this week

BURNT TOAST page 129 **CHILDREN'S SOCIOECONOMIC HEALTH GAP** page 130

NHS chief wants training overhaul

The head of the NHS in England has told *The BMJ* that he will push for a major overhaul of medical training to focus more on the needs of the modern NHS and rejuvenate morale among the junior workforce.

Simon Stevens, said that he wanted to use the government's announcement of 1500 extra medical school places by 2018 as a springboard for change. This refocus should include a stronger emphasis on primary care and psychiatry and an increased recognition of the importance of multimorbidity and frailty, he said.

Alongside this, Stevens said that the NHS would work urgently to provide a more supportive environment to junior doctors training in clinical practice, in response to the frustrations that came to a head during the long running contract dispute.

The chief executive cited, as issues to look at over the next two to three years, the loss of the "firm" system in hospitals, the move towards shift systems that often left doctors feeling detached and unsupported, changes to specialty training, and the lack of time available for learning and research.

Stevens acknowledged that the extra medical training places would not be an instant solution but should be used to rethink the way training was conducted. "It will take 10 years plus for those new doctors to be working in frontline clinical practice, but we've got to use the opportunity to ensure that the curriculum, the training experiences, and the support that undergraduates get are aimed at the health service we will have in 10 or 20 years—as against the health service of today, let alone 10 or 20 years ago," he said. "We would like to see a strong emphasis on primary care and psychiatry as well as a recognition of the importance of comorbidity and frailty, and a whole range of other things."

Stevens, speaking to *The BMJ* at the Health Foundation's conference in London this week, said there should be an equal focus on tackling the issues that have caused low morale among the junior workforce. "It's a huge agenda. We've got to be very careful that we don't cause unintended consequences to the viability of smaller and medium sized hospitals, but it is a debate that we can no longer dodge."

Earlier in his keynote speech he raised the importance of tackling low morale. "We've got bright and brilliant people coming into medicine who have a lot of that squeezed out of them by the way in which the training processes work," he warned.

Gareth Iacobucci, *The BMJ*

Cite this as: *BMJ* 2017;356:j417

FEATURE, p 132

Simon Stevens: "Undergraduates need a curriculum and the training aimed at the health service we will have in 10 or 20 years"

LATEST ONLINE

- Cutting hospital beds would be "lunacy," warns senior emergency doctor
- Hospitals find it difficult to integrate physical and mental healthcare
- Hunt wants to collaborate with Europe on many health issues after Brexit

SEVEN DAYS IN

Northern Ireland GPs threaten to quit NHS

GPs in Northern Ireland have warned they may be forced to leave the NHS after plans for a financial rescue package were thrown into disarray by the fall of the assembly government.

In December, 97% of GPs signed undated resignation letters in protest at underfunding and workforce pressures. The move prompted the health minister Michelle O'Neill to agree to fund a rescue plan, which would have boosted investment and increased training places. But the plans have been derailed by the assembly's collapse, and GPs may now opt to quit the NHS and become private contractors, if BMA members agree to progress the action.

Tom Black (left), chairman of the BMA's Northern Ireland GPs committee, who was closely involved with drawing up the rescue plan, said GPs might be left with little choice if a contingency plan was not forthcoming. "This is not just a crisis in general practice, it's actually falling over," he told *The BMJ*. "At present, the NHS is destroying the GP service, and doctors may have to move outside the NHS."

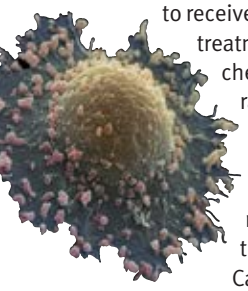
The warning came as hopes to prevent the closure of a Portadown practice with more than 5000 patients were scuppered. Bannview Medical Practice—which has been under threat since all of its doctors resigned—remains in jeopardy after a contractor withdrew interest.

Gareth Iacobucci, *The BMJ* Cite this as: *BMJ* 2017;356:j350

Cancer

Lung cancer survival rates improve

The number of patients with diagnosed lung cancer who survive for at least a year has increased from 31% in 2010 to 38% in 2015, said a Royal College of Physicians report. A target set last year—for 60% of patients with lung cancer to receive anti-cancer treatment such as chemotherapy, radiotherapy, or surgery—has been met, added this year's report, part of the National Lung Cancer Audit.



Cervical cancer mortality risk is higher than expected

Most women's risk of dying from cervical cancer is likely to be higher than previously thought, an analysis in the journal *Cancer* showed. Researchers re-examined mortality rates from 2002 to 2012 in the US, but, unlike prior estimates, excluded women who had had a hysterectomy and were no longer at risk. They also reported significant racial differences, as black women were more at risk than white women.

United States

White House reverses foreign abortion policy

President Trump signed an executive order, known as the "Mexico City Policy," banning federal funding to international groups that perform or provide information on abortions. A Republican president, Ronald Reagan, first created the policy in 1984, but it was rescinded by the Democrats under the Clinton administration. It was reinstated under George W Bush, and Barack Obama ended the policy again in 2009.

President targets Obama's Affordable Care Act

In the first hours of his presidency Donald Trump issued an executive order directing federal agencies to take immediate action to slow, impede, or halt implementation of any provision of the Affordable Care Act that imposes a "burden" on individuals, healthcare providers, insurers, or states. It is unclear what real impact the directive will have, since full repeal requires an act of Congress. (doi:10.1136/bmj.j406)

Trump is urged to be like Thatcher on climate change

A group of respiratory doctors, writing in the journal *Thorax*, implored President Trump, a known admirer of the late prime minister, Margaret Thatcher (below), to follow her example on climate change and leave a positive legacy while boosting the nation's health and finances. Recognising the threat posed by the growing hole in Earth's ozone layer, Thatcher supported international efforts to ban the chloro-fluorocarbons (CFCs) used in refrigeration and aerosol sprays. Without this action the world would already be 3°C warmer.

Research news

Monitoring type 1 diabetes

Continuous glucose monitoring can improve glycaemic control in patients with type 1 diabetes who use insulin injections, two studies in *JAMA* found. In the DIAMOND study the average HbA_{1c} reduction was 1.0% in the continuous glucose monitoring group and 0.4% in the control group after 24 weeks. In the GOLD study the average HbA_{1c} was 7.92% with continuous glucose monitoring and 8.35% with conventional treatment after 26 weeks. (doi:10.1136/bmj.j364)

Early periods linked to early menopause

Women who began menstruating by the age of 11 have an 80% higher risk of menopause before the age of 40 (premature) and a 30% higher risk between 40 and 44 (early), than women who started periods aged 12 to 13. The research, based on 51 450 women and published in Human Reproduction, also showed that women who had not been pregnant or given birth had a twofold increased risk of premature and a 30% increased risk of early menopause.

Cite this as: *BMJ* 2017;356:j395

MEDICINE

Environment

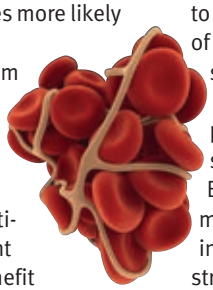
Europe is urged to act on drug pollution in water

European commissioners are risking the health of citizens by failing to tackle drug pollution in water, Health Care Without Harm Europe has warned. The pressure group, which has sent a letter and tabled a petition to urge action, said the commission was 16 months overdue in fulfilling its 2015 pledge to develop a strategic approach to deal with the issue.

