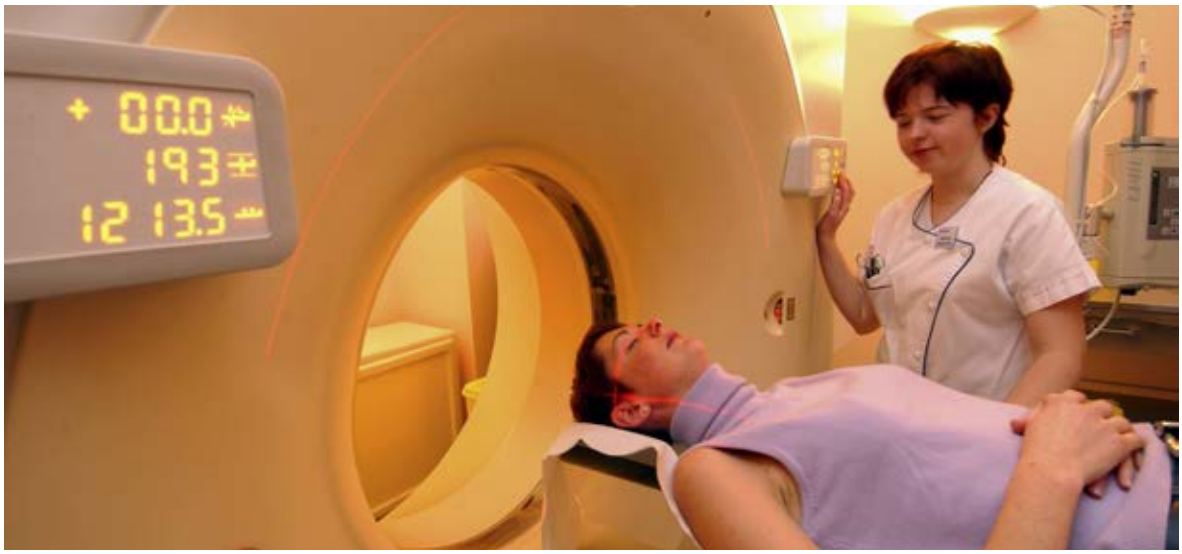
# this week

**NATURAL CAESAREAN** page 457• **DOCTORS ELECTED TO PARLIAMENT** page 458



GARO/PHANIE/SPL

## Give GPs access to urgent CT scans

A coroner has demanded a change in rules that stop NHS GPs in some areas ordering urgent computed tomography (CT) scans, after the death of a 37 year old woman from a brain tumour.

Lisa Hashmi, area coroner for Manchester North, gave the warning in a report sent to Bury clinical commissioning group on the death of Elaine Talbot, whose brain tumour was missed by her GP and hospital doctors. Coroners have a statutory duty to send a report to the person or institution they believe should take action, if the evidence shows a risk of future deaths.

Elaine Talbot died less than a month after developing symptoms of headache and nausea. Doctors failed to revisit an earlier diagnosis of migraine despite her worsening symptoms. She received a CT scan and an accurate diagnosis of glioblastoma only on the day she died, hours after returning in an ambulance to the emergency department of Fairfield General Hospital in Bury.

The same hospital had discharged her with drugs for migraine when she presented as an outpatient a week earlier.

While accepting that an urgent scan ordered by her GP would not have stopped Talbot's death, the coroner said the ability to order such a scan might prevent deaths in some future cases.

"In my opinion there is a risk that future deaths will occur unless action is taken," Hashmi told the clinical commissioning group in her report. "The deceased's GP explained that he had no ability to make a direct urgent request for CT scanning, unlike other GPs in neighbouring towns. He considered that such accessibility would be beneficial.

"Whilst it is unlikely that earlier scanning in Mrs Talbot's case would have altered the outcome, I am concerned that the lack of urgent direct access to CT scanning by clinicians working in primary care may have a bearing upon the outcome for others in terms of prevention of future deaths. This appears to be a commissioning issue."

The coroner said that death was because of natural causes but added that "a number of missed opportunities to investigate and escalate may have had a material bearing on the timeliness of diagnosis, treatment, and intervention for the presence of the brain tumour eventually identified."

The clinical commissioning group had to respond by 14 June, after *The BMJ* went to press.

Clare Dyer, *The BMJ*

**Cite this as:** *BMJ* 2017;357:j2815

**"There is a risk that future deaths will occur" without direct access to CT scans, said coroner Lisa Hashmi**

### LATEST ONLINE

- Elective waiting times rise again after relaxation of targets
- FDA pulls opioid from market over misuse concerns
- WHO downgrades oseltamivir on drugs list after reviewing evidence

# SEVEN DAYS IN

## Older patients "should take PPIs with aspirin"

**Researchers have recommended proton pump inhibitors (PPIs) to prevent bleeds in older patients taking aspirin based antiplatelet treatment after finding that they have a higher than expected risk of upper gastrointestinal bleeding.**

**Peter Rothwell, from the University of Oxford, and lead author, said, "Previous studies have shown there is a clear benefit of short term antiplatelet treatment following a heart attack or stroke. But our findings raise questions about the balance of risk and benefit of long term daily aspirin use in people aged 75 or over if a proton pump inhibitor is not co-prescribed."**

**The study followed up 3166 patients who had a first transient ischaemic attack, ischaemic stroke, or myocardial infarction and were treated with antiplatelet drugs (mostly aspirin).The results, in the *Lancet*, showed that patients over 75 had three times more risk of major bleeding than younger patients (hazard ratio 3.10 (95% confidence interval 2.27 to 4.24); P<0.001). The number needed to treat for routine PPI use to prevent one disabling or fatal upper gastrointestinal bleed over five years was 25 in people aged over 85, compared with 338 in under 65s.**

Susan Mayor, London Cite this as: *BMJ* 2017;357:j2865

## Oral health

**Infants miss out on dental health check-ups**

Around 80% of children aged 1-2 did not visit an NHS dentist in the 12 months to the end of March 2017, the Faculty of Dental Surgery at the Royal College of Surgeons found, despite guidance saying that children should start dental check-ups when they develop their first tooth. The analysis also found that almost 60% of children aged 1-4 did not have a dental check-up in the same period.

## Patient partnerships

**Two new patient editors join *The BMJ***

*The BMJ* appointed two new patient editors to advance its patient partnership strategy. Michael Mittelman is cofounder and vice president of patient advocacy and partnerships at the American Living Organ Donor Fund, which helps living organ donors, and he is a three time kidney transplant recipient. Leah Hardy is a journalist whose career has included editing *Cosmopolitan* magazine. She has extensive experience of the NHS and recently joined Cancer Research UK's Media Volunteers team, working with patients and carers.

## General practice

**Wales sees steep rise in "at risk" GP surgeries**

The BMA called for action to protect general practices in Wales after figures from April showed that 29 practices were "at risk" and had submitted sustainability applications, up from 18 in October 2016. A further 29 practices were uncertain about their future. Charlotte Jones, chair of BMA Cymru Wales's General Practitioners Committee, said that the figures were of "grave concern" and reflected the pressures facing practices in Wales. The BMA urged struggling practices to seek support and advice from their local medical committee and, if necessary, to apply to their health board for financial, administrative, or managerial support.

## UK politics

**Hunt reappointed to post of health minister**

The UK prime minister, Theresa May, reappointed Jeremy Hunt as health secretary after the general election on 8 June. Hunt—already the longest serving health secretary, having held the post since September 2012—acknowledged "challenges ahead, but also huge opportunities to make our NHS even better."

## Medicolegal

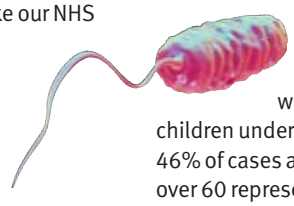
**Scottish doctors get protection for apologising**

Doctors in Scotland who apologise to patients will have legal protection when new legislation comes into force on 19 June. Issuing advice on the changes, the Medical Defence Union explained how the Apologies Act 2016 makes it clear that an apology outside legal proceedings is not an admission of liability. Jerard Ross, the union's medicolegal adviser, said, "Saying sorry to a patient when something has gone wrong . . . is an ethical duty for doctors. The act provides further reassurance that apologising is not an admission of legal liability."

## Cholera

**Suspected cholera cases rise in Yemen**

Suspected cholera cases in Yemen continued to rise, reaching 101 820 cases with 791 deaths as of 7 June. Unicef and the World Health Organization said that the country's most vulnerable groups were the worst affected, as children under 15 accounted for 46% of cases and people over 60 represented 33% of fatalities. The two organisations said that they were focusing on areas reporting the most cases to try to stop the disease spreading further.



## Public safety

**Fire brigade warns about flammable skin cream**

The London Fire Brigade urged carers and health professionals to stop using moisturising creams containing paraffin or petroleum, as 15 people have died this way over three years. The creams are a particular danger to patients who smoke, it warned. The cream seeps into bedclothes and, if a patient drops a cigarette, their sheets and nightclothes can act like a wick, allowing flames to spread quickly. The fire brigade said that the advice was particularly important for older people and those with mobility problems.

# MEDICINE

## Research news

### Enticing labels boost vegetable consumption

To test whether language can change vegetable consumption, researchers labelled a vegetable dish at a university cafeteria every day in one of four ways: basic (eg, "green beans," "carrots"), healthy restrictive ("low sodium bok choy"), healthy positive ("vitamin rich corn"), or indulgent ("rich, buttery, roasted sweetcorn") and collected data over 46 days. Reporting in *JAMA Internal Medicine*, they found that labelling a vegetable dish indulgently was associated with a 25% increase in consumption over basic labelling, a 41% increase over a healthy restrictive label, and a 35% increase over healthy positive labelling.


**Mouthwatering labels increase consumption**

### Complete lymph node dissection is queried

The international Multicenter Selective Lymphadenectomy Trial randomly assigned 1934 patients with clinically localised melanoma but a tumour positive sentinel node to immediate complete lymph node dissection or observation with periodic ultrasound examinations of the sentinel node basin. The results after three years' follow-up, reported in the *New England Journal of Medicine*, showed no significant difference in mean melanoma specific survival.

## Zika

### One in 20 babies may have birth defects

As many as one in 20 babies born to mothers with the Zika virus have birth defects, said the US Centers for Disease Control and Prevention. A report identified 2549 pregnant women with Zika in Puerto Rico and other US territories from January 2016 to April 2017. Some 122 babies (5%) were born with birth defects. The risk increased to around 8% when mothers were found to have Zika in the first trimester.

## Technology

### Drones cut defibrillator delivery time

Researchers from the Karolinska Institute in Sweden developed a drone equipped with a defibrillator to test whether the technology could be useful in treating cardiac arrest in the community. It was dispatched for 18 test "drops" two miles from the launch site and arrived on average 5.21 minutes later,

ANDREAS CLAESSON

compared with 22 minutes when using the emergency medical services. "Saving 16 minutes is likely to be clinically important," concluded the researchers in *JAMA*. "Nonetheless, further test flights, technological development, and evaluation of integration with dispatch centers and aviation administrators are needed."

