

FUTURE OF HEALTHCARE

05 HOW TO MANAGE YOUR EMPLOYEES' HEALTH RISKS

13 WHY THE NHS SHOULD EMBRACE GREEN SURGERY

14 ANTIMICROBIALS AND THE NETFLIX FUNDING MODEL



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FUTURE OF HEALTHCARE

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DATA AND TECHNOLOGY

Baltic exchange: the IT tips we should take from Estonia

Aging and incompatible information systems are hindering the delivery of critical care in the NHS. It would be wise to look to Europe's most technologically advanced nation for solutions

Charles Orton-Jones

Why are NHS waiting lists so long? Some people blame a funding shortfall, while others see the situation as part of a conspiracy to run down the service so that it can be privatised.

But if you ask most medical staff working in the NHS, you'll probably get a different, yet even punchier, response: it's largely down to the abysmal IT they must use.

"It's awful," says a heart specialist at Northampton General Hospital. "Records are held across many systems. If someone's tests are done at a GP surgery or in another hospital, I may not be able to access those records. I often need to ask patients to remember procedures they've undergone. One guy recently claimed that he'd never had a heart operation. I could see the scar on his chest. But I couldn't get hold of his records, so I couldn't prove it."

A stroke specialist in another midlands hospital uses four databases to review patient information. These don't connect with each other, meaning that the same data must be entered separately in each one.

"We got rid of fax machines here last year," says the specialist, punching the air victoriously.

Yet paper documents remain part of everyday record-keeping. A patient of hers recently had an echocardiogram conducted by a local GP surgery, so she was obliged to call that practice to ask for the notes to be sent.

The IT is in such a mess that it's hard to summarise the situation. Each NHS trust is responsible for its own software. The 229 trusts and 1,250 primary care networks in England form independent pacts in a manner reminiscent of the Holy Roman Empire. Northampton General Hospital has an agreement to share information with its counterparts in neighbouring Oxfordshire, for instance, but not with hospitals in other counties. Their tech is unlikely to be compatible.

"The right term is 'spaghetti systems'," says Thuria Wenbar, an A&E locum doctor working at Norfolk and Norwich University Hospitals NHS Foundation Trust.

In a typical day, she must use several different programs that can't talk to each other.

"If I need to order blood tests, I must log into a web application and cut and paste records into another system. That never works cleanly because of the formatting



"Patients can protect information if they wish," Merimaa notes. "Take mental health diagnoses, for instance, which you may not want anyone seeing without permission."

Only 500 Estonians of a population exceeding 1.3 million have taken the option to shield their data so far, but the choice is there, she says, adding: "The system also logs everyone who views data, so the patient can tell who has seen what. This makes it high trust."

Merimaa reveals that the overall annual cost of the system has been €30m (£26m) at most.

How is it so cheap? "We use open-source software to avoid vendor lock-in," she explains. "Our budget is low, so we need to be efficient."

For comparison, the NHS Connecting for Health programme, an early attempt at digitising the organisation, cost an estimated £20bn. It was described in a public inquiry as one of the UK's "worst and most expensive contracting fiascos".

"The Estonian system is wonderful," says Wenbar, who also runs her own software firm, Evaro – an official NHS supplier. "It would be amazing to do something similar here."

Such concepts could be applied in the UK. One would be to create standards governing databases and formatting, so that information can flow smoothly across systems. That's the view of Stephen Critchlow, founder and executive chairman of IT provider Evergreen Life.

"The centre should come up with standards, not specifications or software, and devolve decision-making to a local level," he says. "For all clinical solutions, these standards need to include where the data is stored for each of us, so that our records are all available at the point of care."

Critchlow, who has chaired committees for the National Institute for Health and Care Research, adds that the state of NHS software is "very, very, very bad". Yet it doesn't need to be – and even a modest improvement could produce staggering efficiency savings.

In his latest budget, the chancellor earmarked £3.4bn for IT modernisation, but gave no detail on how this would be spent. If past fiascos are anything to go by, such sums are easily squandered.

Estonia is a model for what can be done. We could start with a single national identifier for each UK citizen and then follow the standards-based model. And, if someone has a moment, unplug those accursed fax machines. ●

differences," Wenbar says. "The databases should connect automatically. They don't."

Even identifying patients is an error-prone process. The UK lacks a single unique citizen identifier. A person will typically have a unique tax reference number, passport number, driver number and so on, but nothing that connects all of these. Each nation of the UK runs its own NHS, each with its own patient ID method. In practice, names and birthdays are used to identify patients on arrival, but the presence of two John Smiths with the same date of birth in one hospital can trigger mayhem.

So what's the solution? Estonia – widely considered to be the world's most digitally advanced nation – offers some clues. More than 600 services provided by its government are accessible on an integrated online platform called X-Road. A unique citizen ID number, protected by two PINs, enables each Estonian to vote in elections and review their health records.

"About 80% of health data is

stored centrally," says Kertti Merimaa, vice-president at Nortal, the Tallinn-based firm that built much of Estonia's healthcare IT. "The other 20% is operational data – day-to-day stuff that doesn't need to be held that way."

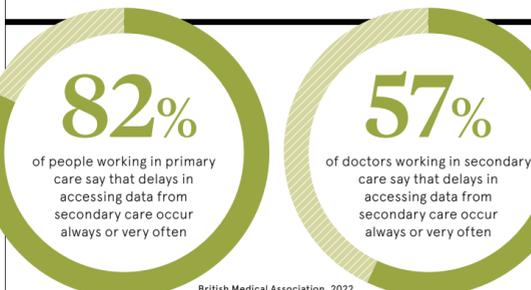
Estonia allows hospitals a degree of autonomy. They can build and buy their own infrastructure, for instance. But it has established national standards that mean data can be transferred seamlessly between the various parts of its health service.

"There's no silver bullet," Merimaa says, "but I believe that the system we've created is very, very good."

She adds that it was built "one thing at a time – we started with basic things such as prescriptions and kept adding".

The smooth flow of digital information means that doctors can access any patient's health records in seconds. The national ID number means that there are no duplicates – biometric registration ensures that.

Two other features stand out: privacy and cost control.



Safeguarding the future: protecting the pipeline of antimicrobial medicines

Novel antimicrobial medicines are urgently needed but pharmaceutical companies must overcome market challenges to shore up the future armoury

It's difficult to believe that penicillin, perhaps the most well-known antibiotic, was first used in only 1928 – less than 100 years ago. This revolutionised medicine, saving millions of lives. Yet since that time, many infectious diseases have become so skilled at evading the power of these essential medicines that antimicrobial resistance (AMR) is now an urgent, global, health crisis.

With one in five bacterial infections already resistant to antibiotics, and this figure set to rise, governments and the healthcare sector need to urgently, and collectively, act now. AMR causes more than 700,000 deaths annually, according to WHO¹, including around 35,000 across Europe². Yet the pipeline for new antibiotic and antifungal products is dwindling, due to limited investment by large pharmaceutical companies. This is because current pricing models make it unsustainable in an environment where new antibiotic use is increasingly restricted to try to slow the emergence of AMR.

Huw Tippet, CEO, Shionogi Europe, explains: "AMR occurs naturally when bacteria, viruses, fungi and parasites change over time. It's part of evolution. They evolve just like the human race. As we introduce new antimicrobial medicines such as antibiotics, bacteria find new ways of overwhelming them". AMR was responsible for more than twice the number of deaths due to tuberculosis, influenza and HIV/AIDS combined in 2020³ and is a very serious threat. New antibiotics are subject to strict controls restricting their use to slow the development of resistance.

However, it can cost more than \$1bn⁴ to bring new antibiotics to market, which is a huge investment. "The market needs to incentivise that investment in research without companies needing to rely purely on large volumes of sales to recoup their outlay. It takes between 10 and 15 years to develop a new antibiotic, so we need to act now to ensure we have a sustainable supply for the future," Tippet explains.

Former chief medical officer, Professor Dame Sally Davies, has warned that routine operations like hip replacements could become deadly within 20 years without effective antibiotics to treat any treatment-related infections. And organ transplantation would be virtually impossible. All of modern medicine, she maintains, stands on the shoulders of antibiotics.

According to WHO, 10 million people globally could die from AMR each year

by 2050 if urgent action isn't taken⁵. AMR is growing at a faster rate than the ability to develop new antimicrobials, including antiviral and antifungal medicines as well as antibiotics.

Tippet warns: "Without innovation, we could go back to the pre-antibiotic era in the 1930s and 1940s when you could die from a minor infection after a cut. Antibiotics have made previously life-threatening diseases like pneumonia treatable.

"There are also financial costs to consider. The World Bank has estimated that by 2050, the health costs of AMR alone could be an additional \$1tn.⁶ AMR results in more patients in intensive care and bigger drug bills. A day in intensive care in the UK costs more than £1,500⁷, while prolonged hospital stays affect the productivity of both patients and caregivers. But AMR is a bigger problem in countries where there is no access to sanitation facilities that are not shared with another household, which affects more than 2 billion people.⁸

Creating a sustainable marketplace

Research and development for new antimicrobials is a complex and costly process. After testing, only one in 30 novel antibiotics in pre-clinical development reaches the marketplace⁹. Bringing a drug to market does not ensure success, as shown by recent bankruptcies of some biotechnology companies operating in this therapeutic area. Small wonder then that insiders talk about the perils of pharmaceutical roulette.

There is also a unique factor that mitigates against pharmaceutical companies casting a speculative eye on antibiotics. The overuse of antibiotics can contribute to AMR, so new antibiotics are subject to strict controls restricting their use to slow the development of resistance.

Shionogi has been part of a pilot programme run by NHS England and the National Institute for Health and Care Excellence (NICE) which could revolutionise the way pharmaceutical companies are paid for antimicrobial medicines. The idea has been to test an innovative approach whereby companies receive a fixed annual fee for antimicrobials rather than the volume used.

