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FUTURE OF HEALTHCARE

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RESEARCH FUNDING

Combating the COVID-19 black hole

Coronavirus is an all-consuming topic, both in terms of published research and funding. But opinion is split over whether it will reinvigorate healthcare spending or simply divert funds away from other needy causes

Nick Easen

The coronavirus pandemic is like a black hole, consuming global health resources and the concerted efforts of countless medical professionals around the globe. It's threatening progress against other killer diseases, such as malaria, HIV and tuberculosis. In the UK, it has had a significant impact on charity-funded medical research, not to mention primary care or cancer treatments. The list is long.

The outbreak has huge ramifications for the future of healthcare, medical research budgets and the focus of funding. "What makes this pandemic unprecedented is not the virus, but the response to it, which is mostly driven by fear and panic that overestimates and overreacts," says Ade Adeyemi, who heads up the global health fellowship at Chatham House.

"This is causing enormous harm and I think there will be a self-correction in early-2021. The medical community, from fear of losing all their funding to COVID-19, will start contextualising the pandemic and giving a more balanced analysis."

The numbers to do with the COVID-19 black hole are eye-popping. Around three quarters of malaria, HIV and TB programmes in 106 countries have been disrupted, according to a survey by the Global Fund. While in the UK, the Association of Medical Research Charities (AMRC) is reporting a £310-million shortfall in medical research funding, which is a 41 per cent drop.

"It will take over four years for research spending to fully recover, but a decade to rebuild what will be lost in terms of capacity and capability. Many organisations are concerned they will be unable to fund future clinical trials and studies," says Nisha Tailor, director of policy at the AMRC.

The potential global economic recession caused by the pandemic doesn't bode well for medical research either. At the same time, global health efforts risk being securitised. This is where health challenges such as the ongoing pandemic are seen as existential security threats to be dealt with along the same lines as terrorism or illegal immigration. Border closures and quarantine rules for travel are part of this process.

"This leads to nationalistic approaches by individual nations



iurPhoto via Getty Images

rather than global solidarity and cross-border co-operation. It tends to divert the money of wealthier states towards strategies that keep the wealthy safe. Global health challenges in poorer countries and their underlying socio-economic determinants risk being ignored in the process," says Jens Martens, executive director at the Global Policy Forum.

"The World Health Organization and UNICEF have already warned of an alarming decline in the number of children receiving life-saving vaccines around the world."

At the same time, COVID-19 has the potential to suck in medical research funding among top institutions around the globe keen to receive fresh support. Already the pandemic has led to the biggest explosion of scientific literature ever. By early-June, more than

23,000 papers had been published, doubling every 20 days, according to one estimate.

"Going forward I expect we'll see a tendency for grants to mention COVID-19, similarly to how, in the last few years, it's been fashionable to mention machine-learning in every application for research on genetics," says Dr Doug Speed, assistant professor at the Aarhus Institute of Advanced Studies in Denmark.

Medical research that shows a clear correlation between COVID-19 infections and chronic conditions such as obesity and diabetes, both of which impose a huge cost on the NHS, are also likely to garner more interest. In fact, obesity increases the risk of dying of COVID-19 by almost 50 per cent.

"This is likely to lead to further calls on the UK government to fund more programmes to tackle

this condition," says Dr Sabrina Germain, senior lecturer in medical law at City, University of London.

There's no doubt COVID-19 is putting public health and spending, or a lack of it, as well as healthcare inequalities, firmly on the agenda of countless politicians and decision-makers globally. It could, therefore, have a positive effect on medical research funding for the long term.

"I personally don't see a long-term dip in research for other conditions; others may disagree," says Adeyemi at Chatham House. "Medical issues have never had so many column inches in newspapers, airtime on television or feeds on social media. The health of any nation, and for every generation, is now a daily conversation. This attention could, in turn, give a shot in the arm to underfunded healthcare systems.

"Many people are now aware of the importance of preventative care for reducing exposure to disease. The awareness of how vaccine development occurs has increased and many approve of developing a vaccine for COVID-19, for instance. This has changed the conversation on vaccine acceptance in many parts of the United States," says Dr Emmanuel Peprah, assistant professor at New York University School of Global Public Health.

COVID-19 has also shown what the healthcare profession is really capable of. The pandemic has brought about a renewed and shared focus, driving innovation, accelerating timelines for solutions, streamlining regulatory processes, with a significant increase in collaboration. There's no going back.

At the same time, the profile of invention has risen to new heights with digital technology topping the list with more virtual health appointments and home monitoring.

"We've seen exponential innovation during the first phase of the pandemic. The NHS has made a great leap forward in terms of digital transformation," says Germain. "The pandemic may also lead to more spending on public health and the NHS, but it is a sector that was already underfunded and needed more support to meet the healthcare needs of the British public."

There's also been a shift in mindset away from the real costs of healthcare towards patient outcomes. The daily pandemic roll call of deaths makes sure of that. Sad as it is, this could be a good thing. It reminds us all of the real value of our health. ●

80%

of global healthcare stakeholders said disruption to their HIV health service delivery was moderate to very high

75%

said disruption to tuberculosis health service delivery was moderate to very high

66%

said disruption to tuberculosis health service delivery was moderate to very high

Global Fund 2020



Guy Smallman via Getty Images

NHS staff applauding key workers at North Middlesex Hospital in May 2020

SOCIAL CARE

Changing care for good

The importance of proper health and social care has never been felt more keenly, but a lack of funding and severe shortage of skills are still holding the sector back

Martin Barrow

Care workers earned our admiration and gratitude for the way they responded to the coronavirus emergency, often putting their own lives at risk to protect our loved ones. The pandemic laid out in stark relief just how critical social care is to communities, to the economy and to the NHS.

But the harsh reality is that working in health and social care is still seen as unappealing. The care sector entered the pandemic in a difficult position, with acute staff shortages, poor working conditions, low morale and a lack of investment in buildings and technology. The COVID-19 death toll in care homes was shocking. The question is whether the pandemic will bring stakeholders together with a new sense of urgency to address these deep-rooted issues.

The future of the care sector is shrouded in uncertainty by repeated delays to social care reforms, including the way in which it is funded. Related to this are the financial problems of many of the private providers in the care sector. A number of the biggest care home companies require financial reconstruction while many family-run businesses are struggling to stay afloat.

While the NHS has experienced significant staffing pressures, the issues in social care are even greater and the outlook is a concern. One measure of the workforce supply gap is the vacancy rate. This rose from 5.5 per cent in 2012-13 to 7.8 per cent in 2018-19. In London it was 9.3 per cent, making it the region with the highest rate. The number of vacancies in social care in England is estimated to average 122,000 at any one time.

Staff shortages have been exacerbated by uncertainties over Brexit, with many care workers in the UK originally from European Union countries and unsure about their future status, which makes working in health and social care even more precarious.

Measuring the full impact is difficult because of the disruption to travel caused by the pandemic, but the sector remains sufficiently alarmed to press the government for urgent clarification about what will be done to ensure the elderly and vulnerable people are not left without good care because of the

deepening skills shortage. Unison, the union, has called for an urgent review of pay and conditions in the social care sector.

One of the lessons of the pandemic has been the extent of mutual dependence between the NHS and social care. When the care sector fails, the NHS is put under additional pressure and vice versa.

The *NHS Long Term Plan* for England, published last year, puts significant emphasis on supporting more people in the community. But this is only possible if people are willing to work in the health and social care sector, supported with the training and the technology they need.

This is not just about how we look after people as they become older and frailer, but about people of all ages who live with long-term conditions that require care and support. And it is about mental health as well as physical health.

Technology can provide some of the answers. Since COVID-19, health-care organisations have been moving services online at a dramatic pace. The most obvious impact has been to reduce the number of physical visits to the GP and hospitals. But behind the scenes, digital tools have been used to bring different services together across primary care, community services, hospital services and social care to work together to deliver joined-up care.

Innovative technologies have also enabled teamworking among much broader networks involving family members, peers and local communities, allowing parents to monitor their children's health while at school or patients to create support communities including their peers, volunteers and friends.

The coronavirus outbreak has highlighted how woefully inadequate paper processes are for the care sector, particularly at a time when the risk is changing hour by hour. By digitalising care-planning processes and evidencing care using mobile technology, providers can make time efficiencies that empower carers. Not only can care evidencing apps save carers time, they also give them the tools they

“Clinical teams need new pathways and new ways of working if we are to deliver high-quality proactive care to our patients in this new world

need to do their job. They provide reliable reminders, highlight concerns and enable carers to monitor residents' wellbeing.

Icon-driven apps that evidence care at the point of care have been shown to save each carer up to an hour a day in paperwork. With almost 1.5 million people working in social care, such additional capacity would be transformational.

Better still, the insights generated by digital systems can create an environment of constant improvement by highlighting where provision needs to be developed, and identifying trends across all areas of resident wellbeing from sleep, nourishment, hydration and medication to exercise and mental stimulation.

But technology alone will not provide all the solutions. Systemic change is needed. Dr Matt Kearney, GP and programme director at UCL-Partners, says: “Technology will be a key enabler, but clinical teams will need new pathways and new ways of working if we are to deliver high-quality proactive care to our patients with long-term conditions in this new world.”

Sally Warren, director of policy at the King's Fund health and care think tank, concludes: “Too often, politicians of all parties decided they couldn't afford the political capital and the financial cost of social care reform. We can only hope the current crisis is showing they can't afford not to.”



30.8%

turnover rate of directly employed staff in the adult social care sector

24%

of the adult social care workforce were on zero-hours contracts



Patient outcomes will drive the future of healthtech

The coronavirus pandemic has been the biggest shock in decades, bigger than the global economic crisis a decade ago, and it's had significant consequences

Coronavirus has put the health of the UK population firmly at the top of everyone's agenda. Daily statistics read out on the news detailing the impact of the virus is testament to the fact that patient outcomes now matter to us all.

Response from the NHS has been admirable; one of the world's largest healthcare providers has done its best dealing with the pandemic effectively. Its systems, people and organisations have had a razor-sharp focus on tackling COVID-19. This has created a catalyst for change, accelerating the uptake of technology, use of data and collaboration across sectors.

"In the last six months, the focus on clinical outcomes and excellence has been unprecedented. This has happened at pace and at scale, with a renewed focus on the patient. There's also been a real readiness to change during this pandemic. A huge number of stakeholders within the NHS want to do things differently and be innovative," says David Oates, UK group managing director at B. Braun Medical Ltd, one of the world's leading manufacturers of healthcare solutions.

"We cannot lose this momentum. There's so much potential going forwards. Partnerships are key to this process. Through collaborative and constructive work alongside the NHS, we can improve patient outcomes for the long term. Certainly, the healthtech industry has a significant part to play."

With the COVID crisis still lingering, the NHS is under increasing pressure to do more, reduce healthcare inequalities, improve the quality of care nationally, manage the pandemic and ramp up planned care that has been curtailed. The healthtech sector has stepped up during this time with the common purpose of supporting the NHS to deliver care.

"But we need to do more work as an industry to develop evidence on how much the NHS stands to gain by using existing or new technology effectively. We have to take more responsibility. Value-based procurement is coming of age around the world. Far more can be achieved by buying and implementing healthtech based on outcomes, rather than competing on the price of a product," says Oates at B. Braun, which sells 5,000 different products

covering most therapeutic areas, 95 per cent of which are manufactured by the company.

For instance, take infusion pumps. B. Braun sells thousands of smart devices to the NHS. They are used to deliver medicines to patients in hospitals countrywide on a daily basis. These can be connected to wireless networks so they can be updated automatically with the latest software, input data into electronic patient records and be calibrated with medication error-reduction libraries.

"At a generous estimate, only 30 per cent are used in this way. They're

purchased because they're smart capable. If deployed in the right way they could save the NHS time and money. Yet the procurement process is often based on the purchase of the electronic device itself, rather than on reducing drug-delivery errors or time saved searching for patient records," says Oates.

"The big challenge when it comes to evolving technology and innovation, is how do you make sure it's used properly and has an impact on patient outcomes, productivity and safety. We need to convince the NHS to procure on this basis. For that we must provide more evidence, more data in partnership, so the full benefits are realised."

Beyond value-based procurement, COVID-19 has also been a real driver for supporting patients at home. It's in the interests of the NHS and industry to deliver high-quality healthcare in more efficient settings beyond hospitals. Clinical care in the community will be critical going forwards, as will the integration of care systems. This involves more joined-up and localised thinking involving the NHS and local authorities.

"Coronavirus is making things crystal clear: local data and local public health systems are more effective in dealing with outbreaks that are localised. This is true of healthcare in general. It needs to be tailored and priorities set to deal with local needs, especially where healthcare inequalities exist and need to be tackled," says Chris Ibbotson, outpatient division manager at B. Braun, a family-owned company, active in the sector since 1839.

For instance, there are more than 2.5 million people living with cancer in the UK, just over a quarter have chemotherapy. Care at home is desirable, especially for those over 75 who struggle to travel for chemotherapy appointments. This accounts for more than a third of all patients.

"It is possible with the right healthtech to deliver chemotherapy infusions at home and monitor patients.

The key here is what the patient is comfortable with. Personalised medicine is becoming increasingly important. People are now more willing to participate in their own healthcare," says Graeme Cameron, B. Braun's hospital care division manager.

"At the same time, we need to eliminate the inefficiencies that exist between healthcare and patients. It has to be as efficient, as targeted and as resourceful as it can be," adds Michael Parden, Aesculap division manager at B. Braun, which is on the board of the Association of British Healthtech industries.

The potential for healthtech is increasingly apparent in more areas, for example with B. Braun's digital rehabilitation support for knee and hip patients. This uses a range of motion sensors and a downloadable app for a patient's smartphone. It can track exercise, log pain and remain in contact with hospitals via a messaging function.

"We can monitor whether patients are doing exercise to build up the muscle before treatment and whether they're doing exercise after their operation. It is all done remotely and can reduce the need for outpatient and community physiotherapy appointments," says Oates.

"If we could do this for 10 or 15 per cent of all knee replacements on a day-case basis, it would take pressure off the rest of the NHS. It may only apply to a small cohort of patients, but it can have a significant impact on the overall system. Looking to the future we can achieve so much more."

Find out more about B. Braun at www.bbraun.co.uk

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SHARING EXPERTISE

“Through collaborative and constructive work alongside the NHS, we can improve patient outcomes for the long term

VACCINE

Challenging ethics to find a vaccine

The pressure is on to find a coronavirus vaccine and time is of the essence. A controversial option, to intentionally infect volunteers, could speed trials up, but it poses significant risks to those taking part

Katrina Megget

More than 30 possible coronavirus vaccines are in clinical trials worldwide in a bid to squeeze traditional timelines and roll out a vaccination programme in the next six to twelve months. But there are calls to speed up the process further through the use of controversial human challenge trials where volunteers are given an experimental vaccine, then deliberately exposed to the virus.

Despite real safety risks and ethical concerns, there is a burgeoning appetite for these trials. More than 36,000 people from more than 160 countries have expressed a willingness to take part with 1 Day Sooner, an organisation that supports COVID-19 challenge trials.

The organisation published an open letter in July, urging preparation of such trials, which was signed by more than 150 academics and experts, including 15 Nobel laureates.

