth than older mothers. In Bangladesh, girls like Keya cannot legally access contraception without permission from their parents or husband.

The photographs were released ahead of Women Deliver, the largest gathering of advocates for girls and women in a decade, held in Copenhagen last week to tackle issues such as abortion, the effect of Zika virus, sexual and reproductive health and rights, and maternal health.

Rebecca Coombes head of features and investigations, *The BMJ*

See www.childmothers.org.

Cite this as: *BMJ* 2016;353:i2804

PIETERTEN HOOPEN/PLAN INTERNATIONAL/UNFPA

EDITORIAL

How similar are biosimilars?

They are likely to be cost effective

The United Kingdom has lagged behind other European countries in adopting biosimilars, said a recent article in the *Financial Times*,[1] and a British Biosimilars Association has been launched "to promote medicines that could shave a third off NHS prices."[2] The UK's chief pharmaceutical officer was quoted as saying that "biosimilar medicines have enormous potential to deliver increased patient access, as well as savings to the NHS, which can be reinvested elsewhere."[2]

Biological products ("biologics") include vaccines, blood and blood components, somatic cells, tissues, and recombinant proteins.[3] Their precise structures are often not easily characterised.

Not like generics

Biosimilars are defined as biologics that are similar to other biologics already authorised for use.[4] When biosimilar proteins are synthesised, the primary amino acid sequence is likely to be preserved, but there can be differences in glycosylation, deamination, or oxidation and in the three dimensional structure, which can affect the interaction of the protein with other molecules. Because of such differences the World Health Organization introduced a nomenclature that involved qualifying with Greek letters the names of some compounds made recombinantly by different manufacturers: follitropin alfa, beta, and gamma and epoetin alfa, beta, theta, and zeta are examples.[5]

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Robin E Ferner, director, West Midlands Centre for Adverse Drug Reactions, City Hospital, Birmingham, UK

Biosimilars should not be regarded as generic equivalents of originator medicinal products, because they are complex molecules, expected to differ more from the originator molecules than generic versions of non-biologics. One cannot be sure that two biosimilars will have similar benefits and harms. Head to head comparisons of biosimilars are infrequent, and indirect comparisons may be inadequate. For example, in a network meta-analysis of the effects of biosimilars of epoetin the authors reported that the comparative benefits and harms of the different compounds were uncertain.[6]

Nevertheless, regulators and market authorisation holders generally take considerable care to ensure that biosimilars are (as the European Medicines Agency states) "highly similar to the reference medicinal product in physicochemical and biological terms,"[7] under principles laid down by the International Conference on Harmonization,[8] the EMA,[8] and the US Food and Drug Administration.[9] These include, for example, demonstrably similar pharmacokinetic and pharmacodynamic properties and being used in the same dosage as the originator product. In England and Wales the National Institute for Health and Care Excellence (NICE) has provisions for recommending biosimilars when appropriate.[10]

Prescribing cheaper biosimilars might save the NHS an estimated 10% of the cost of the relevant biologics, a probable worthwhile saving, as biologics are often expensive. For example, the NHS spent over £140m on the tumour necrosis factor alfa inhibitor infliximab in 2013-14, some 15 years after it was first marketed as Remicade; NICE has since recommended the use of two infliximab biosimilars, Remsima and Inflectra,[11-13] both of which have been thoroughly evaluated. Comparison of Remsima's biological actions with those of the originator product showed only minor differences, and these seemed to be biologically insignificant.[14] The pharmacokinetics were almost identical, and clinical markers of disease activity responded equally well in patients with rheumatoid arthritis or ankylosing spondylitis.

There should not be undue concern over starting treatment with a biosimilar rather than the originator drug

When evidence of this kind is available, there should not be undue concern over starting treatment with a biosimilar rather than the originator drug, although switching between products might not be straightforward.