"These fees are based primarily on a health technology assessment of their value to the NHS," Tippet explains. NHS England said: "It is the first time any health system in the world has successfully assessed the value of an antimicrobial in this way."

In another pioneering collaboration, Shionogi became the first pharmaceutical company to set up a relationship



with the Swiss-based, not-for-profit body GARDP (the Global Antibiotic Research and Development Partnership). The Clinton Health Access Initiative is also involved in this programme to make antimicrobials available in low- and middle-income countries. Tippet believes global action like this is required to prevent further emergence of resistant strains of bacteria and protect all healthcare systems. "AMR knows no borders. We need to support these countries," he says.

Shionogi's collaborations are not restricted to healthcare providers such as the NHS and philanthropic bodies such as GARDP. It is also building relationships with companies such as the global biotech F2G, a specialist in fungal conditions.

Fungal infections are widely associated with minor conditions such as athlete's foot, but patients with blood cancers such as leukaemia or lymphoma and compromised immune systems can develop life-threatening invasive fungal infections. According to a journal from *The Lancet*, there are about 6.5 million invasive fungal infections and 3.8 million deaths a year.¹⁰

There has not been a new class of antifungal medication approved since 2002¹¹, and concerns over the public health risks are growing with the emergence of increased resistance to existing treatment options. This led to the WHO publishing its 2022 list of health-threatening fungi, with the aim of driving further research and policy interventions to strengthen the global response to antifungal resistance.¹²

A make or break year

Actions designed to encourage new antimicrobial drug development, such as the UK's innovative subscription payment system, are likely to be a major focus at a high-level UN General Assembly meeting in September "to set a politically defined vision to provide clear direction and accelerate the global response to AMR."

With the 50th G7 summit in June also expected to feature AMR as a key topic, and the fourth global ministerial meeting on AMR in Saudi Arabia in November, there is no shortage of opportunities for world leaders to unite around solutions in 2024. Experts hope this focus will lead to greater acknowledgement of the crisis and decisive, collective action.

"I believe it shows that the scale of the growing AMR threat is being recognised," says Tippet. "We need G7 governments to lead on fixing the market for infectious disease medicine to ensure we have a future with effective antibiotics. Without this, there is a very real risk that more companies will leave this critical field, which would have a devastating impact on the next generation."

Shionogi Europe is a leader in the fight against AMR. To find out more, visit shionogi.eu



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AMR knows no borders. We need to support these countries



This article has been paid for and developed by Eli Lilly and Company

A roadmap to tackling the UK's obesity crisis

A stark one in four UK adults are living with obesity. To tackle this, the government needs to put in place a holistic strategy focusing on obesity prevention, health education and better support for people living with obesity

Obesity rates in the UK have been rising in a slowly-unfolding epidemic. The increase is causing concern across the healthcare community, as people living with the condition are at increased risk of developing other health conditions, such as heart disease and type 2 diabetes. The wider economy is also suffering with the effects of a more overweight and obese population, both in the UK and globally. Despite the challenges of obesity being widely acknowledged, the chronic, progressive disease does not receive the same level of diagnosis, medical care, or policy attention as other long-term conditions, leaving those affected with limited support.

Often, when support is provided, the disease has already caused physical and mental harm. Obesity is England's new health crisis. NHS data shows that 26% of adults are living with obesity

across the country. However, this is not equally spread across society - the least deprived areas have an obesity prevalence of 20%, whereas in the most deprived areas the rate is 34%.

Obesity, which is defined by the World Health Organization as abnormal or excessive fat accumulation that presents a risk to health and a body mass index (BMI) equal to or greater than 30, is still seen by many as the result of individual choice.

"Obesity is a complex condition," says Fernando Campo, Head of Diabetes & Obesity for Northern Europe at pharmaceutical firm Eli Lilly and Company. "Despite all efforts, people with obesity can find weight loss difficult to achieve and maintain. This is influenced by multiple factors - biological, genetic, behavioral, environmental, social and cultural factors."

The current approach adopted by the Government and NHS has focused on

prevention. The Soft Drinks Industry Levy has removed the equivalent of over 45,000 tonnes of sugar from soft drinks since its introduction in 2018. Calorie labelling has also aimed to empower people to make informed choices, while legislation to restrict the placement of foods high in fat, sugar or salt in supermarkets was put in place to

"We don't want people who are living with obesity to be blamed. They need to feel confident that they can engage with healthcare providers

reduce the likelihood of impulse purchases. From October 2025, the advertisement of less healthy products will be banned on television and on-demand programmes before the 9pm watershed and online at all times.

While prevention is a key component of tackling obesity, these policy measures are yet to have the desired impact. Obesity costs the NHS around £6.5 billion per year and is projected to have a 3% impact on economic growth over the next 30 years. Higher obesity levels are clearly linked to lower productivity.

Research carried out by Future Health, a research organisation led by a former government special advisor on health, revealed that areas of the country with the highest obesity levels had the lowest GDP per head. In contrast, areas with the highest GDP had some of the lowest levels of obesity. The research highlighted a £9,765 difference in GDP per head between local authorities with the lowest and highest obesity rates outside of London.

Solving the obesity crisis begins with tackling some misguided views. "A lot of people think, just eat less and do more exercise," says Campo. "Within both Government and the healthcare system, there are many who don't see obesity as a complex condition and view it as a result of personal choices and personal responsibility. We need to reframe this narrative."

Changing public attitudes and addressing the shame and stigma that some people living with obesity face is another imperative. "We don't want

"We need to reframe the narrative around obesity. It isn't an individual problem, it's a societal problem"

people who are living with obesity to be blamed," adds Campo. "Some people feel shame around their weight and don't seek help. They need to feel confident that they can engage with healthcare providers and be offered options for support."

Supporting the 26% of adults in England already suffering with obesity is essential to relieve stress on the NHS and boost productivity and the economy.

But access to NHS support services can be a challenge as they have limited capacity, and waiting lists can be very long. GP's can potentially refer people to the NHS's Digital Weight Management programme, an online 12-week behavioural and lifestyle course that helps people to manage their weight remotely. But referrals are only available for people if they've also had a diagnosis of diabetes, hypertension or both.

"Obesity can lead to health complications and lower quality of life," says Campo. "People living with obesity deserve access to comprehensive care, in the same way that care would be provided for other chronic conditions."

Lilly is now calling for the Government and the NHS to create a holistic strategy that encompasses prevention, education, and adequate services for people who are already overweight or obese.

"There needs to be a core level of support that people living with obesity can expect when they see their GP," says Campo. "We need more education for healthcare professionals, to support them in how to talk about weight with patients in an empathetic and constructive way. And we need to reframe the narrative around obesity. It isn't an individual problem, it's a societal problem."

To achieve that, collaboration is essential. Government, healthcare professionals and non-governmental organisations must work together to deliver better healthcare outcomes for those living with obesity today and prevent future generations suffering from obesity. If they're successful, the UK can look forward to a healthier future.

For more information about Eli Lilly and Company in the UK, please visit: lilly.com/uk



WORKPLACE WELLNESS

Several pounds of prevention

With nearly 200 million working days lost to sickness each year in the UK, there's a strong business case for employers to make substantial investments in preventive healthcare

Daniel Thomas

Like many fast-growing tech businesses, IT consultancy Zartis has had to deal with some specific health challenges among its workforce in recent years. Since the Covid crisis, most of the Cork-based firm's 290 employees have been working remotely across several European countries, including the UK. While this arrangement offers several benefits, it also has some drawbacks.

It can be challenging for managers to persuade some of these workers to take regular screen breaks, do some physical exercise and engage with their colleagues (albeit virtually), and, if workers fail to do such things, they're at greater risk of falling ill and burning out, which in turn negatively impact productivity.

Realising the risks facing its employees and, by extension, the whole business, Zartis devised a comprehensive preventive healthcare strategy in 2021.

"We began by offering everyone meetings with psychologists, as well as online fitness classes with trainers in activities such as cardio, yoga and meditation," recalls its chief technology officer, Angel Benito. "Seeing the significant impact that this made on our employees, as well as their positive feedback, drove us

to make these arrangements permanent and expand on them too."

Zartis credits the move with improving employee satisfaction scores and retention rates. And it's far from the only employer that's turned to preventive healthcare as worker wellbeing becomes an increasingly important issue.

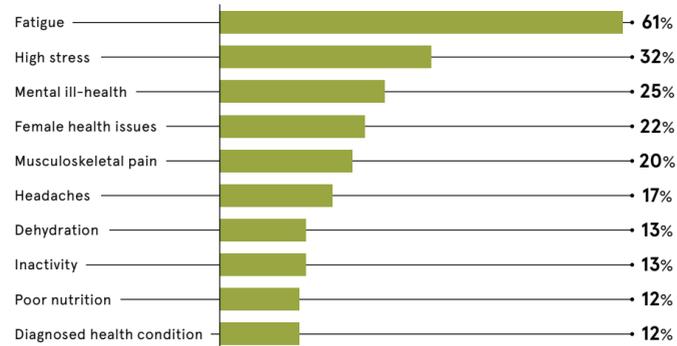
Since 2020, the health of people of working age in the UK has declined to levels unseen since the early 1990s. The latest data from the Office for National Statistics shows that 2.8 million people aged between 16 and 64 are economically inactive owing to ill-health. That is putting ever more pressure on UK plc, whose average annual sickness absence rate rose from 5.8 days per employee in 2019 to an estimated 7.8 days last year.

Tackling the problem with a preventive healthcare strategy is not only the right thing for employers to do; it also makes business sense. But what does an effective strategy look like and what's the best way to implement it?

Jo Walker is the founder and managing director of Let's Talk Talent, an HR consultancy that has worked with companies such as the AA and publisher HarperCollins. She likens disregarding the long-term health

MANY HEALTH ISSUES IMPACTING PRODUCTIVITY ARE PREVENTABLE

Share of employees saying the following health issues negatively impact their productivity



Champion Health, 2024



"True change demands digging deeper and investing in comprehensive solutions that nurture the wellbeing of employees"

needs of employees to neglecting a leaky roof: doing so will make things worse and more costly to fix in the long run. Yet many employers still take a "sticking-plaster approach" to the problem by treating the symptoms instead of the causes.