Cite this as: *BMJ* 2017;357:j2874

## WAITING LISTS

At the end of April there were **3.78** million people waiting for elective treatment in England, up **5%** on the same time last year when there were **3.6** million

## SIXTY SECONDS ON . . . NATURAL CAESAREAN

**NATURAL CAESAREAN? ISN'T THAT AN OXYMORON?**

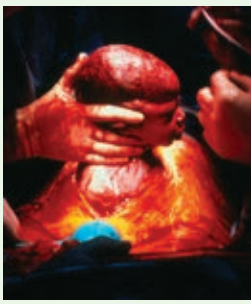
**Sounds like it. But don't worry, putting "natural" in front of caesarean section doesn't mean doing without pain relief. It means slowing down the operation so that it mimics a vaginal birth as much as possible.**

**HOW SO?**

**Surgery starts with the screen up as usual. But after the incision the drape is lowered and the head of the table is raised to allow the mother to watch. As the baby's head comes into view the surgeon pauses to allow the baby to breathe on his or her own. The shoulders are then eased out, and the baby's head is held while he or she wriggles out. The baby is then put on the mother's chest while the surgeon carries on operating.**

**THE BABY WRIGGLES OUT UNAIDED?**

**Apparently so, although the contracting uterus may also help. You will find videos on the internet of babies emerging from the abdomen.**



**ANY BENEFITS?**

**Felicity Plaat, consultant anaesthetist at Queen Charlotte's Hospital in London, said that the main benefit is the immediate skin to skin contact between mother and baby, known to promote breast feeding and bonding. A German study found improved breastfeeding rates and a much better patient experience.**

**IS IT FOR ALL MOTHERS AND BABIES?**

**At Queen Charlotte's the procedure is reserved for women having planned caesareans but is not used for multiple, preterm, or breech births. However, doctors in Rhode Island in the US perform "gentle caesareans" in unplanned and urgent cases.**

**BUT I CAN'T WAIT FOR A BABY TO WRIGGLE OUT OF A STOMACH. I'VE GOT AN OPERATING LIST TO GET THROUGH!**

**Plaat said that staff were worried at first that they would have to wait longer to check the baby and complete paperwork, but they soon came round to the benefits of the technique once they saw how much parents liked it.**

Anne Gulland, London

Cite this as: *BMJ* 2017;357:j2851

# THE UK GENERAL ELECTION

ended in a hung parliament after the Conservative Party won 318 seats, eight short of the 326 seats needed for a majority

DAN KITWOOD/GETTY IMAGES

**Conservative and fomer GP Liam Fox retained his seat by taking 54% of the vote**

STEPHEN BARNES / ALAMY

**Andrew Murrison remains Conservative MP for South West Wiltshire**

JOE GIDDENS/PA ARCHIVE/PA

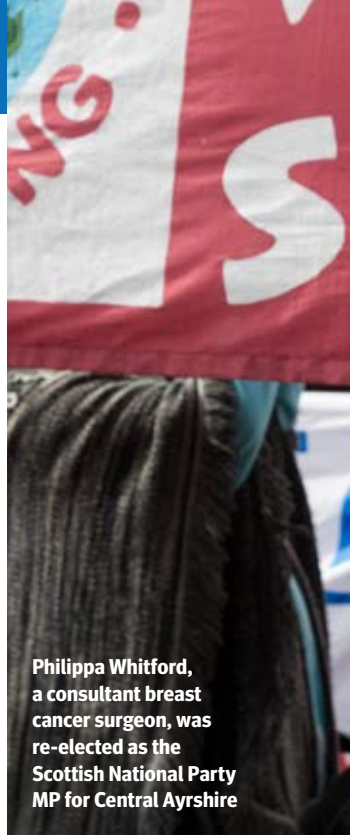
**Caroline Johnson is Conservative MP for Sleaford and N Hykeham**

NEARTHECOAST.COM / ALAMY

**Dan Poulter was re-elected as the Conservative MP for C Suffolk and N Ipswich**

JACK TAYLOR/GETTY IMAGES

**Labour's Rosena Allin-Khan retained her seat in Tooting, south London**



**Philippa Whitford, a consultant breast cancer surgeon, was re-elected as the Scottish National Party MP for Central Ayrshire**

# Use weak government to push for local NHS change, says MP

Doctors' and patients' groups should use the current government's weak position to push for improvements in their local NHS, a Scottish National Party MP has said.

The UK general election ended in a hung parliament after the Conservative Party won 318 seats, eight short of the 326 seats needed for a majority.

Philippa Whitford, a consultant breast cancer surgeon, was re-elected as the Scottish National Party MP for Central Ayrshire. She said that now was a good time for doctors' and patients' groups, charities, and representative bodies to propose detailed and thought-out plans for changes to their local NHS.

"I think there is a lot that local areas can do to put their MPs under pressure. But I think that a very simplistic 'Save Hospital X' [campaign] won't do it because it becomes a chant . . . you might get that MP under pressure, but it won't actually solve the delivery of service for wherever that area is."

## Collaborative working

Whitford said that NHS England's sustainability and transformation partnerships (STPs) had failed to consult the public or healthcare professionals. "To me, the various kinds of NHS protection charities, the BMA, the professions, and local patient organisations should actually be trying to get together and come up with what their STP would look like."

She added, "I think that if they got their local MPs on board and gave not just a 'Okay we want to spend billions and we don't want to change anything' kind of response but actually said, 'Here's what we propose, which we think would deliver a better service, more sustainably, with the staff we have and things in the right place,' then I think it would be—with such a weakened government—harder to resist. And I think you could start to get a head of steam locally."

Whitford said that it was crucial for people to get involved and take over the STP process "to make sure it isn't a process that is only about reaching a financial bottom line."

She said that Theresa May's decision to reappoint Jeremy Hunt as England's health secretary was disappointing. "I would have thought that bringing in new blood . . . would have given a chance for change of tone."

However, although the appointment

**It was crucial for people to get involved and take over the STP process "to make sure it isn't a process that is only about reaching a financial bottom line," said Whitford**

# Hospitals and GP surgeries may be targets for terrorists

The UK police counterterrorism unit has warned hospitals and general practices that they may be targets for terrorist attacks, in updated guidance issued on 8 June.

The *Crowded Places Guidance* by the National Counter Terrorism Security Office came after a series of terrorist attacks this year at London Bridge, Westminster Bridge, and a concert at Manchester Arena.

The document, which gives advice on ramping up the security of all crowded settings, has a specific section dedicated to healthcare. It tells health professionals, "It is possible that your hospital or surgery for example could be the target of a terrorist incident. This might include having to deal with a bomb threat or suspicious items left in or around the area.

"In the worst case scenario your staff, patients and visitors could be killed or injured, and your premises destroyed or damaged in a 'no warning' multiple and coordinated terrorist attack."

Guidance from 2009 described such a "multiple and coordinated terrorist attack" as "unlikely." But last week's guidance contained no such caveat, implying that experts see an attack on a health facility as increasingly likely.

Immediately after the London Bridge attack, in which eight people died and 48 were injured, three major London hospitals—Guy's, St Thomas', and Evelina—went into lockdown. A spokesperson for Guy's and St Thomas' NHS Foundation Trust said that the lockdown meant "that only the main entrances are

MARK KERRISON / ALAMY

was a sign that the government thought that for the NHS it would be "business as usual," she said, there were people in government who were closer to the front line than Hunt "who actually see that the whole Health and Social Care Act has been a mess."

Whitford said that though the government wouldn't want to introduce new legislation, "there might be potential at a local level to say, 'We're going to work out the most cost effective way of providing health and social care in this area.'"

Of at least 30 doctors who stood for election nine were successful. Six were Conservative candidates, including Sarah Wollaston, a GP and the MP for Totnes, who chaired the health select committee under the previous government.

Dan Poulter, former Conservative health minister and a hospital doctor, was re-elected as MP for Central Suffolk and North Ipswich. Liam Fox, a former GP, was challenged for his seat in North Somerset by Greg Chambers, a junior doctor and Labour candidate, but Fox retained his seat by taking 54% of votes.

Other successful Conservative candidates included Andrew Murrison, a former Royal Navy medical officer, who remains as MP for South West Wiltshire; Phillip Lee, MP for Bracknell; and Caroline Johnson, consultant paediatrician and the MP for Sleaford and North Hykeham.

Two doctors standing as Labour candidates were successfully elected: GP and first time MP Paul Williams; and an emergency medicine doctor, Rosena Allin-Khan, who retained her seat in Tooting.

Abi Rimmer, BMJ Careers

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kept open but staff, patients, and visitors can still access the site, with ID checks in place." The spokesperson added, that increased security "reassures the public that their safety is being taken seriously."

The Crowded Places Guidance document warns that terrorist attacks on healthcare facilities "may be enabled by an 'insider' or by someone with specialist knowledge or access to your venue." In March a doctor working at the Sardar Mohammad Daud Khan hospital in Kabul, Afghanistan, the country's largest military clinic, was believed to have helped terrorists armed

SHAH MARAI/AFP/GETTY IMAGES

with bombs, grenades, and guns to enter the building and carry out the attack in which more than 30 people were killed.

Ingrid Torjesen, London

Cite this as: *BMJ* 2017;357:j2873

**FIVE MINUTES WITH . . .**

# Phil Richardson

The lead director for Dorset's NHS STP explains why GPs are central to making local plans a reality

"We started the work on our sustainability and transformation partnership (STP) by looking at a population, rather than the individual organisations within it. It was clear early on that general practice—as part of multidisciplinary primary care—was critical to providing what the population needed.

"We're trying to get parity of quality across the county. We're also trying to tackle the workforce challenge—if we keep doing what we're doing with the current workforce we won't cope with demand and we will run the staff into the ground. In general practice they've stepped up to absorb the work but haven't had the support, investment, or ability to connect with the rest of the system. They can't continue like this.

IF WE KEEP DOING WHAT WE'RE DOING WITH THE CURRENT WORKFORCE WE WON'T COPE WITH DEMAND

"The solution can only be achieved by looking at the system as a whole. We want to create a health and care learning system that is county wide, that brings in a medical school, research, the portfolio way of working, the multidisciplinary approach where teams own a population to work with.

"Some GP practices will continue to work in the same way, but there will be more sharing between them within a locality. Others will want to consolidate some services around, for example, a community hospital. We are proposing a community hub in Dorset that will provide a range of services including, among other things, social prescribing and help with housing.

"In the future, GPs will focus more of their time on complex patients. There will be real multidisciplinary working which will include paramedics, pharmacists, therapists, social workers, and psychiatrists—the whole gamut of clinical and professional skills including the voluntary and third sectors. And then the whole thing can be digitised so we can have the right information at the right time. It will give GPs more time to spend it with complex patients."

Gareth Iacobucci, *The BMJ*

Cite this as: *BMJ* 2017;357:j2853

# AIR POLLUTION

The rising pollution levels of our cities have created an urgent need to reduce the health risks. In a series of articles, including an air pollution map of London's NHS facilities, we look at the scale of the problem and what needs to change, and urge doctors to get involved in a national movement on the risks of air pollution

**THE BIG PICTURE**

## Most London hospitals and clinics exceed air pollution limits

More than half of London's NHS facilities are blanketed in air pollution that is above legal limits, shows new analysis jointly published by King's College London and the UK Health Alliance on Climate Change. Doctors are having to care for their patients in environments where air pollution could aggravate existing illnesses. NHS staff are among those exposed to this health risk, but it is patients' health that is of most concern, especially children's.