Naming and prescribing biosimilars also create problems. An estimated 30 biologics, with combined sales of $51bn (£35bn), came off patent in 2015,[15] opening the door to biosimilars. The task of naming them has therefore become crucial, and countries have adopted different methods. WHO has proposed a voluntary scheme, but the system is highly controversial, partly because the codes are meaningless.[16 17]

In the meantime, the advice on prescribing biosimilars is to use the brand name of your preferred product. After treatment has begun, the same product should continue to be used, if possible, because of potential small differences between biosimilars, which cannot be considered to be completely interchangeable.[18]

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Find this at: http://dx.doi.org/10.1136/bmj.i2721

EDITORIAL

Weekend effect: now you see it, now you don't

New studies reinforce concerns about the government's use of evidence

Almost nothing is clear in the ongoing debate about the safety of hospitals at weekends. It began when the health secretary, Jeremy Hunt, claimed that there were 6000 avoidable deaths each year and a lack of weekend cover by consultants was a key factor.[1] Yet the evidence to support this claim was elusive. Sometimes the Department of Health pointed to a 2012 paper on hospital mortality.[2] Other times, and contrary to the government's code of practice on use of statistics, they mentioned a (then) yet to be published paper in *The BMJ*.[3] The problem was that, while both identified an increase in deaths among those admitted at weekends, neither attributed it to a shortage of medical staff.

Yet, notwithstanding the uncertainties, the government sought major changes in hospital staffing, somehow shifting its attention away from consultants to doctors in training. The subsequent government decision to impose a new contract was mired in confusion.[4]

The only good thing to have come out of this process is that it has stimulated a series of studies that seek to resolve the uncertainties identified by the authors of the initial papers and in accompanying commentaries.[5] In a linked paper, Li and Rothwell used data from a population based stroke register to evaluate the quality of administrative data on patients admitted to hospital with stroke.[6] Although few will be surprised, the authors identify substantial problems with the data. Only three quarters of new strokes could be identified from the administrative data, and more than a third of episodes were incorrectly coded as admissions for acute stroke. An analysis limited to patients with genuine new strokes found no weekend effect.

Three other recent studies have filled other gaps. Aldridge and colleagues examined the work of consultants at weekends.[7] Again, using crude data, they found a increase in mortality at the weekend but, while noting several limitations such as a low response rate among consultants, were unable to show any association between the intensity of consultant input to patient care and mortality.

Bray and colleagues also studied stroke outcomes.[8] Using sophisticated adjustment for case mix, they found no weekend increase in mortality but did find complex variation in the use of investigations and treatment, with patients admitted on weekday nights faring worst.

Finally, Meacock and colleagues examined the important question of whether the threshold for admitting patients is higher at weekends, finding that it is.[9] As suspected, patients getting over this higher weekend threshold are sicker and more likely to die. Once again, the weekend effect disappears after appropriate adjustment.

Collectively, these studies answer some of the outstanding questions. They show that at least part of the weekend effect is data artefact and, consistent with evidence that was available when the health secretary made his initial statement, any remaining association between weekend admission and mortality does not seem to be due to hospital medical staffing.[10] And to the extent that a weekend effect does exist, what is the appropriate response? The available evidence points to a need for improvements in availability of primary care and possibly nurse staffing, but much more research is needed.[12]

Any remaining association between weekend admission and mortality does not seem due to medical staffing

See FEATURE, p 305; and RESEARCH, p 313

thebmj.com
Read more articles on this topic at bmj.com/weekend

If organisations could learn

The most interesting question, however, is how, in the face of what we now know, the Department of Health can still insist that doctors in training must accept a new contract to address any weekend effect? Are ministers simply displaying a range of cognitive biases that collectively prevent any admission of error or the learning and change of direction that should follow? Arguably, this is the next question that researchers might turn to, taking their cue from the World Bank, which has set the standard for learning organisations to aspire to.[13] However, such research is unlikely to be undertaken any time soon.