Walker cites their widespread use of mental health apps as an example: "The irony of that will never cease to amaze me. Achieving true change demands digging deeper and investing in comprehensive solutions that nurture employees' mental wellbeing, not just offering them a digital distraction."

Firms should think bigger than "fruit baskets and gym memberships", she adds. Support options must be thoroughly considered and tailored to individuals' needs. That could mean providing access to mental health support, ergonomic workspaces, health screenings or guidance on healthy living.

Zartis has adopted this approach, offering bespoke support in areas such as career development and personal finance. The firm also has an internal engagement team that keeps in touch with employees through individual check-ins each quarter, helping it to gauge how people are feeling and what they want.

Providing personalised services isn't always straightforward, which is why a growing number of firms,

including Zartis, have decided to partner with external health and wellbeing services platforms.

Some companies are training their staff to take more responsibility for health and wellness issues. Among them is London-based PR firm Babel, which has 29 employees. Two of them have gained mental health first-aid qualifications and run confidential drop-in sessions for colleagues every month. Three others have also been trained in mental health advocacy.

Mental ill-health is a particular problem in the "high-tempo" world of public relations, where burnout is an ever-present risk. So says Babel's managing director, Jenny Mowat, who argues that a supportive working environment should be a key part of any employer's preventive healthcare plan.

Babel has reduced stress among employees and boosted their satisfaction by investing in diversity and inclusion initiatives, offering free healthy lunch options in the office and closing it at 4pm on Fridays, according to Mowat.

While some might view such measures as superficial, she firmly believes that they have helped to nurture "a happier and more committed team that knows its employer is people-focused".

Developing an effective preventive healthcare strategy is not without its challenges, though. For one thing, employees may be sceptical about such initiatives, especially if they aren't seeing what they perceive to be proper pay progression or benefits people elsewhere in their sector are enjoying, such as free health insurance or genuinely flexible working.

Issues such as mental ill-health still carry a stigma for some people, making them reluctant to share their problems with colleagues or take advantage of workplace services.

Tina McKenzie, chair of policy and

advocacy at the Federation of Small Businesses, believes that employers can counter this by empowering line managers to "confidently and competently" support staff who appear to be struggling.

"Fostering a supportive atmosphere in the workplace, where people feel free to discuss any health concerns so that accommodations can be made is definitely key," McKenzie says.

Walker stresses that preventive healthcare must be embedded at the heart of the employee experience if it's to work properly. Simply paying lip service with "empty slogans" will be counterproductive.

"If one of your company's values is 'we care for our people', show how you do this," she urges. "This would also transfer across into your employee value proposition, customer value proposition and culture."

One way to check that you're on the right track is to keep asking employees how they're feeling about things. Along with regular check-ins, Zartis uses staff surveys to assess satisfaction levels in areas such as engagement, career progression and training provision. It publishes its findings "for transparency" and uses these as a guide to improve its business, which is vital to keeping staff healthy and managing the risk of burnout, Benito says.

The average person spends 90,000 hours working over a lifetime. With the link between work and long-term health now clear, employers would be wise to invest in preventive healthcare to support their staff. While creating the right conditions takes time and money, it will ultimately pay off, especially because not doing so is likely to cost far more.

An effective preventive healthcare plan, McKenzie says, is "good for employees and business owners on many levels. It makes moral, as well as financial, sense."

STAFF SHORTAGES

More than a sticking plaster?

While they wait for an investment in training a new generation of clinicians to bear fruit, some NHS trusts are finding creative ways to tackle their immediate skills shortages

Martin Barrow

Have you ever fancied working for the NHS, or in social care? Both services are desperately short of staff. Right now, you could probably land a job anywhere in the UK and work the hours of your choice, particularly if you don't mind temping through an agency. Even if you've been out of the workforce for some time, trusts will provide the training required to bring your skills up to date. The numbers are startling. There were more than 125,500 positions vacant in the NHS between March

and June 2023, equating to about 9% of the organisation's total jobs. But the true picture is almost certainly worse, with tens of thousands of shifts each day routinely being worked by agency or so-called bank staff. Competition for their skills is so intense that shift leaders often can't be sure who is going to turn up for work until the last moment. What are the factors behind this crisis? For one thing, doctors and nurses are leaving the workforce in greater numbers than those joining, causing a serious skills shortage.

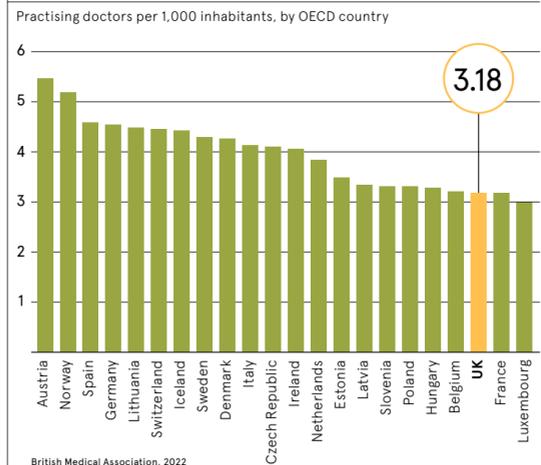
Many older employees are taking early retirement while others are finding alternative employment, particularly in the private sector. Sickness absence rates have been problematically high ever since the Covid crisis. Pay is also a big issue – junior doctors are only the latest healthcare professionals to have been locked in disputes over salaries and hours. Working conditions remain difficult too. Staff have registered their dissatisfaction about crumbling NHS buildings and equipment that's no longer fit for purpose (see feature, p2). The skills shortage is weighing heavily on waiting lists. About 7.6 million people are awaiting NHS treatments, from cataract removal to cancer radiotherapy. Staff shortages are causing further delays to care, which make conditions more stressful and less attractive to both existing employees and potential recruits who could help the NHS to reduce its backlog. It's a vicious circle. Traditionally, the service has relied on overseas recruitment to make up for the shortfall of home-grown talent. Roughly a third of doctors and nurses working here have come from abroad – the highest proportion since records began, according to NHS Digital. But hiring across borders has become harder because of tightening visa restrictions and increasing demand for health workers in their own countries. The Department of Health and Social Care has accepted that it's not sustainable to rely on agency staff and foreign workers. With this in mind, the NHS Long-Term Workforce Plan has secured an additional

“When so many posts are unfilled, staff become severely stretched, spending on bank and agency personnel rises and there's a high risk of burnout

£2.4bn from the government to boost education and training. Key measures include doubling the number of medical school places, almost doubling the number of adult nurse training places and increasing the number of GP training places by 50% by 2031. This development has been widely welcomed, but there's also an acknowledgement that it will take several years to train all the extra doctors and nurses required. When the plan was published in June 2023, the King's Fund, an independent think-tank, described it as “the first comprehensive long-term strategy for the NHS workforce and the essential first step to overcome the current workforce crisis”. Yet the scale of the staff shortage remains “enormously worrying”, says Saoirse Mallorie, senior policy analyst at the King's Fund. “When so many posts are unfilled, staff become severely stretched, spending on bank and agency personnel rises and there's a high risk of burnout. Under these circumstances, health professionals cannot provide the care they want to.” NHS England also recognises that much needs to be done to make the service a better place to work and thereby improve retention. “After the challenges of the past 12 months, it is as important as ever that we listen to staff and focus on changing their experience for the better,” says its director of staff experience and engagement, John Drew. In this respect, the annual NHS staff survey is an important tool, eliciting responses from more than 600,000 employees. Their feedback is aggregated at an organisational,

regional and national level. Teams can also interpret their own data locally to identify ways to improve factors within their control. The findings inform trusts and fledgling integrated care systems, which are redoubling local efforts to hire healthcare professionals via innovative schemes. For instance, University Hospitals of North Midlands NHS Trust piloted two recruitment events last year, ensuring that several stages of the process could be completed on the same day. These initiatives, which also encouraged staff to recommend appropriate roles to relatives and friends, were considered a success, filling all vacancies in domestic services such as cleaning and catering, thereby reducing agency costs. Since the events, the average time the trust takes to fill vacancies has dropped from 75 days to 48 days. University Hospital Southampton NHS Foundation Trust remedied a shortage of healthcare support workers by improving its job application process after finding that its complexity had been deterring potential candidates. The trust introduced voice application technology, which can be accessed via a smartphone and completed verbally or by text. The trust is receiving 67% of total submissions via the app, with a conversion rate of 74% – higher than expected from a demographic that's unlikely to have engaged with the trust before. Meanwhile, Chesterfield Royal Hospital NHS Foundation Trust has committed resources to enabling more people to take up flexible working. This has encouraged significant numbers of recent retirees to return to the organisation and work on a part-time basis. Local initiatives of this type may seem like a drop in the ocean, given the sheer number of vacancies there still are in the NHS. They also lack the headline-grabbing heft of a multibillion-pound investment in training a new generation of doctors and nurses. Nonetheless, they have addressed some of the urgent day-to-day needs of staff and patients – and they're helping to restore faith in the NHS at a time when its very future is being questioned. ●

THE UK IS IN DESPERATE NEED OF MORE DOCTORS



INSIGHT

‘Every disease deserves a treatment, no matter how rare’

Simone Boselli, public affairs director at EURORDIS-Rare Diseases Europe, explains how European policymakers can incentivise R&D for rare disease treatments