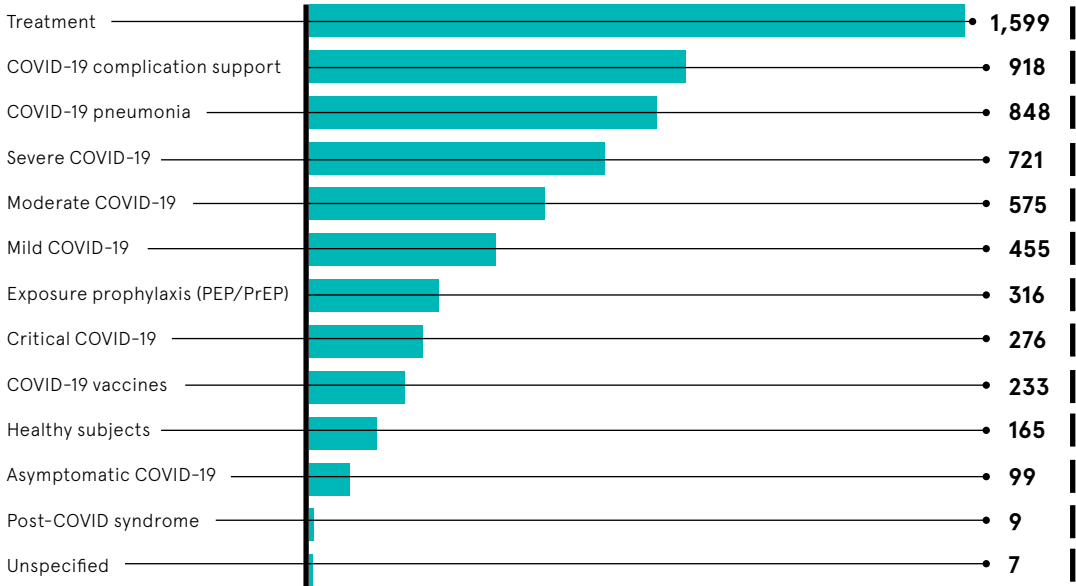
But the search for a vaccine suffered a temporary setback in early-September when an Oxford University trial with British drug-maker AstraZeneca was paused after a volunteer suffered a possible serious adverse reaction, illustrating the risks involved even without deliberate exposure to COVID-19.

Abie Rohrig, director of communications at 1 Day Sooner and challenge trial volunteer, says his desire to take part is for the good of humankind. "Since I am at a very low risk of death and hospitalisation from COVID-19, I am more than willing to take on the risk so that older and immunocompromised populations can stay safe," the 20 year old says.



COVID-19 TREATMENT VACCINE TRIALS BY TYPE

Number of coronavirus (COVID-19) clinical trials for drugs and vaccines worldwide as of September 18, 2020



Pharma Intelligence 2020

Challenge trials have been used in the past to test vaccines against flu, typhoid, cholera and malaria. They can speed vaccine development when low levels of virus circulating in the population make determining normal vaccine efficacy difficult. They can also compare the efficacy of different vaccines, highlighting which candidates should be advanced, as well as providing important

insights into the virus, disease progression and immunity.

A coronavirus vaccine would benefit from all this, particularly if challenged in the low-risk group of healthy 18 to 30 year olds, where fatal infection rates are estimated to be 0.03 per cent. But, unlike malaria and typhoid, COVID-19 has no sufficient rescue treatment should trial volunteers get sick and the SARS-CoV-2 virus is still poorly understood.

The first peer-reviewed paper calling for coronavirus challenge trials was published online in March in *The Journal of Infectious Diseases*. Professor Nir Eyal, a senior bioethicist and director of Rutgers University's Center for Population-Level Bioethics in the United States, was the lead author and now a member of the 1 Day Sooner advisory board.

He says there are risks to volunteers, but challenge trials should

be supported. "We don't need challenge trials to beat COVID. We need them to beat it faster," he says. "Faster means averting thousands of deaths per day."

But the World Health Organization remains undecided and other academics claim now is not the time. Dr Gregory Poland, director of the Vaccine Research Group at the US-based Mayo Clinic, believes the claims about saving lives are false arguments. Even if a challenge trial was conducted today, he says, people would not be protected with a coronavirus vaccine tomorrow. It could take months just to find the appropriate strain and dose for these trials, erasing the speed advantage.

There is also no guarantee the results of challenge trials in low-risk healthy young adults would be applicable to the elderly or those with underlying conditions. "To me,



Since I am at a very low risk of death and hospitalisation from COVID-19, I am more than willing to take on the risk



How COVID has changed clinical trials

Coronavirus lockdowns forced the world to stay at home. This also caused the pause and postponement of thousands of clinical trials, with patient enrolment in trials significantly down, by as much as 79 per cent in April compared to the previous year, according to Medidata.

But the lockdowns have also spurred innovation in the sector. Traditional timelines, for instance, are being busted in a bid to get a coronavirus vaccine to market through greater collaboration between companies and different trial designs. In the United States, the collaborative project Operation Warp Speed aims to deliver a vaccine by the end of the year by running design, manufacturing and delivery operations in parallel rather than sequentially.

Additionally, clinical trials have moved outside traditional trial sites with a boom in virtual trials, which use remote monitoring, teleconferencing and digital data collection tools, such as wearable devices. Artificial intelligence (AI) is also beginning to be used in the recruitment process to identify patients suitable for trials.

The COVID-19 legacy will be a positive one, says Graham Belgrave, senior vice president, head of European operations, at clinical research organisation Advanced Clinical: "I believe the genie is out of the bottle and we will see an ever-increasing reliance on AI, on remote and virtual visits for clinical trials." This, he says, is likely to become the new norm.

it's unethical to challenge somebody and we're in the middle of multiple, large phase-three vaccine trials, so I do not see the benefit compared with the risk," says Poland.

Dr Michael Jarvis, associate professor in immunology and virology at the University of Plymouth, takes a similar stance. "A bad experience at the early stages of the vaccine development pathway could really impact acceptance of an efficacious COVID vaccine by the public," he says. "I think this is a legitimate reason to wait."

Yet we are getting closer to COVID-19 challenge trials. Both US and European regulators say they will consider proposals, and pharmaceutical company Johnson & Johnson says it is "evaluating the potential benefit of human challenge trials". The US National Institute of Health also recently announced the decision to explore the possibility of, and prepare for, human challenge trials.

Meanwhile, the Oxford University group developing the frontrunner coronavirus vaccine is understood to be reviewing the technical aspects of how these studies could be undertaken.

A cross-national survey of almost 6,000 people conducted by Eyal and colleagues in July found 75 per cent preferred scientists to conduct challenge trials over standard trials, even as respondents acknowledged the risks. The results may help remove a roadblock to their

implementation. It could also open the door for more widespread use in infectious diseases and future pandemics, especially in the absence of rescue treatments.

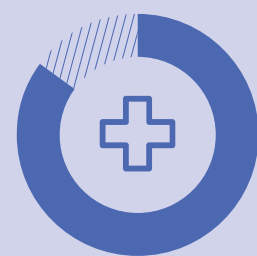
The problem though, says Eyal, is people are cagey about their support. "Nobody wants to be first, lest the public and electorates punish them for it," he says.

But we may have no choice. Officials in America have already said challenge trials might be needed if natural infections decline and standard studies can't determine efficacy. Ana Nicholls, healthcare analyst and managing editor of the *Industry Briefing* at The Economist Intelligence Unit, agrees this is a concern. "Some vaccine developers have had to chase cases around the world to set up and conduct trials. Some early trials were abandoned altogether," she says.

If we want a vaccine now or for a future pandemic, challenge trials may be the only option, but balancing risk against the potential benefits is tricky. COVID-19 could shift the needle.

Rohrig at 1 Day Sooner is optimistic, believing it's likely a challenge trial will begin by the end of the year. Tens of thousands of young people have acknowledged the risks and still want to take part, he says. "We hope others do not speak on our behalf as to which risks are justifiable for us to take," Rohrig adds. ●

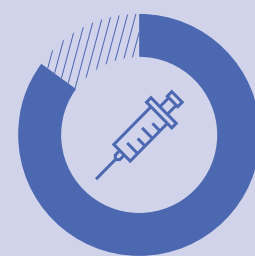
HEALTHCARE SYSTEMS



85%

of UK people are satisfied with the country's healthcare system – this puts the country in the middle of the pack among 12 European countries surveyed, ranked sixth.

VACCINATION



85%

of Brits are in favour of compulsory vaccination, the sixth-highest national proportion in the survey.

PREVENTATIVE HEALTH MEASURES

British people are more poorly informed than their European neighbours about predisposition and genetic links to certain diseases.

36%

of Brits admit they don't know which diseases are favoured by predisposition and genetics – the highest in the survey.

STADA annual health report 2020

How to build a trusted pharma brand

STADA is celebrating its 125th birthday. But what does it take to create a globally respected brand?

To go back to the foundation of STADA is to scroll through the modern history of medicine. The year 1885 predates the discovery of aspirin or insulin. In Bavaria, Wilhelm Röntgen would take another decade to detect x-rays. In Vienna, Karl Landsteiner identified the main blood groups only at the turn of the century.

"We have come a long way," says Peter Goldschmidt, chief executive of STADA. "While we remain true to the values of the forward-thinking chemists who founded STADA in Dresden back then, we are now truly global as one STADA."

A century-and-a-quarter later and STADA, known in the UK mainly as Thornton & Ross, is active worldwide, trading in more than 120 countries, with around 12,400 employees and over €2.6 billion in annual sales. It's a moment to reflect. How, exactly, did STADA grow from its roots in German pharmacy to become a global leader in generics and consumer health?

"Our guiding star is our purpose: caring for people's health as a trusted partner," explains Goldschmidt. "This means working closely with hospitals, pharmacies, supply-chain partners and patients to provide high-quality products."

Regardless of whether it is supplying high-quality prescription or consumer health products, STADA focuses on maximising the value offered to healthcare professionals and patients as a trusted partner. For example, a novel ready-to-use formulation of a widely-used cancer drug gave physicians a safer and time-saving means of treating multiple myeloma, saving the NHS £6 million in the process.

Gold-standard treatments for life-threatening diseases, such as cancer, osteoporosis and Parkinson's, are key elements of STADA's portfolio, especially as the company increasingly pushes into biosimilars, or equivalent versions of original biological drugs. But the group, especially Thornton & Ross in the UK, is also widely recognised for its popular consumer healthcare products such as Covonia cough remedies, Hedrin head-lice treatments and Oilatum skin creams that enable people to treat their own ailments.

Thornton & Ross head Roger Scarlett-Smith points out that offering patients and consumers innovative solutions, such as with its well-loved Zoflora disinfectants, is central to the company's vision. "We do not try to do everything ourselves," he acknowledges. "Partnerships are essential to our business model."

Working as a partner to healthcare systems is also essential to STADA's vision. For instance, in the UK, Thornton & Ross is the NHS's leading supplier of emollients, having donated more than 100,000 samples to NHS staff during the current pandemic.

To deliver on this commitment to partnership in the broader healthcare context, STADA compiles an annual *Health Report* which, in its 2020 edition, is based on surveying more than 24,000 people across 12 European countries. The report provides insights into health-related topics including vaccines, antibiotics, sex and death.

For example, the 2020 survey revealed satisfaction with the national healthcare system was highest in Switzerland, Austria and Belgium (90 per cent). On the current hot topic of compulsory vaccination, a key issue in the COVID era, in Spain and Finland around nine in ten favour compulsory vaccination, yet in Switzerland, Austria and Russia around 30 per cent oppose it. Telemedicine is growing in acceptance, with seven in ten in Europe now open to examination via webcam.

There are some intriguing national idiosyncrasies. A third of people in the UK have no idea which diseases are affected by genes and 40 per cent of Belgians categorically never talk about sex. The results are vital in shaping public policy on healthcare.

"Being a trusted partner is at the heart of what STADA does," Goldschmidt concludes. "Both organically and through targeted alliances and acquisitions, we continue to expand our high-quality, affordable offering for healthcare professionals and patients so we can deliver on our purpose of caring for people's health as a trusted partner."

To find out more please visit www.stada.com and www.thorntonross.com



9 out of 10

people in Spain and Finland favour compulsory vaccination, yet in Switzerland, Austria and Russia around 30 per cent oppose it

55%

of Brits are worried about US involvement in the NHS

STADA annual health report 2020

PREVENTION

The push for preventative healthcare

Benefits of tackling the causes of ill health are well known, though progress has been sluggish, but now the coronavirus is prompting new preventative technologies

Rachel Jones

The *NHS Five Year Forward View*, published in 2014, promoted a more engaged relationship with patients, carers and citizens to prevent ill health. While last year's green paper, *Advancing our health: prevention in the 2020s*, put preventative healthcare solutions at the heart of the *NHS Long Term Plan*.

Then the coronavirus pandemic hit and has been a wake-up call for many. Rising anxiety around health, coupled with difficulties in accessing care, have hammered home just how important preventative healthcare is.

Dr Chris Toumazou, regius professor of engineering at Imperial College London, says the pandemic is highlighting an epidemic of life-style disease. Frustrated that hospitals lacked a business model to adopt preventative technologies, he decided to "make health personal", turning directly to the consumer and launching GENEU, a personalised skincare venture which represented a first step into making genetic tests less intimidating.

Toumazou has since co-founded DNANudge, which uses a cheek swab and tiny microchip to extract and analyse customers' DNA. A capsule and app nudges users towards healthier choices when shopping, showing red when a barcode is scanned to indicate risk factors from genes associated with diabetes, obesity and hypertension.

"A lot of preventative tests show you a problem without a solution, but ours are actionable," he says. The technology is being employed directly in the fight against COVID-19. Last month, DNANudge

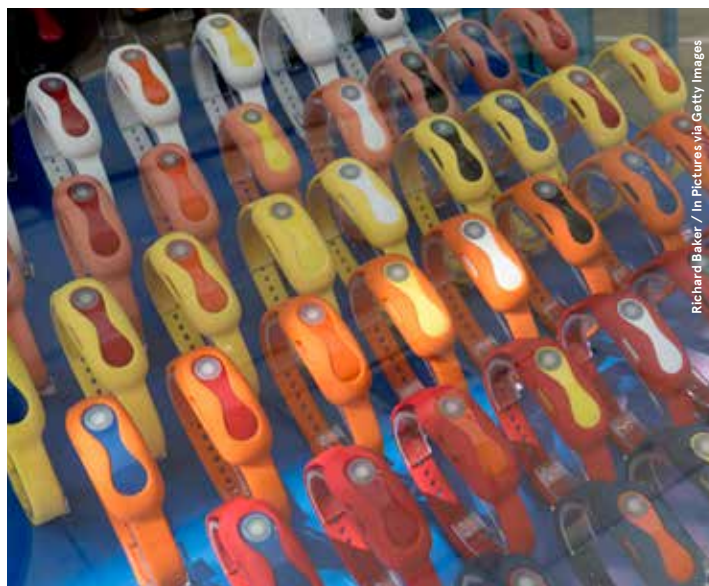
won a £161-million UK government order to produce 5.8 million lab-free COVID-19 tests.

Thrive, a proactive health company offering at-home blood tests, also focuses on actionable results. "We recognise the value of what blood testing tells us and are seeing many organisations, public and private, recognise the need to increase what we know about individuals," says co-founder and chief executive Hamish Grierson. As at-home testing is commoditised, he says, this will help people stay safe, avoid perceived pain points and, importantly, reduce in-person interactions.

Neil Mesher, chief executive of Philips UK and Ireland, which offers products for diagnosis, treatment and telehealth, points to resetting elective and cancer procedures. "Detecting cancers at stage 1 means outcomes are three times better and costs are three times less," he says. "Given COVID-19, how do we get these detection systems into the community?"

Putting diagnostic tests onto the high street with appropriate IT and

“We need a more systematic approach to helping people make healthier choices, rather than focus on personal responsibility



LEFT DNANudge wristbands in the window of the company's flagship store in London's Covent Garden in May 2020; this tech is now being employed directly in the fight against COVID-19

infrastructure could offer a way forward. "We're talking nationally about this, as well as to health trusts and retailers," says Mesher. "Can they use retail space to provide facilities for diagnostic testing?"

COVID-19 has put early detection at a premium. Healthcare company Isansys Lifecare automates the collection of raw patient data and creates decision-support tools for clinicians and says all its clinical clients are moving to gather high-quality data to build predictive models.

Birmingham Children's Hospital, for example, is building a self-learning predictive system at the level of individual patients. "This will be very different to the kind of data you can collect with an Apple watch," says co-founder and chief executive Keith Errey. "We are focused on having absolutely accurate information for an individual.

We see that as the way things are moving."