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Find this at: http://dx.doi.org/10.1136/bmj.i2750

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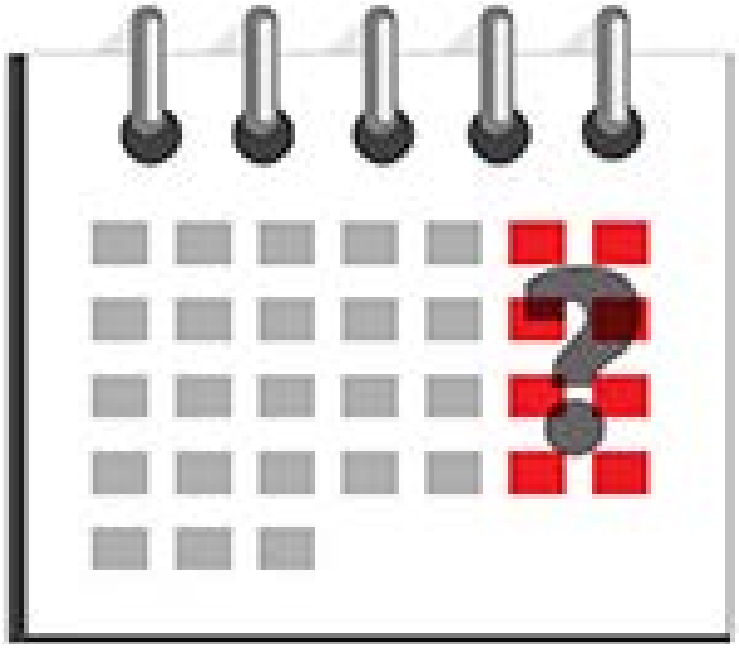
THE WEEKEND EFFECT

How strong is the evidence?

Jacqui Wise looks at recent research on whether there are increased risks for patients admitted at the weekend and asks experts to point out where there is consensus and where there are gaps

thebmj.com
See more articles about the "weekend effect," including further details on the studies listed here, at bmj.com/weekend

See EDITORIAL, p 303; RESEARCH , p 313



In patients admitted at night, mortality was **10%** higher than in those admitted during the day. [Bray et al]

The odds of death for elective surgery patients who had surgical procedures on a Friday or at the weekend were **44%** and **82%** higher respectively than on a Monday. [Aylin et al]

The health secretary, Jeremy Hunt, has cited various evidence to support the government's push to improve hospital services on Saturdays and Sundays and to justify imposing new contracts on junior doctors. But as the junior doctors' strike has rolled on, studies on the so called weekend effect—excess deaths in people admitted to hospital at weekends—have become political footballs used by all parties to justify their positions, leading to confusion about what the evidence really shows.

Of the 15 substantive studies dominating the public debate (the 11 Hunt refers to and four new papers, including one published in *The BMJ* this week, p 313), none has reached definitive conclusions about the cause of the weekend effect , and two recent studies have even questioned whether there is a weekend effect at all. No study has specifically looked at whether the numbers of junior doctors on duty at weekends affects outcomes. Those that have looked at senior doctor staffing have reached mixed conclusions. And there are many potential contributing factors that have so far received little attention.

Over the following pages we summarise what these studies tell us and what is still unknown.

Patients undergoing elective surgery under **junior** consultants had slightly **lower** odds of 30-day death when compared with patients under more experienced consultants. [Ruiz et al]

IS THERE A "WEEKEND EFFECT"?

Are patients admitted to hospital at weekends more likely to die than those admitted on week days? The study findings are divided.

YES

Weekend mortality for emergency admissions: a large multicentre study.
Aylin et al, 2010. *BMJ Quality and Safety* 2010;19:182-6; doi:10.1136/qshc.2008.028639
The adjusted odds of death for patients admitted on a Saturday or a Sunday to all public acute hospitals in England were 10% higher in the following 30 days than for those admitted on weekdays.