Not only does air pollution affect infants' and children's health as their hearts and lungs develop, it also disproportionately affects the most vulnerable people, including older adults and people with pre-existing conditions who need to travel regularly to health centres and clinics for care and treatment. This week doctors, nurses, and allied healthcare professionals took part in the UK's first ever national clean air day (15 June) to highlight the challenges we face from air pollution. The day was part of a global effort, "Unmask My City" (http://unmaskmycity.org), led by health professionals around the world.

Researchers from the Environmental Research Group at King's College London worked with the campaigning group the UK Health Alliance on Climate Change to create an air pollution map of London's NHS facilities. In their analysis researchers looked at the air quality at 2200 medical facilities, including London's major hospitals, several general practices, clinics, and general health facilities, using data from the Greater London Authority and Transport for London. Sites were identified from 2834 records taken from NHS Digital's Organisation Reference Data, published in April 2017. These sites ranged from acute care facilities to community and outreach sites. The results show that health facilities throughout the city are affected by air pollution. In particular, 74% of facilities in inner London and 41% in outer London are in areas where nitrogen dioxide levels are above the legal limit.

The findings mirror other studies showing that vulnerable groups are disproportionately exposed to air pollution. One recent study found that most nurseries in London are located in air pollution hotspots. The data analysis released this week is additional proof that London's air is toxic and especially harms the vulnerable among us.

This new finding should not put people off coming to hospitals, but it does show that across London air pollution requires immediate action. Because we cannot remove schools and hospitals from our city centres, we need to rethink our current transport model and shift to cleaner, greener transport and get more people walking and cycling. We need a series of hard hitting measures such as those described by London's mayor, Sadiq Khan (p 463), not just in the capital but across the UK, as 38 of 43 UK areas are still breaching legal limits on nitrogen dioxide concentrations. As a matter of urgency local authorities in all the UK's cities should analyse air pollution around health facilities.

Pauline Castres, Nick Watts, UK Health Alliance on Climate Change, David Dajnak, Environmental Research Group, King's College London, Melissa Lott, University College London

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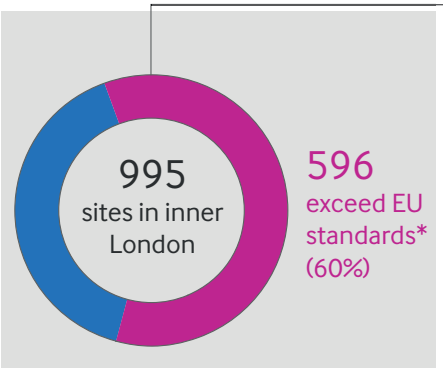
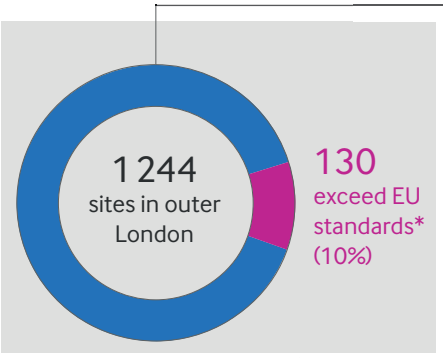
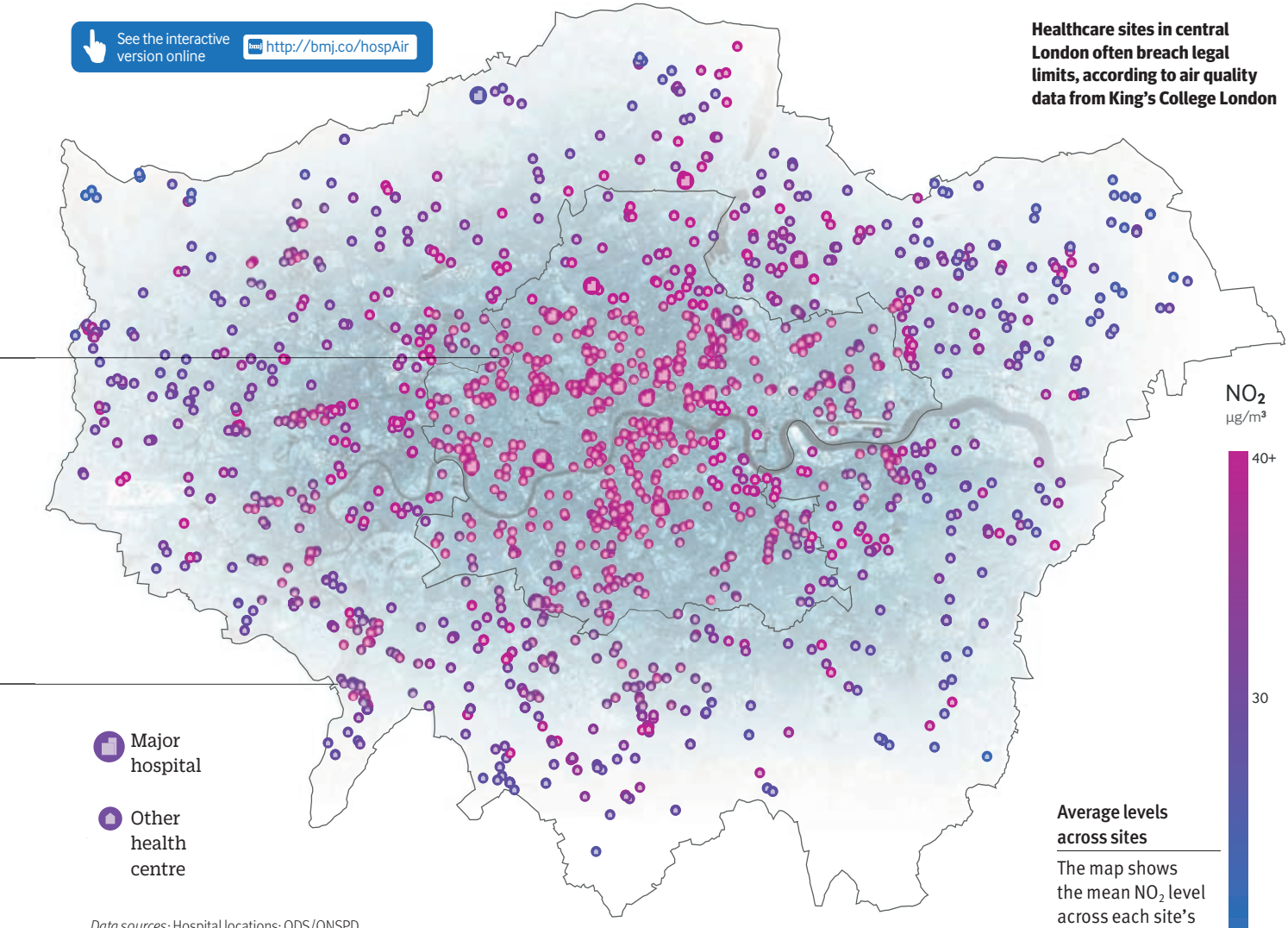



*Average annual limit = 40 µg/m$^3$

See the interactive version online http://bmj.co/hospAir

**Healthcare sites in central London often breach legal limits, according to air quality data from King's College London**




*Data sources:* Hospital locations: ODS/ONSPD
Air quality model: King's College London Limits: https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update.pdf
*Data file:* http://bmj.co/hospAirD
*Satellite image:* NASA


# The human cost of dirty air

Estimates of attributable deaths tell only half the story

The increase in evidence linking pollution to adverse health across the entire lifecourse led to a 2013 report by the Royal College of Physicians and Royal College of Paediatrics and Child Health examining all aspects of this public health crisis, *Every Breath We Take: The Lifelong Impact of Air Pollution*.[2] Drawing on data collated and analysed by the UK government's Committee on the Medical Effects of Air Pollutants (COMEAP), the report concluded that around 40 000 deaths a year could be attributed to air pollution, a figure that has been widely cited.

**Ain Satar, a paediatric doctor, outside University College London Hospital, located on one of the most polluted roads in western Europe**

### Why 40 000 deaths?

After reviewing evidence from many countries, COMEAP concluded in 2010 that $PM_{2.5}$ levels are linked to increased all cause mortality which, in the UK, is equivalent to 29 000 (estimated 75% plausibility range 5000 to 60 000) attributable deaths each year, mostly from cardiovascular and respiratory disease.[3] This figure emerged from sophisticated statistical modelling of data that included more than half a million US adults followed up for around 15 years.[4]

The figure of 29 000 attributable deaths is subject to the usual uncertainties in even sophisticated observational analyses, but it's useful because it helps us to compare the overall health burden of air pollution with that from hazards such as alcohol (22 000 attributable deaths in England) and smoking (80 000 in England).[5] In reality, particulate pollution does not kill 29 000 people directly each year, but it does make existing illnesses worse; the estimated harm being equivalent to 29 000 deaths brought forward by an average of seven months each.[3]

Stephen Holgate, MRC clinical professor of immunopharmacology, University of Southampton s.holgate@soton.ac.uk

Helen Stokes-Lampard, chair, Royal College of General Practitioners

More recently, COMEAP has found that $NO_2$, in large part from vehicle emissions, is also associated with an estimated 23 500 (range 9500-38 000) attributable deaths.[6] Adding this figure to deaths associated with particulates overestimates the combined effect so the RCP reported an estimate of 40 000 deaths annually attributable to both pollutants, noting that it could be greater or smaller than this. The Department for Environment, Food and Rural Affairs quoted a combined range of 44 750-52 500.[6]

Although we are familiar with the effects of summer and winter pollution episodes on asthma, pneumonia in older people, strokes, and heart attacks, the wider effects of air pollution are less known. Chronic exposure impairs lung growth of the fetus and throughout childhood, increasing the risk of developing asthma and contributing to impaired cognition, type 2 diabetes, various cancers, skin ageing, and even serving as a risk factor for obesity.[2]

Launching a report on children's health and the environment in March, the then director general of the World Health Organization, Margaret Chan, said that a "polluted environment is a deadly one—particularly for young children. Air pollution is one of the most pernicious threats facing global public health today and is on a much bigger scale than HIV or Ebola."[7]

The discussion on the effect of air pollution and climate change has been focused so far on the loss of life, but the extent of the total disease burden and the combination of morbidity and mortality will be much greater. Future work from COMEAP and others will be directed at capturing lost quality adjusted life years to give us a better understanding of the overall risks to human health and wellbeing associated with air pollution.

Understanding the risks and appropriate responses to environmental threats is difficult enough, but how we translate the statistics into the real world experiences of patients and the wider public presents another problem. General practitioners in the UK will at some point today explain in "human" terms the multiple environmental and lifestyle risk factors that contribute to ill health. We do it as part of our job, and patients have trust in the information they receive from us and other health professionals.