But placing the emphasis on the individual does not mean shifting responsibility entirely to patients. Obesity is a major target in the government's push for preventative health measures, but David Buck, senior fellow at The King's Fund health charity, argues that repeated attempts at tackling the nation's weight have yet to succeed.

"There is no silver bullet," he says. "If it was that simple, we would have cracked it by now. The risk is we rush towards devices and avoid thinking about bigger, systemic things." Instead we need a more systematic approach to helping people make healthier choices, rather than focus on personal responsibility.

Mental health is also a major target in the drive for preventative healthcare solutions. Lack of

capacity was previously a factor in the slow uptake of preventative technologies, says Beth Lawton, chief digital and information officer at Sussex Partnership NHS Foundation Trust, which provides mental health and learning disability specialist services.

"Our clinicians are incredibly pressured and it takes time to get familiar with a new technology and feel confident to adopt it as part of a therapeutic toolkit," she says.

Since March, however, the pandemic has engendered new personalised care pathways. More than 27,000 virtual appointments with clinicians were offered in Sussex in the months to August. "Virtual and digital offerings, including digitally enabled therapies, are now part of our mainstream," says Lawton. "COVID-19 opened our eyes to their value to service users."

Dr Nick Lake, the trust's director of psychology and psychological therapies, says digital technologies can bring a much more enabling and empowering approach for people to own their wellbeing.

One such solution is SlowMo, a blended digital tool combining face-to-face therapy with an interactive app to help people with intrusive thoughts. Initial findings suggest virtual consultations, following a first in-person appointment, reduce the rate of no-shows.

Lake believes COVID-19 has also reinvigorated a wider community response. "We need to strengthen and encourage a narrative around taking back responsibility for emotional wellbeing, individually and as communities, and promoting the various tools and options at our disposal," he says.



Monkey Business Images via Shutterstock

As consumers engage with new healthcare technologies and devices, broader views on health may change. “What is a patient and what is a consumer?” asks Thriva’s Grierson. “Where does wellbeing stop and healthcare start? It isn’t binary; the truth is it’s a sliding scale.”

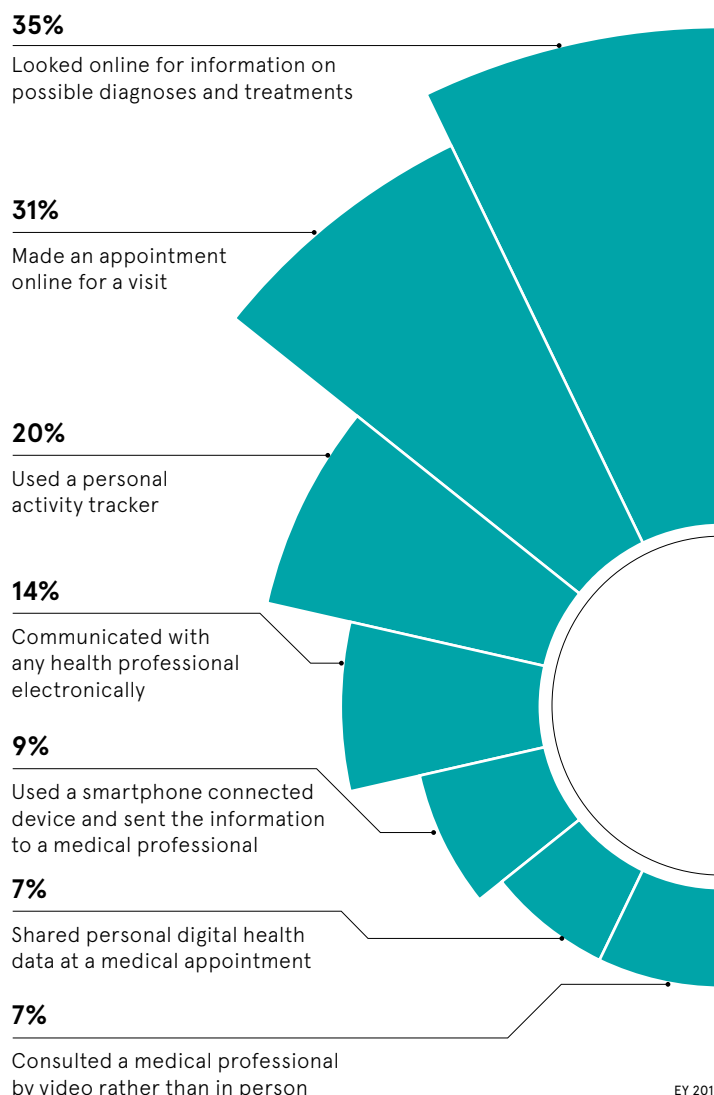
So could the pandemic create a more proactive environment that will facilitate better choices? Imperial’s Toumazou is clear that COVID-19 is as much a consumer problem as a health issue. “The risk of getting severe COVID-19 will be mitigated if you look after your health and if you change your behaviour as the result of tests,” he says.

Information is the first step in many preventative healthcare solutions. While hospitals are seeing new value in gathering good data, so are individuals: the notion of the quantified self is here to stay. The challenge will be to bring together disparate elements to create safe, connected healthcare records.

Interoperability, the ability to exchange and use data, will be crucial, says Mesher at Philips. “Everyone talks about how many steps they’ve done today, but if we have all this data about our lifestyles, is there a healthcare professional we can talk to about that dataset? Is the healthcare profession ready for 66 million people who want to talk about their individual printouts? We are on the right trajectory, but we still have work to do.” ●

DIGITAL HEALTH, TECH AND PATIENT ENGAGEMENT ALL KEY TO PREVENTATIVE CARE

Percentage of UK consumers who have used the following healthcare technologies to manage their own health



Revolutionising healthcare for patients and clinicians

A technology revolution is energising NHS services and connecting patients with their care to improve health and wellbeing across the UK

As the world wrestles with the pressures of the coronavirus pandemic and ageing populations, intuitive IT systems are redefining the capabilities of clinicians and administrative staff to meet growing demands on their time and resources.

Stress points across the NHS have been amplified by the cumulative impact of the pandemic, but leading healthcare technology company TPP is providing hope with smart and proven systems that are being used by more than 250,000 clinicians.

Its success is built on 23 years’ healthcare IT heritage and the company’s core product SystmOne, which curates 50 million patient records in the UK and is used by 7,000 NHS organisations, including 2,600 GP practices.

Its reach and reliability are vital to the national drive for integrated care, which aims to connect multiple organisations across healthcare to boost efficiencies and patient outcomes.

“We have a wide understanding of healthcare and the NHS, which allows us to find ways to make the patient journey better and improve clinical delivery,” says Matthew Stickland, director of strategy at the Leeds-based firm, a pioneer of integrated care.

“Our approach enables GPs and hospitals to work more efficiently, reduce their costs and, crucially, deliver the right services to the right patients. We are not just supplying the software, we use our experience and insights from clinical data to support the NHS in delivering better healthcare.”

“Given the current emphasis on creating integrated care systems and the impact of the COVID-19 pandemic, never has it been more vital to deliver connected, cross-organisational care

Its bespoke Autoplanner software recently scored a huge success in a community nursing scheme in Leicestershire where it more than doubled patient contact time from 31 to 71 per cent of the working day. With the smart use of data, it optimised work patterns to save 12.5 hours’ clinical time per team daily and improve outcomes and patient satisfaction.

TPP’s software, which collates data centrally, is also reducing pre-operative assessments in several hospitals from a cumbersome forty-five minutes down to five minutes, freeing up clinicians’ time.

SystmOne, which is one of the world’s biggest online databases, is deployed across the NHS and its patient-facing portal Airmid helps 2.5 million patients to access their medical records regularly so they can be more involved in their care.

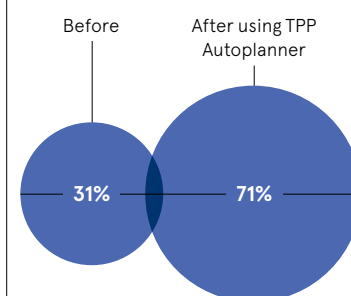
TPP systems perform securely across primary care, hospitals, mental health and social care, and its interoperability with other systems across healthcare will be a critical asset as the UK emerges from the pandemic to face intense pressure from an ageing population living longer with co-morbidities. Figures from the Office for National Statistics forecast that one in five people in the UK will be over 65 in 2030, while the 85-plus age group is expected to double to 3.2 million by 2041.

“Our ethos from the day we were founded was to provide a joined-up system and we have seen that grow across organisations,” says Stickland. “Given the current emphasis on creating integrated care systems and the impact of the COVID-19 pandemic, never has it been more vital to deliver connected, cross-organisational care.

“The question is how do we make sure that a hospital isn’t just an isolated end-point and separate from its community. We enable care to be delivered across the community so resources are focused on better patient outcomes, better patient experience and cost reduction.”

Independent research has shown that deploying TPP SystmOne across an acute hospital trust would generate £82.5 million in benefits across ten years while the company’s electronic observations system at Airedale Hospital, in Yorkshire, boosted capacity by 25 per cent and could save 900 hours of clinicians’ time annually.

Patient contact time in the working day for clinical staff



250k
NHS staff members across 7000 NHS organisations use TPP SystmOne

£82.5m
in benefits generated across ten years when deploying the TPP SystmOne across an acute hospital trust

“Our experience, understanding and commitment to making technology work for patients and clinicians mean we can make a huge difference to the NHS and healthcare,” says Stickland. “The pandemic has tested everyone to the limit and it has provided demand for innovation to tackle future challenges.

“We have an opportunity to revolutionise healthcare by using safe and secure IT systems that have already proved their capabilities. There is the potential to do even more for the benefit of patients and the NHS.”

For more information please visit www.tpp-uk.com



Improving patients' lives with affordable cancer drugs

The coronavirus pandemic has taught us to take nothing for granted and, despite decades of medical and scientific advance, we stand at a pivotal point for cancer treatments

People are living longer with multiple morbidities and healthcare demand is growing around the globe. The miracles of modern cancer survival rates come at a price in both financial burden and logistical pressures across healthcare systems.

Cancer accounted for 9.5 million deaths worldwide in 2018 and that figure is predicted to rise to 12 million by 2020.

The cost of cancer treatment is expected to grow by 10 to 13 per cent between 2018 and 2022, compromising access to affordable, effective therapies for patients and heaping intolerable strain on national budgets.

Patient outcomes have been revolutionised by blockbuster drugs and biologics, but novel discovery is slowing down, requiring the medical, scientific and healthcare regulatory systems to look to new ways of delivering life-enhancing care.

A critical benefit is being provided by generic medicines, lower-cost versions of patent-expired drugs, and biosimilars that replicate the impact of game-changing biologics at a fraction of the price. This is being combined with dynamic innovation across the life cycle of a drug that is creating products that make medical regimens easier for patients to take and adhere to while easing the strain on healthcare.

"There are great challenges ahead, particularly in oncology with the exponential growth in demand. But there is the drive and ingenuity to tackle them so patients get the medication and support they need," says Paul Tredwell, vice president of speciality brands at UK-based Accord Healthcare, Europe's largest provider of oncological chemotherapy drugs.

"Healthcare has made amazing advances in producing game-changing drugs over the last 20 years, but the issue we have is that the median

cost of a new oncology drug has risen from around £60,000 a year in 2013 to £115,000 a year in 2017.

"We have revolutionised outcomes for patients, but healthcare spending is increasing which is a tough challenge. We have to balance the best patient outcomes with access to affordable, high-quality medicine which is where companies like Accord come in.

"So, we have to think differently and apply ourselves to every aspect of medical delivery. We need affordable drugs and we need to be patient focused so it is easier for patients to take them and get the benefits.

"Patients are more interested and involved in their care than ever before and this provides an opportunity to connect with them, understand what they need and make sure they get it."

Accord, which has invested more than £150 million in skilled staffing of production lines and equipping state-of-the-art facilities in the UK since 2017, stands at the fulcrum of clinical delivery with its role of manufacturing affordable drugs and connecting hospitals, pharmacists, wholesalers and other frontline healthcare providers.

It has a pipeline of innovative molecules, repurposed drugs and delivery systems, such as injectable devices and packaging.

The importance of generic medicines was highlighted by the vital role they have played supporting healthcare systems and cancer patients during the pandemic, demonstrating clearly that they are a significant part of the healthcare future.

Generics are sold at about 15 per cent of the originator price, while biosimilars are around 30 per cent cheaper. The NHS announced that it had saved more than £700 million from its annual medicines bill in 2019 by switching to generic and best-value biologic treatments, including

A recent study in Europe forecast that biosimilars could provide a saving of between

€0.91 to 1.82 billion

to healthcare providers over a five-year period based on sales volume data

Lee S, et al, BioDrugs 2019

Accord Healthcare one of the top 5 manufacturers in Europe with

4 approved biosimilars

EMA 2020

“We have revolutionised outcomes for patients, but healthcare spending is increasing which is a tough challenge

a £100-million saving from one drug that had expired its patent.

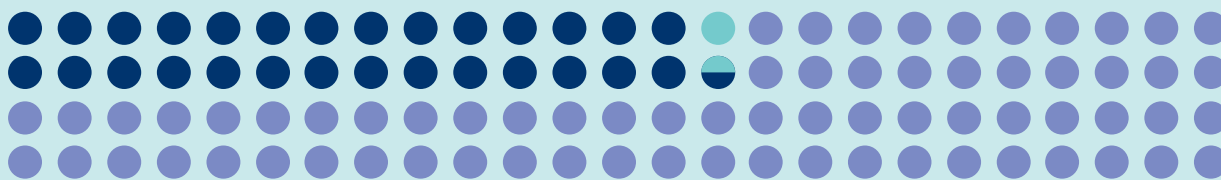
Sir Simon Stevens, NHS chief executive, commented: "We will continue to drive changes to ensure every NHS pound is spent wisely and patients have access to innovative life-changing medicines.

"Use of the best value versions of expensive medicines is already delivering effective treatment for patients across the NHS, including those with cancer, offering the right care for patients while saving the taxpayer hundreds of millions of pounds."

BIOSIMILARS ARE THE FASTEST RISING SEGMENT OF THE PHARMACEUTICAL MARKET

In Europe **30%** of all medicine spend is on biological medicines

of which **1.5%** are biosimilars



Per Troein, et al, IQVIA 2019

The value of European biosimilar drug sales in 2018 was approx

€2.47 billion

Research and Markets 2019

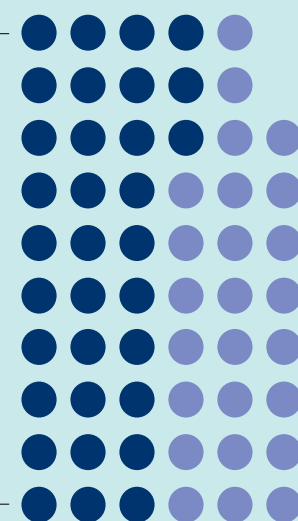
Since 2006 there have been 58 biosimilar drugs approved by the EMA of these

33

are approved to treat haematology and oncology related conditions

29%

are monoclonal antibodies



EMA 2020

Allied to those huge savings is the ability to adapt biosimilars to achieve incremental improvements and wider access to create a progressive framework with affordable mechanisms rather than big-budget changes.

"Biosimilars and generics help by lowering the cost of treatments and, therefore, improving access for more patients and by freeing up funds for research into new oncology treatments," says Accord's Tredwell. "The savings provided by biosimilars will be significant to European healthcare economies over the next five years, potentially up to a further £1.4billion, according to a recent study.

"But it's about much more than the cost. It's about the positive impact on the patient. It's about the product and the delivery system and, since the introduction of biosimilars, we have seen an increase in the diversity of delivery devices and storage capabilities that is helping meet patient demand.