Weekend hospitalisation and additional risk of death: an analysis of inpatient data.
Freemantle et al, 2012.
Journal of Royal Society of Medicine 2012;105:74-84; doi:10.1258/jrsm.2012.120009
Admission to any NHS hospital at the weekend was associated with a significantly increased risk of in-hospital death within 30 days compared with admission on a Wednesday.

Day of week of procedure and 30 day mortality for elective surgery: retrospective analysis of Hospital Episode Statistics at acute and specialist hospitals in England
Aylin et al, 2013. *BMJ* 2013;346:f2424; doi:10.1136/bmj.f2424
The adjusted odds of death for patients who had surgical procedures on a Friday or over the weekend were 44% and 82% higher compared with the odds for patients who had these procedures on a Monday.

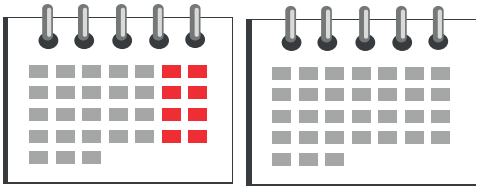
The Global Comparators Project: international comparison of 30 day in-hospital mortality by day of the week.
Ruiz et al, 2015.
BMJ Quality and Safety 2015;24:480-2; doi:10.1136/bmjqs-2014-003467
Mortality was higher among patients admitted over the weekend in most of the hospitals studied in England, Australia, the United States, and the Netherlands.

Increased mortality associated with weekend hospital admission: a case for expanded 7 day services?
Freemantle et al, 2015. *BMJ* 2015;351:h4596; doi:10.1136/bmj.i4596
Emergency and elective patients admitted to all NHS hospitals at the weekend were 10% sicker and faced a 15% increased relative risk of death within 30 days compared with those admitted on weekdays.

NO

Biases in detection of apparent "weekend effect" on outcome with administrative coding data: population based study of stroke.
Li and Rothwell, 2016.
BMJ 2016;353:i2648; doi:10.1136/bmj.i248
Coding errors for stroke patients in Oxfordshire distort the mortality figures, making them appear better for patients admitted on weekdays.

Weekly variation in health care quality by day and time of admission: a nationwide, registry-based, prospective cohort study of acute stroke care.
Bray et al, 2016.
Lancet 2016; doi:10.1016/S0140-6736(16)30443-3
There was no difference in 30 day survival between weekends and weekdays. However, mortality among patients admitted at night was 10% higher than among those admitted during the day.



WHAT THE CRITICS SAY

Dereck Bell, professor of acute medicine, Imperial College, says: "The majority of the published literature shows a weekend effect, especially large studies. Emergency patients seem to be most affected, and medical probably more than surgical, rather than elective."

Nick Black, professor of health services research at the London School of Hygiene and Tropical Medicine in London: "All studies that are based on Hospital Episode Statistic (HES) data suffer from the problem that you can't adjust adequately for case mix. There is nothing in the coding about comorbidity."

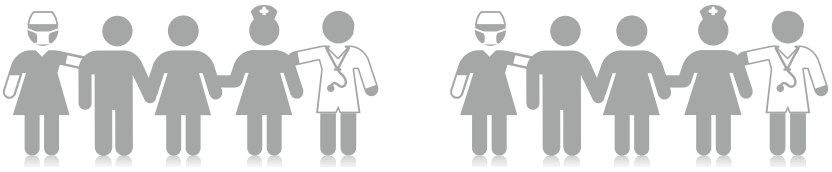
IS MORTALITY THE RIGHT THING TO FOCUS ON?

Dying for the weekend: a retrospective cohort study on the association between day of hospital presentation and the quality and safety of stroke care.
Palmer et al, 2012.
Archives of Neurology 2012; doi:10.1001/archneurol. 2012.1030 http://archneurjamanetwork.com/article.aspx?articleid=1212192
Patients with stroke admitted at weekends are less likely to receive urgent treatments such as brain scans (43.1% *v* 47.6% in the week) or thrombolysis and have worse outcomes across a range of indicators (11% compared with a mean of 8.9% in the week).