### A day to remember

The recent National Clean Air Day (www.cleanairday.org.uk) provided us with a high profile public platform to get the message about air pollution across to the public, policy makers, and our new intake of politicians. All must now take collective action to bring about positive change.

Air pollution is one of the biggest health challenges of our day, but we should take heart from history. Just look at what was achieved when health professionals kickstarted a national movement on the risks of smoking after the publication of Doll and Bradford Hill's paper in *The BMJ* in 1950.[8]

**Cite this as:** *BMJ* 2017;357:j2814

Find the full version with references at http://dx.doi.org/10.1136/bmj.j2814

GETTY IMAGES

# Sadiq Khan: how cities can act

The London mayor talks to Fiona Godlee, *The BMJ*'s editor in chief, about why air pollution is a priority for his administration

**Health professionals describe air pollution as a public health emergency, but you don't often hear this message from politicians. Why did you choose to make it a key priority?**

Everyone should have the right to breathe clean air, wherever they live. You may not be able to see air pollution in London, but it affects each and every one of us and is responsible for the premature deaths of more than 9000 people in London every year. I know from personal experience that the city's air is damaging people's health. I was diagnosed with asthma only a few years ago. Air pollution disproportionately affects the most vulnerable people in London, including those living in poorer areas, babies, children, older people, and those with long term illness. Filthy air is linked to conditions like asthma, heart disease, and COPD. Yet air pollution is a problem we can fix. Cleaning up London's air will also be good for the NHS, business, and society.

**In London, road transport is the main cause of pollution. How can we fix this?**

I want to see more electric vehicles, including buses, and more space given to people who want to walk and cycle. In our new transport and environment strategies I will set out how we will make this happen. Of course, I know there is no single "quick fix." That's why we've put together a package of hard hitting measures to sort it out.

In the next two years, the ultra-low emission zone (ULEZ) and "T charge" [on vehicles with high emissions] will help deter the dirtiest vehicles from central London. The T charge is a vital first step to delivering the ULEZ, which will reduce nitrogen dioxide emissions by 50% in central London and will help remove older polluting vehicles from October 2017.

I have also been lobbying the government to introduce a national diesel scrappage fund to help drivers who bought diesel cars in good faith. The government must also take immediate action so people are encouraged to buy the cleanest vehicles.

**Greener transport is good for our health and the planet. How do you see public transport in London shaping up?**

London already has Europe's biggest electric bus fleet, and I want it to grow even bigger. We've already put more electric buses on the roads this year. By next year, we won't be buying any more diesel double decker buses. By 2020, all 300 single decker buses in central London will have zero emissions. I also want to phase out diesel taxis. From January 2018, all new taxis licensed in London must be able to run with zero emissions. These measures will be good for the health of Londoners, by reducing daily exposure to diesel air pollution.

**How can we encourage people to cycle and walk more in London?**

Many of the things we can do to reduce air pollution will encourage people to be more physically active. That's why we're going to put significant investment into cycling schemes in the years ahead. We want cycling or walking to be the default choice for short trips.

It is my ambition that Londoners walk or cycle for at least 20 minutes every day—currently only 34% of Londoners meet this target. New analysis shows that if every Londoner walked or cycled for 20 minutes a day, it would save the NHS £1.7bn in treatment costs over the next 25 years.

**The government's draft air quality plan relies on local authorities solving the air pollution problem. What's the best way for councils and government to work together?**

The plan is nowhere near far-reaching enough. In the UK, nitrogen dioxide limits are being breached in 38 of 43 areas. Yet there is no clear plan to have more clean air zones. Other cities have problems with air quality and need similar solutions to London. The government should be leading by example, yet vehicle excise duty still encourages diesel. The government needs to go back to the drawing board—and urgently.

Cite this as: *BMJ* 2017;357:j2842

# Time to put the brake on polluting motor vehicles

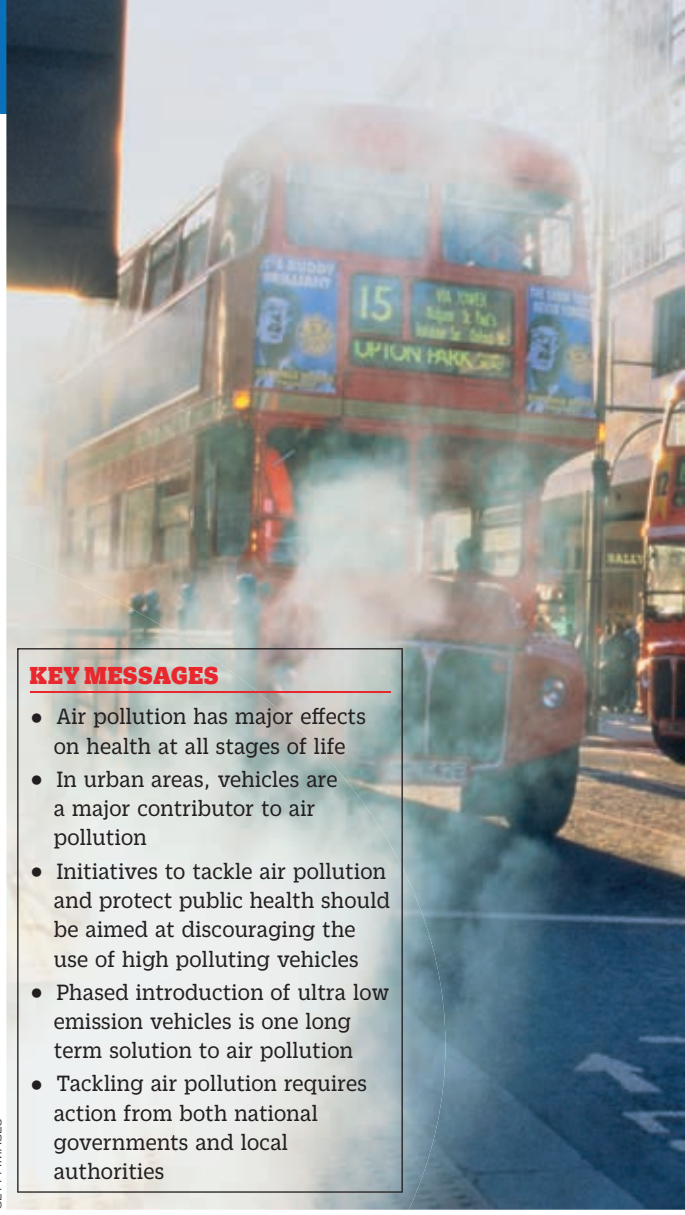
We urgently need a clean air act to tackle high polluting vehicles argues **Robin Russell-Jones**

In 1915, Herbert Asquith, prime minister of Britain, said that the motor car was a luxury that was rapidly turning into a nuisance. More than a century later, vehicles still rely on the internal combustion engine, fossil fuels are still the predominant energy source, transport accounts for 15% of greenhouse gas emissions globally, and outdoor air pollution is responsible for 3.7 million premature deaths a year worldwide.[1] In some capital cities, such as Beijing and Delhi, pollution is so bad that schools have to be closed and people are warned to stay indoors. Air pollution is thought to contribute to 1.6 million deaths a year in China, accounting for around 17% of all deaths, compared with almost 10% in the UK.[2-4]

The UK government has resisted implementing the EU air quality standards for the past seven years, during which time a growing body of medical evidence has shown the harmful effects of air pollution in general and of diesel in particular.[5] Patients with heart and lung disease are the most affected by air pollution, but exposure to small particulates has also been linked to stroke, diabetes, obesity, and dementia.

In response to the successful court case brought by Client Earth, a non-profit environmental law organisation, the UK government published a draft position paper on 5 May to achieve compliance by 2020 with the legal limits for nitrogen dioxide ($NO_2$) contained in the 2008 EU Air Quality Directive.[6] The document, published jointly by the Department of Environment, Food, and Rural Affairs (DEFRA) and the Department for Transport, has been widely criticised for dealing only with $NO_2$ rather than being a comprehensive Clean Air Act that also tackles other air pollutants. The draft paper does not mention particulates, which pose the main threat to health, and much of the responsibility for remedial action has been devolved to local councils.

Two decades ago the UK and other European governments made the decision to promote diesel over petrol in the erroneous belief that this would mitigate climate change.[7] The 2015 Paris agreement on climate change charged governments worldwide with the responsibility of minimising air pollution without aggravating climate change. Here I discuss how this can be achieved and contrast the measures needed with DEFRA's proposals.

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**The low emission zones in London have had little impact on health**

**KEY MESSAGES**

- Air pollution has major effects on health at all stages of life
- In urban areas, vehicles are a major contributor to air pollution
- Initiatives to tackle air pollution and protect public health should be aimed at discouraging the use of high polluting vehicles
- Phased introduction of ultra low emission vehicles is one long term solution to air pollution
- Tackling air pollution requires action from both national governments and local authorities

## Air quality limits

The EU and the World Health Organization have set limits on the "safe" quantity in air of several pollutants that affect human health (table).

The table also lists the percentage of the urban European population exposed to pollutant levels above the EU and WHO limits.[8] Apart from for $NO_2$, the recommendations from WHO are stricter than EU limits but are not legally enforceable. A substantial percentage of the urban European population is exposed to levels above the EU or WHO limits.[8] For example, although only 8% of the population are overexposed to $PM_{2.5}$ according to the EU limit of 25 $\mu g/m^3$ a year, 85% are exposed to quantities that exceed the WHO annual limit of 10 $\mu g/m^3$.

The DEFRA document claims that overall emissions in the UK have reduced over the past four decades.[6] This is mainly the result of measures

**Air quality limits and population exposure**

| Pollutant | EU limit | Proportion of urban EU population exceeding EU limit (%) | WHO limit | Proportion of urban EU population exceeding WHO limit (%) |
|---|---|---|---|---|
| $PM_{10}$ | 50 $\mu g/m^3$ in 24 h | 16 | 20 $\mu g/m^3$ a year | 50 |
| $PM_{2.5}$ | 25 $\mu g/m^3$ a year | 8 | 10 $\mu g/m^3$ a year | 85 |
| BaP | 1 $\mu g/m^3$ a year | 20 | 0.12 $ng/m^3$ a year | 88 |
| $NO_2$ | 40 $\mu g/m^3$ a year | 8 | 40 $\mu g/m^3$ a year | 8 |
| $SO_2$ | 125 $\mu g/m^3$ in 24 h | <1 | 20 $\mu g/m^3$ in 24 h | 38 |
| $O_3$ | 120 $\mu g/m^3$ in 8 h | 8 | 100 $\mu g/m^3$ in 8 h | 96 |

BaP=benzo(a)pyrene. $NO_2$=nitrogen dioxide. $O_3$=ozone. $PM_{2.5}$= particulate matter ≤2.5 µm. $PM_{10}$= particulate matter ≤10 µm. $SO_2$=sulphur dioxide.