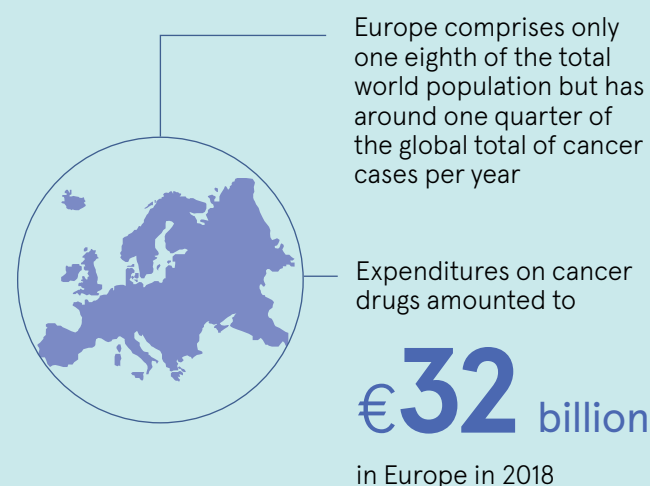
"At Accord, our mantra is to drive the best outcomes for patients which

could involve changing the pharmacokinetic properties to create longer acting versions and improve how long you can leave medicines out of the fridge and whether it needs to be in the fridge at all. We have also designed user-friendly injectable systems for ease of use. These things are important to the patient as well as the healthcare system."

COVID-19 restrictions meant immune-compromised patients needed to take a more hands-on approach in their care, which saw a rise in patient-administered therapies and could help shift more care away from expensive hospital and clinical settings.

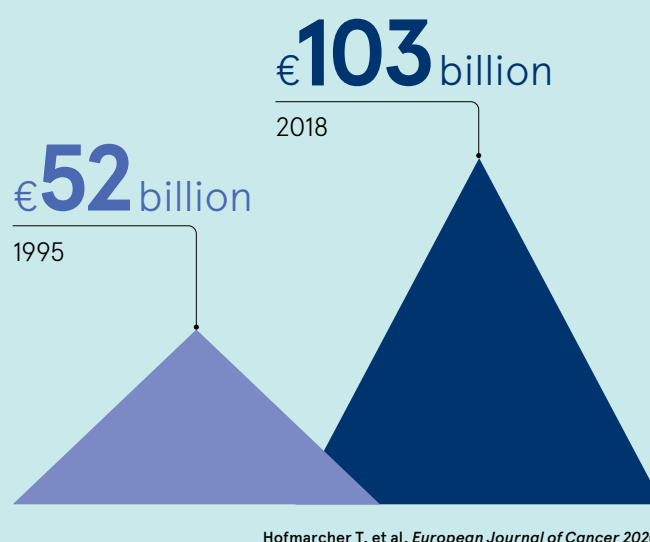
A move to greater patient involvement in care, home monitoring and self-administration is a trend that is being hailed as a potential healthcare saviour as it can improve compliance and de-stress hospital waiting lists. The use of digital support and transferring treatments safely to at-home settings is a key element of NHS long-term planning.

ACCORD IS PROVIDING AFFORDABLE ALTERNATIVES IN SOME OF THE MOST COMPLEX AREAS OF MEDICINE



Hofmarcher T, et al, *European Journal of Cancer* 2020

Between 1995 and 2018 health expenditure on cancer care has almost doubled



Hofmarcher T, et al, *European Journal of Cancer* 2020

"We see patient empowerment as critical to the future of healthcare," adds Tredwell. "Accord is an agile company that has grown its UK operation from less than 50 staff in 2010 to more than 1,200 across its sites at Barnstaple in Devon, Didcot in Oxfordshire and Fawdon in Tyne and Wear, an empty 22-acre site that has been regenerated over the last two years, as well as its headquarters and laboratories based at Harrow, Middlesex. It has established a strong base for export into Europe and now employs an additional 600-strong staff base across the region.

It's goal of becoming a top-five pan-European generics and biosimilars company by 2021 is strengthened by a novel pipeline with several products in phase-III trials across its areas of clinical focus in oncology, auto-immune conditions, central nervous system and critical care.

"We are committed to launching new medical products, but we are also in tune with the paradigm shift of patients becoming more empowered

and seeking to learn about their treatments, which has been amplified during the pandemic," says Tredwell. "We are developing digital education routes for both patients and healthcare professionals.

"We are co-developing a new platform with senior oncology partners to support patients along their chemotherapy and radiotherapy journey as we believe patients will have more positive outcomes if they understand the therapies they are receiving, why they are getting them and how to manage any side effects.

"Our driving force is not just about providing treatments; as the market leaders in Europe of oncological chemotherapy drugs, we have a responsibility to improve patients' lives."

For more information please visit accord-healthcare.com

accord



Making the most of biosimilars

Biosimilar medicines are increasing access to high-quality treatments for millions of patients across Europe for conditions such as cancer, diabetes, rheumatoid arthritis and other immune-related diseases.

Their potential is creating new frontiers of medicine, but regulatory barriers and a drive to push down costs could stifle innovation and availability. Buyers are exploiting competition among generic companies to extract discounts and lower drug prices.

Experts believe innovation and patient benefit can be protected by the Europe-wide adoption of the most economically advantageous tender (MEAT) protocol when assessing the value of biosimilars.

"If you have a medicine that is helping a patient, you have to look at the whole package, not just the price point," says Paul Tredwell, vice president of speciality brands at UK-based Accord Healthcare. "It seems sensible to adopt the MEAT approach rather than focusing on driving the price down, to unsustainable levels, which can only harm innovation and reliable access."

“All we’re asking for is that the healthcare systems and payers actually consider overall value and not just price

The UK is a world leader in the use of generics and the willingness to substitute an expensive biologic with a more economic biosimilar to improve access and reduce the healthcare burden.

But there is an inconsistency of biosimilar adoption across Europe due to the way the different healthcare systems operate. "I fear that if we move to substitution, which is being voiced in some countries, then the system will follow the same path as generics. This may not mean lower prices, but it could mean the removal of patient benefits on device, storage and support packages as lower costs will drive companies to deliver the low-cost option," says Tredwell.

"This could also have a knock-on effect on supply; the lead times and complexity of manufacture mean that if one supplier has an issue, its unlikely others can fill the gap of their product within a short time frame, which could lead to shortages in the market. Given the benefits these biologics bring to patients, this would be a significant step backwards for the industry.

"At Accord, we have our own manufacturing, packing and filling, which means we can compete in a cost-contained environment, but we are always striving to innovate. We aim to provide a good price point at the same time as being able to develop additional features that will show patient benefit. Price should not be the only driving factor."

Placing an emphasis on value rather than just price can lead to extra advances in safety, supply chain resilience, a crucial factor in European healthcare systems withstanding pressures at the height of the pandemic, and green procurement.

"All we're asking for is that the healthcare systems and payers actually consider overall value and not just price," Dr James Burt, Accord's executive vice president, Europe, Middle East and North Africa, concludes. "Healthcare systems and payers have to resist a focus on price alone and recognise MEAT as a concept; that's in European Union statute now.

"Without that, you have this race to the bottom and all the fragility people are now saying is a dangerous thing. With that, there's a mechanism whereby improved practices can be encouraged."

1.9m

number of deaths attributable to cancer each year in Europe – the second highest cause of death across the continent

1/4

of the world's cancer cases are in Europe, despite the region comprising just one eighth of the global population

WHO 2020

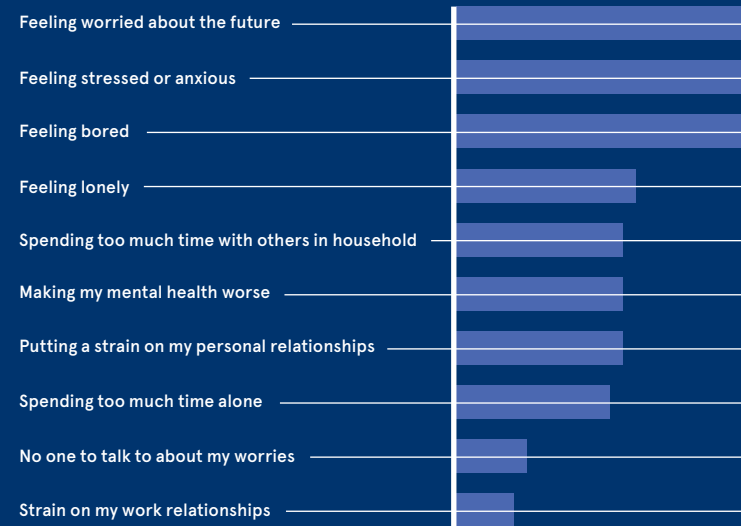
FEELING THE PANDEMIC PRESSURE

The evidence that the coronavirus pandemic has harmed our mental health is overwhelming. From increased stress and anxiety to feelings of loneliness and trouble sleeping, the minds of people all over the world are suffering, but what are the specific issues keeping us up? And what can we do to tackle them?

LOCKDOWN PUTTING PRESSURE ON PEOPLE'S MENTAL HEALTH

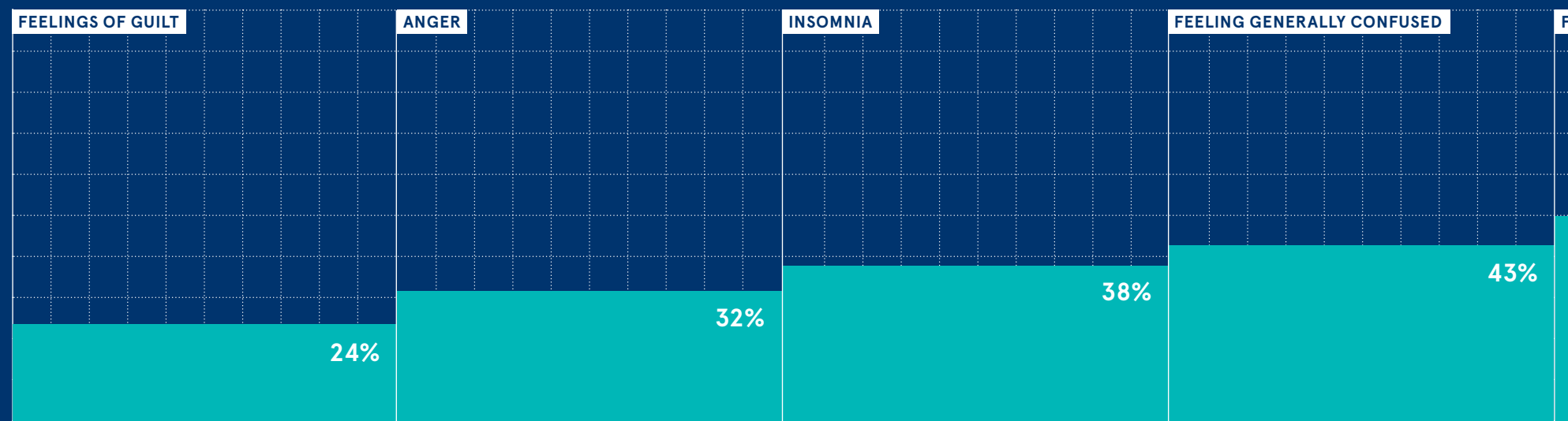
Britons were asked the ways in which the pandemic was affecting their mental health

Office for National Statistics 2020



SYMPTOMS OF POOR MENTAL HEALTH ON THE RISE SINCE CORONAVIRUS OUTBREAK

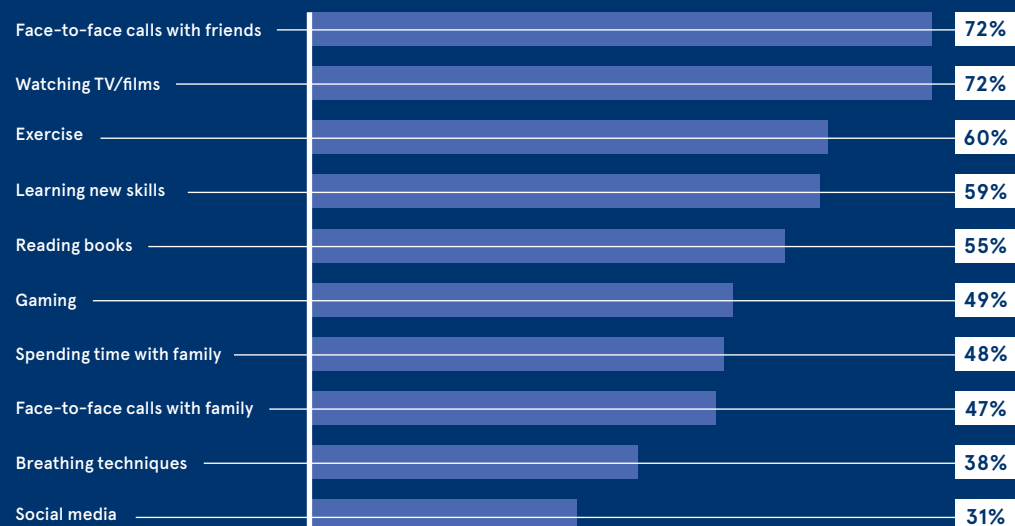
Employees from around the world were asked which of the following they had experienced more of since the beginning of the pandemic



DEVELOPING NEW COPING MECHANISMS DURING LOCKDOWN

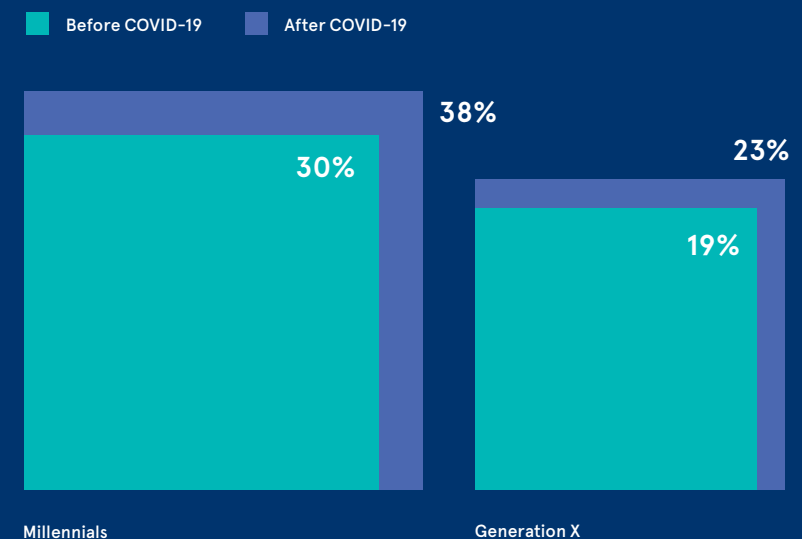
Activities young people in the UK find helpful in managing their mental health during the pandemic

YoungMinds 2020

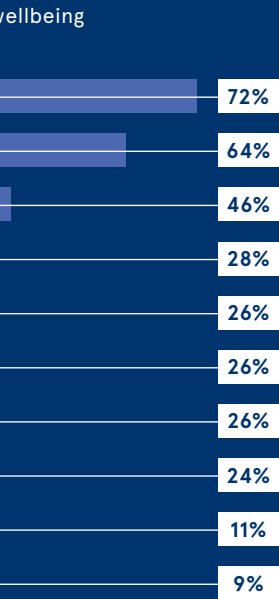


LONELINESS ON THE RISE AMONG ALL AGE GROUPS

There has been a 7 per cent increase in feelings of loneliness for American adults, particularly high among Millennials