Surgical risks

Anti-clotting drugs are often not needed

Guidelines recommend chemoprophylaxis for surgical patients to prevent deep vein thrombosis and pulmonary embolisms, but only around 25% need them, a meta-analysis in the *Annals of Surgery* found. Patients who were not given anticoagulants and were assessed as being at the highest risk were 14 times more likely to develop vein thromboembolism than those in the lowest risk category (10.7% *v* 0.7%). Perioperative anti-clotting treatment was found to benefit only surgical patients with Caprini scores of 7 or higher. (doi:10.1136/bmj.j376)



General practice

MDU pays £30m in GP out-of-hours claims

The Medical Defence Union has paid more than £30m in compensation and legal costs on behalf of GP members working in out-of-hours and unscheduled care settings in three years, including a number of cases that were settled for more than £1m. Pierre Campbell, the union's head of underwriting, said, "There are some additional challenges for GPs working in unscheduled care settings which result in claims that are, on average, higher value and more difficult to defend than claims arising from routine care."

Viability of 300 surgeries is under threat

The BMA has urged ministers to begin an urgent programme of long term investment in GP services, as another practice is set to close. The Brighton practice will become the city's seventh to close in two years. BMA surveys suggest that more than 300 GP surgeries in England risk closing as they struggle to cope with rising demand, shrinking budgets, and chronic staff shortages.

Hospital testing

Bedside eyesight check may reduce patient falls

Some trusts in England and Wales have introduced a tool to assess patients' eyesight quickly to help reduce trips and falls while they are in hospital. The tool uses a mixture of questions and visual aids to help doctors, nurses, or therapists check a patient's eyesight at the hospital bedside. (doi:10.1136/bmj.j358)

PAINFUL SEX

Some 7.5% of sexually active British women experience dyspareunia, and 2% of sexually inactive women avoid sex because they fear the pain

SIXTY SECONDS ON . . . BURNT TOAST

WHAT IS THIS? *GOOD HOUSEKEEPING* MAGAZINE?

I've got some bad news: burnt toast may give you cancer.

NOW, I FEEL LIKE I'M READING *THE DAILY MAIL*.

The Food Standards Agency has launched a campaign warning people not to overcook bread, potatoes, and other starchy food as this produces acrylamide, which has been linked to cancer.

HOLY SMOKE! WHAT DOES THE AGENCY MEAN BY OVERCOOKING?

The chemical is produced only when baking, frying, toasting, or roasting, in what is known as the Maillard reaction. Cooks should aim for their food to be a golden yellow, not dark brown. "Go for Gold" is the agency's snappy slogan.

NEVER A FROWN WITH GOLDEN BROWN ROASTIES, THEN?

It depends how you cook them, and they should be more golden than brown. The method for cooking roast potatoes favoured by many cooks, parboiling then shaking the potatoes to fluff them up, increases the surface area and therefore the amount of acrylamide that forms.

WHAT ELSE DO I NEED TO KNOW ABOUT THESE KILLER SPUDS?

Don't store raw potatoes in the fridge, as it leads to a process called cold sweetening. This increases the amount of acrylamide produced in cooking.

SO WHERE ARE ALL THE STUDIES BACKING UP THESE WARNINGS?

Unfortunately, there are only studies in animals at the moment. But because the cancer causing mechanism is the same in animals as it is in humans the agency is assuming that the risk is the same.

SO TOAST IS, ER, TOAST?

Not really. The eminently reasonable people at the agency are not telling people to avoid certain foods. "Moderation and variation" are the key watchwords. The level of risk is not high, but it's "higher than we are comfortable with," said one of its spokespeople.

Anne Gulland, London

Cite this as: *BMJ* 2017;356:j365

Call to close "alarming gap" in health between UK's rich and poor children

Child health experts have called for a comprehensive strategy to reduce poverty and social inequalities, as a report published this week shows that UK children living in deprived areas have much poorer health than those in more affluent regions.

The report, published by the Royal College of Paediatrics and Child Health, brought together data on 25 measures of child health, including deaths; rates of diseases such as asthma, diabetes, and epilepsy; and risk factors for poor health, including obesity and smoking.

The results showed that although children's health has improved over the past 10 to 20 years, the rate has slowed in recent years and that the UK has fallen behind many other European countries.

Children from deprived backgrounds had much worse health and wellbeing than those from wealthier areas in 24 of the 25 indicators measured, including higher rates of mortality, obesity, non-intentional injury, maternal and adolescent smoking, and emergency hospital admissions for asthma or poor diabetes control.

The UK death rate in young people was one of the highest in western Europe. The mortality rate in children aged 1 to 9 years was 12.1 per 100 000 in 2013-14, and the rate in 10 to 19 year olds was 17.3 per 100 000.

Mortality in UK infants under a year old was the fifth highest in figures from 19 western European countries. Some 2517 deaths occurred among infants in England and Wales in 2014, most commonly from conditions related to preterm birth.

Mortality was strongly associated with deprivation in all age groups, and infant mortality in the babies under one year in the lowest socioeconomic group was more than twice as high as in the highest group.

The report identified smoking during pregnancy as one of the most important modifiable risk factors for improving infant health. Despite moderate reductions over the past 10 years the rates of smoking during pregnancy in the UK remained higher than in many European countries (19% in Scotland *v* 5% in Lithuania).

Women in lower socioeconomic groups were much more likely to smoke during pregnancy: 25.9% of women in the most deprived areas of Scotland smoked during pregnancy, compared with 3.3% of those in the least deprived areas.

The authors recommended that reducing poverty and social inequalities was essential if children's health and survival are to be improved.

Neena Modi, president of the RCPCH, said, "The health of infants, children, and young people in the UK has improved considerably over the past 30 years. But . . . it is tragic that the future health and happiness of a

Children raised in deprived areas had much worse health and wellbeing than wealthier peers in 24 of 25 indicators

MPs condemn "arbitrary" decisions on infertility treatment

FERTILITY FIGURES

One in 10 CCGs

10.5%

were consulting on reducing or decommissioning NHS fertility treatment, and only four

1.9%

fully followed NICE guidance

MPs have called for an end to "devastating" disparities in access to infertility services across England.

They said that "crude, discriminatory, and arbitrary" funding decisions by clinical commissioning groups (CCGs) were causing suffering to people denied treatments, including stress, anxiety, depression, and the breakdown of relationships.

In a cross party debate on 19 January MPs said that wide variations in service provision should be investigated and a national tariff introduced to end anomalies in treatment costs.

Steve McCabe, Labour MP for Birmingham, Selly Oak, said that some CCGs were withdrawing fertility services altogether because of budgetary pressures. Many others were funding fewer treatment cycles than recommended by national guidelines or changing local eligibility criteria to restrict access. "There is a strong feeling that what is going on isn't fair and needs to change," he said.

The National Institute for Health and Care Excellence (NICE) recommends that women under 40 who have been unsuccessful in conceiving after two years should be offered three full cycles of in vitro fertilisation (IVF), or if the woman is between 40 and 42, one cycle. McCabe said some CCGs had, "without explanation," lowered the maximum age for IVF to 35, while others were applying other arbitrary restrictions.

Couples have been refused treatment if one had a child from a previous relationship, and same sex couples had to demonstrate they had six cycles of private treatment before being considered by the NHS.

STEVE McCABE
"This looks like crude, discriminatory rationing based on pseudo-moralistic prejudices"

ED VAIZEY
Unfair constraints force couples to seek treatment abroad, leading to complications and "increased costs for the NHS"

NICOLA BLACKWOOD
"I will ask NHS England to communicate to CCGs the expectation that guidelines should be followed by all"

REX/SHUTTERSTOCK

UK DEATH RATE ONE OF THE HIGHEST IN WESTERN EUROPE

The mortality rate in children aged 1 to 9 years was **12.1** per 100 000 in 2013-14, and the rate in 10 to 19 year olds was **17.3** per 100 000

significant and growing number is in jeopardy because of an alarming gap between rich and poor."