### MEASURES FOR TACKLING VEHICLE POLLUTION

**Actions that can be taken by local authorities:**

- Encourage drivers to walk or cycle, particularly on short journeys
- Introduce pedestrian only areas in town and city centres
- Install cycle networks
- Encourage the use of public transport, if necessary by subsidising fares
- Introduce or extend clean air or congestion zones and make them more expensive for high polluting vehicles
- Raise parking fees for high polluting vehicles
- Reduce congestion by using variable speed limits and fewer speed bumps
- Identify and fine highly polluting vehicles at the roadside
- Display air quality readings in public locations, particularly near schools
- Give priority to air quality in building planning applications and promote microgeneration projects

**Actions that require government measures:**

- Raise vehicle tax on diesel vehicles
- Raise tax on diesel fuel and phase out subsidies for red diesel
- Phase out transport refrigeration units
- Ultimately ban all diesel powered vehicles from urban areas and combine this with a diesel scrappage scheme
- Introduce vehicle emission testing regimens for new cars that reflect on-road driving conditions
- Ensure that the annual tests of vehicle roadworthiness include oxides of nitrogen and small particulates in emissions testing
- Make it illegal for garages to circumvent pollution control technology by, for example, removing particulate filters
- Incentivise the introduction of ultra low emission vehicles
- Ensure that renewable energy provides an increasing proportion of electricity in the UK
- Ensure that EU directives controlling air quality remain on the statute book after Brexit

to reduce $NO_2$ and $SO_2$ from power stations and Britain's falling industrial output. The situation is different in urban areas, where diesel is the main contributor to levels of $NO_2$. Failure to comply with EU limits for $NO_2$ is a particular problem in Italy, Germany, and the UK, where close to half of new cars and nearly all commercial vehicles have diesel engines.

Diesel engines also generate polycyclic aromatic hydrocarbons, such as benzo(a)pyrene (BaP), which are of particular concern because maternal exposure has been linked to mental health problems and neurocognitive delay in children.[9-11] Concentrations of polycyclic aromatic hydrocarbons are monitored differently between countries. BaP is the only polycyclic aromatic hydrocarbon that the EU reports, owing to its carcinogenic potential. The EU annual limit of BaP is eight times higher than the WHO limit (1 ng/m$^3$ *v* 0.12 ng/m$^3$), based on the WHO unit risk for lung cancer and an additional lifetime cancer risk of 1:100 000.

Between 2000 and 2014, BaP emissions at traffic monitoring sites in the EU rose by 52%, largely owing to the increase of diesel vehicles in the private car market.[8] Levels of BaP now exceed the WHO limit for 88% of the urban population.[8]

A new generation of petrol driven cars that use gasoline direct injection are now being heavily promoted by the European car industry, but this technology produces even more particulates and polycyclic aromatic hydrocarbons than does diesel. Reducing these emissions will require the use of particulate filters, but there are concerns that these filters are not efficient at removing the smallest particles.[12] Furthermore, testing filters after manufacture is not legally required.

**Exposure to small particulates has been linked to stroke, diabetes, obesity, and dementia**

## Drivers of pollution

Transport also affects health indirectly by contributing to global warming. Carbon dioxide ($CO_2$) is the main greenhouse gas, but ozone, nitrous oxide, and black carbon also contribute to climate change. Although commentators have criticised the EU for prioritising global warming over air pollution,[13 14] some of the responsibility lies with European car manufacturers for promoting the fuel efficiency of diesel without mentioning that emissions of other greenhouse gases, particularly black carbon, were higher than from petrol driven engines.

According to the European Environment Agency air pollution in the EU accounts for 520 000 deaths annually and costs half a trillion euros in increased health costs.[8] Approximately one tenth of these deaths occur in the UK, which is equivalent to 1000 premature deaths a week.[2 3]

Not all pollution is related to transport. Agricultural practices throughout Europe, particularly the use of nitrogen based fertilisers, generate ammonium ions in the atmosphere, which contribute to the formation of secondary aerosols that cause long range particulate pollution in the UK and elsewhere. In eastern Europe, the main source of BaP and particulates is combustion of coal and biomass.[8] Even so, monitoring points that exceed EU limits are almost exclusively in urban areas (94% in the case of BaP). Traffic contributes up to 80% of $NO_x$ in urban areas of the UK.[3] For these reasons, we urgently need a new Clean Air Act that covers all sources of pollution,[15 16] an ambition that will become difficult to achieve if vital EU directives are repealed after Brexit.

## Tackling pollutants

As motor vehicles are major contributors to air pollution, many of the initiatives to improve air quality focus on transport. The box lists the main strategies for tackling vehicle pollution that can be adopted by councils or introduced nationally by the government.

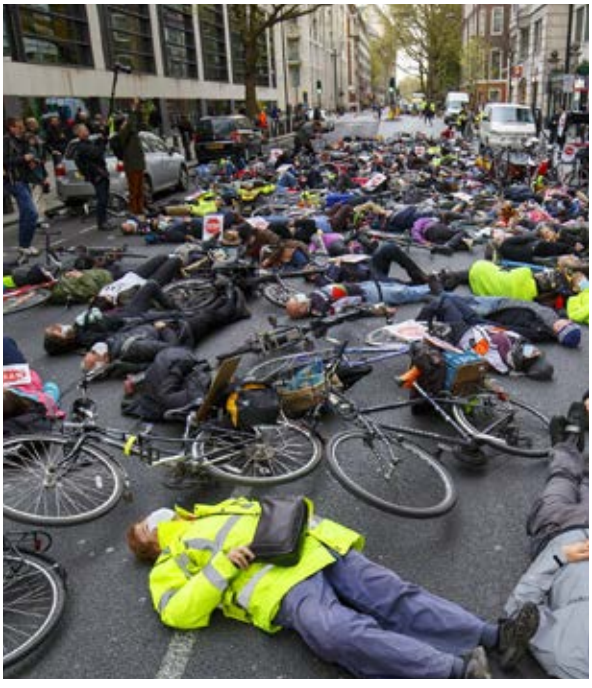
Using ultra low emission vehicles, powered by either hydrogen or a battery, is one way to tackle vehicle pollutants. Electric vehicles are emission-free themselves, but electricity is not a fuel. The carbon footprint of an electric vehicle depends on whether fossil fuels or renewable energy are used to charge the battery. Hydrogen fuel cells are also being used to power electric vehicles, and hydrogen itself can be burnt in an internal combustion engine to produce water and small amounts of $NO_x$. Using renewable energy sources to generate hydrogen is necessary to benefit both air pollution and climate change.

Attempts to exclude highly polluting vehicles from urban areas have had mixed results. The Greater London Authority and some local councils in the UK have introduced low emission zones, but these have not included cars and small vans, and they have had little or no effect on ambient air quality.[5] Furthermore a study of 2000 children aged 8-9 in a London low emission zone found no improvement in respiratory function over three years.[17]

Nonetheless, DEFRA has identified clean air zones as the principal means of reducing $NO_2$ levels in UK cities. This is unlikely to work on its own. Firstly, 38 of the 43 areas currently monitored in the UK exceed $NO_2$ limits, so strategy should be nationwide and not left to individual councils. Secondly, charging vehicles to enter city centres will not necessarily reduce pollution overall if it is simply diverted elsewhere. Thirdly, the projected improvement in air quality is predicated upon new vehicles producing less $NO_2$ in line with stricter EU vehicle emission tests. But diesel manufacturers have been gaming the system for years by developing pollution control technology that operates only within a certain temperature range or, in the case of Volkswagen, only in the laboratory. This improves performance, but the overall result is that emissions of $NO_2$ on the road are 4-5 times greater than in laboratory tests,[18] a discrepancy that applies even to the latest diesel engines compliant with Euro 6 specifications. The EU is planning to introduce a vehicle testing regime that reflects on-road driving conditions in September 2017, but it will be weaker than Euro 6 standards.

**The latest DEFRA consultation contains no specific national proposals, and limits the power of councils to identify or charge polluting vehicles locally**

Competing interests: I have read and understood BMJ policy on declaration of interests and declare that I am on the board of Ebsworth Enterprises, a limited company dedicated to developing and funding environmentally friendly technologies. I was involved with the Campaign for Lead-Free Air from 1981 to 1989. I am the author of a book on society's attitude to the environment throughout history (*The Gilgamesh Gene*).
Provenance and peer review: Not commissioned; externally peer reviewed



GETTY IMAGES

**In April 2016, protesters staged a die-in protest at an anti-pollution rally outside the Department for Transport in London**

Thus, health improvements will be difficult to achieve unless financial incentives are used to promote ultra low emission vehicles, and the most polluting vehicles are banned. This conclusion underlies the decision by several European capitals to ban all diesel vehicles from 2025. London, however, is the most congested city in the EU,[19] so other solutions are urgently required.

The latest DEFRA consultation, however, contains no specific national proposals, and it limits the power of councils to identify or charge polluting vehicles locally.[6] It contains no proposals to raise vehicle excise for diesel vehicles nor to raise the tax on diesel fuel. Increasing tax by 10p a litre would raise £1.7bn (€1.9bn; $2.2bn) annually for the exchequer, which could be used to fund a national diesel scrappage scheme.

Draft NICE guidance on air pollution includes traffic calming measures as one of the only interventions directly aimed at reducing vehicle emissions.[20] Potentially more effective measures include ensuring that annual tests of vehicle roadworthiness, include the testing of oxides of nitrogen and small particulates; investment in technologies that can identify and fine highly polluting vehicles at the roadside; raising vehicle tax for diesel vehicles and tax on diesel fuel. Revenue from raising taxes could fund allied interventions, such as diesel scrappage schemes.

The International Monetary Fund has calculated that the worldwide cost to society of burning of fossil fuels is over $5 trillion a year.[21] These costs are not included in comparisons between different modes of transport or different sources of energy.[22] It would hugely benefit public health and the environment if the prices of diesel and other fossil fuels were increased progressively until drivers opt for genuinely clean alternatives. Motoring organisations might complain, but society should be concerned with the right of all citizens, including children and pregnant women, to breathe clean air.

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EDITORIAL

# The general election, the NHS, and social care

A less damaging deal on Brexit and more funding may result

Labour's Rosie Duffield after winning in Canterbury

The outcome of the general election will mean more of the same for the NHS and social care in the short term and huge uncertainty on two fronts in the medium term. The Conservative government has failed to obtain the mandate it was seeking and at the time of writing was hoping for support from Democratic Unionist MPs to implement its programme. The weakness of the minority government will strengthen the hand of NHS England in implementing the *Five Year Forward View*[1] and continuing its work to achieve financial stability and improvements in performance.