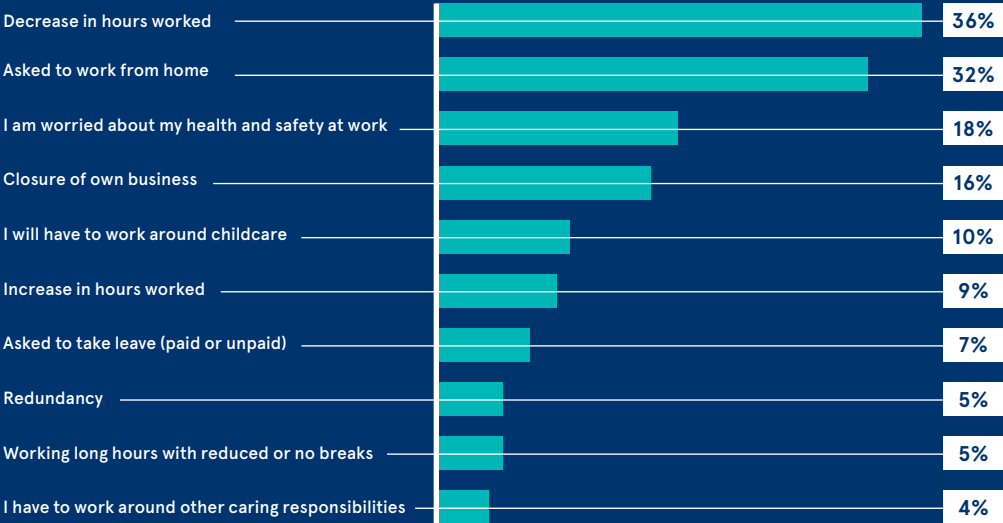
AL STATE



COVID-19 DRIVING A NEW SPATE OF WORRIES AROUND WORK

How the pandemic has impacted the jobs and working lives of UK employees

Office for National Statistics 2020



HOUSEHOLD FINANCES HAVE BECOME A LARGER CAUSE FOR CONCERN FOR MANY

The ways in which COVID-19 has impacted household finances, according to the 23 per cent of UK adults who said it had

Office for National Statistics 2020

73%

Reduced income

32%

Use of my savings to cover living costs

26%

Savings value is being affected by economic instability

22%

Struggling to pay bills, such as food and energy

20%

Pension value is being affected by economic instability

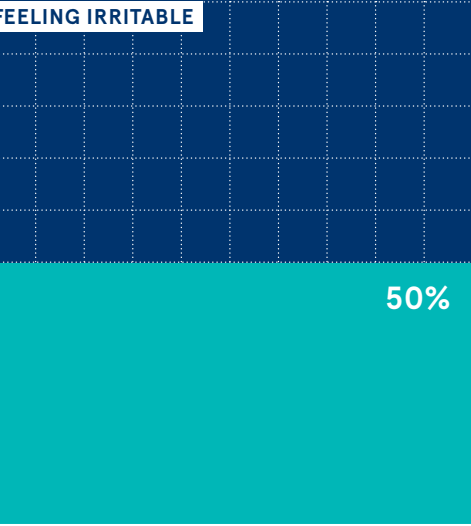
11%

Providing financial support to friends and family

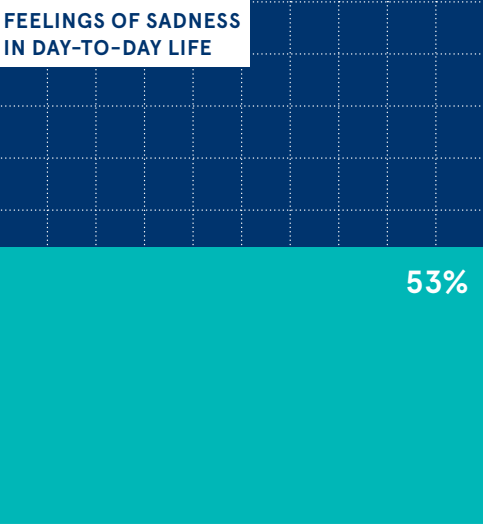
4%

Delay to state welfare benefits, such as Universal Credit

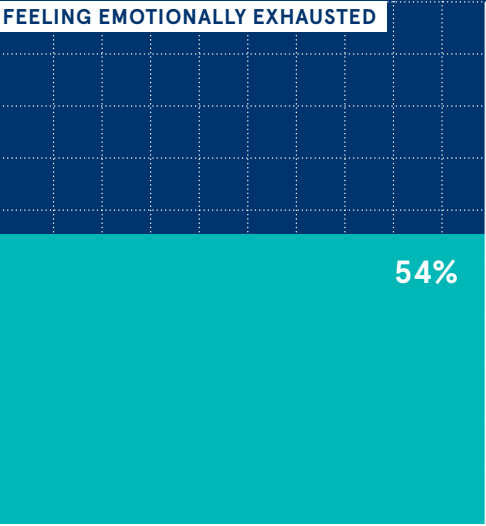
FEELING IRRITABLE



FEELINGS OF SADNESS IN DAY-TO-DAY LIFE

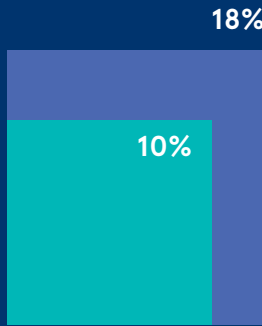


FEELING EMOTIONALLY EXHAUSTED



Qualtrics 2020

overall, with the numbers

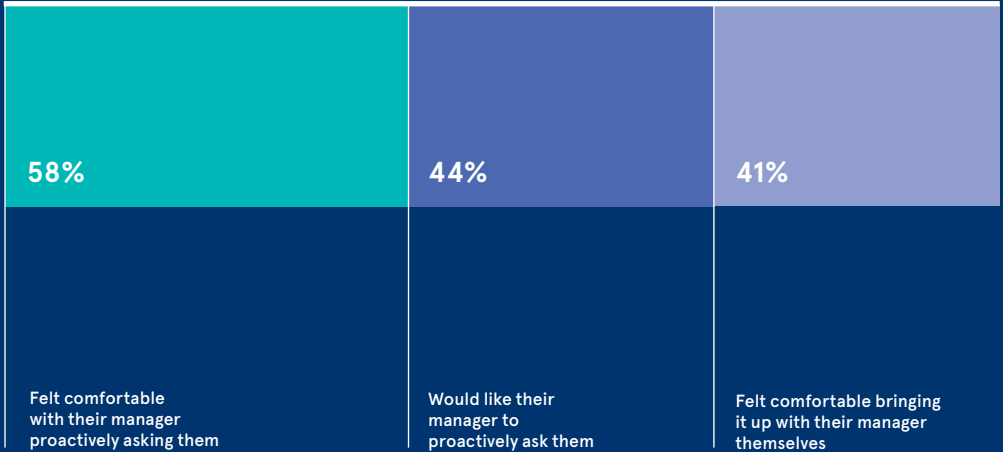


Baby Boomers

HOW MANAGERS CAN SUPPORT WORKERS WHO ARE STRUGGLING DURING THE PANDEMIC

Qualtrics 2020

One in three employees feel that, were they to talk to someone, their manager would be best placed to help them with their mental health issues; but not all are willing to initiate conversations themselves



Pandemic drives tech usage in drug development

Clinical research is gearing up after a buffeting from the coronavirus that derailed thousands of trials for new treatments for diseases across almost all therapeutic areas

The quest to produce a viable coronavirus vaccine continues and the aftershocks of the pandemic will rattle through healthcare for several months to come, but technology is highlighting its ability to play an increasing role in drug development.

Strategic application of mobile technology, artificial intelligence (AI) and machine-learning is having a growing influence on clinical research and its multifaceted capabilities underscore its potential to be a meaningful tool in clinical studies to help bring treatments to patients faster.

A white paper titled *COVID-19 and Clinical Trials*, conducted by Medidata, records that 60 per cent of the industry are currently optimistic about the future of clinical trials. In April, Medidata saw a 58 per cent decrease in patients entering clinical trials globally and an 87 per cent drop in the UK specifically. Fast forward to July and these numbers are down to 6 per cent and 55 per cent respectively. So the optimism is warranted.

"COVID-19 has obviously had a significant impact with a reduction in the number of trials and patients enrolling in trials, but that is starting to bounce back," says Fareed Melhem, who leads Acorn AI Labs, Medidata's data science innovation lab. "The optimism comes from a general belief that we will get past the pandemic. And there's optimism that this period has accelerated the use of technology and the lessons we are learning around how to simplify trials for patients during the pandemic will endure post-COVID."

Medidata has pioneered software solutions to support the running of clinical trials for 20 years and has generated data from 20,000 trials involving more than six million patients. The company has been able to develop a comprehensive suite of services that deliver improved data collection and trial management, as well as the ability to pull out patterns and provide insights by deploying cutting-edge AI and data analytics.

Healthcare regulators, who are responsible for approving new drugs and treatments and are thoroughly involved in the clinical trial process, have shown flexibility through the pandemic without compromising patient safety.

The long-term view across the industry is that technology will be a dominant force in the future of drug development. There's a clear cost and time benefit, but perhaps more importantly it minimises the burden on patients. It helps remove logistical barriers, such as travel and taking time off work, so patients are encouraged to participate and remain in trials and be more involved in its outcomes.

"There has been a challenge to maintain data flow during the pandemic, but it has also really accelerated the conversations we've been having around the application of technology in healthcare over the past five, ten years," says Paul O'Donohoe, Medidata's scientific lead, eCOA (electronic clinical outcome assessment) and mobile health.

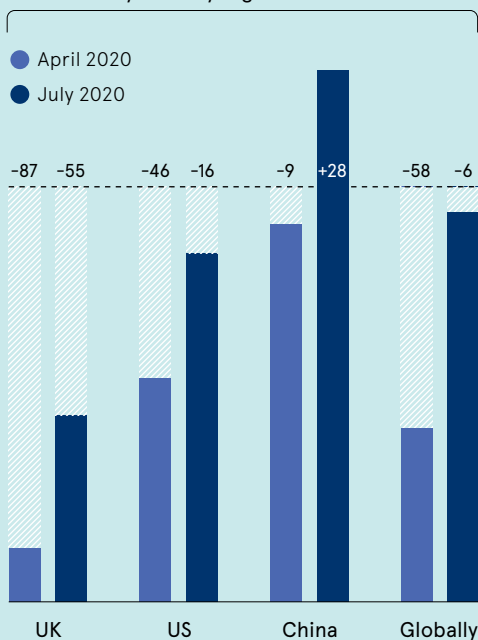
"We've been speaking about remote data capture using smartphones and tablets for several years, so we're not necessarily doing anything new as we respond to this situation. What is new is just how rapidly we've seen people jump in on the technology, as well as the flexibility we're seeing from the regulators."

"It has created an opportunity to demonstrate that these technologies work very well and that we can run clinical trials largely remotely and use technology to capture good quality data from patients, while offering them a better experience. The success of sustaining clinical trials with large virtual elements will only encourage its use from an early stage in future trials."

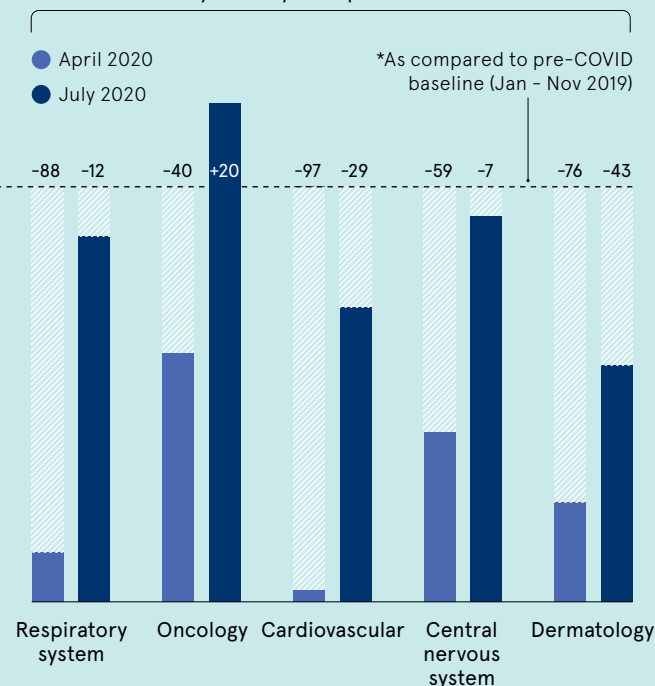
Around 30 per cent of trials can be conducted completely virtually and there are always elements that can be conducted remotely. By continuously collecting patient data, from a wearable for example, you get a more complete picture of the data and holistic view of the patient, compared to singular

INITIAL IMPACT OF COVID ON CLINICAL TRIALS AND THE RECOVERY

Change in new patients entering study-sites by region (%)*



Change in new patients entering study-sites by therapeutic area (%)*



*As compared to pre-COVID baseline (Jan - Nov 2019)

ACTIVITIES MOST IMPACTED BY COVID-19



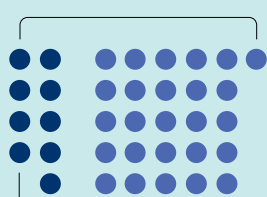
FEELINGS ABOUT THE FUTURE OF CLINICAL TRIALS

58% are optimistic

Medidata, COVID-19 and Clinical Trials: The Medidata Perspective, 18 August 2020

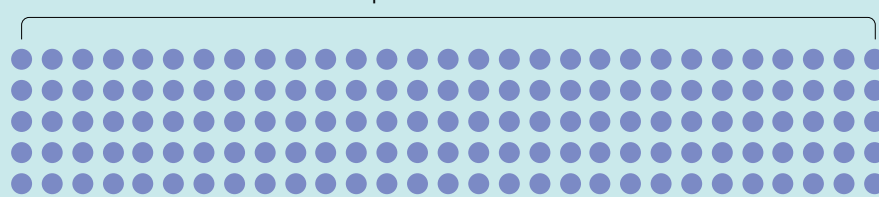
COVID-19 VACCINE LANDSCAPE

35 candidate vaccines in clinical evaluation



9 of these in Phase 3

145 candidate vaccines in preclinical evaluation



World Health Organization, Landscape of COVID-19 Candidate Vaccines, 9 September 2020

check-ins at a clinic. Patient platforms and portals, such as newly launched myMedidata, enable patients to participate more fully in clinical trials and offers more patient-centric solutions.

"We're getting feedback from patients as we build and develop our technology to make sure it's technology they want to use when they are enrolled

in a trial," says O'Donohoe. "We have patients at the centre of what we do and are keen to explore anything we can do to make it as positive an experience as possible. We are minimising unnecessary visits and doing as much as possible at home without losing those key touchpoints with the investigator or the clinical staff."

The imperative is to drive high-quality data that creates valuable, actionable clinical outcomes. Melhem adds: "We support a large proportion of the trials running globally and the data we generate contributes to a lot of positive change across the industry. Acorn AI was launched with the specific intention of getting more insight from the data so we can design better trials for patients and for companies, accelerate enrolment and monitor the execution of trials in real time to keep them on track. Our goal is really to drive a lot more efficiency in the clinical trial process."

For example, the ability to use synthetic control arms, utilising historic

data to mimic the control group, means more patients are on the active drug rather than placebo, hugely benefiting research companies as well as patients.

Melhem concludes: "Healthcare faces a lot of challenges in the future, not just from the pandemic and its aftermath, and our insights can help create more precise treatments with more targeted trials so the promise of what they can deliver for individual patients is much greater."

"We will learn a lot from the pandemic, but one thing it has clearly shown us is technology in clinical trials is vital and will play an integral role in our ability to get treatments to patients faster."