Russell Viner, officer for health promotion at the college, said, "We are calling on each government across the UK to adopt a 'child health in all policies' approach. That means that, whatever policies are made, from whatever government department, they must consider the impact on child health.

"If politicians are serious about improving our nation's health, then they have to think long term. And that means investing in children."

Susan Mayor, London

Cite this as: *BMJ* 2017;356:j377

"This doesn't look like medical criteria to me, it looks like crude, discriminatory rationing based on pseudo-moralistic prejudices," McCabe said. "Efforts to provide IVF on the cheap are perversely wasting resources because the incomplete offer is rarely successful. It's a bit like giving less than the recommended dosage of any drug or treatment."

MPs cited a recent audit of 209 CCGs by Fertility Fairness, which represents patient, professional, and industry bodies. Its figures showed that more than one in 10 CCGs (10.5%) were consulting on reducing or decommissioning fertility treatment, and only four fully followed NICE guidance.

Ed Vaizey, Tory MP for Didcot and Wantage, said that unfair constraints and high costs charged by providers forced many couples to seek treatment abroad where different regulations applied. "It is often the case that many more embryos are implanted in treatment abroad and that can lead to multiple pregnancies. These can lead to greater complications and that of course can lead, paradoxically perhaps, to increased costs for the NHS."

Public health minister Nicola Blackwood said that infertility was a serious medical condition and it was both "disheartening" to learn that access to IVF treatment on the NHS had been reduced in many places and "deeply disappointing" that some CCGs had stopped routinely commissioning IVF. She said, "I will be writing to NHS England to ask that it communicates clearly with CCGs the expectation that NICE fertility guidelines should be followed by all."

Blackwood also said NHS England, the Department of Health, and professional and stakeholder groups would "redouble efforts" to develop benchmark pricing, which was a step towards introducing a national tariff.

Matthew Limb, London

Cite this as: *BMJ* 2017;356:j361

FIVE MINUTES WITH . . .

Kate Lampard

The chair of GambleAware talks about the questions GPs should ask patients

"Awareness of gambling addiction is not very high. We have been doing a lot of work to raise awareness, but it's still not as high as we would like.

"A particular concern is that GPs may not recognise gambling addiction and [so fail to] point people to treatment services. We would like to encourage GPs to be more conscious of it, particularly when people present with mental health issues and addictive behaviours.

"There are two simple questions GPs should be asking: Have you ever felt the need to bet more and more money? Have you ever lied to the people close to you about how much you gamble?

"The other issue is that we receive no public funding for treatment. There are no guidelines on how this problem should be dealt with.

"There is an NHS clinic, the National Problem Gambling Clinic, whose direct costs are met by GambleAware. We also commission and fund a network of treatment providers across the country [through the charities GamCare and the Gordon Moody Association], meaning help is locally available to 95% of the population.

"Just under 8000 people a year are being treated for a gambling related addiction, but we believe that only represents about 3% of the total. This is a public health issue: 20% of people we treat have comorbidities. They suffer from other forms of addiction as well as mental health problems. We would like the NHS to step up. A lot of people whose addiction has not been identified will be in treatment for something else.

"WE WANT THE NHS TO STEP UP. A LOT OF PEOPLE WHOSE ADDICTION HAS NOT BEEN IDENTIFIED WILL BE IN TREATMENT FOR SOMETHING ELSE"

"We also want to increase our research spending from £1m to £1.5m a year. We're commissioning work on the costs of gambling related harm to government, in terms of criminal activity and health and wellbeing.

"Gambling is so much more accessible now. We have a generation of children who have grown up with blanket advertising, and we don't know what the consequences will be."

Cite this as: *BMJ* 2017;356:i6846

Aiming to make junior doctors' lives easier

From overhauling annual reviews to allowing joint training applications, Health Education England is working on various initiatives to improve the working lives of trainees, Wendy Reid, an HEE director, tells **Abi Rimmer**

The ongoing dispute between junior doctors in England and the government has focused attention on many of the difficulties that juniors face in their work. But Wendy Reid, director of education and quality at Health Education England, says that one outcome has been to highlight the work that her organisation has already been doing to tackle those issues.

"There was a real sense of us being able to take a breath, take a step back, and say, 'That's wrong—actually we can fix that,'" she says.

This year HEE will be looking at the annual review of competency progression (ARCP) process. "There's a sense that doctors in training are heavily regulated, and quite rightly," Reid says. "However, the ARCP process is delivered in multiple ways across England. Even in the same specialty there are variations in different parts of the country."

Reid would also like to see changes to the outcome of the ARCP process. Currently trainees are deemed only "satisfactory" or "unsatisfactory." She says, "Being deemed satisfactory is somewhat limiting for a profession that prides itself on its vocational qualities, its commitment to service, and the fact that most of us work in public service for 30-40 years."

She adds, "I think satisfactory is mealy mouthed. We don't value brilliance, genius, difference."

Medical couples

In addition to its work on ARCP, HEE has worked to ensure that junior doctors receive their rotas two months before they start work. Changes are also being made to allow junior doctors to make linked training applications with their partners.

"We'll be pre-allocating trainees who have got specific caring responsibilities, and we'll be facilitating placement swaps," Reid says. "Before next year's recruitment [process] we are scoping the viability of actual, linked applications through the Oriel process—so you apply with your partner rather than going into a transfer pool once you have both got jobs."

There are some fairness issues to consider in this new approach, she says, but so far the work has been done in partnership with employers and doctors in training.

One issue raised during the junior doctors' contract negotiations was the need for greater flexibility in training. As a result, Reid says, "We've been looking specifically around less than full time training opportunities, and we're interested to know whether we could pilot less than full time training opportunities in some of the more frontline, acute, burnout type specialties, such as emergency medicine."

This work will be developed over the next 12 months, Reid says, and HEE will also try to ensure that it is more transparent about the opportunities for training less than full time.

Reducing rotations

The HEE is also looking at length of specialty training placements, after doctors commented that they rotate too often. "My

SEVEN DOCTORS ARE AMONG "MOST INFLUENTIAL PEOPLE IN BRITAIN"

Debrett's has published its 2016 list of the 500 most influential people in Britain, including seven doctors in its "science and medicine" section

DEBRETT'S

Jane Dacre, president, Royal College of Physicians

Ara Darzi, Paul Hamlyn chair of surgery, Imperial College London

Sally Davies, chief medical officer for England

Jeremy Farrar, professor of tropical medicine and director, Wellcome Trust

Wendy Reid wants trainees to feel a connection with their hospital

"I think satisfactory is mealy mouthed. We don't value brilliance, genius, difference"

sense," Reid says, "is why move unless you have to?" However, there are some difficulties with this approach, she adds.

"Does that mean that the person who has their first choice never has to move, and that if you're further down the allocation order you fill in?"

Reid adds, "What we have done now is start at a local level and ask the postgraduate deans to look locally at where there are anomalous moves that don't need to happen and to stop them."

The desire to reduce junior doctors' moves from hospital to hospital also plays into Reid's ambition for trainees to become a bigger part of their local community. "I'm really keen to promote the doctor's engagement with the local population rather than just being dropped on a training programme that makes no sense to local patients," Reid says.

She adds that though many junior doctors feel very connected to the NHS as a whole, they rarely feel that same connection with their employing hospital. "So I think there's a piece of work for us to do with employers to say, "This is a very valuable and vital component of your workforce, and they need to know who you are," Reid says.

"We've seen great examples where chief executives are out there on induction day and they go to junior doctor meetings, but clearly that wasn't and isn't enough. I think every chief executive now knows, because of the dispute, how vital it is and what poor morale really means."