In Europe's ongoing battle against rare diseases, the quest to develop and ensure access to vital medicines remains a central challenge. Despite rare diseases affecting a relatively small number of individuals per condition, their collective impact is significant, touching the lives of more than 30 million Europeans and their families. Pharmaceutical companies have been reluctant to commit resources to developing medicines for rare diseases because of their small patient populations. To counter this, the EU enacted the Regulation on Orphan Medicinal Products in 2000, which has incentivised the development of therapies for countless individuals who lack effective treatment options. But two decades on, this regulatory framework requires reform and modernisation. A staggering 94% of rare diseases still lack specific treatments, making the enhancement of treatment development across Europe a pressing necessity. Thankfully, European policymakers are debating reforms to this incentive scheme. It is vital that by the time the law is updated the proposed reforms are perfected to address the unmet medical needs of Europe's rare disease community over the next 20 years. EURORDIS has long been advocating for a more thoughtful approach to enabling public and private entities to develop treatments for rare diseases. Our idea is to reward developers with progressive periods of market exclusivity for developing medicines that address conditions that do not currently have therapeutic options. And, incentives could be further improved by offering extended periods of market exclusivity for the most groundbreaking treatments, which would signal to the world that Europe is a leader in supporting medical innovation. Terminology will be another key issue for policymakers to consider. It is vital that the definition of ‘unmet medical needs’ remains flexible and inclusive, facilitating early dialogues involving patients, clinicians and regulators. Such dialogues ensure the European Medicines Agency and patient representatives can shape guidelines that reflect the evolving needs of the rare disease landscape. At EURORDIS, we are also pushing for a system in which European

countries can collectively purchase rare disease medicines. The Covid pandemic showed that the practice of joint procurement works, and such a system for rare disease medicines would promise better pricing and more timely access to treatments. This would be especially beneficial for smaller EU countries. Lastly, we want to see a more streamlined and efficient process to get new medicines approved and delivered to patients who urgently need them. The introduction of a programme designed to offer additional support to firms developing medicines for rare diseases would ease the navigation of regulatory journeys, speed up the delivery of innovative treatments and make sure patients of even the rarest conditions receive timely care. The revisions to the EU's pharmaceutical legislation offer significant potential for the rare disease community, but it is crucial that amendments are meticulously tailored to address the specific needs of this community effectively. At our upcoming 12th European Conference on Rare Diseases and Orphan Products (ECRD 2024), taking place online on 15 to 16 May, we will be hosting a session, titled “Innovative Therapies, Unequal Access: Bridging the Gap for Rare Disease Treatments”. This discussion will address the ways that Europe can boost access to rare disease medicines, including through pharmaceutical reforms. Every disease deserves a treatment, no matter how rare. It is about time that European policies reflected that commitment. ●



Simone Boselli
Public affairs director
EURORDIS-Rare Diseases Europe

The importance of community-centric healthcare

Local teams and a sustainable out-of-hospital system are vital for better patient outcomes

Issues with access to GPs and timely treatment in A&E are rarely far from newspaper headlines, with accounts of lengthy waits for appointments causing worry for patients and increased strain on beleaguered NHS professionals. To address this, the National Association of Primary Care (NAPC) is delivering a patient-centric, bespoke approach, where integrated neighbourhood teams focus on an area's health needs. These needs are dictated by the geography and demography of that population.

Fostering community collaboration

“You create capacity by removing pointless handoffs,” says Katrina Percy, deputy CEO, NAPC. She highlights how barriers often arise when teams operate in isolation. “You'll hear things like ‘Oh, you sent it to this team – it should have been that team’, or, ‘I'm not allowed to refer to the speech and language service because it's got to go through a system’.” She adds that staff can't then discuss a case with a colleague in another speciality to help resolve these issues because everything's anonymous. “We heard about a patient dying of colon cancer, who needed an enema,” says Percy. “The GP asked the nurse to do the enema, as the patient was in severe pain, but the nurse said, ‘No, you haven't done a rectal examination.’ The doctor explained that it was the right thing to do, but her guidelines told her she couldn't. Imagine – this person is dying and we are just not doing the right thing for them.” In contrast, integrated health teams collaborate rather than operating in silos. They share insights and best practice, making necessary adjustments and interventions jointly across health and social care, leading to better patient outcomes.



Percy says: “We want the NHS to take a viewpoint that solving population health issues, activating and enabling people to manage their own health and supporting the out-of-hospital space is the solution to all the headlines you read at the moment. It's outrageous that people sit in ambulances for hours on end.” She believes the answer is to build a sustainable, robust out-of-hospital system. For example, communities could have a group for new parents with young children, where a team of trusted professionals can teach them how to care for common childhood illnesses and when to worry. With that support and guidance, people are more likely to recognise the symptoms of severe medical issues, such as meningitis. Communities could also have similar groups for the elderly and for those with mental health concerns.

Empowering employees and patients

Percy believes the current system makes it harder for the public to manage their health. “We are deskilling patients and making it even less likely that we might manage our own healthcare,” she says. “All the evidence tells us you get worse outcomes as a result of that.” GPs, says Percy, have become “like a postbox” for the NHS, with doctors unable to spend time with patients whose needs are often complex, belying the oft-cited image of them simply handing out medication. She says there's a need for high-performance teams of GPs, nurses, therapists, receptionists, operational managers and pharmacists. This reduces bureaucracy and time spent on handovers, creating capacity for teams to identify and prioritise health needs. Also, employees – empowered to do the job they trained for – are happier at work. Percy claims the result is around 25% of time freed up, according to estimates from existing teams. NAPC acknowledges that the transition to this new model and approach “will be challenging to achieve and is likely to take time to fully implement and deliver the desired outcomes,” which is not without risk. But the association believes that the current fragmented delivery model with its “clunky bureaucratic referrals, handovers and processes, is arguably a greater risk”. Percy surmises: “This is the solution to the GP access issue – and it's the solution to the ambulance waits, people sitting in beds for months on end. You make earlier diagnoses; you change the relationships between specialists and generalists. Even if this is only the answer to GP access, you're creating additional capacity by allowing teams to flourish by investing time in them – to allow them to find time to care for that population and its needs.”

“You make earlier diagnoses; you change the relationships between specialists and generalists

To find out more, visit napc.co.uk

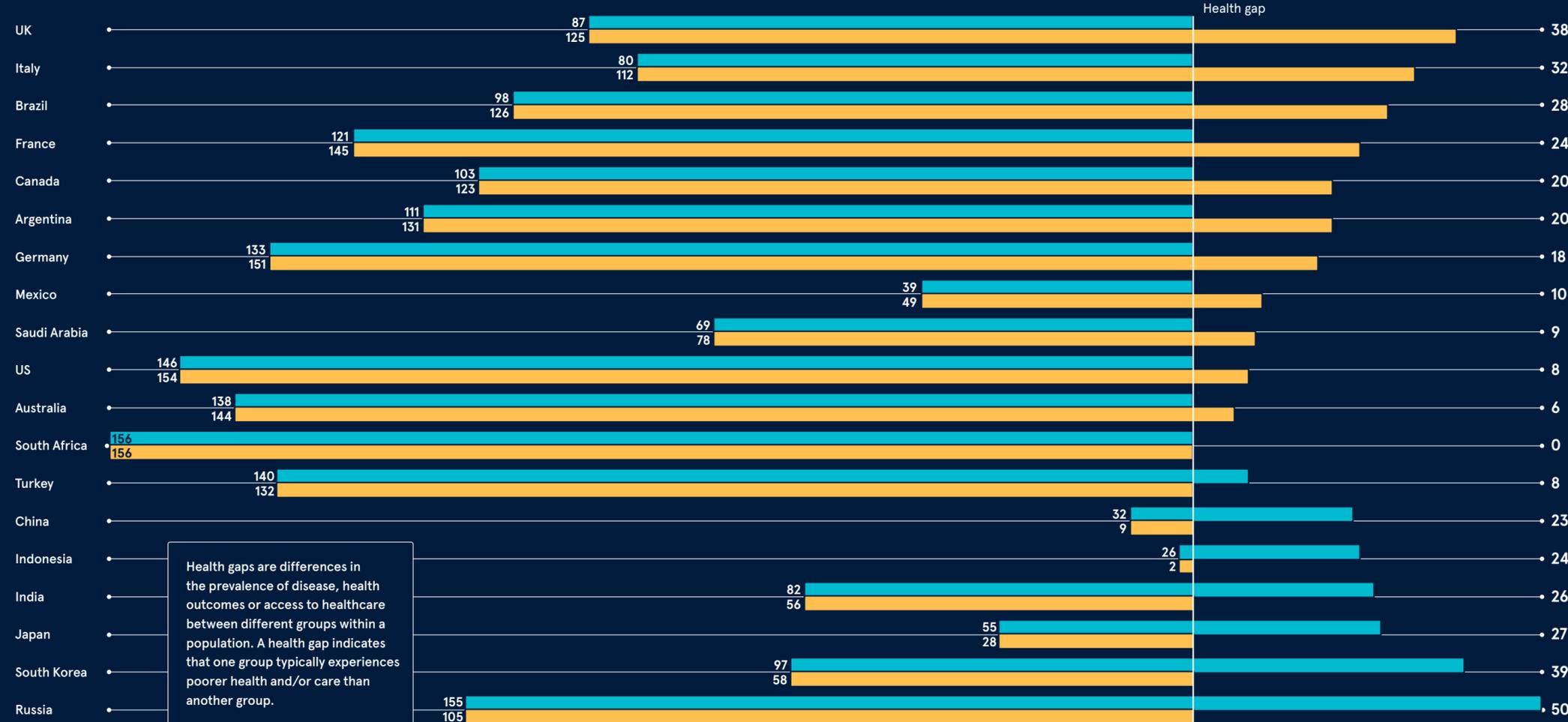


THE UK'S GENDER HEALTH GAP

Health outcomes are rarely equal across different population groups. Gender is one of the many factors that is reliably correlated with both the incidence of poor health and access to health services. In the UK, the female health gap is particularly pronounced. So how is the country's health inequality affecting businesses? And, what can employers do to support their female employees?