For more information please visit [medidata.com](https://www.medidata.com)

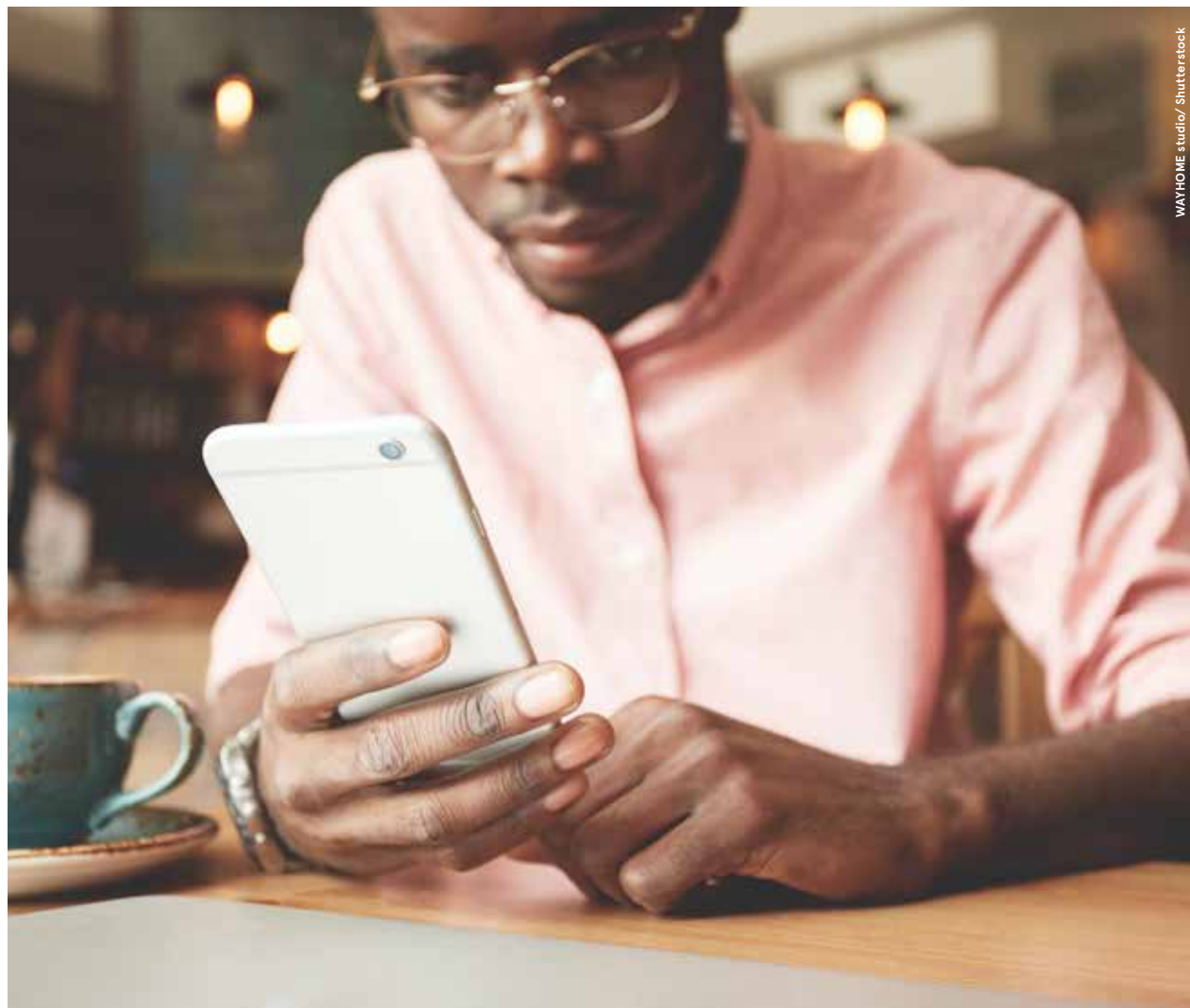
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DASSAULT SYSTEMES

“

We will learn a lot from the pandemic, but one thing it has clearly shown us is technology in clinical trials is vital and will play an integral role in our ability to get treatments to patients faster



WAYHOME studio / Shutterstock

PUBLIC HEALTH

Introducing the citizen scientist

Coronavirus has touched us all, leading to an unexpected opportunity for turning everyday citizens into research scientists who could help drive major breakthroughs in fighting the pandemic

Heidi Vella

Cycling home in mid-March, like many feeling depressed about the proliferating coronavirus pandemic, Tim Spector, professor of genetic epidemiology at King's College London, suddenly had an idea.

His study of more than 14,000 twins, called Twins UK, was concluding, but what if the participants were surveyed about their experience of the coronavirus? Within four days, Spector and the team behind ZOE, a personal nutritional tech company of which he is a co-founder, had expanded the idea and publicly launched the COVID Symptom Study app. In under 24 hours more than a

million people were contributing. The app now has more than four million contributors and routinely monitors new cases and outbreaks.

"It's the biggest citizen science project of its kind and has surpassed all our expectations, it's been crucial for understanding outbreaks in the population," says Spector.

Nicholas Timpson, professor of genetic epidemiology at Bristol University, explains the citizen science concept as "getting the general public, as opposed to patients, involved in research".

Timpson is part of another citizen science research project called Children of the 90s, which has been

taking samples and surveying individuals from multiple generations for more than 30 years. In response to COVID-19, Timpson and his team are regularly questioning the participants and have noted a disproportionate impact on younger individual's mental health compared to last year.

Though this study and the COVID Symptom Study are both citizen science based, Timpson says what is unique about the latter is the medium or channel is completely different.

"The app is very accessible; it's a way to collect data across the population despite a really acute and difficult situation. It's helping the public inform policy, as well as myself and other researchers to link our records to the results and combine them. It's a remarkable thing," he says.

Contributors to the COVID Symptom Study app are asked daily if they have any of 19 symptoms. Test results can also be logged and by the end of April the app had collected around 60,000, including 10,000 positive, results. The datasets were shared with researchers at King's College London who, using machine-learning and artificial intelligence, looked at symptoms that clustered with the positive test results, against those clustered with negative results.

The information was used to train a predictive algorithm that can now determine, with an 80 per cent predictive ability, whether a person has COVID-19 depending on their symptoms. Researchers extrapolate this data across the population to create an estimated daily nationwide and local figure for people with symptomatic COVID-19.

Spector says this data allowed the researchers to understand, before the government, where outbreaks

were occurring. They were also one of the first studies to identify loss of taste and smell as a key symptom of the disease, which was a significant breakthrough.

"The results are fast," he adds. "I've been doing studies for 30 years and never got a result in less than six months. Yet, with the app, we included a question on loss of smell and taste, and we had the answer in a week. It's an incredibly fast and agile tool."

Overall, data from the app has informed 315 scientific papers and assisted the government's testing programme by sending out 10,000 tests a week to app users over two to three months.

To help manage its workload, global independent health network Cochrane, which provides systematic reviews and other synthesised research evidence to inform health decision-making, has developed a citizen science tool, called the Cochrane Crowd. Through the platform, volunteers are asked to characterise data and research. The results are fed into an algorithm to classify a record with 99 per cent accuracy.

Anna Noel-Storr, information specialist and project manager at Cochrane Crowd, says new technology combined with citizen science is disruptive.

"It has allowed us to scale; through this approach we can now handle more records than ever before and we are considering how we can change some of our other processes," she says.

However, there are challenges, such as gaining trust within the healthcare profession and keeping participants interested.

The public's eagerness to understand COVID-19 has attracted participants to the COVID Symptom Study and been critical to its success. The researchers and app designers have encouraged this by providing regular feedback.

"I think this is why it has been much more successful than the government apps, which are one-way reporting. People like the interaction and they get used to doing it, even those who wouldn't have before," says Spector.

The results are fast. I've been doing studies for 30 years and never got a result in less than six months

The research model could be used to derive insights on common health problems, such as obesity or diabetes, as long as "public participation is high, it's cost effective and does not infringe on people's personal liberties", he adds.

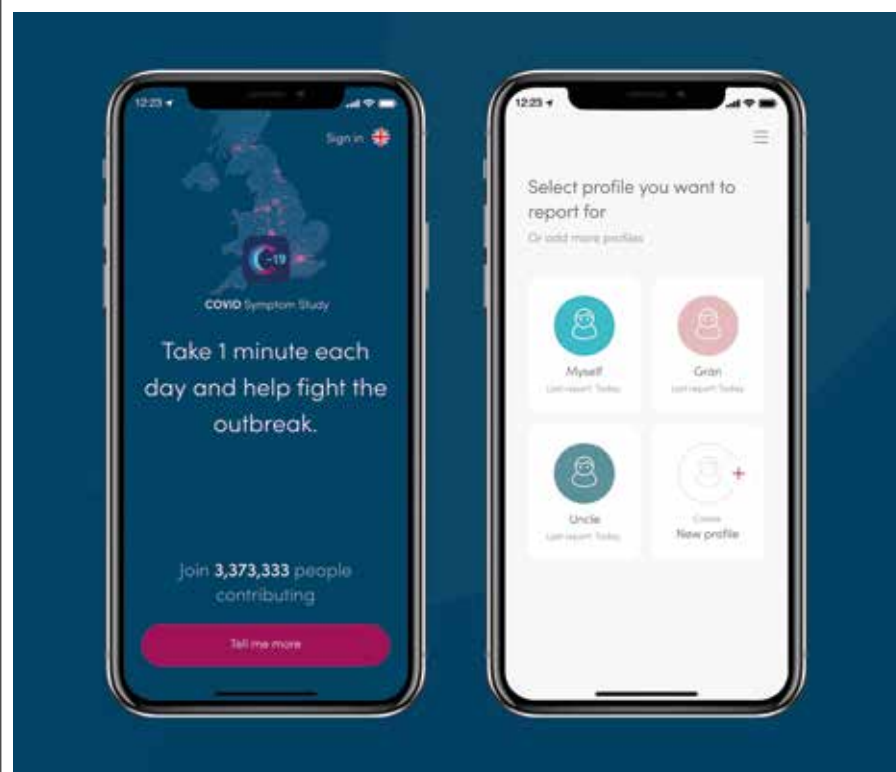
However, when conducting citizen science studies, it is important to be conscious that people who interact with apps, for example, are not reflective of the entire population, warns Timpson. Furthermore, maintaining public trust is paramount.

"We don't want the Cambridge Analytica-style worry about people accessing data in an incredulous way; the notion of citizen science is far bigger than any one study, it's a feeling that as an individual my health and my data, if combined in the right way, can contribute to better policy," he says.

The COVID Symptom Study team are preparing to launch a school programme to monitor outbreaks in the education system, as well as research the long-term effects of COVID-19. ZOE, the platform that powers the app, is looking to launch a personal nutrition app next spring.

Timpson hopes the continued success of this research project will ultimately see citizen science attract more people.

"I want the visceral understanding the public now have of studying disease replicated outside COVID; we need to harness this opportunity to get people to understand the value of their data. If we get that right, it'll transform how we do population science in the future," he concludes. ●

BELOW
The ZOE COVID Symptom Study app


Resilient care sector adapts for the future

The social care sector has been at the forefront of the UK's response to the coronavirus pandemic, learning and adapting rapidly to protect our vulnerable loved ones

The need for government to drive greater alignment between social care and healthcare is an age-old conversation, but one that has been illuminated during the coronavirus pandemic. Lack of a joined-up approach to the delivery of care in the UK has long prevailed, despite some efforts to bring it closer together.

The social care sector has played an incredibly important role during the pandemic, taking in huge numbers of residents to prevent the NHS from being overrun, and without all of the same testing and support. But the government has a way to go in uniting the sectors.

Social care workers are as skilled and sometimes more so than NHS staff, yet often feel they are viewed as an afterthought. This was perfectly encapsulated in the early stages of lockdown when it took weeks for the government to broaden the Thursday national doorstep applause from only NHS workers to everybody on the frontline of the virus.

"If the pandemic isn't enough of a signal for decision-makers, legislators and leaders of this country to align the way healthcare and social care work together, then I don't know what is," says Lisa Soper, operations director at Avery Healthcare, which runs 56 residential, dementia and nursing care homes countrywide. "It should be a defining moment and a lesson to everyone that silo-thinking and funding doesn't work."

Avery is a leading player in the social care sector, demonstrating that a well-run care operation with the right level of robust and scalable procedures and well-trained staff can quickly adapt and withstand the impact of something as serious as COVID-19, with its many unknowns and lack of a user manual.

Crucially, Avery's comprehensive training forms the foundation of its service; all employees, no matter what their role, are cross-trained. For example, housekeepers can support with personal care and the well-being team can support residents at meal times.

Its holistic, forward-thinking approach to the provision of care meant Avery was on a stronger footing than most when COVID-19 impacted, immediately establishing good access to personal protective equipment and adapting its protocols to protect staff and residents. Its regional managers didn't visit unless essential, so a robust communications strategy, developed by an internal COVID strategy team, run via Microsoft Teams meetings, meant management could continue to review and maintain quality across the group.

With 70 per cent of all residents in care homes living with some form of dementia, it's imperative that the sector at large understands the best way to care for those affected. In recent years, Avery Healthcare has transformed its dementia approach, with a contemporary strategy focused on enabling people to continue living a fulfilled life, rather than simply receiving care. Avery's care homes utilise Skype and social media to enable contact between residents and loved ones, which became invaluable when families couldn't visit.

"The idea of people coming to live in a care home and sitting quietly while care workers do everything for them is now very outdated," says Jo Crossland, head of dementia care at Avery Healthcare.

"Quite rightly, people want to continue living their life. We have bespoke training for all of our staff, but particularly around dementia care, including linking with higher education institutions to deliver the best and most up-to-date evidence-based care possible. All our staff are skilled care workers and when COVID arrived it meant all of them could support our residents.

"The training we've established at Avery has also given our staff the confidence to question some of the local guidance during the pandemic. At the start of the crisis, several local community mental health teams, including psychiatrists, suggested that our care homes may have to consider restricting residents to their bedrooms, or increasing behaviour-modifying or mood-altering medication, to sedate



residents sufficiently, so social distancing could be maintained.

"Responsibly, our staff had the confidence and knowledge from their training to know there were alternative and more person-centred ways of supporting our residents to remain safe while continuing to enjoy their lives."

Avery's efforts to ensure its residents can continue to enjoy life as normal to them as possible extend to activities, meals and faith. Avery has become expert not only in delivering vegetarian and vegan diets, but also diversifying for homes in ethnically diverse areas, with Halal or West

Indian cuisine, for example. In addition, its care homes support a range of religious observations, with ministers from various faiths coming in.

To further increase its understanding of residents, particularly those living with dementia, Avery uses life-story work to truly understand the individual. Working with the resident and their family, staff develop an individual life-story board, which explores the resident's life, including their family, career, holidays, interests and life experiences.

Life-story boards are kept in residents' bedrooms, so staff are always reminded of the life they have lived so far, enabling them to communicate in meaningful and familiar ways that are beneficial to the resident. This is especially supportive for those with reducing cognitive abilities, who are struggling to make sense of the world around them; it helps Avery's carers reunite them with those memories still preserved.

This proved particularly valuable when entertainers couldn't enter the care homes, residents couldn't go out on trips and other aspects of life were restricted. The information Avery gathered through such life-story work, as well as its more operational protocols, meant it could maintain a

high quality of life with as little disruption as possible to its residents.

"How the pandemic has informed us about the future of care is that you have to deliver it really well, based on a thorough understanding of each individual," says Avery's Soper.

"Care is not just about medication and falls prevention. It's the next phase of a person's life. If you have a strong community within, you can do so much more to ensure residents have the best quality of lifestyle.

"People will often have a sense of reluctance about moving their loved one into a care home. With the media often distorting the reality, we can assure everyone that care homes are in fact some of the safest places to be at the moment. We've always been well prepared, resilient, united and passionate about providing excellent care to our residents, which has meant we have withstood the recent challenges and are well set for the way ahead."

For more information please visit averyhealthcare.co.uk

Avery | Care With A Difference



If the pandemic isn't enough of a signal for decision-makers, legislators and leaders of this country to align the way healthcare and social care work together, then I don't know what is

WELLBEING

Counting the cost of poor mental health

Coronavirus has illuminated the business impact of an unwell workforce, but will the pandemic mean companies take a greater interest in employee health and wellbeing?

Ben Rossi

When the severity of the coronavirus outbreak became apparent at the beginning of the year, organisations suddenly found themselves having to make rapid decisions. They needed to protect the physical health of their workforce and enable them to continue working while cocooned in their own homes in line with government instructions.

But as the pandemic has continued to play out, the implications on people's mental health have exposed a clear correlation between employee health and wellbeing, and business outcomes.

More than half of adults and over two thirds of young people have said their mental wellbeing has deteriorated since COVID-19 emerged, according to mental health charity Mind. Meanwhile, further research by analyst firm Gartner during the pandemic found 53 per cent of employees feel burnt out, 42 per cent feel depressed, 55 per cent are lonely and 89 per cent are worried about their own personal welfare.