Abi Rimmer, deputy editor, BMJ Careers

Cite this as: *BMJ* 2017;356:j402

Waseem Qasim, professor of cell and gene therapy, Institute of Child Health

Mark Walport, government chief scientific adviser

Simon Wessely, president, Royal College of Psychiatrists

Orthopaedic trainees launch anti-bullying programme

A programme to tackle a culture of bullying, undermining behaviour, and harassment in trauma and orthopaedic surgery has been launched by the British Orthopaedic Trainees Association (BOTA) and the British Orthopaedic Association.

The #HammeritOut initiative, launched earlier this month (www.bota.org.uk/hammer-it-out), is supported by several organisations, including the Academy of Medical Royal Colleges and the Royal College of Surgeons. It aims to create a "positive workplace culture" in trauma and orthopaedics.

Simon Fleming, president of BOTA, said the initiative was a response to the results of a survey of more than 500 members. A quarter of respondents said they had felt undermined at work at least once over a four week period. When asked if they had ever, during a trauma and orthopaedics post, witnessed a colleague being undermined, two thirds said that they had.

Fleming said, "#HammeritOut was the result of a promise we made to our membership to act on the results of the census.

"The thing that stood out was a culture of behaviours that were unacceptable and that affected patient care and training."

He said that, as well as his association's census, surveys such as those by the GMC, the Joint Committee on Surgical Training, and the NHS showed that undermining and bullying were a problem across the board.

"We recognise we can't change the NHS, but we can change the culture within trauma and orthopaedics. We can start a dialogue, get our house in order, and aim to inspire others," he said.

Fleming said that the next step was for BOTA to work with the British Orthopaedic Association to gather information about doctors who are not in training, such as consultant surgeons and staff and specialty and associate specialist (SAS) doctors.

"Ideally we want to get data on our whole community. We know the trainee point of view, but the NHS staff survey tells us that consultants and SAS doctors are also experiencing these behaviours," Fleming said. "Once we have a real picture of where we can improve we can focus our efforts and make a powerful difference," he said.

Fleming said he hoped many small changes would result from the campaign, such as engagement with clinical champions and subspecialty societies, having a professional behaviours representative at every hospital, and continuing work to change British Orthopaedic Association courses to include training in awareness of undermining and bullying behaviours.

Abi Rimmer, BMJ Careers

Cite this as: *BMJ* 2017;356:j398

THE BIG PICTURE

A care “time bomb”

A third of people in the UK with HIV are now aged over 50, and this is the fastest growing group of people with HIV, says a new report from the Terrence Higgins Trust.

The report, *Uncharted Territory*, shows that the first generation of older people with HIV face poverty, loneliness, and discrimination, and it warns of a social care “time bomb” ahead. The report finds that nearly six in 10 of these people are living in poverty, double the proportion in the general population, and 82% said that they experienced moderate to high levels of loneliness, three times the proportion in the general population. Among the 240 people surveyed for the report were Annmarie, right, who has been living with HIV since 1996; Rosline, above, and Chris, top.

The trust is calling for HIV and ageing to be a mandatory part of all training, induction, and development for social care workers and GPs.

Cite this as: *BMJ* 2017;356:j405

NATASHA VALENTINO AND J MCGILL WINSTON

EDITORIAL

PCSK9 inhibitors for hypercholesterolaemia

New drugs, same old problems

Statins (hydroxymethylglutaryl coenzyme A reductase inhibitors) reduce "bad" low density lipoprotein (LDL) cholesterol concentrations and cardiovascular risk. So too, do better diet and more exercise, which together almost halve rates of coronary event rates when compared with an "unfavourable lifestyle."[3]

For some people, though, statins and other medicines cause unacceptable adverse effects or are inadequate to control LDL cholesterol even when combined with lifestyle changes.[4 5] People with familial hypercholesterolaemia have particularly high concentrations of LDL cholesterol, and a new generation of drugs promises to help control this.

The drugs derived from the discovery that a few people with very low LDL cholesterol concentrations have gene mutations that cause loss of function of the enzyme PCSK9 (proprotein convertase-subtilisin/kexin type 9).[6 7] LDL receptors on the surface of hepatocytes bind circulating LDL cholesterol and are then endocytosed. Within the cell, receptors are either recycled or degraded. We now know that PCSK9 switches this process towards degradation, and if PCSK9 is inhibited, more LDL receptors are recycled to the cell surface, where they can take up more LDL cholesterol.

This mechanistic insight has led to two newly licensed PCSK9 inhibitors, alirocumab and evolocumab. Both drugs are monoclonal antibodies, given by subcutaneous injection every two to four weeks. They significantly reduce LDL cholesterol concentrations compared with placebo, whether used alone or added to standard therapy.[8-11] Average concentration fell about 60% from around 3.15 mmol/L (120 mg/L) at baseline to around 1.3 mmol/L (50 mg/L) in two large, industry sponsored trials lasting up to 78 weeks. Most trial participants were already taking statins and a few were taking ezetimibe or other drugs (see supplementary table on bmj.com).[10 11]

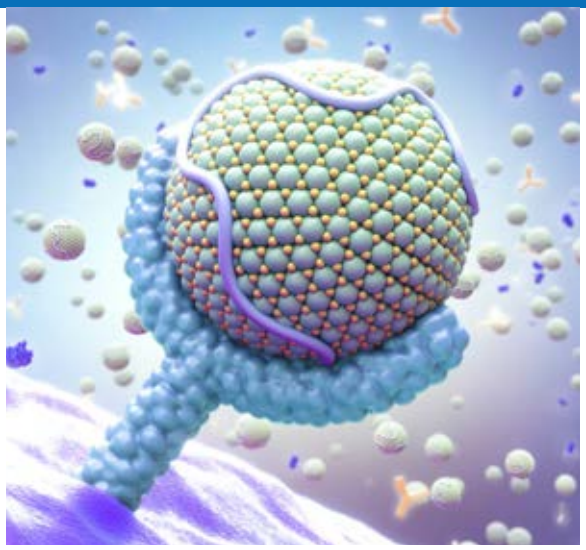
The primary outcome in the alirocumab study was change in LDL cholesterol concentration from baseline.[11] This was a secondary outcome in the evolocumab study, in which adverse events were the primary outcome.[10] Since this was an open label extension of 12 earlier studies, however, participants were already known to tolerate evolocumab.

The National Institute for Health and Care Excellence recommends the new drugs for primary and secondary prevention in people with primary heterozygous familial hypercholesterolaemia. In non-familial hypercholesterolaemia or mixed dyslipidaemia the drugs are recommended only as secondary prevention.[8 9]

Clinical questions

The reductions in LDL cholesterol are impressive, but there are important gaps in our knowledge. First, we cannot be sure that reductions in LDL cholesterol will be associated with better clinical outcomes. After all, fibrates, torcetrapib, and extended release niacin–laropiprant reduced LDL cholesterol concentration but not overall mortality.[12-15] Relevant trials of the PCSK9 inhibitors are due to report in 2017-18.

Second, the people with the greatest need for LDL cholesterol reduction are those with familial hypercholesterolaemia. In heterozygous familial hypercholesterolaemia, which affects about 1 in 500 of people with European heritage,[1 2] LDL cholesterol reductions of some 60% are reported.[16] However, in patients with the much rarer and more serious homozygous form, LDL receptors are defective or absent, and the inhibitors therefore have considerably smaller effects, and sometimes none.[17]



MAURIZIO DE ANGELIS/SPL

The PCSK9 inhibitors are a seductive example of 21st century medicine

Furthermore, treatments with PCSK9 inhibitors will require a lifetime of injections, but we have information on fewer than 1000 patients exposed for 18 months or longer.[18 19] Few patients younger than 18 or older than 75 were included in the studies, and pregnant women and people with type 1 diabetes, severe renal or liver problems, hepatitis C or HIV infection were unrepresented.