THE UK HAS THE LARGEST FEMALE HEALTH GAP IN THE G20

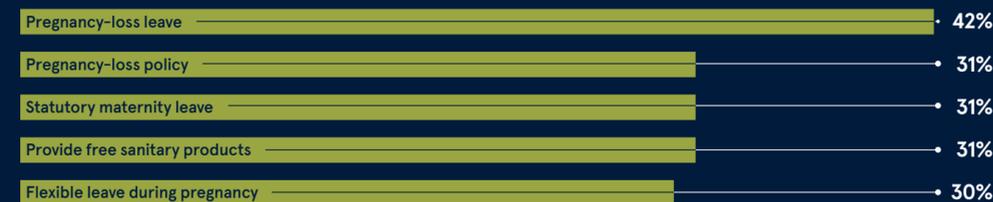
Health gap by G20 nations; rankings out of 156 countries



Health gaps are differences in the prevalence of disease, health outcomes or access to healthcare between different groups within a population. A health gap indicates that one group typically experiences poorer health and/or care than another group.

WHAT KIND OF HEALTH SUPPORT DO WOMEN WANT FROM THEIR EMPLOYER?

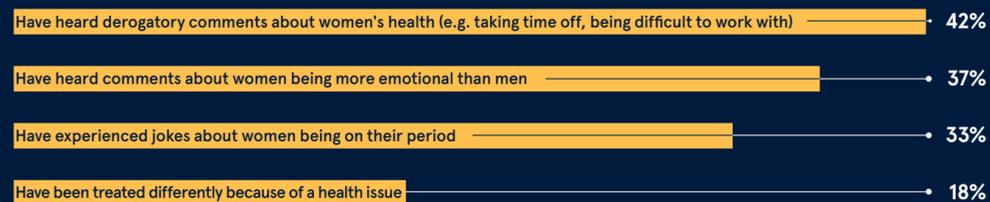
Women's opinions on the most important things an employer can do to support women's health in the workplace



Benenden Health, Fawcett Society, 2024

WOMEN OFTEN EXPERIENCE DISCRIMINATION AT WORK BECAUSE OF THEIR HEALTH ISSUES

Share of women who have experienced the following discriminatory behaviour at work



Benenden Health, Fawcett Society, 2024

HOW ARE EMPLOYERS SUPPORTING THE HEALTH OF FEMALE EMPLOYEES?

Share of employers supporting women's health in the following ways



Benenden Health, Fawcett Society, 2024

42%

of women feel uncomfortable discussing their health with their manager

150m

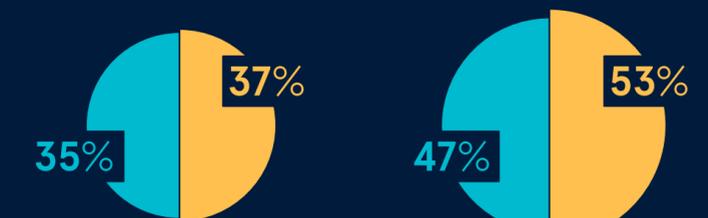
the number of working days lost each year in the UK because of women's ill health and lack of support

Benenden Health, Fawcett Society, 2024

BUSINESS OWNERS BELIEVE THAT THEIR FIRM WOULD BENEFIT FROM BETTER FEMALE HEALTH OUTCOMES

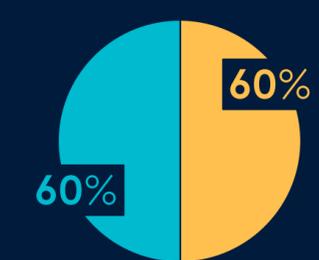
Perceptions of male and female business owners on women's health in the workplace

Male business owners Female business owners

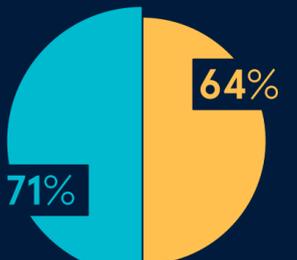


I don't understand women's health issues and it impacts our ability to support women in the workplace

Women are more difficult to manage than men because of their health issues



We would get more out of our female employees if they had better health outcomes



I would value more support in understanding women's health issues

Benenden Health, Fawcett Society, 2024



PATIENT ACCESS

Why diagnostics don't have to be so testing

A new network of community diagnostic centres is improving NHS patients' access to a whole range of medical tests in some of the most disadvantaged parts of England

Sean Hargrave

Anyone walking into Sulis Hospital Bath for the first time could be forgiven for thinking that they've arrived at a five-star hotel. This sleek building, on a business park outside the Somerset village of Peasedown St John, is the brainchild of award-winning architecture firm Foster & Partners, whose guiding design principle was to help people feel healthier by connecting them with the green space outside the building with the aid of large windows.

It started life in 2010 as a private hospital but was bought in 2021 by the Royal United Hospitals Bath NHS Foundation Trust in a bid to shorten its waiting lists. The hospital has also become one of the 160 community diagnostic centres (CDCs) that the government started introducing in England during the Covid pandemic. The hope is that they will be completing 17 million tests a year by March 2025.

The concept behind CDCs is straightforward. More than 80% of

NHS patients need diagnostics such as blood tests, X-rays and ultrasound scans. This usually requires a hospital visit and all the stresses that this can entail – for instance, a struggle to find a space in a costly car park, perhaps because the public transport options are inadequate, followed by a long spell in a packed and uncomfortable waiting room. The CDC network has been designed to provide an extra layer of support to the NHS and a better experience for patients.

"We can have a hugely beneficial impact as a CDC on how quickly people get their test results," says Sam Harrison, head of commercial operations at Sulis Hospital Bath. "We carry out thousands of radiology and MRI scans, endoscopies and other diagnostics each year, both for the local community and for patients sent to us by 15 surrounding trusts. There's a lot of free parking here and inside we have plenty of space and comfortable seating, so people can feel more at ease."

This facility isn't your typical CDC. Apart from its high-end design, it's in a rural location just off a bypass six miles from Bath city centre, whereas most centres are situated near where many people live, work and shop, in areas better served by public transport.

Imperial College Healthcare NHS Trust recently opened the second of its three planned CDCs at Wembley, north-west London. These new facilities are not only bringing care to

Interior of Sulis Hospital in Bath

“We all rely on hospitals – they're essential. But, if you were designing one from scratch, you'd probably change a couple of things

where it is needed most but also taking pressure off local hospitals, reports Amrishi Mehta, a consultant radiologist and the trust's clinical director for imaging. He hopes that they will also reduce the number of procedures that are postponed because of spikes in patient numbers, which are often seasonal.

"This is part of a national programme to create additional diagnostic capacity in the heart of communities and away from acute hospitals, where sudden peaks in demand for urgent services can mean that planned care gets delayed at short notice," Mehta explains.

He adds that the trust is "offering more diagnostics at more convenient locations and times that help local people to work around other commitments. We hope to make it easier and less daunting for them to get tested."

Few locations could compete with Wood Green CDC, in north-east London, for accessibility. It's on the edge of a shopping centre with ample parking; it's a 15-minute walk from two railway stations and even closer to two Tube stops; and it's served by several bus routes.

These aren't the only factors that are making life easier for patients. The speed at which people can be referred by their GPs to access the latest scanning tech is also highly beneficial, notes Gemma Walsh, lead radiographer at the centre, which is run by Whittington Health NHS Trust.

"Wood Green CDC not only brings CT and MRI diagnostic imaging into the community, making this easier for patients to access; it also allows GPs to directly refer people here, rather than a main hospital site, for some examinations," she says. "This will enable the NHS to achieve its aims of reducing waiting times for diagnostic imaging and help to combat local health inequalities."

This aim of levelling the playing field is a founding principle of the CDC programme. The key concern is that people living in deprived areas find it relatively difficult to access vital public services. Because most of them are located close to communities that need the most support,

CDCs will encourage disadvantaged people to obtain the tests that they need and get health conditions diagnosed in good time.

It's not only ease of access that distinguishes the new CDCs from traditional diagnostic clinics. They often have use of the latest technology too. Take Oxford CDC, for instance. Located near some of the most deprived wards on the city's south-eastern outskirts, the centre was established in 2021 in partnership with Perspectum, a local spin-out originating from the Oxford University Hospitals NHS Foundation Trust. Perspectum has developed a new way of conducting MRI scans that gives greater clarity than traditional methods can offer, according to its co-founder and CEO, Rajarshi Banerjee.

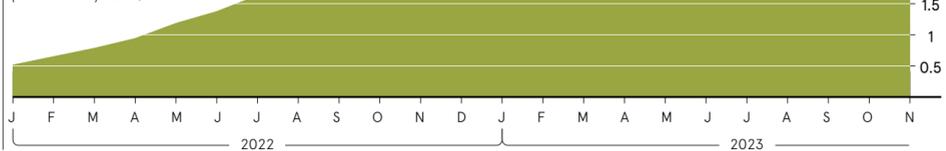
"We're taking people off NHS waiting lists and helping them to get results earlier, using a cutting-edge system that can give surgeons the exact location of an area that needs to be operated on," he says.

Banerjee continues: "We all rely on hospitals to give us access to the best people and wonderful facilities – they're essential. But, if you were designing one from scratch, you'd probably change a couple of things. You'd make it easier to get to, with better transport links, and offer more parking, for instance. That's what we have here. It's convenient for people – and we have a garden and a nice waiting room, so it doesn't feel too much like a hospital."