68%

of organisations introduced at least one new wellness benefit by late March 2020, to aid employees during the COVID-19 pandemic

Gartner 2020

This has accelerated a trend that was already gaining momentum: employers recognising their crucial role in employee health and wellbeing. In the *Mental Health Trends Report* from wellbeing app Headspace, half of UK workers said mental health support is essential, not just to help manage stress and anxiety during the pandemic, but also to ensure they enjoy work and perform at their best.

Absenteeism has long been a problem. One in five UK workers have taken a day off in the last year due to stress, anxiety and depression, the Headspace research found. According to a study by Westfield Health, a company of just 150 employees racks up an absence cost of £118,440 each year. Poor mental health can also reduce productivity, with one in five workers saying they've lost up to two hours in a day due to feeling tense and anxious. Since the pandemic, nearly half of workers have suffered from stress.

Despite significant financial cuts due to the impact of the pandemic, 32 per cent of organisations told Gartner they have introduced new wellbeing initiatives for employees, including virtual counselling, mental health days off and subscriptions to mental wellbeing apps. Recognising that health and wellbeing issues come in different forms, employers are also working to understand individual concerns, generate more well-rounded mental health awareness and introduce a better variety of initiatives.

"It's now more important than ever to support the mental as well as physical health of employees," says Jolawn Victor, chief international officer at Headspace, which has seen an increase of more than 500 per cent in requests from companies seeking support for their employees since mid-March.

"They say prevention is better than cure and that's certainly the case with mental wellbeing. As there's more fluidity between work and our personal life, particularly in light of COVID-19, we cannot ignore that we must be healthy and happy at home and at work," says Victor.

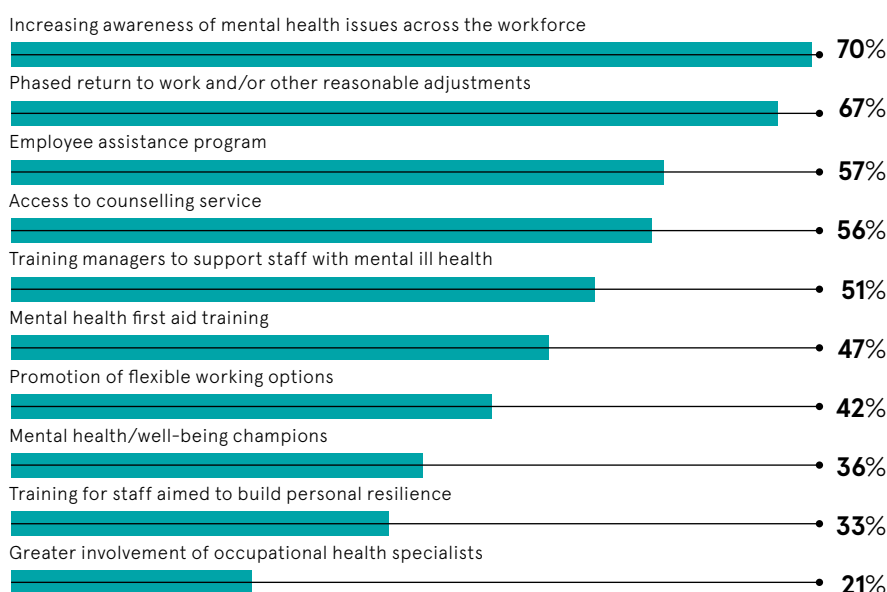
Yorkshire-based tech firm Vapour Cloud is just one organisation that has sought to transform its approach to employee health and wellbeing following extended lockdown. The company invested in a health and wellbeing assessment tool by



Justin Page via Getty Images

WHAT WORKPLACES ARE DOING ALREADY, AND HOW THEY COULD HELP MORE

Share of actions taken by UK employers to manage their employees' mental health at work



CIPD 2020

“As there's more fluidity between work and personal life, we can't ignore that we must be healthy and happy at home and at work

Champion Health, which began with a confidential online questionnaire for all staff. Once completed, each employee received an individual report regarding their physical and psychological wellbeing, and Vapour's management team was supplied with an anonymised overview.

The findings helped inform its new wellbeing strategy, which has included the rollout of online mental health awareness training so employees feel more empowered to talk about their psychological wellbeing and hopefully take appropriate action if a colleague or loved one needs help. The company has also introduced and funded a therapy and counselling support line for use by colleagues and their families.

Such efforts are crucial to the success of the business, says head of operations Carol McGrotty, who has spearheaded the programme and believes other organisations simply "pay lip service".

"I know from our own health partner that some of their other customers have come back to say they appreciate the data from the assessments, but they don't have time to act on the findings yet," she says.

"This stall is inexcusable, particularly when the mental health of colleagues is concerned. We're starting to think more proactively about what we can do to boost our resilience to the external factors that put our wellbeing at risk.

"We're adopting a hybrid approach; employees can come back if they wish, but it's not compulsory, and we acknowledge that our duty of care extends to their newfound workplace too. Some colleagues have struggled with distancing and couldn't wait to get back to work. Others have welcomed the extra time at home and have begun to rethink the balance they are now striving for from their career. But there are so many scenarios in-between."

As well as tackling increased stress, anxiety and unhappiness as a result of COVID-19, many businesses have had to help staff transition to remote working. At the start of the pandemic, most treated this as a short-term trend, but organisations are now seeing it as a more permanent reality.

As well as allowing employees to transfer office equipment to their home, many companies are rolling out a number of initiatives to support the health and wellbeing of remote workers, while ensuring others can safely return to newly laid out offices that adhere to distancing and hygiene protocols.

It is impossible to predict how workplaces will look a couple of years from now, but it is certain that employee health and wellbeing will feature more heavily than ever before in both workplace policies and staff benefit packages. If there is any positive to draw from the pandemic, it is that employers are looking at mental health through a different lens and understanding their responsibility for the wellbeing of employees is not only a moral one, but also directly impacts the bottom line. ●

MENTAL HEALTH

How COVID has changed attitudes to mental health

The coronavirus crisis has been more than an assault on physical health and may have finally advanced the cause of mental wellbeing on a national level

Chris Stokel-Walker

The pandemic has ravaged the world, testing the healthcare sector to its limits. As well as the physical toll, there has been a mental health reckoning. Perhaps the silver lining of long months of lockdown

and social distancing is that mental health awareness has become uppermost among the public and politicians. From great turmoil has come some positive change towards mental health. Here's how the conversation has shifted.



Photographie.eu via Shutterstock

Conversations around mental illness have been normalised

There was a time that talking about your mental or emotional state was taboo. But COVID-19 has changed the conversation, with more adults willing to admit when they're not coping. "We've also seen a lot of talk around reaching out to helplines and discussions around feeling low and lonely, and

reaching out to people. All these are quite positive shifts," says Dr Antonis Kousoulis, director for England and Wales at the Mental Health Foundation. While the headline figures – one in five UK adults were likely to be experiencing some form of depression during the pandemic, compared to one in ten before – are worrying, the fact that people are willing to say they're struggling is a mammoth step forward.

We're talking more to friends and family

The so-called Blitz spirit is often invoked when talking about coming through hardship, but crises can unite populations and communities. Mutual aid groups, set up on social media sites during the early stages of lockdown, were ostensibly about ensuring the vulnerable were able to receive food and care. However, they extended to community-based support groups that showed an increase in empathy within neighbourhoods. Knowing there are others out there, willing to lend a hand when needed, can improve people's mental or emotional state at a time of great uncertainty. "What we've seen is people coming together, supporting each other through digital means and remote calls," says Kousoulis. "We shouldn't lose that motivation to connect with each other and support each other."



Maskot via Getty Images



damircudic via Getty Images

Remote access to mental health is easier than ever

Though there's little substitute for in-person treatment for those living with a mental health problem, the need for social distancing has meant health services have developed remote access to treatment, crucial for those people finally

admitting to not coping. Many people are fearful about visiting a psychologist in person, but can instead book appointments and speak to experts from the comfort and familiar surroundings of their own home. Removing the barriers to entry to treatment for those who believe they may be suffering from a mental illness can help them seek out help when it's most needed.



Gaelle Marcel via Unsplash

More immediate help is provided through digital means

As we spend more time on our devices, we're turning to apps for every part of our lives, including fostering a positive sense of wellbeing. That's vital as four in five people in the UK are worried about the effect coronavirus is having on their life, nearly half reporting high levels of anxiety. Apps such as Calm, which offers guided meditation programmes that users can follow to improve their mental health

awareness, can keep minimal mental health issues under control. Be Mindful, another app, provides an NHS-approved ten-step course of thirty-minute long mindfulness sessions. Yet these apps aren't a silver bullet, warns Kousoulis. "I'm a little bit in two minds around the trends in digital mental health," he says. "In some terms the rise of apps is a positive trend, but most of these apps don't have a real evidence base behind them. Apps work best if they're guided. We call that a blended model; you're doing a bit on your own and a bit with others."

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Protect provides accessible, affordable clinical and wellbeing support for your workforce, so you can get your people back to work, safe and well with confidence.

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We're recognising the need to treat the cause, not the problem

Mental illness is now being seen as something that should be addressed at its root cause, rather than waiting for it to manifest itself to the point when living with a mental health problem becomes difficult. As with physical health, early intervention is key to nipping a problem in the bud before it becomes unmanageable. "People talk about a mentally healthy UK on the back of COVID-19, but we can't achieve a mentally healthier nation if we're only focusing on the sharp end of the stick, people experiencing crisis," cautions Kousoulis. "We need to be thinking about mental health in the spaces and the settings we spend most of our time in."



Photographie eu via Shutterstock

Employers are taking more of an interest

Anxiety about returning to the office and fears of being disconnected while working remotely are all taking their toll. Unmind,



frakes via Shutterstock

a mental health organisation, says eight in ten businesses recorded an increase in staff requests for mental health provisions during the lockdown. "We have certainly seen many companies in the commercial and not-for-profit sector, and the civil service, embracing that new reality and offering flexibilities to their staff, acknowledging the challenge of having children in the house or a housemate," says Kousoulis. The rise in awareness by employers echoes similar shifts towards public mental health awareness. The Mental Health Foundation has run Mental Health Awareness Week every May since 2001. In the midst of the COVID-19 pandemic, it saw its most successful week to date. "I'm not sure COVID played a huge role in that," Kousoulis concedes, "but maybe it shifted the conversation. We hear a lot of discussions around kindness and compassion and being kind to yourself."

Governments are taking action too

Individuals' reactions and community support can help when it comes to mental health awareness, but living with a mental health problem often needs governmental support. Around the world, governments are recognising they need to offer support and guidance on how to manage people's mental or emotional state. In April, the UK government

launched its Every Mind Matters campaign, in collaboration with the Duke and Duchess of Cambridge, encouraging people to look after their mental and physical wellbeing. But central governments are far from the only ones advising people how to look after themselves. Local government is providing support, posting information online and mailing out leaflets that help people manage their mental health more positively during these trying times. ●



WPA Pool via Getty Images

Covid-19 is putting stroke recoveries at risk.

4 in 10 people who had a stroke this year feel they aren't getting the support they need to rebuild their life.

You can help stroke survivors find hope after stroke. Join us and call on UK decision makers to urgently act on the Stroke Recoveries at Risk report.

Sign our open letter now stroke.org.uk/recoveries-at-risk

Rebuilding lives after stroke

Stroke
Association



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The Stroke Association is registered as a charity in England and Wales (No 21015) and in Scotland (SC037789).
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JN 2021-141

Apps that can catch skin cancer early

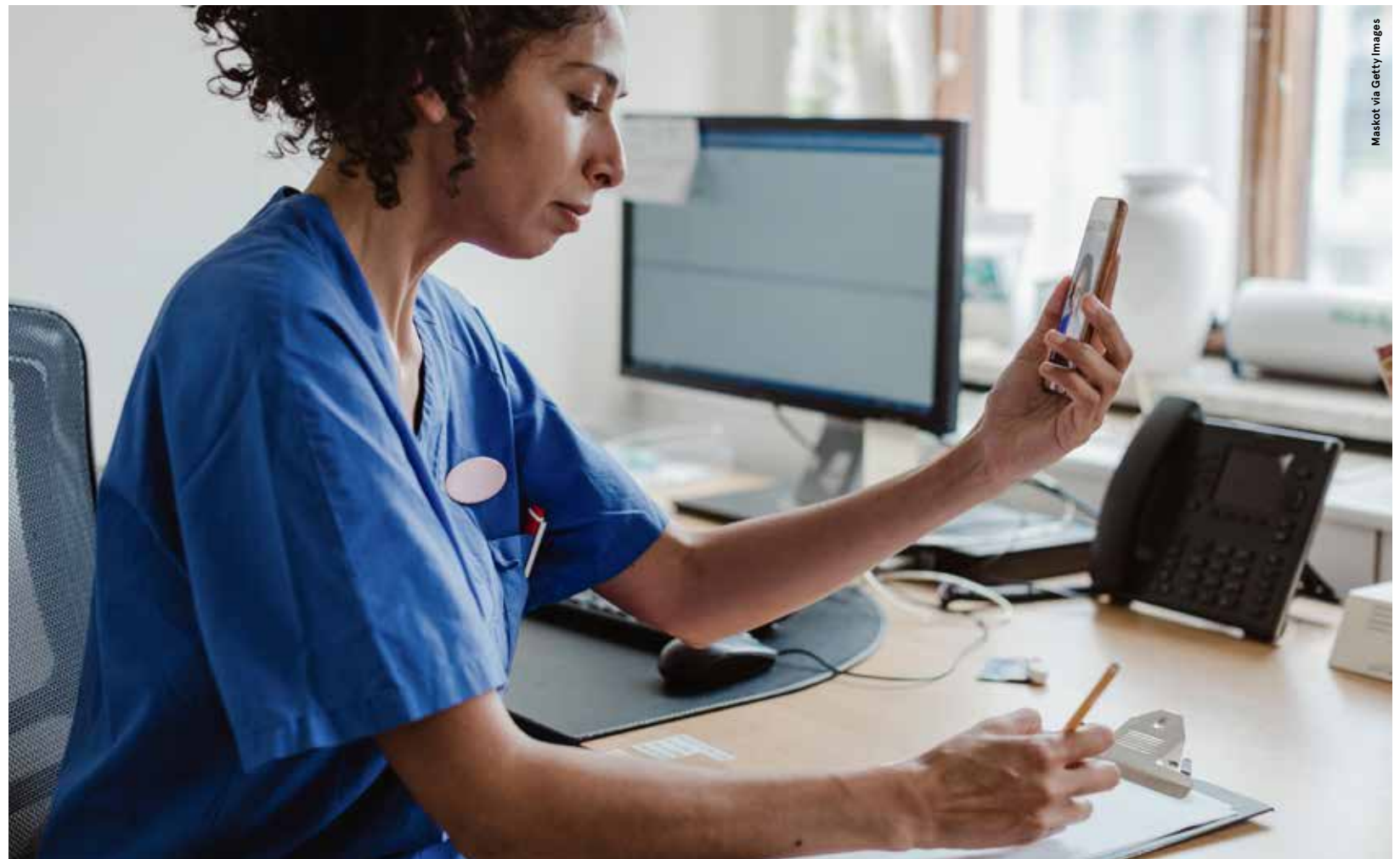
Incidence of skin cancer is rising fast as dermatologists struggle to keep up. New technology offers a helping hand, but whether telemedicine is the way forward is up for debate

Abby Young-Powell

Early detection can make all the difference when treating skin cancer. Consequently, the number of skin diagnosis and mole monitoring apps has multiplied over the past five years. A 2017 study, for instance, found there had been an 80.8 per cent growth in dermatology apps since 2014.

But do such telemedicine apps create more problems than solutions? Or can sophisticated, regulated technology, artificial intelligence (AI) and telemedicine products streamline patient pathways and ease the burden of healthcare professionals, detecting more cases of malignant melanoma?