Long term effects

Although people with very low LDL cholesterol concentrations because of mutations in PCSK9 have low rates of cardiovascular disease, the long term effects of using bioengineered drugs to inhibit the enzyme are unknown. Both agents are immunogenic and can cause injection site and hypersensitivity reactions. Pfizer halted development of bococizumab, another monoclonal PCSK9 antibody, because its immunogenicity often led to hypersensitivity reactions and loss of efficacy.[20] Neuropsychiatric and cognitive effects have been described but remain uncharacterised. Other adverse effects may emerge with time.

The PCSK9 inhibitors are a seductive example of 21st century medicine, and other inhibitors are in the pipeline.

Evolocumab and alirocumab, however, have been licensed on the basis of a surrogate biochemical measure, rather than clinically relevant outcomes. For now, NICE is right to limit the use of these expensive medicines to highly selected subgroups.

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EDITORIAL

Two cheers for May's discovery of child and adolescent mental health

Now the prime minister must act decisively to improve services across the country

The UK prime minister's recent discovery of the crisis facing services for child and adolescent mental health has been widely welcomed. In her first speech of 2017—thought by some to be intended to draw attention away from the more comprehensive row about the state of the NHS—Theresa May declared that "by 2021 no child will be sent away from their local area to receive treatment for mental health issues."[1]

She went on to commit the government to put in place the relevant training for schools and classroom teachers, a Care Quality Commission review of services, and a sharper focus on community services.

Incessant pressure

Given that it is only a year since David Cameron, May's predecessor in Downing Street, had a similar Damascene revelation—perhaps prompted by the incessant pressure of a campaign waged by the *Times* newspaper[2]—what are we to make of this continuing and troubling saga?

Around the UK there has been growing anger at what are generally perceived to be weak or non-existent services to alleviate the mental distress of young people, who should be our most treasured resources. Charities, politicians, leaders in education, and even royals have drawn attention to the rising tide of anxiety, depression, self harm, and general poor self esteem among young people.[3]

Objectively too, these concerns have a firm foundation. Population surveys, controversially discontinued in 2004, repeatedly found that at least 10% of our young people are in such distress that they need expert help.[4]

Yet the services we provide are wholly inadequate to meet their needs.[5] Allocated resources remain pitiful despite lip service being paid to the need for parity of esteem for services for physical and mental health.[6]

So the prime minister's intervention and her focus on schools as a captive place of action must be a good entry point. But it is only a start, and we are still working with a flawed model.

There has been growing anger at what are generally perceived to be weak or non-existent services

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DAN KILWOOD/PA WIRE/PA IMAGES

Theresa May announced plans to "transform" mental health services for children and young adults in a speech earlier this month

In cities such as Manchester and Liverpool, each with approaching 100 000 young people, most of the roughly 7000 who are in need of expert help will go unattended, and for those fortunate eventually to be seen by a professional what is on offer is often inadequate. Yet the often suggested solution of many more consultant psychiatrists looks hopelessly unrealistic even if medical students were flocking to psychiatry as a career choice, which they are not. Another approach is needed urgently.

Public health

That other approach is one rooted in public health, whole systems, and the life course. It begins with sex and relationships education and planned parenthood, invests in support for parenting and classroom teaching, strengthens school health services, and ensures that all family doctors and other primary care professionals are at least literate and preferably competent in adolescent health concerns.

It also guarantees quality standards for referral and treatment, including the vexed issue of young people having to travel long distances away from home for specialist services.

Since the commissioning of sexual health and young people's health services in England were transferred to local government we have witnessed continuing attrition in many areas, and school health services have begun withering on the vine. The omens are not good.

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Where next?

In the last of his series, **Gareth Iacobucci** looks at what the NHS needs to do to keep up with changing demand

In this series I have assessed the extent to which the challenges facing the NHS threaten its founding principles, to provide universal, equitable, comprehensive, high quality healthcare free at the point of use.[1-4] Although many of the problems are complex and multifactorial, there are common themes and even some consensus on what action is needed.

Public health

Whether any healthcare system can cope with demand depends on the public's health. The epidemics of chronic disease caused by poor diet, physical inactivity, alcohol and drug misuse, smoking, and air pollution have put huge pressure on NHS resources. Government's failure to take policy decisions that would protect and improve the public's health is making such pressure unsustainable.

After the failure of its responsibility deal, which relied on voluntary action by the food and drink industry, the government's pledge to impose a tax on sugary drinks is welcome but it's disappointing that its long awaited childhood obesity strategy did not impose mandatory restrictions on sugar in food.

Good evidence also supports the public health benefit of introducing a minimum unit price for alcohol, a policy Public Health England recently endorsed. Ministers have pledged to examine the evidence and England should now follow Scotland's lead. However, even if there is action to tackle poor diet, alcohol misuse, and other threats to public health, further cuts to preventive services such as sexual health, addiction, and weight management[6-8] will be harmful.

Government and public health leaders need a coherent plan to reduce air pollution that causes an estimated 40 000 deaths a year in the UK.[10] Action could include more clean air and low emission zones, better monitoring of air pollution near hospitals and schools, and a ban on diesel vehicles in city centres. Pledges to tackle climate change through measures such as phasing out coal power must be honoured and built on.[11]

Show us the money

Policy experts and NHS leaders are converging in the view that the NHS is underfunded. The government insists that the £8.4bn extra funding above inflation to the NHS by 2020-21 is a generous settlement in the context of far bigger hits to most other government budgets (for example, a 29% cut to the local government budget),[12] but this takes little account of the impact of an ageing population and has masked cuts to health related areas such as medical education and public health. Health economists, MPs and NHS England's chief executive, Simon Stevens, have all argued that the actual amount of extra money is closer to £4.5bn. With demand for services rising relentlessly, experts agree this settlement is not enough to maintain the status quo, and Stevens is on record as saying that it will represent a real terms reduction in per person spending by 2018-19.[13]

Agreement is just as strong on the need to find extra funding for a social care system, where service cuts are creating knock-on pressures in the NHS.[14 15] Desperate local authorities have responded by asking residents to support raising council tax by up to 15% to help protect social care,[16 17] but local measures do not disguise the need for a national solution. If the government cannot or will not improve its settlement, it must be open about the likely consequences, be it higher taxation or defining the care the state is willing to fund.

Ministers must also acknowledge the true cost of manifesto pledges such as seven day services, estimated at between £1.07bn and £1.43bn.[19] The UK has 2.8 trained doctors per 1000 of the population. The Organisation for Economic Cooperation and Development average is 3.5.[20] Unless this changes quickly, it is difficult to see how the government can deliver seven day care. It seems unlikely it will abandon the policy given the political capital it has staked, but without extra funds, reality dictates it will need to adopt a more nuanced approach focusing on urgent and emergency rather than routine care.

Crucially, efforts to engage clinicians in this agenda and in tackling other challenges will founder without action to improve morale. The damage to junior doctors' morale will not be quickly or easily repaired. However, the recent announcement of measures to improve training and mentorship and help hospitals to operate rotas that allow doctors a better work-life balance are a start.[27]

As for GPs, the government has at last recognised the pressure on primary care and committed an extra £2.4bn by 2020-21.[28] This must arrive at the frontline before more practices close[29] and more doctors take early retirement.[30] Delivering the pledged £500m resilience support urgently is crucial.

The shift in emphasis away from competition and towards collaboration[21] is generally viewed as positive, and given the lack of evidence for the effectiveness of a market in healthcare,[22 23] many would like to see the NHS in England operating more like the other UK nations, which dispensed with the purchaser-provider split and do not have an internal market.[24] The 44 sustainability and transformation plans being developed across England ask the NHS and social care to work together to coordinate services. The approach is sensible, but the plans must be realistic in their forecast about reducing demand, and must face proper scrutiny from patients and clinicians before implementation.