WHAT THE CRITICS SAY

Andrew Goddard, former director of the Royal College of Physician's' medical workforce unit: "Mortality tends to make headline figures but it is a blunt tool and needs studies with very large numbers. We shouldn't really be using it as a marker of quality of care; there are much more sensitive markers."

IS INADEQUATE STAFFING THE PROBLEM?



Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study.

Aiken et al, 2014. *Lancet* 2014;383:1824-30; doi:10.1016/S0140-6736(13)62631-8

An increase in a nurse's workload by one patient increased the chance of an inpatient dying after common surgery by 7%, and every 10% increase in nurses with a bachelors degree was associated with a 7% decrease in this likelihood.

Exploring the impact of consultants' experience on hospital mortality by day of the week: a retrospective analysis of hospital episode statistics.

Ruiz et al, 2015. *BMJ Quality and Safety* 2015; doi:10.1136/bmjqs-2015-004105

Death rates among patients admitted to English hospitals for elective surgery were higher on Friday, Saturday, and Sunday but consultant seniority had no significant effect on predicting mortality. Patients operated on by junior consultants had slightly lower odds of 30 day death than those operated on by more experienced consultants.

Association between day of delivery and obstetric outcomes: observational study

Palmer et al, 2015. *BMJ* 2015;351:h5774; doi: 10.1136/bmj.h5774

Babies born in English hospitals at the weekend had an increased risk of being stillborn or dying in hospital within the first seven days. But the study found no consistent association between outcomes and staffing.

Mortality of emergency general surgical patients and associations with hospital structures and processes.

Ozdemir et al, 2015. *British Journal of Anaesthesia* 2015;116:54-62; doi:10.1093/bja/aev372

Data from 156 NHS trusts showed those with fewer general surgical doctors and lower nursing staff ratios had higher mortality among patients admitted at weekends.

Weekend specialist intensity and admission mortality in acute hospital trusts in England: a cross-sectional study.

Aldridge et al, 2016. *Lancet* 2016; doi:10.1016/S0140-6736(16)30442-1

Patients received half as much specialist attention at weekends as on weekdays. The survey of 15 000 specialists at NHS trusts found a 10% increase in the risk of death associated with weekend admission but no evidence of an association between senior doctor staffing and mortality. The response rate was only 45%.

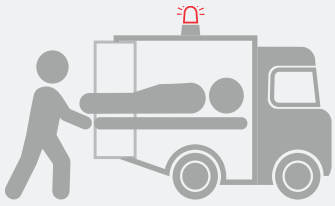
WHAT THE CRITICS SAY

Rubin Minhas, *BMJ* research editor: "Weekend mortality is higher, and staffing is lower, and while association is not causation, the studies point to more resources being linked to better outcomes, which is plausible and intuitive."

Andrew Goddard: "There is no great correlation between senior staffing levels at weekends and mortality. There haven't been any good studies looking at the effect of numbers of medical registrars at the weekend. Part of the difficulty is that there are so many different models of care between different hospitals and wards regarding staffing."

Paul Aylin, codirector of Dr Foster Unit at Imperial College London: "A higher proportion of junior consultants are operating on a Friday. It looks as though junior consultants have lower mortality but this may be because they tend to do less complex cases."

ARE PATIENTS ADMITTED AT THE WEEKEND SICKER?



The increased mortality associated with a weekend emergency admission is due to increased illness severity and altered case mix.

Mickulich et al, 2011.

Acute Medicine 2011;10:182-7

Patients admitted to one Dublin hospital at the weekend had a roughly 11% higher 30 day in-hospital mortality compared with those admitted on weekdays, however, the case mix was different. Once this was accounted for there was no increased mortality at the weekend.

Increased mortality associated with weekend hospital admission: a case for expanded 7 day services?

Freemantle et al, 2015.

BMJ 2015;351:h4596; doi:10.1136/bmjh4596

More patients admitted to English hospitals at the weekend are more seriously ill than those admitted in the week, but even when results are adjusted to account for this, there is still an increased relative risk of death of 15%.