The nationwide roll-out of CDCs is in its final stages. But even when the network is fully operational, most diagnostic testing is still likely to be done in hospitals. Nonetheless, these new facilities are expected to be vital in accelerating diagnoses and providing extra capacity to help NHS trusts manage their waiting lists more efficiently. ●

CDCs HAVE PERFORMED NEARLY 6 MILLION DIAGNOSTIC TESTS SINCE JANUARY 2022

Cumulative number of diagnostic tests performed by CDCs, millions



Q&A

Combatting antimicrobial resistance: a doctor's perspective

Antimicrobial resistance is a serious public health concern. **Dr Ron Daniels** stresses the urgency for collaboration on solutions



As an intensive care consultant in Birmingham, and founder and chief executive of the UK Sepsis Trust, Dr Ron Daniels sees the impact of antimicrobial resistance (AMR), especially on people who develop sepsis, which claims around 48,000 lives in the UK each year. That's more than breast cancer, bowel cancer and prostate cancer combined. Daniels highlights the global crisis caused by the dearth of novel antibiotics to treat sepsis and other infections.

Q What does the antibiotic development pipeline look like?

A There are 46 antibiotics in the development pipeline. It's likely that only around 28 of these will be significantly effective against the common priority pathogens. The pipeline is tiny compared to that for drugs for diabetes, coronary artery disease and high blood pressure.

Antibiotics are essentially single-use products. Someone with high blood pressure will take their drugs for life. Antibiotics are for acute illnesses. The profits are low and development costs are high. There are no significant commercial incentives to develop antimicrobial medicines.

Q Is there a need here for collaboration between governments, big pharma and bodies such as the UN and the World Health Organisation?

A Absolutely. Professor Dame Sally Davies (former chief medical officer) is on record as saying

46

antibiotics in clinical development globally, of which...

28

are expected to target the highest priority pathogens

WHO, 2021

that AMR is a more immediate threat than climate change. The message the public gets is that AMR is a future threat, but it's affecting thousands of people in our hospitals today. We need action now.

The UK and other countries have been examining how we can incentivise the antimicrobial pipeline. The National Institute for Health and Care Excellence has a subscription pilot that reimburses pharmaceutical companies almost according to the societal value of their new medicines. This only applies to two medicines. We're hopeful it will be extended.

Q Sepsis highlights the alarming scale of the AMR crisis. What is sepsis and why is it such a major concern?

A Sepsis is the way the body can respond to infection. The immune system goes into overdrive, causing organ damage. Sepsis can be triggered by a seemingly benign urinary tract infection, but it's the immune system's response that's harmful.

Globally, there are about 49 million sepsis cases every year. In the UK, there are an estimated 245,000 cases and 48,000 deaths each year. To put that into context, sepsis is a more common reason for UK hospital admission than heart attacks and claims more lives than breast cancer, bowel cancer and prostate cancer combined. But this relationship is not black and white. These conditions can coexist. For example, somebody having chemotherapy for breast cancer may have a weakened immune system, putting them at risk of sepsis.

Q How can we improve the way we manage infections?

A This depends upon infection management. This is not about AMR or sepsis in isolation. It's about infection prevention in all of its forms, including access to clean water, sanitation, hygiene and vaccines. It's about disease surveillance, pathogen surveillance, pandemic preparedness and antimicrobial stewardship.

Q Why doesn't sepsis get as much attention as heart disease or cancer?

A Governments have focused on heart attacks and cancer for a lot longer. There was significant progress in the 1960s with heart attacks, but sepsis was only defined from a medical perspective in the mid-1990s. It's had less lead time.

Also, sepsis doesn't have a common touch point. If you have a heart attack, you see a cardiologist. If it's cancer, you see an oncologist. Sepsis touches every point of the healthcare

“We need a culture where infection management is seen to be as important as that of trauma, heart attacks and cancer

system. There's no specific set of health professionals routinely dealing with it. But once organ failure occurs, we admit patients to intensive care.

Q How can we improve the way we manage infections?

A This depends upon infection management. This is not about AMR or sepsis in isolation. It's about infection prevention in all of its forms, including access to clean water, sanitation, hygiene and vaccines. It's about disease surveillance, pathogen surveillance, pandemic preparedness and antimicrobial stewardship.

Stewardship is not about measuring how many antibiotics doctors prescribe and assuming that an increased prescription rate compared with the average is bad practice.

We need a culture where infection management is seen to be as important as that of trauma, heart attacks and cancer. Every doctor and every patient

should expect excellence. We need everybody to understand that antibiotics are for treating bacterial infection, and, in very high-risk patients, preventing it. They're not for self-limiting viral illness. Health professionals also have to prescribe responsibly.

They have to understand what their local antimicrobial flora is, how likely it is that an organism is going to be therapy-resistant and tailor treatment accordingly. In many UK hospitals, there is a significant lag time between the prescribing clinician attending the patient's bedside and receipt of antimicrobial prescription information.

Q What are the concerns around animal stewardship?

A Animals account for about a third of UK antibiotic consumption. We're concerned about the routine use of antibiotics in intensive farming to compensate for poor animal husbandry.

There's evidence that you can have a direct transfer of genetic material from a microbe that has developed resistance in a farm animal to pathogens that can infect humans. Most UK meat reared with antibiotics is laid down for some time before consumption, reducing the risk of direct ingestion of antibiotics. But meat from overseas is often not laid down for so long. So, ready meals from overseas may contain antibiotics. And, of course, animals fed antibiotics excrete them, contaminating the environment.

Q Could individualising treatment help make the best use of antibiotics?

A Although sepsis affects 49 million people, we have a 'single size fits all' definition. We apply the same physiological and laboratory thresholds to all sepsis patients – from athletic 18-year-olds to 88-year-olds with severe cardiovascular disease. This is illogical.

What does it mean? We're probably significantly over-treating some patient cohorts and significantly under-treating others. Some sepsis patients can comfortably wait six to 8 hours before receiving antimicrobials – some can't wait six to eight minutes.

The intelligence doesn't allow us to prioritise patients who need treatment most urgently. We need to build national registries to map which people develop sepsis. We need to apply pattern recognition to establish which patients need antibiotics and assessment within an hour and which can wait. We have much to do.

It's now or never – let's work together to combat AMR. To find out more, visit shionogi.eu



This article has been initiated and fully funded by Shionogi BV. Opinions expressed by Dr Daniels are his own and in no way influenced by Shionogi.

An AI diagnostic revolution – pushing the digital frontiers of pathology

Rapid advances in AI promise to transform the efficiency of pathology and could help pathologists achieve dramatic improvements in patient outcomes

The rapid development of AI and deep learning tools has prompted many pathology specialists to grow increasingly optimistic about the role that digital pathology can play in assisting their work and enhancing their capabilities. Such innovations herald a new era of healthcare powered by tech-enabled diagnostic precision.

The transformation of pathology

Routine diagnosis in pathology involves the application of a stain called H&E (hematoxylin and eosin) to tissue samples on microscope slides. This highlights and distinguishes cellular structures, helping pathologists spot any abnormalities. While H&E staining is a crucial diagnostic tool, the technique has its limitations. Not only is it time-consuming, there is a high probability of varying interpretation and diagnosis from even just a single slide.

In recent years, parts of this process have benefited from digitalisation, like automated whole-slide imaging (WSI). This method, pioneered in the late 1990s, uses an automated microscope that scans a tissue section to produce a composite high-resolution image file (similar magnification as optical microscopes) that can be easily stored and shared.

The widespread adoption of WSI in pathology took several years, but today, tools and techniques are advancing rapidly – and so are the roles of pathologists, who are increasingly working as part of a broader patient care team. In this respect, AI is enabling them to gather more, and better, patient data to inform diagnosis, treatment and monitoring.

With the NHS's chronic understaffing and increasing patient backlog,

additional pressure has been put on the need to provide rapid diagnosis of cancerous tissues for a pathologist's already heavy workload. Rather than replacing expertise, AI serves as a powerful aid to pathologists, helping them work more efficiently and accurately.

Digital techniques can help minimise analytical errors while also freeing people from repetitive lab work, as well as evaluate images and identify details that the human eye could miss. It can also be incredibly cost-effective – a 2020 Deloitte research report¹ estimated that in Europe, "AI could save up to 53 million hours of routine analyses for clinical technicians, linked to potential savings up to £755m (€883m) per year".

Such eye-catching figures are notable in the UK for two reasons. First, an under-resourced NHS is desperately trying to optimise its expenditure as an ageing population places ever more demands on its services. Second, NHS managers have typically seen traditional pathology methods as excellent value for money, especially compared with more complex imaging techniques. These decision-makers are therefore likely to consider any move towards a process like molecular testing to be more costly. However, while this may be true in relation to the immediate, upfront cost, where AI-aided methods are being used to determine whether hugely expensive treatments are needed, the slight increase in the cost per test would be offset by wider, long-term efficiency savings.

The power of AI – offering a new perspective

While some people still need to be persuaded of AI's potential in pathology,



the pace of innovation is exciting. In a recent issue of Diagnostic Pathology², researchers at Ohio State University noted that advances in the field were unlocking opportunities across "anatomical, clinical and molecular pathology" while catalysing new solutions ranging from biomarker screening to outcome prediction.

Indeed, the bright future of digital pathology in the UK prompted the Royal College of Pathologists to issue a statement noting the "great potential for the development of AI to support the diagnostic process in pathology, especially image analysis in histopathology".³

The ability of AI systems to detect patterns, identify anomalies and accurately predict outcomes is remarkable. It's an area in which Owkin, an AI innovator, is well placed to drive change. Two of the company's more exciting AI diagnostic developments integrate digital pathology workflows to support accurate decisions at a fraction of the time and cost of existing tests.

The first is MSIntuit[®] CRC, the first CE-marked AI diagnostic that pre-screens for MSI, a key biomarker used in the management of patients with colorectal cancer. It aims to have a significant impact on doctors and patients by decreasing workload and turnaround time and preserving tissue material and resources. By using AI, this innovative tool supports reproducibility by potentially addressing inter-observer variability, with the end goal of optimising quality and efficiency for critical tests and helping to facilitate better access to immunotherapy.

Owkin is also developing RlapsRisk[®] BC, a risk assessment tool for the recurrence in early breast cancer,

designed to help pathologists and oncologists determine the right treatment pathway. Iain MacPherson, professor of breast oncology at the University of Glasgow, believes that this "innovative AI technology has the potential to address an important unmet medical need that could ultimately lead to better outcomes for patients with early breast cancer treated in the NHS".