Clinical outcomes

Clinicians must play their part by embracing efforts to improve quality of care. They could start by engaging more with tackling unwarranted variations in care identified by the Carter report,[34] and by putting aside tribalism and turf wars for the greater good.

The NHS faces a turbulent future and stark decisions loom about what we can afford. With political will, managerial excellence, and strong clinical leadership, we may be able to protect and ultimately improve what remains our greatest postwar achievement.

Gareth Iacobucci, senior reporter, *The BMJ*

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bmj.com

Read the series at bmj.com/nhs-2017

Charity ends at home

Orbis's mission to eliminate avoidable blindness worldwide affects its volunteers' practice and the care their UK patients receive, writes **Richard Hurley**. As our appeal closes, there's still time to donate

GEOFF OLIVER BUGBEE/ORBIS

Volunteering "makes you a much better doctor in all respects: you learn an incredible amount clinically," says Rob Walters, a consultant ophthalmologist based in Cardiff who has been volunteering for the global eye care charity Orbis for two decades. Orbis aims to eradicate preventable blindness, which can lead to destitution and death in poor countries. Its volunteers train teams at local hospitals, aboard its aeroplane, kitted out with an operating theatre and training suite, or via its e-learning platform.

Volunteering brings "a better degree of understanding and compassion," Walters tells *The BMJ*. "And it makes you feel incredibly fortunate for having a wonderful institution like the NHS."

Nurse practitioners

But these missions also have tangible effects on care in the UK—for example, the use of nurse practitioners. Walters explains, "When I first went out [with Orbis] nurse practitioners were unusual in the UK. We were training nurses in Ethiopia to do surgery; we realised you need to use all the skills around you to deliver a more efficient service, provided there are checks and balances." Back in the UK, Walters secured funds for nurse practitioners. Their numbers and contribution to the NHS have risen since.

Five years with Orbis, including missions to Zambia, Mongolia, and China, have also made Manish Raval, a consultant anaesthetist at Moorfields Hospital, London, more conscious of waste. "Seeing things done with limited resources reminds you that solving problems is not about finding the most expensive solution but the most appropriate solution. That can make you more aware of what you use and how you use it in the UK."

He gives an example: the sub-Tenon anaesthetic technique is done in the UK with a £20 preformed cannula but this equipment is not routinely available in Zambia. Exploring other options before leaving the UK, Raval discovered that intravenous cannula sheath could be used instead—with advantages.

"You can get these worldwide for a few pence compared with the cannula," he says. "It also turned out to be a nicer technique: much less traumatic for the eye and better tolerated by the patient, and this is what I do in the UK now and when training anaesthetists with Orbis."

Volunteering and working with new teams reinforced to Raval the importance of the World Health Organization's surgical checklist. "Seeing its value in an environment that truly needs it, you bring it back and use it with a greater sense of enthusiasm and confidence.'"

"It makes you feel incredibly fortunate for having a wonderful institution like the NHS"

But the biggest bonus for volunteers might be the good feeling, thinks Raval. "You go somewhere like Zambia, and you meet people working in tough situations with very little who give you a sense that anything is possible. You come away feeling you've done something spectacular and wanting to work that much harder."

Last year, Orbis donors helped fund 65 558 operations globally, including 24 177 on children. It also trained 1414 doctors and nearly 29 000 other healthcare workers. A big thank you to *BMJ* readers, who have already given £14 447; Orbis continues to welcome donations.

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ANALYSIS

Post-Ebola reforms: ample analysis, inadequate action

A review of progress finds the world is still not prepared to prevent detect or respond to disease outbreaks, argue **Suerie Moon and others**

In August 2014, the World Health Organization (WHO) declared the Ebola outbreak in west Africa a public health emergency of international concern, and the world scrambled to respond. Better preparedness and a faster, more coordinated response could have prevented most of the 11 000 deaths directly attributed to Ebola and also the broader economic, social, and health crises that ensued.

In the aftermath of this collective failure, numerous reports were published reviewing what went wrong and how infectious disease outbreaks should be better managed.

Yet, despite the great interest in ensuring progress, a clear picture of what has actually been achieved is elusive. Given the importance of improving our ability to battle current (Zika, yellow fever, etc) and future outbreaks of infectious disease, we examined seven major reports and identified areas of consensus on action. We grouped recommendations under key themes (table 2) and identified the greatest areas of progress and stasis. We then assessed what progress has been made and what can be done to address the gaps (table 1, see bmj.com).

Compliance with health regulations

All the reports identified inadequate compliance with WHO's International Health Regulations (IHR) as a major contributor to the slow response to Ebola. The regulations are an international treaty for managing infectious disease outbreaks. The reports highlight three major challenges to compliance: countries' core capacities, unjustified trade and travel restrictions, and inability to ensure that governments report outbreaks quickly.

Core capacities

The regulations require countries to assess their capacities for disease surveillance and response and to report whether these are sufficient to meet their obligations.

Much work has been done in this area. In February 2016, WHO issued the Joint External Evaluation tool for voluntary external assessments of national core capacities.[13 14] Thirty four countries (low, middle, and high income) have been assessed using the tool or its predecessor, the Global Health Security Agenda, with 31 countries scheduled for 2017.[15 16]

Aid workers in Liberia help treat and contain Ebola in September 2014 in Paynesville, above, and Monrovia, below

A clear picture of what has actually been achieved in ensuring outbreaks are better managed is elusive

Much work remains to ensure adequate financing and technical assistance are available for countries that need them. Ensuring adequate capacities worldwide is estimated to cost $3.4bn (£2.8bn) annually, much less than the $60bn-570bn estimated to be lost each year from pandemics.[8 17]

Several initiatives have been launched to provide funding. The G7 committed to assisting 76 countries at the 2015 and 2016 summits.[18] Substantial funding has also come from the US, which announced $1bn for building capacities in 31 countries,[19] and South Korea, which announced $100m for 13 countries.[20] The World Bank has sought funding to assist at least 25 countries with pandemic preparedness plans in its latest financing round[21] and established an international working group in November 2016.

KEY MESSAGES

- Seven reports on the global response to Ebola largely agree on what went wrong and what needs to be done
- Substantial efforts to tackle these problems are under way, but progress has been mixed
- Many critical problems have been given inadequate political or financial resources
- The global community needs to increase resources and implement monitoring and accountability mechanisms to ensure the world is better prepared for the next pandemic