Higher mortality rates amongst emergency patients admitted to hospital at weekends reflect a lower probability of admission.

Meacock et al, 2016.

Journal of Health Service Research and Policy 2016; doi:10.1177/1355819616649630

The number of admissions at 140 trusts in England from emergency departments was similar at weekends to weekdays, but the number of direct admissions from the community was 61% lower. While mortality for admissions via emergency departments was only 5% higher at weekends, for direct admissions it was 21% higher.

WHAT THE CRITICS SAY

Minhas asks: "Is the weekend association really just the clustering of different risk groups of patients across the week, rather than anything to do with hospital care?"

Bell says: "The issue of illness severity being different at weekends is often suggested but not really backed up by well conducted studies, and even if this were the case we would need to ensure services overall are even better able to cope."

DOCTORS' WELLBEING

Rising workload and falling morale

The pressure on the health service led the BMA to convene a special meeting on morale earlier this month. **Abi Rimmer** reports

Doctors have been placed in a "critical situation" by the government's failures in running the health service, Mark Porter, the BMA's chair of council, told delegates at a meeting this month.

The special representatives' meeting, held in London on Tuesday 3 May, was organised to allow delegates to discuss doctors' workload and morale. Speaking to the meeting, Porter said, "We're here because we want to restore some hope to the National Health Service. That's not easy when we are surrounded by failure.

He added: "This meeting was called to answer a critical situation: the industrial action, called in the face of an intransigent government, [and] the massive wave of doctors wanting to leave the profession. They're all symptoms of the same, profound, demoralising failure in the government's running of the health service."

"[The strike] was simply a more organised version of a depressingly familiar situation" Jane Dacre

Depressingly familiar

Jane Dacre, president of the Royal College of Physicians, told delegates that junior doctors were leaving the NHS because they did not feel "safe, valued, or supported." As well as focusing on concerns about the new contract for junior doctors in England, delegates discussed issues facing GPs, academics, and hospital doctors. Dacre said that gaps in trainee rotas were also taking their toll on consultants. "While much was made in the media last week of consultants taking on the role of juniors during the strike, for many of my colleagues this was nothing new—it was simply a more organised version of a depressingly familiar situation," she said.

"We need realistic career development plans in place" Kitty Mohan

Melody Redman, a foundation year 2 trainee, also highlighted the problems caused by rota gaps. "We are breaking our workforce, the very people who are trying to deliver good patient care," she said. "We need to fill rota gaps, and we need doctors to feel supported to deliver safe patient care."

Kitty Mohan, former co-chair of the BMA's Junior Doctors Committee, argued that the BMA had a part to play in helping doctors to develop their careers. "We need to have realistic career development plans in place, and I think the BMA can have a role in this, helping people to see where their future careers may lie," she said.

The conference heard that staff and associate specialists (SAS) doctors were also facing increasing workforce pressure. Amit Kochhar, chair of the BMA's Staff, Associate Specialists, and Specialty Doctors Committee, said that one of the biggest problems faced by SAS doctors was bullying. "We, the BMA, need to develop strategies to deal with and outlaw bullying and harassment in the workplace and identify systems to bring the perpetrators to justice," he said.

Michael Rees, co-chair of the BMA's Medical Academic Staff Committee, highlighted particular issues faced by academic doctors, who, he said, needed to be supported. Doctors needed to be given enough time to develop their careers, innovations, and leadership, he said. "If we do that, we will have a satisfied workforce and we will get more doctors wanting to stay in this country."

Victims of their own success

Referring specifically to problems faced in general practice, the GP Farah Jameel said it was important that doctors' workload was clearly defined. "Define the workload, carry out a workload survey, become resilient, empower your workforce, teach them how to say no, turn people away who are coming to you for things like, 'My heating isn't working at home.' I don't need to see that patient," she said.