**The result in Canterbury, where Labour won the seat on a platform that included opposing plans to reconfigure hospital services, will have set alarm bells ringing in Whitehall**

## Evolutionary changes

Changes in legislation to support delivery of the forward view, foreshadowed in the Conservative Party manifesto, now seem unlikely, if only because they would act as a lightning rod for opposition parties seeking to attack the government's stewardship of the NHS. In the absence of legislation, NHS England will continue to promote evolutionary changes to the organisation of the NHS, including collaboration and in some cases mergers between clinical commissioning groups. Accountable care systems in which NHS organisations come together to plan and deliver care will also become more prominent.[2]

Work to achieve financial stability and improvements in performance will remain a high priority as NHS funding fails to keep pace with rising demand. The shape of things to come was indicated before the election in reports of NHS England and NHS Improvement tightening their grip on areas with the biggest deficits. Under a new "capped expenditure process," these areas have been asked to consider a range of radical measures to cut costs. Options under discussion include restricting patient choice, reducing work that is outsourced by NHS trusts, stopping funding for some treatments, closing wards and theatres, and reducing staffing.[3]

All areas of England are working on sustainability and transformation plans (STPs),[4] which are NHS England's chosen means of implementing the forward view at a local level. Some STPs include plans to reconfigure acute hospital services. The new government is likely to be sensitive about these changes in the light of public concerns about the downgrading of local hospitals. The election result in Canterbury, where the Labour Party candidate won the seat from the Conservatives on a platform that included opposing plans to reconfigure hospital services in east Kent, will have set alarm bells ringing in Whitehall.

The fate of the Conservatives' manifesto proposals for social care is in doubt. The mishandling of these proposals during the election was one of the factors that influenced the outcome, and commitments to means test winter fuel payments are unlikely to be acceptable to the Democratic Unionists. Coming forward with specific plans for reforming social care funding and legislating to implement them will be exceptionally difficult in the absence of cross party consensus. Unless the government is willing to provide extra resources, publicly funded social care will be rationed even more severely.

In the medium term, uncertainty derives from the likelihood of a second general election and the impact of the Brexit negotiations and their aftermath. History shows that a minority government is inherently unstable even when it has a pact with another party. By-elections during the coming parliament could further weaken the government's position, and any deal with the Democratic Unionists could unravel in the face of events. The probability that the prime minister will be challenged from within her own party is a further source of instability. The public will not thank politicians for calling a second election, but there may be little choice in current circumstances.

## No hard Brexit

Brexit negotiations will have a direct effect on the NHS through issues such as the rights of EU nationals working in the UK and an indirect effect from what Brexit means for the economy and public finances. One of the consequences of the election is that the government has no mandate to pursue a hard Brexit. Assuming that a seriously wounded government is able to reach some kind of deal with the EU, and this is by no means certain, this may be less damaging to the NHS and social care than many had feared.

A clear message from the electorate was the need for politicians to listen to and act on its concerns about public services and the effect of further spending cuts. If the government is willing to hear this message—and media reports as we went to press looked promising—it may loosen the purse strings and find additional funding for the NHS and social care to avoid the harsh restrictions on services now being considered. That at least would be a good outcome.

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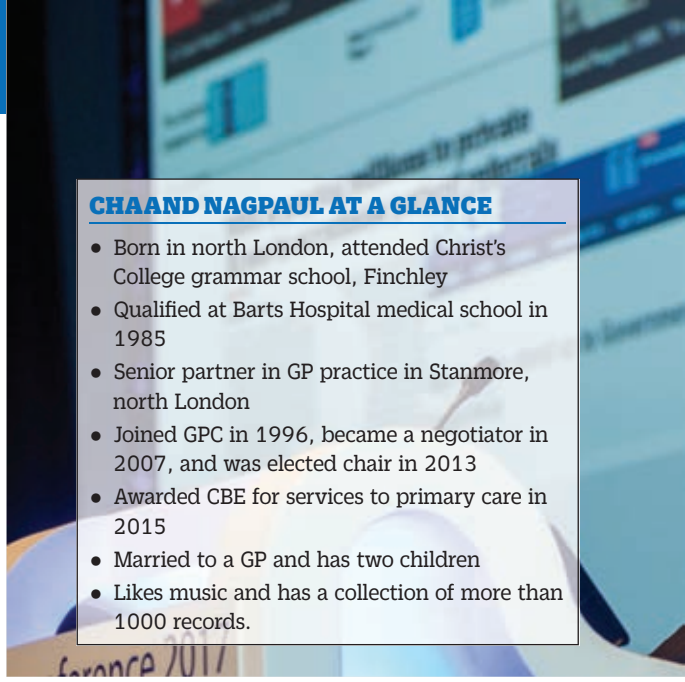
Chris Ham, chief executive, King's Fund, London, UK

# Chaand Nagpaul: a calm and persuasive negotiator

**Anne Gulland** looks at what the profession can expect from the BMA's incoming chairman, Chaand Nagpaul



### CHAAND NAGPAUL AT A GLANCE

- Born in north London, attended Christ's College grammar school, Finchley
- Qualified at Barts Hospital medical school in 1985
- Senior partner in GP practice in Stanmore, north London
- Joined GPC in 1996, became a negotiator in 2007, and was elected chair in 2013
- Awarded CBE for services to primary care in 2015
- Married to a GP and has two children
- Likes music and has a collection of more than 1000 records.

In the kind of poll that Theresa May can only dream about, Chaand Nagpaul was elected unopposed as chair of the BMA's council earlier this month. He takes over the post from Mark Porter, whose five year term as chair ends on 29 June 2017.

As a member of the BMA's General Practitioners Committee (GPC) since 1996 and its chair since 2013, Nagpaul is already a seasoned medico-politician. He took over the GPC as the reforms heralded by the Health and Social Care Act were kicking in and the funding, workforce, and workload crises facing general practice were beginning to bite.

He has scored some notable successes. Less than six months into his leadership of the GPC, Nagpaul and his team won praise for negotiating a new contract, a year after the previous one had been imposed on GPs by the government. His influence was also evident when, during his chairmanship, the government announced extra cash for primary care.

Nagpaul is known for his composure, perhaps not surprising for someone whose boyhood ambition was to be a chess player. Speaking to *The BMJ* he said the game taught him the "life skills of logical thinking, planning several moves ahead, and looking at the endgame—not just at the immediate hurdle facing you."

"He's not a table thumper," says Hamish Meldrum, who was chair of the BMA council before Porter and a GPC member alongside Nagpaul. "He wants to see the other side's point of view and get to an agreed position."

Meldrum adds, "Some of the profession may want to see the chair banging the table and having a real go at government. But when it comes to it, you have to work with them and convince them."

Nagpaul is not afraid to be critical and, at this year's annual local medical committees' conference, he berated politicians for their "callous disregard" of the NHS. He was also scornful of the Leave campaign's claim in the 2016 EU referendum that "the £350m the EU takes every week" could be spent on the NHS. "The reality is that we've been cheated with the opposite: a deep freeze in NHS spend, continued savage austerity cuts, and politicians turning a blind eye to the spiralling pressures affecting the entire health and social care system," he said.

This passion is genuine, says Farah Jameel, a north London GP and GPC colleague. "He is a frontline clinician: he is living and breathing the challenges we're all facing and can relate to them," she says.

**"He's not a table thumper. He wants to see the other side's point of view and get to an agreed position"** — Hamish Meldrum

Meldrum points out that, although Nagpaul has shown himself an able leader in the GP world, he will now have to represent doctors from all specialties. "As chair he'll need to show that he's not just focused on GP issues," he says. "He'll have to leave them behind and make sure he's representing all the doctors in the BMA."

The role requires attention to detail and a grasp of policy, Meldrum adds. "He'll be out of his GP comfort zone."

Jameel believes that Nagpaul will be able to carry it off as he's a hard worker with a prodigious memory. "Having watched Chaand over the years, both from afar and working quite closely with him, I have seen his ability to negotiate and influence while staying inclusive and respectful of all views. His principles and values stand him in

## TRAINING TO TACKLE BULLYING

**Junior doctors should receive compulsory training on how to challenge bullying behaviour, the Royal College of Surgeons of Edinburgh has said**

### 1 Compulsory

As part of its #LetsRemoveIt campaign, the college has called on deaneries, Health Education England, and NHS Education for Scotland to introduce compulsory training for doctors in foundation training. The campaign urges NHS trusts and boards to ensure that people who bully and undermine colleagues have their training responsibilities removed.

### 2 Zero tolerance

Michael Lavelle-Jones, the college's president, said that the college had a "zero tolerance" approach to bullying, undermining, and harassment and categorically condemned these in all circumstances.

### 3 Culture

Training could help bring a culture change, the college said, to "encourage people to challenge poor behaviour and think about their own behaviour." Lavelle-Jones said, "We want to change the culture of healthcare to ensure that this kind of behaviour becomes so unacceptable it can no longer go on."

### 4 Need

Lavelle-Jones said that the case of Ian Paterson, a breast surgeon who was recently sentenced to 15 years in prison for carrying out unnecessary operations, highlighted the need to tackle bullying in the workplace. "We must change the culture in which such a surgeon can remain unchallenged, with the team around them perhaps aware of some of the issues but too scared to speak up," he said.

good stead," she says. He's also a night owl, working regularly into the small hours.

That work ethic should help him deal with a full in-tray when he takes over the leadership of the BMA. The anger stoked by the junior doctors' contract is still festering and negotiations over the new consultant contract are not yet finished. And, while it remains to be seen what a weakened May administration will mean for the government's austerity programme, it is unlikely that the NHS will suddenly receive a large cash injection.

Porter became a seasoned media player during his time as chair, so how will this famously unruffled individual cope with the media spotlight? Clare Gerada, former chair of the Royal College of General Practitioners, believes that this will be one of the trickiest aspects of the job. "Chaand is a good communicator and I've seen him in action," she says. "But it used to take me hours to prepare for a two minute slot on the *Today* programme and this is an area he will have to work on."

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**5 All health workers**

The college has called on all healthcare professionals to sign up to the principles of the #LetsRemoveIt campaign. It said that trusts and boards should give staff the time to undertake training on bullying and that they should work with all healthcare specialties to improve the workplace culture.

# Cardiologist who presented false prescription escapes suspension

A consultant cardiologist who was convicted of presenting false prescriptions in colleagues' and friends' names to support his own addiction to painkillers has had conditions imposed on his registration for 12 months.

A medical practitioners' tribunal also found that Martin Royle, 45, carried out five transoesophageal echocardiograms after his employer had told him to refrain from the procedure. He was also found to have worked in private practice on six occasions when on call for the NHS.

The tribunal found that his clinical behaviour amounted to misconduct but not so serious as to impair his fitness to practise. He had not acted dishonestly, the tribunal ruled.

Working at his private practice while on call for the NHS also amounted to misconduct but was not so serious as to impair his fitness to practise, the tribunal found. The scheduling problem was not of his making, and when a conflict arose he had always arranged cover at the NHS hospital.

The tribunal did find that he was guilty of serious misconduct in writing the false prescriptions. Counsel for the General Medical Council asked the tribunal to suspend him. But the tribunal chairman, Edward Doyle, said that this would be "disproportionate."

Royle will instead work under the supervision of an agreed "responsible officer" for 12 months. His conditions include an undertaking not to perform transoesophageal echocardiograms, work in private practice, or prescribe drugs for himself or his family.

Royle had shown insight into his failings, had cooperated with regulators, and was supported by his colleagues' positive testimony, said Doyle. "The tribunal bore in mind that enabling a competent clinician to continue in safe practice, wherever possible, is in the public interest," he said.

Clare Dyer, *The BMJ*

Cite this as: *BMJ* 2017;357:j2845

# Psychiatrist who kicked patient is suspended for six months

A consultant psychiatrist who was convicted of assault for kicking a patient who had kicked her has been suspended from practice for six months by a medical practitioners tribunal.