The digital transformation of the NHS

The UK pathology profession faces several obstacles, including talent shortages, growing caseloads and the need for more precise diagnostic capabilities. Demand is growing rapidly, with NHS hospitals' pathology test volumes rising by a mean annual rate of 2.4% between 2012 and 2021, according to Source BioScience, a provider of histopathology lab services.⁴

The digital transformation of the pathology ecosystem could solve many of these hurdles. A healthcare economic model (HEM)⁵ proposed by Source BioScience indicates that digital workflows can reduce the average pathology turnaround time by two days. This has been verified by testing at East Kent Hospitals University NHS Foundation Trust and validated by other trusts. The HEM also predicted that over a span of five years, a digital workflow would facilitate savings equivalent to over 8,000 patient life-years when compared to the previous traditional pathology workflow.⁵

As the demand for their services continues to increase, embracing the latest technology will help ease pathologists' workloads, reduce turnaround times and enable greater efficiencies

without compromising patient care. This will demand a shift of mindset in the profession and encourage the adoption of digital methods, especially by newcomers to the field.

Owkin is committed to enabling this transformation. Working closely with its extensive academic network to develop robust digital solutions, the techbio aims to empower pathologists to work more effectively while making precision medicine more accessible to more patients.

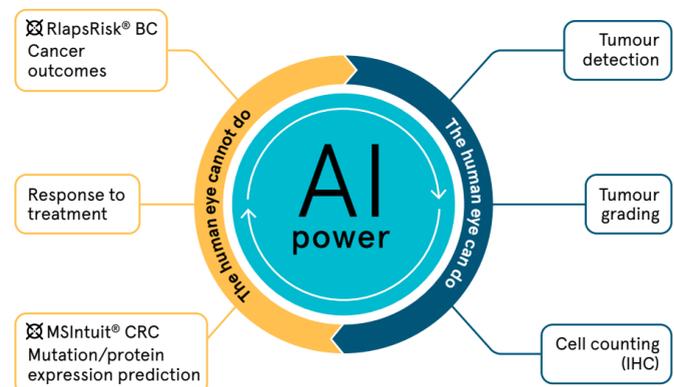
To find our more about MSIntuit[®] CRC and RlapsRisk[®] BC, manufactured by Owkin France, please visit: owkin.com/diagnostics-approach



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HUMAN VS COMPUTER

Adapted from Echie et al (Kather group), 2020, bJCR



SUSTAINABILITY

The complications of a carbon-ectomy

Surgical practices in the NHS are extremely eco-unfriendly. If the service is to honour its net-zero pledges, these must be made greener, but significant barriers stand in the way

Olivia Gagan

In 2020, the NHS became the world's first healthcare system to make a net-zero commitment. Its 2040 decarbonisation target is more ambitious than it may seem, given that the organisation is responsible for 6% of the UK's total greenhouse gas emissions.

Surgery is one of the key contributors: operating theatres are responsible for a quarter of all hospital CO2 emissions, with an annual carbon footprint equivalent to that of 700,000 homes.

To address this problem, some medical professionals are advocating the wider uptake of so-called green surgery principles. Such initiatives are often limited by funding constraints, logistical hurdles and cultural resistance. But some sustainable practices may become more acceptable to clinicians and patients alike as the pressure on them to help tackle the climate crisis grows.

The operating theatre is the biggest consumer of energy in the hospital because of its need to power "bright lights, surgical devices and high levels of heating and air conditioning. It is all happening in that small room," explains Aneel Bhangu, a consultant surgeon and professor of global surgery at University Hospital Birmingham.

He adds that "the number of consumables used in each operation is also massive – far more than for any other hospital procedure. Anaesthetists use gases, which are pumped out into the environment. And at the end you have contaminated waste, which is incinerated."

There are options for offsetting the environmental impact of surgery, including tree-planting and buying carbon credits. But, even if the cost and questionable efficacy of this approach were put aside, it still wouldn't be feasible. Offsetting one year's worth of surgery in the UK would require the creation of a forest more than three times the area covered by Greater London, according to Green Surgery, a 2023 research report published jointly by Brighton



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“If you can make decarbonisation work in surgery, you can make it work in the rest of the hospital

and Sussex Medical School (BSMS), the Centre for Sustainable Healthcare and the UK Health Alliance on Climate Change (UKHACC). Slashing the number of operations would also be unfeasible, given that there are about 7.6 million people on the waiting list for consultant-led NHS care. The most effective solution, therefore, would be for the service to embrace new technologies,

practices and attitudes.

Reliable data on the carbon footprint of surgery was scarce until recently, but research evidence in this field is accumulating quickly. In this respect, the 116-page Green Surgery report can be viewed as a landmark document.

Work on the publication was co-chaired by Mahmood Bhutta, a BSMS professor, consultant surgeon and associate of the Centre for Sustainable Healthcare; Chantelle Rizan, a BSMS doctor, researcher and clinical lecturer; and Elaine Mulcahy, director of the UKHACC.

A key finding of their research is that single-use medical products have become so deeply associated with cleanliness in recent years that clinicians have turned away from reusable equipment, which is equally safe once sterilised.

Take disposable gloves, for instance: 1.4 billion are used annually in the NHS – "almost enough to stretch to the Moon", Bhutta says. And this is the average figure for a normal year. Faced with the Covid crisis, NHS England ordered nearly 5.5 billion gloves over the 12 months to 24 February 2021, according to the Department for Health and Social Care.

Although gloves are necessary for some invasive procedures, they still pick up and transfer germs in the same way as bare hands, notes Bhutta, who adds that "60% of current glove use in the NHS is inappropriate – people just put them on as a habit. We've got skin, which is a fantastic immune barrier. But this is a very difficult cultural shift."

Surgical gowns and drapes are other disposables causing a massive

waste problem. About three-quarters of those bought by the NHS are single-use items.

"There's absolutely no reason for these to be disposable," Bhutta says. "They're used for convenience – and because there's been some serious marketing by their manufacturers."

Surgical procedures can also be decarbonised. In 2022, Bhangu was part of the team that delivered the first documented net-zero operation in the NHS. Sustainability measures included using intravenous anaesthetics rather than gases; wearing reusable gowns, drapes and scrub caps; recycling paper and plastic waste; and working with industry partners to recycle instruments that had been designed as single-use items.

Improvements to processes, materials and practices in surgery can also be rolled out to other parts of a hospital, creating more cost savings and getting the NHS to net zero faster, Bhangu says.

"If you can make decarbonisation work in surgery, you can make it work in the rest of the hospital," he argues. "Our principle is to focus on the operating theatre and then use it as the exemplar."

If NHS staff, managers – and patients – are to embrace green surgery, they will first need to be assured about its safety as well as its eco-benefits, according to Bhutta.

"We also need the government to invest in the infrastructure," he adds. "If we want more sterilisation facilities, we have to build those."

The NHS is under great financial stress, of course, but Bhutta argues that decarbonising is almost always cheaper over time. Switching to a circular-economy model whereby it purchases a laundry service, for instance, makes more financial sense than buying millions of throwaway gowns every year.

NHS procurers "should have a mandate that says we will always prefer buying reusable rather than disposable", Bhutta says. "Even if you're not going to do it to be green, do it to save money. In our hospital in Brighton, even from the few things we've done, we're already saving at least £200,000 annually and we've barely touched the surface yet. We could probably save at least £500,000 every year."

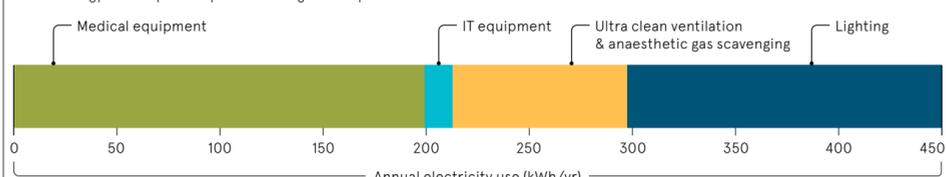
Bhangu notes that decarbonisation is not the highest priority for a beleaguered NHS, acknowledging that it "doesn't have the headspace for green surgery. But we are trying to create that headspace."

He believes that we all have a collective responsibility to demand that the organisation keeps to its net-zero commitments. But, given the strain the NHS is under, it may be individual hospitals and research teams that lead the charge to make green surgery a reality – and, eventually, create a green health service that could become a template for others around the world. ●

SURGERY IS AN ENERGY-INTENSIVE PROCEDURE

Brighton & Sussex Medical School, 2023

Annual energy consumption of particular surgical components in the UK





RESEARCH AND DEVELOPMENT

Up the anti: funding the fight against bacterial resistance

As microbial immunity to existing medicine increases, the NHS is pioneering an incentive system that could revive global investment in the crucial, yet dangerously neglected, field of antibiotic R&D

Heidi Vella

Antibiotics are viewed by many as the backbone of modern medicine. Without them, common infections and routine surgical procedures would be life-threatening. But the increasing resistance of pathogenic bacteria to such drugs is a genuine threat to their efficacy.

In 2022, more than 58,000 people suffered an antibiotic-resistant infection in England – a 4% increase on the previous year, according to the UK Health Security Agency.

The World Health Organization attributed 1.27 million global deaths in 2019 directly to antimicrobial-resistant bacterial infections. And, the UN Environment Programme has estimated that the annual toll could reach 10 million by 2050 if no effective action is taken to tackle the problem.

Despite these stark figures, there has been relatively little investment in new antibiotic development in recent years. The pharmaceutical industry raised £5.45bn on oncology R&D but a mere £125m for antibiotics in 2020, for example. Indeed, such is the lack of funding that no truly novel antibiotic classes have been licensed since the late 1980s.