Peter Holden, a GP and BMA council member, said that GPs had become

FIVE MOTIONS DEBATED AT THE BMA JUNIOR DOCTORS' CONFERENCE LAST WEEKEND

1 JUNIOR DOCTOR CONTRACT

"This conference believes that Jeremy Hunt has destroyed morale amongst junior doctors and in the NHS, and reaffirms the BMA's policy of having no confidence in him as Secretary of State for Health."

RESULT: PASSED.

2 CAREER IN MEDICINE

"This conference believes that the BMA should no longer actively promote medicine as a career."

RESULT: REJECTED.

3 SEVEN DAY SERVICES

"This conference . . . is concerned by recent controversy over the Freemantle paper on excess mortality [*BMJ* 2015;351:h4596] . . . We call for the chair of council to write an open letter to *The BMJ* editorial board and ethics committee asking for the immediate retraction of the paper."

RESULT: REJECTED.

4 WHISTLE-BLOWING

"This conference calls on the BMA to . . . urgently investigate whether any loopholes exist in the protection afforded to junior doctors who have raised concerns about patient safety."

RESULT: PASSED.

"We're never willing to say no" Peter Holden

victims of their own success. "We're never willing to say no, and the NHS has been established, workforce wise, on the assumption that no one ever has annual leave, no one ever has sick leave, study leave, or any other adversity, and we always keep going the extra mile," he said.

Holden argued that doctors needed barriers to protect them from excessive workloads. "The pressures on doctors to work when they are not well are unacceptable, and we should not accept them," he said.

Marcus Bicknell, a GP in Nottingham, warned about the effects of excessive regulation on general practice. "The effect of regulation on workload and morale is devastating, we are regulated to death," he said. "We're regulated through NHS England, we're regulated through the Care Quality Commission, and we're regulated through the General Medical Council."

He added, "My colleagues chose to resign before their appraisals; they chose to quit before a CQC inspection. They give up when faced with NHS England investigations. I call on the BMA to look at these issues. We need your support."

Abi Rimmer, BMJ Careers
arimmer@bmj.com

5 PHYSICIAN ASSOCIATES

"This conference believes that no physician assistant should have a starting salary above the basic level of an FY1 [foundation year 1 trainee]" and "demands that tuition should be free as long as it is provided for extended role practitioners."

RESULT: REJECTED.

EU REFERENDUM

Brexit and public health

Anne Gulland considers tobacco and alcohol pricing

Would Britain be more free to legislate on alcohol and tobacco pricing?

The United Kingdom already has some of the most stringent tobacco control policies in Europe. On 20 May it is set to become only the second country in the world after Australia to introduce plain packaging for cigarettes, going far beyond the EU tobacco products directive.[1]

The UK also has the highest cigarette prices in the European Union. According to the Tobacco Manufacturers' Association, the price of a premium packet of 20 cigarettes in the UK is £9.16 (€11.62; $13.23), compared with £5.46 in France, £4.26 in Germany, and £3.78 in Spain.[2]

The Scottish parliament passed legislation to introduce minimum unit pricing on alcohol in 2012. The legislation has still not come into force because it has been subject to a long running legal challenge by the Scotch Whisky Association. The European Court of Justice ruled in December that the Scottish plans are restrictive to the market but said that if the Scottish government can prove that minimum pricing is more effective than taxation in reducing harm the legislation can be introduced. However, the European Court of Justice is not a decision making body, and the decision is ultimately down to the Scottish court regardless of whether the UK leaves or stays in the EU. A hearing by a Scottish court is expected sometime this year.

Would there be less collaboration in the event of a Europe-wide epidemic?

The lack of UK engagement with the European Centre for Disease Prevention and Control (ECDC) would be one of the most worrying health outcomes of Brexit, says Martin McKee, professor of European public health at the London School of Hygiene and Tropical Medicine.

"The UK would no longer have any say on the ECDC's management board, and our researchers would not be invited to any meetings," says McKee.