ABBAS DULLEH/AP/PA

MARTIN ZINGG,MSF

Table 2 | Breakdown of reports by topic, with key areas of agreement

Topic	Areas of agreement
Compliance with IHR	
National health systems and core capacities	Need to develop national core capacities and for domestic and external financing. Need more credible assessment of country core capacities, including proposals for independent, external, and peer assessments. WHO technical support to countries needed
Trade and travel restrictions	Need incentives for early reporting of outbreaks and stronger disincentives or compliance mechanisms for undue trade and travel restrictions, for both governments and private sector
Knowledge management	
Sharing epidemiological and research data	Need for systems for rapid sharing of epidemiological and other research data. Platforms for sharing strategies for community mobilisation and communications
R&D of health technologies	Need global R&D funding for emerging infectious diseases. Need WHO to convene, set priorities, and coordinate pandemic related R&D. Need to directly ensure that affected populations have access to relevant health technologies. Expansion of PIP Framework to other pathogens. Need agreed research standards and processes for regulatory approval. Need to build local research capacity and engage local researchers and communities
UN and humanitarian emergency systems	
Operational	Need better capacity for health and humanitarian actors to work together in crises and to strengthen capacity of existing institutions rather than create new ones
Political	Need to systematically bring health matters before broader UN governing bodies (either UN General Assembly or Security Council)
Readiness and reform of WHO	
PHEIC declaration	Use intermediate alert before public health emergencies. Measures for greater transparency and independence of declaring an emergency
Emergency capacity and culture	Creation of dedicated WHO centre with proposals for a separate oversight body (whether governing, technical, advisory, or independent board). Need to develop operational emergency culture and to strengthen ability to work with non-state bodies
Human resources	Consolidation of emergency related units in WHO. Creation of virtual global health emergency workforce under WHO. Need for strengthened capacity of WHO staff at country and regional offices, with objective performance management and merit based, competitive appointments
Governance and leadership	Need for strong leadership, particularly electing a director general able to challenge or hold accountable member states. More streamlined relations between headquarters, regional, and country offices in emergencies, including central role of headquarters if countries have inadequate capacity. Little discussion of the organisation's core functions
Financing	Need to improve predictability of financing. Several calls for increasing assessed contributions (by 5-10%) and funding emergency work with core budget
Follow-up and accountability	
Financing	Need better transparency and harmonisation of international aid flows. WHO contingency fund. Global R&D pandemic financing ≥$1bn a year. World Bank PEF and other rapidly disbursed funding sources for emergencies. National health system strengthening financing
Accountability	Need for ongoing mechanisms for monitoring and accountability for preparedness and response efforts

PHEIC=public health emergency of international concern; R&D=research and development; PIP=pandemic influenza preparedness; PEF=Pandemic Emergency Financing Facility

Unwarranted travel restrictions exacerbated economic repercussions and made it harder for aid to be sent

Trade and travel

The second major problem is ensuring that trade and travel restrictions during outbreaks are justified. Fuelled by intense public concern and media attention, many governments and private companies restricted trade and travel during the Ebola outbreak, though many of these measures were not warranted on scientific or public health grounds. These restrictions exacerbated economic repercussions and made it harder for aid organisations to send support.

To date, we are unaware of any progress towards minimising unnecessary trade and travel restrictions. While there have been discussions between agencies, no initiatives have been announced

Outbreak reporting

The third issue concerns countries' obligation to report outbreaks swiftly.

A new incentive for early reporting is the World Bank's Pandemic Emergency Financing Facility, created to provide rapid financing for outbreak control and to protect countries from the high economic costs of outbreaks through an insurance mechanism. Its speed and effectiveness cannot be tested until the next outbreak strikes. The extent to which WHO will publicly call on governments to report outbreaks or refrain from excessive trade and travel restrictions will depend on who is elected the next director general in May 2017.

Knowledge sharing and research

The reports recognise that timely sharing of knowledge, research, and health technologies is crucial for both preventing future outbreaks and mitigating the effects of existing outbreaks.

Encouragingly, some of the proposed solutions were incorporated in the Zika response. In September 2015, WHO convened a meeting of researchers, who agreed that rapid, open data sharing should be standard in emergencies.[26] The International Committee of Medical Journal Editors confirmed that publishing relevant data in a health emergency would not prejudice later publication.[27] The *WHO Bulletin* has since launched the

ZikaOpen platform to make research more rapidly available.[28]

WHO and Médecins Sans Frontières have been working to create a virtual biobank for existing Ebola samples. For future research, WHO has created a list of priority pathogens, mappings of research and development pipelines (starting with Zika and MERS), and target product profiles for Zika.

Substantial efforts are also under way to increase funding for research and development and for stockpiling existing products. The Coalition for Epidemic Preparedness Innovations (CEPI), which has an initial focus on vaccines for the MERS, Lassa, and Nipah viruses, announced in January 2017 that it had raised $460m from Norway, Japan, Germany, the Wellcome Trust, and the Bill and Melinda Gates Foundation, with a five year goal of $1bn.

Strengthening WHO and the UN

All reports agreed that WHO and the broader UN and humanitarian systems needed to be strengthened after an inadequate response to the Ebola emergency. Although the reports supported maintaining WHO's role as the leader of global preparedness and response, they agreed that it needs substantial reform to do so credibly.

WHO responded by establishing a new emergency programme that incorporates its capacity to respond to disease outbreaks (Global Outbreak and Response Network), humanitarian assistance (foreign medical teams), and its health cluster leadership role under the Office for the Coordination of Humanitarian Affairs.[32] The programme is governed by an independent oversight and advisory committee[33] and has already led WHO responses to a series of crises, including cholera in Haiti; yellow fever in Angola, Uganda, and the Democratic Republic of the Congo; and the Zika outbreak. WHO has also fostered emergency medical teams to provide surge support to national health systems, with about 75 medical teams on standby, and has developed a formal process of quality control for selection, training, and verification of the teams.[34]

WHO has created a contingency fund to provide rapid funding in emergencies, with a target of $100m. To date it has received only $31.5m, much of which is committed to ongoing crises. Of the $1.24bn WHO requested for specific ongoing emergencies and the broader emergency programme, member states had provided only about 41% as at December 2016.[35] This lacklustre response reflects the continuing instability of WHO's emergency capacity.

Institutional problems

Institutional problems identified in the reports include unstable financing, minimal transparency, human resource shortcomings, and little accountability after failure.

Several reports also emphasised safeguarding WHO's independence from any single member state or other party, an issue inextricably linked to funding. These recommendations stem from concerns that political pressure might lead to undue delays in the declaration of a public health emergency.[9]

WHO has not initiated any major institutional reforms since the Ebola outbreak. Furthermore, no new transparency policy, organisation-wide accountability mechanism, or redefinition of core functions has taken place. Spearheading institutional reforms is likely to fall to the next director general.

UN and humanitarian systems

Many reports mentioned poor coordination between UN agencies, WHO, national governments, community leaders, and local and international non-governmental organisations and weak arrangements for accountability.

The reports also highlighted the importance of accountability arrangements given the demanding nature of reforming complex organisations and systems.

In April 2016 the UN secretary general announced arrangements for WHO to inform his office of all grade 2-3 outbreaks and the IASC of outbreaks that may require a broader UN response. The secretary general also formed a global health crises task force to identify next steps, led by the heads of major UN agencies and the World Bank, with participation from independent experts and civil society.[37]

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However, no ongoing monitoring or accountability mechanism has yet been created. Identifying how to establish meaningful system-wide accountability will be a key challenge for the task force and new secretary general. Given that no member state representatives are on the task force, how to continue to engage national political leaders will also be important.

Conclusion

We have identified several priority gaps. Adequate, sustained financing and technical assistance must be mobilised to ensure that every country has the basic core capacities for identifying and responding to outbreaks. Unwarranted trade and travel restrictions need to be tackled. Many problems regarding health technologies are unresolved, including the need for international norms on sharing data and samples, standardised clinical trial protocols, clear regulatory processes, funding for research and development beyond vaccines, and measures to ensure equitable access to diagnostics, vaccines, and drugs for outbreaks. Finally, a core group of WHO member states must commit to tackling its deeper institutional weaknesses, such as unstable financing, unclear organisational focus, limited transparency, and vulnerability to political pressures from member states.

The reports concluded that the world remains grossly underprepared for outbreaks of infectious disease, which are likely to become more frequent in the coming decades. The window to launch major reforms opened immediately after the crisis, but may be closing as political attention wanes.

Leadership changes in some of the most powerful countries, and at the head of WHO and the UN, have added considerable uncertainty about future readiness for outbreaks.

Monitoring progress is therefore vital. A permanent and independent mechanism to hold governments and intergovernmental organisations accountable is sorely needed. The UN secretary general's global health task force has an important role in making arrangements for follow-up. The world will not be ready for the next outbreak without deeper and more comprehensive change.