Skin disorders are extremely common and the number of people who develop malignant melanoma in Britain has risen faster than any other common cancer. Between 2013-14 and 2017-18 GP referrals for dermatology increased by 15 per cent to 1.16 million a year, according to NHS England.



The coronavirus pandemic has meant many routine screenings, and urgent referrals and treatments, have been delayed or cancelled, leading to a backlog of patients.

With so many moles referred from primary care, which usually require a biopsy, malignant melanoma is notoriously time intensive and challenging for doctors to diagnose.

Telemedicine has been hailed as a solution. Skin diagnosis and monitoring apps, such as Skin Analytics,

Miiskin or MoleCare, present an opportunity to clear the backlog of patients created by the pandemic and could make it possible to catch additional skin cancers early on.

Neil Daly, chief executive of Skin Analytics, believes there is “no answer that doesn’t involve technology like ours”. He says: “We just don’t have the resources to cope with the number of patients otherwise.”

The rise in commercial skin diagnosis apps could reflect an increased



As dermatologists we will and we should move along with how technology develops. AI will be the way forward and we do need to adapt our ways accordingly

desire for patients to take healthcare into their own hands, especially in light of COVID-19. “It’s empowering for the patient because it enables them to take control of their own health,” says Dr Sharon Wong, dermatologist based at London Bridge Hospital.

However, there are concerns about unregulated commercial apps diagnosing and treating skin cancers and skin conditions.

John Loder, investment director for Nesta, an innovation foundation, is optimistic about the potential of sophisticated telemedicine technology, but says it must be properly regulated and tested in clinical settings. “The regulatory environment is not completely nailed down,” he says.

A *BMJ* report released in February looked into publicly available skin-Scan and SkinVision apps, and concluded algorithm-based smartphone apps had a “poor and variable performance”, saying “these apps have not yet shown sufficient promise to recommend their use”.

If telemedicine solutions don’t have a high degree of accuracy they could cause additional problems, such as missing cancers and offering false reassurance or further overloading healthcare professionals.

“If a patient goes to a GP and says this app says this, it’ll be difficult for the GP, who is not a skin expert, to disagree. So we could get more patients referred to the dermatologist, which could even increase the workload,” says Dr Adil Sheraz, consultant dermatologist and British Skin Foundation spokesman.

Speeding up skin cancer detection

Scientists have warned there could be thousands of excess deaths in the UK in the coming years due to delays in cancer diagnosis and treatment during the coronavirus crisis.

To tackle this, University Hospitals Birmingham (UHB) NHS Foundation Trust launched a pilot in May with artificial intelligence (AI) company Skin Analytics.

Services were set up away from the hospital and the trust’s clinical photographers worked with Skin Analytics to capture an image of the patient’s lesion which was then assessed by the AI. If it was determined to be cancerous, a dermatologist remotely reviewed and placed the patient on the correct treatment pathway.

The aim of the pilot was to reduce delays in skin cancer detection and treatment during

the pandemic by providing a screening programme using the AI tool.

“It was driven by the demand caused by COVID,” says Neil Daly, chief executive of Skin Analytics. “We wanted to deal with a volume of patients that couldn’t be seen in hospital and we were able to see a large number of patients and take some of the pressure off.”

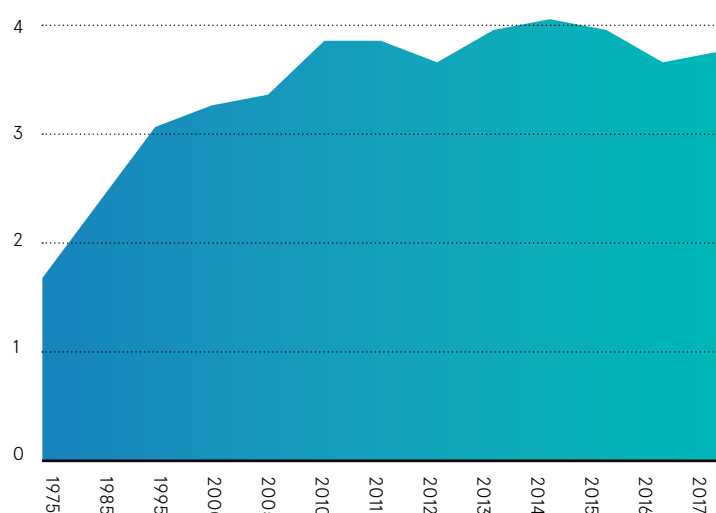
Nick Barlow, director of applied digital health at UHB, says he is “incredibly proud” of the initiative. “Identifying patients with melanoma [during the coronavirus pandemic] and providing treatment sooner will result in significant benefits,” he says. “Managing the clinical risk and finding the patients who need treatment for melanoma will also be a key focus for hospitals well beyond the COVID-19 crisis.”

The pilot is an example of how sophisticated AI-based tools can be used alongside healthcare professionals to help detect skin cancers, especially in light of the pandemic.



INCIDENCE OF SKIN CANCER IN THE UK HAS RISEN SHARPLY OVER PAST 35 YEARS

Rates per 100,000 population



Cancer Research UK 2019

On top of this, images patients take themselves on smartphones might not be clear, so apps could miss problems.

Another concern is that a lot of the images in app databases are from lighter skin types. "So they could widen the gap we already have in picking up melanomas in darker skin types," says Sheraz. "We have to be careful to cater for all different types of skin cancers."

Where it's used, telemedicine works best alongside healthcare professionals. One reason for this is the emotional element of diagnosing cancer and need to reassure patients, says Daly at Skin Analytics. "People are really complex and AI is a blunt tool that you need to target in the right way," he says.

For example, Wong says if a patient of hers had a lesion that looked concerning, she could prime them for the possibility of bad news early on.

Dermatologists can also examine patients physically. "Ultimately humans will prefer to have human interaction and AI isn't able to engage in that higher-level conversation," she says. "As a human we can examine not just on a visual aspect, but also on a tactile aspect. We can touch the skin."

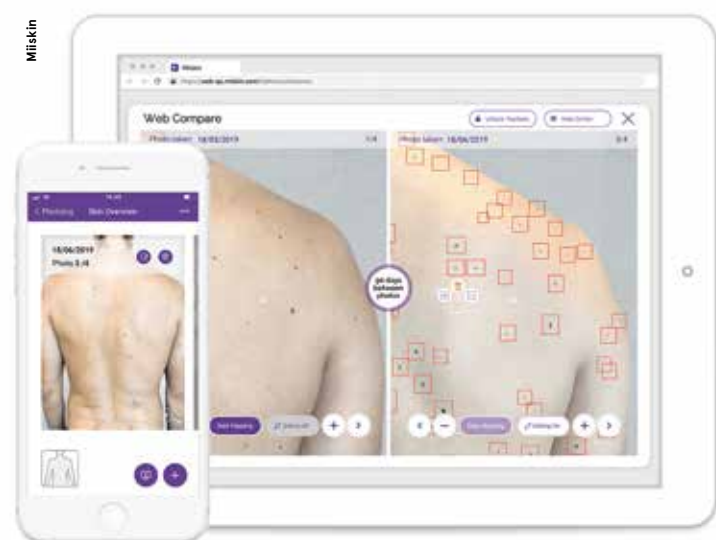
Despite the misgivings, many in public healthcare and digital health are excited about the possibility of telemedicine and envision a future where skin diagnosis apps work alongside clinicians.

Digital solutions can reach remote locations and people unable to access services due to the coronavirus pandemic. Both Wong and Sheraz say they believe skin monitoring apps, such as Miiskin, are already helpful and would like to work with more regulated, sophisticated digital tools in the future.

"As dermatologists we will and we should move along with how technology develops. AI will be the way forward and we do need to adapt our ways accordingly," says Sheraz. "I'm really happy people are looking at this technology."

Wong agrees. "During COVID we've used teledermatology a lot and it's only pushed to the forefront the importance of embracing and working alongside technology to improve patient care," she says.

Telemedicine has the potential to streamline healthcare services and help dermatologists to detect skin cancers. But there are still a number of challenges that must be overcome to ensure the range of skin diagnosis apps are regulated, sophisticated and safe to use.



The Miiskin app in use

Building a future where no one dies from skin cancer

Skin Analytics' clinically validated AI ensures our device can accurately detect skin cancer. Using DERM AI means the people who need medical help can get it sooner, whilst also providing peace of mind to those who don't.

skin analytics

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MEDICAL WASTE

Conquering the waste mountain

Mounting levels of medical waste were a concern before coronavirus added piles of personal protective equipment to the problem. Now scientists are hurrying to find a solution to keep patients and the planet safe

Jon Axworthy

Even before anyone had even heard of coronavirus, the issue of medical waste was being recognised as an increasingly urgent problem with global consequences.

To highlight the extent of the problem we need only look at the city of Wuhan, which before the disease was discovered there was generating between 40 and 50 tonnes of medical waste a day; three months later, on March 1, that figure had spiked to 247 tonnes a day.

15%

of total waste generated by healthcare activities is considered hazardous material which may be infectious, toxic or radioactive

0.5kg

of hazardous waste is generated on average per hospital bed per day in high-income countries

WHO 2018

247

tonnes of medical waste being generated a day in Wuhan, China, as of March 1st 2020

Personal protective equipment (PPE) would have, understandably, made up for a large proportion of the increase. The World Health Organization (WHO) estimated at the time that PPE supplies would need to increase by 40 per cent monthly to protect front-line workers.

Although increased PPE demand might have significantly added to the amount of single-use plastic discarded daily, its usage was already sky high in medical settings because for hospitals and their surgeons, plastic offers the chance to work with tools that are cheap, durable and, most importantly, sterile.

The environmental and human cost of this wastage was demonstrated dramatically in Indonesia, a country which had been generating unprecedented amounts of its own medical waste as it struggled to get to grips with the highest death toll from COVID-19 in Southeast Asia.

Combine this with the fact that Indonesia's landfills are the final resting place for a significant amount of Europe's medical waste and you have a recipe for the disaster that occurred at Cipeucang landfill, on the outskirts of Jakarta. In May, the facility suffered a major wall breach and sent 100 tonnes of waste landsliding into the nearby Cisadane River, covering the river flow and putting the lives of river-side communities at risk.

It's unlikely to be a coincidence that the event happened after Indonesia's government revealed that 1,480 tonnes of COVID-19 medical waste was produced in the country between March and June.

So how do we square environmental responsibility with the public duty to keep high-risk hospital personnel

safe while they test and treat patients for COVID-19 and other pre-existing life-threatening conditions?

There has been a lot of attention around a process called pyrolysis, or chemical recycling at high temperatures, after a research group from the University of Petroleum and Energy Studies in India suggested it could be used to degrade polypropylene, a main ingredient in N95 protective respirators, surgical masks and single-use gowns.

However, this is now being seen as a false dawn as many experts agree that we can't chemically recycle our way out of the problem.

One of those experts is Professor Judith Enck, president of Beyond Plastics, who explains: "Chemical recycling is not a viable option. It doesn't have a proven track record, can rarely exist without massive public subsidies and doesn't scale up. Instead, a much more reliable and economical approach is to look for innovative alternatives to single-use plastics in medical settings, finding reusable alternatives to N95 respirators and other forms of reusable PPE."

An alternative could be elastomeric half-face respirators (EHFRs), which are commonly used in manufacturing and construction. A 2020 study from Baylor College of Medicine in Houston found that EHFRs rivalled N95 respirators in performance and fit testing and, most significantly, can be safely reused by hospital staff.

"I think the reason we haven't seen elastomeric respirators often used in healthcare, prior to COVID-19, was because the issue had never been pressed," says Dr Stella Hines, a pulmonologist at the University of Maryland School of Medicine, who has led a study looking at reusable PPE. "EHFRs are clearly effective, they protect the healthcare worker and validated cleaning and disinfection protocols exist that can be modified to suit the needs of the healthcare setting."

There is also increasing awareness that while we continue to find ways to reuse infectious waste, we also need to address the management of the non-hazardous material that is generated by healthcare activity.

According to WHO, these benign products make up 85 per cent of all medical waste and include items like the ubiquitous surgical blue wrap, a sheet of polypropylene that covers sterilised tools before surgeries. Many hospitals are already experimenting with replacing the wrap with reusable sterilisation containers.

So could the answer to slowing the growth of the medical waste mountain be similar to the measures adopted to deal with domestic waste, whereby households were asked to audit and realign their habits on reuse and recycling?

Sonia Roschnik, international climate policy director at Health Care Without Harm, believes it could be. She says: "Just as it's now incumbent on the individual to cut back

on single-use plastics, recycle and reduce their environmental footprint, so it's incumbent on hospitals and clinicians to try and do the same. I think the healthcare sector can and needs to improve its segregation and hence its waste management for reduced environmental impact."

Roschnik, who is also the former director of the NHS Sustainable Development Unit, highlights some successful schemes that are already up and running, including one operating at the Queen Victoria Hospital in East Grinstead, which brought in a new waste scheme and immediately saw a reduction in clinical waste of between 10 and 15 per cent compared to the previous whole-year figures.

With schemes like this being introduced, it's possible the pandemic can catalyse thinking on medical waste so environmental and medical ethics don't have to clash, and doctors don't have to face the stark choice between patient and planet. ●



“

We need innovative alternatives to single-use plastics, and reusable alternatives to N95 respirators and other forms of reusable PPE

OPINION

‘We want to create a vision for the future of social care, which positions it as an essential part of the national infrastructure’

If there is anything positive to draw from this dreadful pandemic, it is the professionalism of the adult social care workforce. The workforce, our sector’s biggest and best resource, has never had due understanding or thus recognition, but these last few months have demonstrated its dedication, commitment and resilience.

While the workforce is resilient, it is only as resilient as the funding and support behind it, hence the need for adequate long-term support for the sector. No longer can social care be seen as the underdog, instead it needs to be seen as a vital part of an interdependent system with the NHS.

As the largest representative body for independent providers of adult social care, Care England is working to ensure there is the funding available to stabilise the current system. We want to create a vision for the future of social care, which positions it as an essential part of the national infrastructure.

There have been many false starts for social care, including numerous consultations, revisions and inquiries, but if reforms are not made now, the sector will teeter on the brink of collapse. Care homes are an essential part of the continuum of care and thus critical to the nation’s vision where social care is seen as a resource, not a burden. And let’s not forget that it rivals the NHS as the biggest employer in the country.

Part of this vision for social care is reclaiming the term “integration”. Real integration is not about the structures of organisations, but it is about the outcomes; outcomes for the people the system serves. The experience of the service user and outcomes are paramount as are the efficient and effective use of resources. What is required now is a different culture, one where success is measured in outcomes.

We need to see care staff treated as the true professionals they are. The adult social care workforce needs to be seen for what it is: an exciting, challenging, professional career; and we have to ensure staff are remunerated accordingly.

The government must start developing a proper career pathway for social

care, with clear skills and competency frameworks and an entrenched career escalator. This recognition must also translate into the pay and conditions of care staff on a par with the NHS and other public services.

The coronavirus pandemic has exposed the fault lines in the system and for all the rhetoric about health and social care, social care has clearly been an afterthought in much of the planning and development that went on before this pandemic. This must not be allowed to continue and in the future we must see social care and the NHS as interdependent systems requiring the same level of priority from the government and the same level of recognition from society.

The pandemic has underlined the value of adult social care to England’s economy, communities and society. It is vital that we safeguard this national asset in the coming weeks, months and years ahead. A failure to do so will not only damage the UK’s interests in the short term, but also, impinge upon its ability to respond to longer term demographic change. Additional funding, support and attention for the sector are all part of this effort. Whilst the NHS’s ability to operate is contingent upon the strength of the adult social care system. Thus, adequate investment in the NHS must be in tandem with sufficient support for the adult social care sector.

These are tough objectives, but Care England will fight tenaciously to reposition social care so it is seen by government as an essential part of our system and recognised by the general public for the amazing way it supports people and transforms lives. ●



Professor Martin Green
Chief executive
Care England

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