If the UK joined the European Economic Area (EEA), like Norway, Iceland, and Liechtenstein, it would become an observer on the centre's management board and advisory forum. If it decided not to join the EEA but still wanted to participate the UK would have to adopt and "apply legislation of equivalent effect to EU legislation on communicable diseases," the ECDC states.

The ECDC also coordinates the early warning and response system, which enables member states plus those in the EEA to share information about communicable diseases. While it is unlikely that the ECDC would kick the UK out, there would be a question mark over its continuing membership in the event of Brexit.

Would food labelling and standards change?

UK food manufacturers have to conform to European standards requiring them to list all ingredients on labels and highlight potentially hazardous products such as nuts. Manufacturers have leeway in other areas such as calorie content.

However, the UK has come up against the European Commission on its proposed traffic light labelling scheme for food high in fat, salt, or sugar, which the EC ruled was "simplistic." But in the event of Brexit food manufacturers are likely to continue to abide by EU law to retain access to the single market. The government is keen that the UK food industry should be export focused.

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The UK has the highest cigarette prices in the European Union

DUNCAN SMITH

Hamed Khan, 33, is a GP in south London, a lecturer in clinical skills at St George's, and an articulate commentator in the press and on television about the NHS and the role of the GP. He champions the GP's role in the emergency department—as implemented at St George's—as a gatekeeper who can advise but not compel patients to go elsewhere if appropriate. He also believes that GPs should have a stronger role in undergraduate education. He trained at Barts and The London NHS Trust and was a doctor in the London Marathon medical team.

BMJ CONFIDENTIAL

Hamed Khan
Hates classism and prejudice

Who has been your biggest inspiration?
My parents, Khalid and Hajrah. My father, who is a doctor, was the greatest inspiration and influence in my decision to take up medicine.

What was the worst mistake in your career?
None that I regret. Even my biggest mistakes have been learning opportunities.

What was your best career move?
Taking up my current post as a clinical skills lecturer: teaching medical students and inspiring them to achieve their fullest potential is uniquely rewarding, and their energy and enthusiasm are contagious. And, of course, taking up general practice. The breadth of our clinical acumen, together with the personalised continuity we provide in the community, makes general practice uniquely rewarding.

Bevan or Lansley? Who has been the best and the worst health secretary?
Frank Dobson was the best health secretary of my generation. He opposed the costly and inefficient internal market and persuaded the government to substantially increase NHS funding. Jeremy Hunt is the worst. Not only are his policies dangerous and unfeasible, but he also seems determined to demean doctors in the eyes of the public and to destroy our collective morale.

Who is the person you would most like to thank, and why?
My parents, for their dedication to ensuring that I got the best start in life.

To whom would you most like to apologise?
Anyone I have unknowingly wronged or offended.

If you were given £1m what would you spend it on?
I'd invest half of it, give a large chunk to charity, and buy a 1964 Aston Martin DB5.

What single unheralded change has made the most difference in your field?
The internet. It has revolutionised access to information and communication, transforming our ability to disseminate evidence and share good practice. The positive impact on quality improvement and patient safety is immeasurable.

Do you support doctor assisted suicide?
No. Seeing increasing numbers of patients with terminal cancer and advanced dementia as a GP has certainly helped me empathise with the arguments in favour of it, but I remain firmly opposed.

What personal ambition do you still have?
I'd like to write at least one more medical textbook. More generally, I want to continue using my media platform to campaign for health policy to be uncoupled from politics. This leads to populist policies geared towards creating catchy soundbites and favourable news headlines rather than robust evidence and outcomes. I'd also like to see general practice move away from 10 minute appointments.

Summarise your personality in three words
Energetic, determined, compassionate.

What is your pet hate?
Classism and prejudice.

Do you have any regrets about becoming a doctor?
None whatsoever. I remain convinced that being a doctor is the most fascinating and rewarding vocation in the world.

Cite this as: *BMJ* 2016;353:i2618