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DATA BRIEFING

Death clocks: How long have I got?

Knowing when you are going to die could help make life choices, but **John Appleby** finds that his life expectancy varies depending on who he asks

Data from the Office for National Statistics national life tables for 2013-15 show that over the past 33 years average life expectancy at birth for UK residents has been increasing by, on average, 13.1 weeks per year for boys and 9.5 weeks for girls.[1]

Period life expectancy (assuming no change in future death rates) at birth averaged across the three years of 2013 to 2015 are estimated to be around 79 years for boys and 83 for girls. The good news is that we are all living longer. The bad news is that we will all die…but when?

Baby girls born in 2015 can't all expect to live to 83. Some will die sooner, some later. Our genetic inheritance, lifestyle, wealth, employment, and consumption of everything—from education to recreational drugs and healthcare—are all potential causes of variations around the average life expectancy.

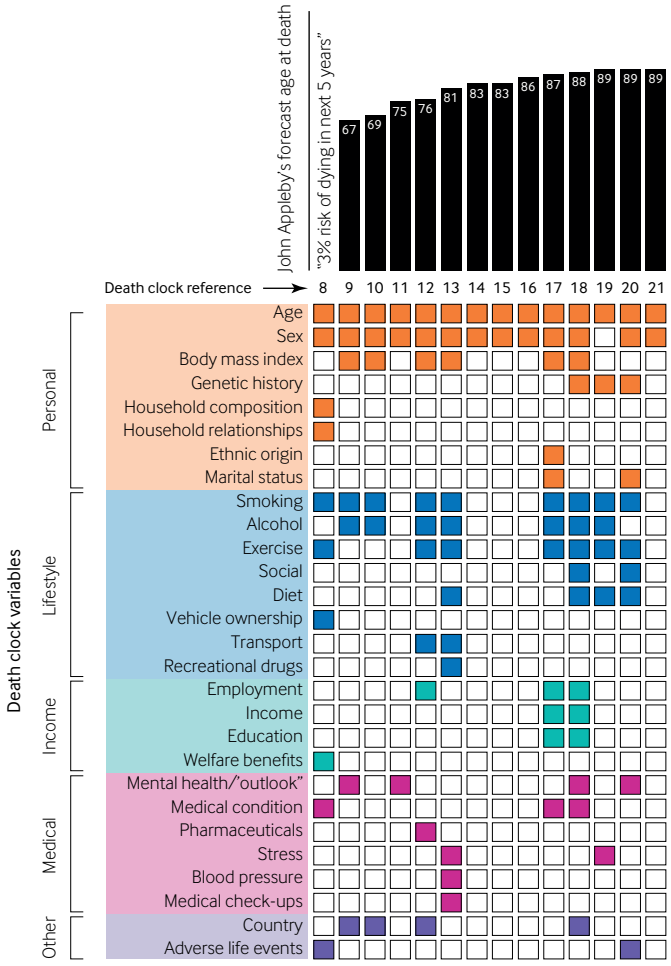
Mortality factors

But as Rufus has summarised,[2] many other factors can affect mortality and hence life expectancy. Being married can add over a year to life expectancy compared with being single, for example.[3] Sleeping less (but not too much less) is associated with an improved life expectancy compared with sleeping more.[4] One study suggests that optimists have a 55% lower risk of early death than pessimists.[5] A typical Swiss man has a longer life expectancy (81 years at birth) than a typical Latvian man (69 years at birth).[6] And of course, not only do the rich have more money than the poor, they also tend to enjoy a longer life to spend their wealth.[3]

So, while the ONS period life tables—based on fixed, age specific death rates—provide one population based view of life expectancy, for a more individual perspective you need to adjust these figures for personal characteristics and circumstances.

Based on my sex and the current mortality for my age group, ONS life tables suggest I will die around May 2040, about a month after my 82nd birthday.[7] But as the figure above shows, plugging a few more personal details—such as my marital status, income, and stress levels—into a random selection of online "death clocks" produces a range of predictions for my life expectancy from 67 (eek!) to 89 (yay!).

Four required only details of age and sex but produce life expectancies ranging from 83 to 89.[14-16, 21] One probed 15 different aspects of my life to generate a life expectancy of 88.[18] And one provided a slightly more cryptic and difficult to understand "3% risk of dying in the next five years" rather than a specific age at death.[8]



Variables required by a selection of death clocks[8-21] and predictions for the author's life expectancy (bar chart). Note that the first model produces a risk of death in the next five years rather than an actual age of death

Prediction models

Some of the variation in predictions is due to differences in the basic life table data that the clocks use (some are based on non-UK data for example). Differences will also arise given the particular risk calculators (prediction models) used, the number of variables included, and the way they combine variables to produce individualised forecasts.

Variation also arises from treating what are essentially probabilistic forecasts as point estimates. One online predictor of death does, however, provide a nice pictorial representation of the uncertainty surrounding its forecast. Based on just sex and age, the "Years you have left to live, probably" calculator[15] does what it says on the tin, and with an interactive chart builds up a distribution curve of probable life expectancies. (The figure, left, shows the average for this calculator, which is around 83 years).

So perhaps the only safe conclusion is that death clocks should come with a health warning: calculating your date of demise is somewhat sobering and the results should be taken with a pinch of salt.

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ILLUSTRATION: DUNCAN SMITH

Jackie Bene is one of the few clinicians to become a senior NHS manager, a career move akin to volunteering to go hatless into a blizzard. A consultant physician at the Royal Bolton Hospital, she became chief executive in 2013 after emerging exonerated from an inquiry into whether, when she was medical director, the hospital had fiddled its death statistics through the coding of sepsis cases. "You need to have resilience in buckets in this job," she told a local newspaper on taking the job. That resilience seems to be paying off: in August the trust gained an overall "good" rating from the Care Quality Commission, and it is widely recognised for its turnaround of financial and operational performance.

BMJ CONFIDENTIAL

Jackie Bene
Resilience in buckets

What was your earliest ambition?
To be a policewoman, or, more specifically, an undercover detective.

Who has been your biggest inspiration?
My grandparents. Their values, resilience, and fortitude inspired my specialism.

What was the worst mistake in your career?
Breaking bad news to the wrong patient.

What was your best career move*?*
Moving to Cornwall for my very first job.

Who has been the best and the worst health secretary?
With Bevan's legacy of high quality healthcare based on need rather than ability to pay, there's really no contest for the best.

Who is the person you would most like to thank, and why?
My stepfather, who unfortunately now has severe Alzheimer's disease, for helping me believe that I could become a doctor.

To whom would you most like to apologise?
To my long suffering yet uncomplaining partner of 23 years, for all of those long dark nights when I really should have been at home.

Where are or were you happiest?
In our bolthole—a tiny old coastguard's cottage on Flamborough Head. It's the most relaxing place I know.

Do you support doctor assisted suicide?
I respect people's individual wishes, but don't think that doctors are best placed to judge when someone's life should end.

What book should every doctor read*?*
Have the Men Had Enough by Margaret Forster—a touching story of a family living through the grandmother's decline as a result of Alzheimer's.

What is your guiltiest pleasure?
Watching hours and hours of old news and music footage.

What television programmes do you like?
Absorbing crime thrillers. The more twists and turns the better.

What is your most treasured possession*?*
My vinyl record collection, which tells the story and secrets of my youth.

What personal ambition do you still have?
To see genuine health and social care integration with a universally shared electronic health record.

Summarise your personality in three words
Honest, fair, and compassionate.

Do you have any regrets about becoming a doctor?
None at all. It's been a privilege and has led me to roles where I've felt able to contribute so much more than I ever expected, including my present role.

If you weren't in your present position what would you be doing instead?
I'd do some humanitarian work abroad.

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