Temitope Ademola was working in a learning disability service when the incident occurred in January 2014. Ademola also placed her hand over the female patient's mouth, restricting her breathing, her conviction stated. She was sentenced to 200 hours of community service.

Ademola, who qualified in Nigeria in 1997, was a new consultant at the time of the incident. The patient, who had learning difficulties, was highly agitated and had to be restrained at one point by two nurses. The patient threatened Ademola that she would kick her, whereupon the psychiatrist answered, "I will kick you if you kick me."

The same patient had threatened to punch Ademola a week before, and on that occasion the psychiatrist had said, "I will punch you if you punch me."

But Ademola had impressed the tribunal with her efforts at remediation, which included a course in mastering difficult interaction, said Nigel Westwood, chairing the tribunal. She had been "contrite and dignified" and the tribunal was "struck by the lack of self pity on your part," he told her.

Her misconduct was an isolated incident set against an otherwise unblemished career, said Westwood, referring also to "the impressive array of testimonials that speak of you as a dedicated, capable, and caring doctor."

The tribunal considered erasure but decided that it was disproportionate. A six month suspension would give her "more time at this juncture to further develop your insight in regards to the threatening words you used," Westwood told her.

Clare Dyer, *The BMJ*

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PASCAL FOSSIER/GETTY IMAGES

HEAD TO HEAD

# Do doctors have a duty to take part in pragmatic randomised trials?

For society to benefit from new clinical knowledge the expectation should be to participate in research, writes **Marion K Campbell**. **Charles Weijer and colleagues** agree but argue that the fundamental need for consent makes this an imperfect duty

## yes

### If you benefit from other people's participation you have a duty to reciprocate

Marion K Campbell, professor of health services research, Health Services Research Unit, University of Aberdeen
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Doctors require knowledge of the potential benefits and harms of different treatments to inform clinical decision making. Patients also require this information to make an informed choice between different treatment options. This knowledge base is generated from robust clinical research such as randomised controlled trials. For this to advance, doctors and patients must be willing to take part in studies.

Randomised trials are the best way to evaluate effectiveness because they aim to compare interventions fairly.[1] Many trials have shown that treatments that were thought to be beneficial were actually of minimal benefit or harmful (for example, oxygen therapy in acute myocardial infarction[2]). Pragmatic randomised trials evaluate treatments as they are delivered in clinical practice, aim to answer relevant questions, and directly inform decision making.[3]

Trials can occur only if doctors and patients take part—without their involvement, this knowledge would not exist. Doctors routinely use, and their knowledge benefits directly from, information gathered from trials (for example, when using evidence based clinical guidelines).

#### Everyone benefits

If society wishes healthcare to improve, doctors and patients must continue to participate in such endeavours. There is also the concept of reciprocity: if you benefit from other people's participation then you have a duty to reciprocate,[4] especially in a publicly funded health system such as the NHS. Some ethicists argue that we all have a moral obligation to take part in medical research because its aim is to significantly benefit humankind (grounded in the concepts of beneficence towards others, fairness, and the public good).[5]

Patients can benefit from taking part in trials. A meta-ethnography of reasons why participants took part in trials reported perceived benefits such as more follow-up and longer consultations.[6] Doctors too benefit from participation, gaining clinically relevant knowledge while training in good clinical practice; experiencing the rigour of high quality clinical research; and learning how to apply it in their clinical practice. Advances in infrastructure (for example, the UK Clinical Research Network, which supports the delivery of trials in the NHS[7]) have eased the administrative commitment for doctors participating in trials.[8]

#### Consent and equipoise

Doctors' ethical considerations about whether to participate in a pragmatic trial depend on whether they are the direct recipients of the research intervention or whether they are consenting for their patients to be approached to participate in a trial.

For knowledge translation and health services trials—for example, to test different ways to facilitate the adoption of evidence based results into practice—doctors should have a high threshold for withholding consent.[9] By doing this they would effectively be denying their patients access to the potential benefits of participation. Some ethicists have argued that individual doctors' consent may not be needed for these types of trial.[9]

When doctors agree to their patients being approached to take part in a trial, clinician equipoise (being sufficiently uncertain about the best treatment for a patient) becomes a critical ethical concern.[10] Many doctors decline to participate in a trial because they believe they are not in equipoise. If, however, the wider community of doctors differs in the perception of what treatment is best—and therefore there is collective equipoise[10]—doctors should routinely participate in trials to answer this uncertainty.[10] If they do not, patients will be the recipients of conflicting information about the best treatment option depending on which doctor they see—and not all can be right.

Of course, the decision to take part in a clinical trial must remain ethically justifiable to the trial participant because trials come with risk (especially for patients who agree to receive trial treatments). So it would be wrong to insist that a moral obligation to participate in trials mandates compulsory participation for all.

For patients in particular, individual informed consent will likely remain the norm (although, as with doctors, individual consent for patient participation in service level trials of the roll out of evidence based practice may not be essential). Rather, a moral obligation to participate implies a different starting point—where the expectation is that doctors routinely participate in trials and that their patients expect to be approached to take part.

# no

## People should be able to choose how they help others

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Conducting timely pragmatic randomised controlled trials is a social priority that requires patients and doctors to participate. But there is no enforceable duty to participate.

Informed consent is a cornerstone of research ethics. Respect for autonomy requires that research participants—be they patients or doctors—make an informed choice to take part, as enshrined in the United Nations International Covenant on Civil and Political Rights.[11]

But lack of consent is reported to be the most common barrier to enrolment in randomised trials.[12] If a duty exists to take part in pragmatic trials, some ethicists argue that participants' consent may not be required.[5 13] If true, this would speed enrolment and help broaden the applicability of study results.

John Harris, a bioethics professor at Manchester, argues that because patients benefit from the medical advances produced by research they have "a clear moral obligation to participate. They have an obligation grounded in fairness or reciprocity to "contribute to the social practice that produces them."[5] And, in principle at least, participation in research could be viewed as somehow mandatory; the research enterprise would collapse without enough patient participation.

Even were we to accept this position generally a gap exists between ethical argument and sensible policy.

### Free choice

Voluntary participation in public projects is preferable, Harris argues.[5] People should be able to choose how to discharge any duties of beneficence towards others, whether or not they are willing or unwitting beneficiaries themselves. As a result, a policy of educating and encouraging patient participation in research is preferable to conscription. And patients themselves clearly express that their consent to research should be sought, even in low risk pragmatic trials comparing treatments used routinely in practice.[14]

Must doctors participate in pragmatic trials? Gelinas and colleagues argue that efforts to ensure the quality of care fall within the hospital's sphere of control and that the consent of doctors is therefore not required.[13] It is certainly true that hospitals are ultimately responsible for care delivered. They have the right to set policies regarding the credentials of doctors and patient safety initiatives. Additionally, they can audit and enforce these policies, and these measures typically offer support and remedial intervention within a framework of employment law.

But when hospitals conduct pragmatic randomised trials they are no longer merely setting policy, they are doing research, which comes with its own ethical regulations. Respect for these protections is essential because research exposes participants to risks primarily for the benefit of other people. Consider Haugen and colleagues' pragmatic cluster trial of a surgical safety checklist to improve patient outcomes.[15] For research purposes, surgeons were required to participate in an educational initiative, and their compliance with a safety checklist was observed and recorded. Poor compliance could have implications both for their employment and reputation, and neither of these risks is negligible. The fact that the benefit of the checklist was unknown highlights the importance of the general principle that doctors have a right to be free of research without their consent.

### Consent is important

A duty to participate in research would probably eliminate the need for consent. But neither patients nor doctors have an enforceable or perfect duty to participate in pragmatic trials; their consent is therefore required.

But a weaker version of the duty to participate in research is plausible. In the same way that we have imperfect duties to choose how to contribute to our community or help poorer people, we should also contribute to the public good of research as we see fit. This understanding gives patients and doctors a reason to say "yes" when their consent to participate in a pragmatic trial is sought.

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**COMMENTARY** Ashley Woodcock

## View from the frontline of pragmatic trials

In 1998 Roland and Torgerson pointed out that efficacy and pragmatic trials sometimes arrive at different conclusions "either because a treatment that works in an ideal setting does not work in real life, or because improvement in a biomedical endpoint does not produce the expected health gain."[1] The highly controlled environment of randomised controlled trials designed to examine efficacy or safety does not reflect everyday practice. In trials of chronic obstructive pulmonary disease (COPD) or asthma, for example, primary efficacy endpoints are selected to give the best chance of drug approval[2] but may not be relevant to patient experience. Efficacy trials avoid confounders such as comorbidities or diagnostic uncertainty, so that 80-90% of routine patients in primary care are excluded.[3] Patients are healthier and more adherent than patients in the general population.[4] Frequent and intensive monitoring, with treatments provided directly, all contribute to perfect inhaler technique and adherence rates of >80%. This contrasts with routine practice, where patients are reviewed infrequently, have multiple medications for their comorbidities, and adherence can be as low as 23%.[5] Despite this, most clinical guidelines are still based on efficacy trials.

Pragmatic trials of effectiveness have substantial challenges. They require substantial funding, relationship building, sophisticated collection of blinded data, and altruism to achieve recruitment targets that reflect a broad population.[7]

One example is the Salford Lung Study, an open label randomised pragmatic randomised trial that showed that fluticasone furoate-vilanterol once daily from a novel dry powder inhaler (Relvar Ellipta) reduced exacerbations in COPD compared with usual care.[8] There were very few exclusions and around half of eligible patients in Salford took part. Participants were older and included more women, more current smokers, more comorbidity, and greater exacerbation frequency compared with the participants in the phase III trials for the same product.[10]

We need more pragmatic randomised trials in routine care if we are to understand the true value of medicines and get clinical guidelines onto a clinically relevant evidence base.

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Competing interests: I led the Salford Lung Study.
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IT SERVICES

# Cyberattack may prove to be a wake up call

**Jon Hoeksma** reports on why some trusts were more affected than others by the computer virus that paralysed the NHS last month

When most of the NHS was brought to a standstill by the Wannacry virus on 12 May, initial attention focused on the residual use of the superceded Windows XP operating system in many of the affected NHS trusts. Its later versions—Windows Vista, and Windows 7, 8, and 10—are also vulnerable.

But to infect computers, the virus first had to get inside the network and past perimeter defences such as firewalls. The virus proved so disruptive because it exploited a set of vulnerabilities in Microsoft software using a tool known as Eternal Blue, believed to have been developed by the US National Security Agency and then leaked onto the internet by a hacking group called Shadow Brokers.

After Wannacry infects an initial computer, usually via email, it releases software onto the local network that seeks out other computers to infect. After infection, Wannacry encrypts files and issues a ransom demand for $300 (£236) for decryption. The ransom doubles after 72 hours.

That Wannacry got into trusts' networks highlights the variable state of NHS IT infrastructure and its maintenance (see box below). Trusts that had not applied the latest critical patches to operating systems were particularly vulnerable.