So why are investors largely ignoring antimicrobials? The overriding reason is simple, says Kim Lewis,

biology professor at the Northeastern University College of Science, Boston, and director of its Antimicrobial Discovery Center.

"It's hard to make money from antibiotics, because those compounds aren't sold," he explains.

It can take up to 15 years and more than £780m to develop a new antibiotic, according to the Wellcome Trust. Once approved, the drug will

then be kept in reserve, used as a last resort to tackle a build-up of resistance. Moreover, the treatment cycle typically lasts only a fortnight, so the product's potential sales revenues are unlikely to repay the manufacturer's investment.

Normally, when an antimicrobial molecule of interest is discovered, a startup secures venture capital to pursue its development into trials,

How a skills gap could hinder progress

Experts warn that years of underfunding have led to a shortage of expertise in antimicrobial research. It's another factor that could stymie efforts to revive the market for new antibiotics.

The AMR Industry Alliance, a private sector coalition formed in 2016 to combat antimicrobial resistance, estimates there are about 3,000 researchers in this field globally, compared with 46,000 working on cancer treatments. It also notes that there were 35 times as many papers published about cancer in 2022 than there were about high-priority bacteria.

The decline has been attributed to the withdrawal of many large pharmaceutical

companies from antibiotic R&D, meaning that the field has come to be dominated by relatively cash-strapped smaller players. Of the 217 antibacterial products in pre-clinical development in 2021, for instance, only 34 were developed by large businesses, according to research by the World Health Organization. On the other hand, micro-companies (defined as those with fewer than 10 employees) were responsible for 81.

If incentives such as the subscription model developed by NHS England and the Nice are to work properly, a significant amount of skills and talent must first be restored to the field, according to Grace Hampson.

"Even when the global revenue on offer is enough to support the market for new antimicrobials, we can't just pick up

where we left off because so many key players have exited the industry over the years," she says. "So much expertise has been lost, along with confidence in the antibiotics market."

Mark Moloney, emeritus professor of chemistry at the University of Oxford, believes that the industry would do well to take a lesson from the Covid crisis.

One of the reasons that antiviral vaccines were so successful during the pandemic was that "much of the underpinning technology was already on the shelf", he explains.

In antibiotics, by contrast, "we've let things slip over the past 20 years, unfortunately," Moloney adds. "We must fund the underpinning science so that we have capacity in place which can then be scaled up quickly when needed."

after which big pharma will step in to bring the finished product to market. But this is no longer happening, according to Lewis.

NovoBiotic Pharmaceuticals, a firm he co-founded in 2003, provides a case in point. It's developing two compounds that are active against some bacteria that have developed resistance to other antibiotics. But they have yet to attract serious interest from investors, despite their obvious potential.

"Society," Lewis argues, "must step in."

In 2019, NHS England and the National Institute for Health and Care Excellence (Nice) addressed the investment shortfall by crafting a funding mechanism to decouple antibiotic manufacturers' revenues from their sales volumes. This has become known as the Netflix model,

because it pays a drug company an annual subscription fee, meaning that the firm will be reimbursed regardless of how many units of its new antibiotic are prescribed.

The Nice piloted the model with the purchase of two antibiotics: cefiderocol and ceftazidime/avibactam. After an evaluation process to finalise the price to be paid for both, they were eventually made available to the NHS in 2022.

NHS England is expected to adopt the system permanently. The proposal is that producers of new antibiotics that have secured, or almost secured, regulatory approval will be invited to submit tenders to the Nice. Newly proposed antibiotics will then be assessed for eligibility based on factors such as the pathogens they target and their social value commitments.

If a drug is deemed eligible, its value will be assessed against 17 criteria, including the quality of antimicrobial stewardship (the producer's efforts to discourage over-use) and surety of supply. Based on the assessment, the manufacturer will be offered somewhere between £5m and £20m a year. This so-called fair-share payment value is meant to reflect NHS England's share of the global market, which stands at roughly 2.5%.

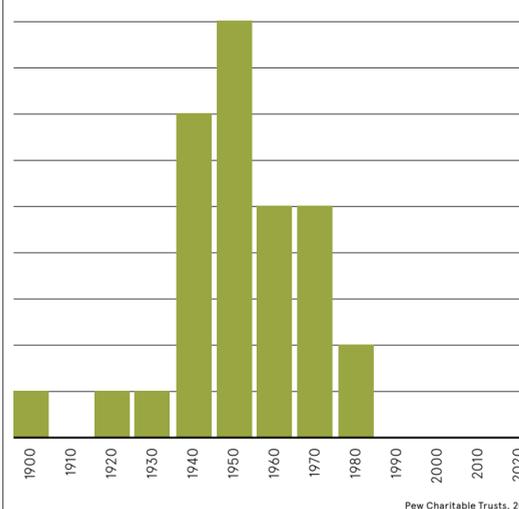
The trial, the first of its kind in the world, has proved the feasibility of the Netflix model. That's the view of Paul Catchpole, value and access policy director at the Association of the British Pharmaceutical Industry, a trade body with a membership of more than 120 UK drug companies.

But he adds that this country cannot shift the dial on global antibiotic investment by itself.

"All countries, particularly the G20, must make their own contributions to add up to significant sums of money that will render anti-

THE BYGONE AGE OF DISCOVERY

Number of novel antibiotic classes discovered, by decade



Pew Charitable Trusts, 2020

“All countries, particularly the G20, must make their own contributions to render antibiotic R&D more commercially attractive

Most studies of the Netflix approach have predicted a high social return on investment (ROI). The Center for Global Development, for instance, gave the following estimate for the Pasteur Act's proposed system in 2022: "From the US domestic perspective – considering both the value of averted death/disease and associated hospital costs – ROI is calculated at 6:1 over a 10-year time horizon and 28:1 over a 30-year time horizon."

Yet notable challenges must still be overcome for such a model to boost investment significantly. One of the biggest of these concerns the potentially small yearly payments on offer. When interviewed by the OHE, potential investors in the UK were clear that a subscription fee of less than £10m wouldn't incentivise them. They also wanted a more concrete commitment from the NHS to keep paying subscriptions for several years, given that it takes at least a decade to develop an antibiotic.

For investors requiring the kinds of ROIs that they could achieve only by targeting several territories, the risk of so-called free-riding is a concern. This is where a country offers relatively low fees that don't reflect its share of the global market, so the potential aggregate sum on offer may not prove enough for them to risk their money.

Nonetheless, the broad consensus is that the subscription approach has great potential if it can be applied fairly around the world, especially if the international community can collectively specify which pathogens should be prioritised. But reversing the long decline in investment in antibiotics is likely to require a whole package of measures, Catchpole warns.

"There won't be one approach that will crack it alone – we need to look at the whole piece: research, reimbursement and demand," he argues. "It's important to keep the momentum going, starting with the UK evaluating more antibiotic products. This will send a strong message globally."

"With this model, a country can dictate how much it wants to pay," she explains. By contrast, the costs under a TEV system would be "much less predictable for the health system and for the drug companies". For that reason, several EU member states oppose its introduction.

INSIGHT

'Better patient activation results in better outcomes'

Patient care has become increasingly fragmented. Dr Minesh Patel explains how a focus on community care could improve patient access and health outcomes for those most in need

There is currently a strong focus on GP access, both in government and in the health industry. This is perhaps unsurprising considering the many challenges faced by the NHS. But the reality is that we will never meet patient demand by simply doing more of the same.

About 90% of all health activity happens in our communities and many practitioners believe that we need to motivate a greater collective priority on patient activation – whereby people are empowered to better manage their own healthcare – to encourage a more effective approach to access. Evidence supports this emphasis. Better patient activation results in a more effective use of resources and better outcomes, especially when we prioritise those people who are the least activated, often in communities that experience the most deprivation.

To address this problem, the NAPC and Imperial Healthcare established a pilot scheme of community health and wellbeing workers, based on results from a programme in Brazil. The scheme started in Westminster but has now been extended to other areas around the country. The programme relies on handpicked individuals who live and work in particular communities and are able to support entire households across the spectrum of health and care needs. By localising access to care, the programme enables those with the most need to become active participants in their own healthcare.

In my experience, health improvement happens when small teams of people in health, wellbeing and social care settings work with small groups of people and individuals in our community as well as between individuals and groups in communities themselves.

If we want to co-create health improvement and effective access to services across the breadth of our communities, we need teams that have clear and shared objectives, work interdependently, meet regularly and evaluate their work.

We also know that smaller teams such as these are safe and show better development than larger impersonal teams. There is evidence to support, that joy in the workplace is linked to safer high-quality care in addition to a happier workforce. I have also witnessed this.

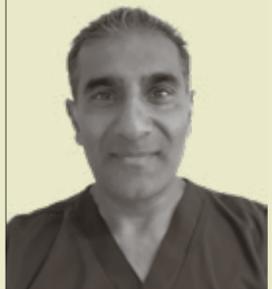
In our preoccupation with improving access to primary care, with concerns centred on the state of the healthcare workforce, we are in danger of fractionalising care further. There is no doubt that there are benefits of scale around some clinical pathways, but day after day health professionals witness the lived experience of our population receiving increasingly fragmented care.

A frail individual or someone with complex needs who is discharged from hospital often experiences care through a number of different community, mental health and specialist teams, all working in silos. This typically results in something less than the sum of its parts. The individual's GP practice will be attempting to operate with all of those teams, often having to fill gaps which shouldn't exist.

The current narrative is of a failing primary care. Yet we have a world-class workforce and an opportunity to create real teams around our neighbourhoods, empowering people to improve their own health and wellbeing and use resources effectively. It's challenging and needs on-the-ground support, investment and focused leadership at all levels that is willing to cede authority to these teams to do what is right for their population rather than what is right for their organisation.

Without this we will simply continue to experience dangerously rising demand on services.

That is why we must urgently shift the focus to developing empowered high-functioning neighbour teams around and in service of those in our local communities. ●



Dr Minesh Patel
GP and member
NAPC SLT

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