This is because the virus exploits a known weakness. Microsoft published a security update two months before Wannacry was unleashed and, in an unusual move, released a special patch for Windows XP users—despite the fact that XP is no longer officially supported. But a patch is no good unless it's installed and, despite warnings from NHS Digital, some trusts had not applied the patches.

To be as cybersecure as possible, trusts need a multilayered approach, starting with a firewall. "Good cybersecurity begins with perimeter defence: keeping the bad guys out," says Shaunna McMahon, chief information management and technology officer at Frimley Park NHS Foundation Trust, which is a pilot for the national NHS Digital CareCert cybersecurity programme, a series of national initiatives designed to provide trusts with training, support, and advice.

But to be cybersecure means being prepared for inevitable breaches of the firewall, so intrusion detection software is needed and computers and other devices on the network need up-to-date patches. Should the worst happen and data are lost once the virus gains access to systems, clean back-ups are essential.

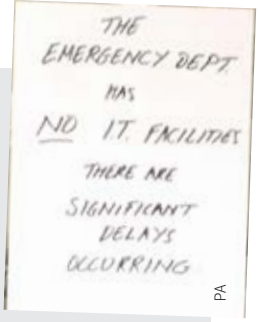
NHS Digital, NHS Improvement, the Care Quality Commission (CQC), and the National Cyber Security Centre are investigating the lessons of Wannacry. Leeds Teaching Hospitals NHS Trust said that it was "important that we ask NHS England and NHS Improvement to share learnings from incidents in other trusts quickly."

A key question is why some trusts were so badly hit compared with others. One observation is that several trusts that had suffered recent cyberattacks or network failures were particularly affected by Wannacry.

Barts and the London NHS Trust was one of the worst affected. With more than 2000 computers infected, it declared an emergency and its network was down for almost a week. It was still not back to normal two weeks later.

But Wannacry was just the latest IT meltdown for the trust with a £135m deficit, the largest in the NHS. Barts was subject to a ransomware attack in January that was quickly followed by a major network failure—resulting in severe disruption for several weeks. The causes of those failures are unknown but the trust was left ill prepared for Wannacry.

Northern Lincolnshire and Goole NHS Foundation Trust was hit by one of the first



PA

## IS THE NHS PARTICULARLY VULNERABLE?

After the recovery efforts, attention has turned to establishing why the NHS was so vulnerable—far more so than other public services running ageing software.

Having older operating systems embedded in medical equipment is worrying because it is difficult to install security patches in devices, check-in kiosks, cameras, and scanners. The sheer number of brands and models makes it harder to manage, resulting, for example, in poor patch deployment and insecure configurations. Medical devices are also often not seen as the IT department's responsibility.

The legal responsibility for keeping medical device software up to date is also unclear. Patching devices may also invalidate Medicines and Healthcare Products Regulatory Agency certification, which may be based on a specific version of the system used, and while some suppliers manage software updates and patching as part of routine maintenance and support, others say it is the client's responsibility.

GETTY IMAGES

## DID KNEEJERK REACTIONS MAKE THINGS WORSE?

Many trusts responded to the attack by shutting down their networks, suspending email, or cutting off external links. Email was thought to be the primary source of infection. There was no clear national advice on whether this was the right thing to do. And in the face of what was an unprecedented global attack, which initial reports suggested was targeting the NHS, many cut links with the outside world.

But these precautionary actions, akin to pulling up the drawbridge, proved far more disruptive than the infection.

Where local IT networks were suspended, NHS staff immediately lost access to clinical information systems, including electronic patient records, radiology and laboratory results, order communications, and electronic prescribing, and had to return to paper systems.

Of the 47 English NHS trusts and 13 Scottish health boards affected it is not yet known how many were infected and how many were affected because they shut down their systems. Adrian Byrne, chair of the national CCIO network and information technology director at Southampton University Hospital NHS Foundation Trust, none of whose computers were infected, says some trusts suspended access to local networks as a kneejerk reaction. "I fail to see how disconnecting clinical systems from networks helps anyone."

**Trusts that struggle financially seem also to have struggled with cybersecurity**

high profile NHS cyberattacks in October 2016. Despite working with the CareCert team to learn lessons from this attack, it was also hit by Wannacry.

Southport and Ormskirk NHS Trust on Merseyside was also badly hit. A prescient board paper from May said the organisation was unprepared for such an attack and lacked a recovery plan. The trust was working to have one in place by August. Southport differed from other trusts in recording its lack of preparedness publicly.

Most trusts, however, were not infected as they had sufficiently robust security arrangements. But the NHS's interconnectedness meant almost all trusts were affected, as access to systems and networks was suspended as a defensive measure.

There are indications that the trusts that were least affected were also the most digitally advanced. Of the 16 hospital trusts in England classed as "global digital exemplars" by NHS England none was reported to be severely disrupted. They still had to work hard to check vulnerabilities and ensure the latest patches were applied but they didn't go into digital meltdown.

The global digital exemplars were named in September 2016, based on an assessment that included measuring how modern their systems and supporting infrastructure were. Modern patient record systems, of the kind run by most of the 16 exemplars, necessitate investment in a sophisticated and highly resilient underpinning network infrastructure. The exemplars were also selected on the level of senior management vision and commitment to digital transformation. One such trust, West Suffolk, has since approved a new firewall to "help protect against the type of attack suffered in May," it says.

Trusts that are struggling financially, or with service delivery, seem also to have struggled with cybersecurity. Twelve of the 37 trusts directly disrupted by Wannacry had been in special measures between 2012 and 2017, according to Amitava Banerjee, senior clinical lecturer in clinical data science at University College London.

In a board paper on Wannacry, North West London Healthcare NHS Trust's interim director of information technology, Alan Brown, said, "The request for further cost savings in the IT service is increasing the risk of more attacks and the time it takes to respond to and recover from them." The trust had six machines infected but could act quickly thanks in part to investment in intrusion detection software.

Joe McDonald, chief clinical information officer (CCIO) at Northumbria Tyne and Wear NHS Foundation Trust and chair of the national CCIO network, says, "IT is the canary in the mine for NHS funding, not as glamorous as incubators and kidney machines, but no less essential."

The CQC—in an early response to 12 May—seems set to gain a new role to assess NHS organisations' cybersecurity. Although NHS Digital's CareCert programmes have been developing support on cyber best practice, there are no national guidelines and each trust must manage locally.

What Wannacry highlighted was that many NHS trusts are not following good IT security practices and that, consequently, individual health services and the NHS as a whole are vulnerable to cyberattacks. To deliver shared care records requires multiple organisations in health and care to work together. Wannacry, which affected organisations in more than 100 countries, proved particularly virulent and quickly jumped between trusts with regional community of interest networks.

IT security requires investment—including replacing legacy systems where practical or ensuring network separation where not—so threats cannot leapfrog across the whole system. Good security requires doing the basics—getting on top of patch management and having clear escalation procedures when a breach does occur.

Clear national command and control for managing incidents and issuing initial alerts is also needed. In the aftermath of Wannacry, NHS Digital worked closely with NHS England, the Department of Health, and the National Cyber Security Centre, but one of the highlighted weaknesses was procedures for alerting IT directors and chief information officers. Guidance was most often sent via email, which was little help when email systems were being taken down as a defensive measure (see box above).

Similarly, one chief information officer said that being instructed by NHS Digital late on the Friday of the attack to get into every local GP practice over the weekend and fix the problem showed little understanding of how primary care worked.

Joe McDonald, concludes, "The NHS needs the equivalent of Batman's bat signal—something which no one can miss—for when these incidents occur, as they will."

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DIGITAL HIGHLIGHTS

# Suicides among junior doctors in the NHS

**One of our most popular articles this month was an editorial on suicide among junior doctors (*BMJ* 2017;357:j2527), which argued that there "should be a means by which all suicides by junior doctors are identified and investigated, including an explicit focus on the role that workplace pressures may have played." Here are some of your comments on Twitter:**

**Agnes Ayton @AgnesAyton**
A national confidential enquiry would be helpful for all healthcare professionals, not just junior doctors. We need a positive work culture

**Gavin @drgprman**
I guess part of the issue is that doctors in training are not seen/treated as staff, they are moving parts controlled by Health Education England

**DrSarahJarvis @DrSarahJarvis**
Tragically, those in caring professions like medicine/nursing all too often put others' needs before their own

**Doreen Rabi @doreen_rabi**
I always worry that we assume that young MDs with high capacity are also highly resilient. Work conditions are important but we must acknowledge the culture of perfection, performance, and endurance that is so unhealthy and unreasonable


FROM THE ARCHIVE

## A noticeable decay in the art of lying about venereal diseases

Last week Public Health England released new data that showed the number of cases of syphilis is at its highest level since 1949. As a 1946 Ministry of Health report in *The BMJ* (*Br Med J* 1946;2:432) detailed: "In 1939 the incidence of early syphilis, as judged by the cases dealt with at the treatment centres, had reached the lowest point on record, but by the end of 1943 there was an increase in early syphilis of about 140% above 1939 figures." In 1948 a follow-up report (*Br Med J* 1948;2:218) ascribed the "spectacular increase in syphilis" to the post-war "return from overseas of millions of men of the age groups most likely to be infected."

That same year in the journal (*Br Med J* 1948;1:850), physician RR Willcox laid out the argument that "non-sexual transmission is no great rarity; that there is no reason for not giving the benefit of the doubt to persons with a positive serology who deny all history of previous genital disease or of sexual intercourse; and that the possibility of extragenital infection—yes, even the water closet seat—should be accepted, at least in women, and not conceded as a favour with the tongue in the cheek."

A James Marshall replied to say that he, "like most patients' wives," would "need much more convincing evidence" to accept this (*Br Med J* 1948;1:953). He also observed that "since the war ended there has been a noticeable decay in the art of lying among patients with venereal diseases. In the past, according to the patients, syphilis was often contracted through contact with syphilitic cricket balls, billiard tables, bedposts, bulls' horns, etc. Now my patients seem always to contract their diseases by sexual intercourse."

## MOST READ ONLINE

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*BMJ* 2017;357:j2353

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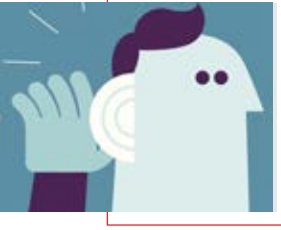

**Listening to patients is not enough**
*BMJ* 2017;357:

**Unproductive activity and NHS consultants**
*BMJ* 2017;357:j2693

# BMJ Podcast: Your brain on booze

This week *The BMJ*'s Duncan Jarvies talked to Anya Topiwala, a clinical lecturer in old age psychiatry at the University of Oxford, about a study she coauthored that found that alcohol consumption, even at moderate levels, is associated with adverse brain outcomes. Below is some of their discussion:

*How is it that alcohol might be affecting the various brain structures? Is it a direct mechanism or is it working through some different action?*

That's a really interesting question and something that's very difficult to answer at the moment. We simply don't know. In people who have been drinking heavily over long periods of time we know that alcohol can be directly neurotoxic and also the association with thiamine deficiency can mediate some brain damage. But in the case of light to moderate drinking, as we have here, we really don't know as this is one of the first studies to find an association.

Listen to the podcast in full at bmj.co/alcohol_brain