

# The Report

## Solving the Prevention Puzzle Hypertension and digital health

**Phil Chowienczyk** Hypertension can underpin the NHS prevention agenda

**Symposium** What strategic shifts will improve standards of care?

**Community leaders** Where remote monitoring is already transforming lives

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## Infographic

**Hypertension is silent, measurable and treatable, but too often missed. Government and NHS leaders must make routine blood pressure detection and monitoring the starting point of the shift from sickness to prevention**

**16 million**

Number of UK adults estimated to have high blood pressure. That means that around 30 per cent of UK adults are at increased risk of heart attack and stroke, half of whom are not receiving effective treatment

**80,000**

Estimated number of cardiovascular deaths linked to high blood pressure each year in the UK, making hypertension one of the country's biggest preventable health risks

**8 million**

Number of people in the UK thought to have either undiagnosed or uncontrolled high blood pressure, increasing pressure on NHS services



Sources: NHS England, UK Health Security Agency, NICE, BIHS

**50 per cent**

Proportion of heart attacks and strokes linked to high blood pressure. Regular monitoring matters

**£2.1bn**

The estimated annual cost of hypertension to the NHS. Digital tools can save money

**30 per cent**

Proportion of high pressure results in clinical settings that may not reflect everyday readings



**Prof Phil Chowienczyk**  
Vice president, British & Irish  
Hypertension Society

# “Prevention must reach people earlier, more consistently, and in ways that fit their actual lives”

The government has set out three radical shifts for the NHS: from hospital to community, analogue to digital, and sickness to prevention. They should start by applying these to hypertension.

Hypertension – chronically elevated blood pressure – is the leading modifiable risk factor for cardiovascular disease in the UK. It is linked to around half of all heart attacks and strokes, and is a leading cause of heart failure, kidney disease and vascular dementia.

Tackling blood pressure must sit at the heart of any credible prevention strategy, and the next phase of progress will depend on smarter, more accessible tools to detect and monitor it beyond the clinic.

Surveys suggest that more than 16 million people have hypertension. When treated effectively the associated risk can be largely eliminated. Yet most are either undiagnosed

or have hypertension that is inadequately controlled. Hypertension is more prevalent in some ethnic minority groups and in areas of deprivation, compounding existing health inequalities. It is often silent, progressing for years without obvious symptoms, while damage accumulates.

Millions are living with a major, measurable, treatable risk factor that too often goes unnoticed or is only addressed after it has caused life-changing, irreversible harm. Prevention is still too reactive, too uneven and too dependent on people turning up at the right time, in the right place, for the right test. If prevention is to be credible, it must reach people earlier, more consistently and in ways that fit real life, not idealised pathways.

This requires a multifaceted approach: better public health education; population-level measures, such as reducing salt intake through better government policy; improved detection in the community, workplace and healthcare settings; and more effective, less burdensome treatment that supports long-term adherence.

The shift from hospital to community, and from analogue to digital, is particularly pertinent to hypertension. We are on the brink of a technological revolution that, if harnessed properly, will make monitoring more accessible, scalable and aligned with the way people live.

Smartphones could enable population screening without specialist equipment. Wearable devices like watches, rings and bracelets may replace burdensome and resource limited cuff-based ambulatory blood pressure monitoring machines, that currently present a major bottleneck for diagnosis and hence treatment. Finally, using these devices to track the response to treatment facilitates a more efficient shared-care management pathway that reduces patient burden and improves engagement with treatment.

But this transformation must be handled carefully. New technologies need rigorous evaluation, proportionate implementation and integration into NHS pathways with clear standards, safeguards and performance monitoring. This is where we have a vital role: not simply to welcome innovation, but to help shape it – defining when new tools are fit for purpose, how they should be assessed, and how they can strengthen care without widening inequalities.

If the NHS is seeking a practical, measurable and highly impactful example of its proposed mission shift, hypertension is the place to start. ●

# What strategic shift will improve hypertension care?

New tools, remote monitoring, and cultural and regulatory reform could all help a digital-first NHS better diagnose, prevent and manage high blood pressure



**Pauline Swift**  
Chair,  
Blood Pressure UK

We have long campaigned for those living with high blood pressure to “Know Your Numbers”. People should be empowered to measure their own blood pressure, bringing about a reduction in related harms, including stroke, heart and kidney disease, and dementia.

Being able to check our blood pressure at home makes it easier to feel in control of one's own health. The NHS must aim to make home blood pressure measuring simple and accessible.

This means people getting a validated BP monitor easily, then sharing readings with their healthcare provider without complicated apps or systems.

As patients, we really don't want to have to engage with lots of different platforms; we want a simple, ideally single platform, such as the NHS app, offering accessible advice on what to do if our numbers are too high. We need to know our data is secure, will lead to timely feedback from our healthcare providers, and won't just disappear into the system.

Also, a digital-first NHS must not leave individuals behind. Not everyone is comfortable with, or has access to, digital tools. Pharmacies, local health services and charities have a vital role in supporting people to check their blood pressure, understand their results and engage with their care. If this is done properly, it could move blood pressure management away from an occasional check-up at a specified place and time towards something more continuous, supportive and centred around our everyday lives.



**Dr Manish Saxena**  
Hypertension specialist,  
Barts Health

To realise the 10-Year Health Plan, early diagnosis of hypertension and better community treatment must become priorities. Certain groups carry a higher burden of disease and experience poor health outcomes, while inequalities and poor access to care deepen the problem. The shift from analogue to digital blood pressure measurement offers an opportunity for patients to be better informed and involved in their care.

Development of novel drugs and devices for hypertension and cardiovascular disease are accelerating. Cuffless blood pressure monitoring technologies are moving closer to regulatory approval.

Many technologies are smartphone based, increasing practicality and affordability, avoiding the need for any new hardware and making scalable monitoring more realistic.

Their ease of use at home, work and community settings could support earlier detection and better monitoring, improve engagement with healthcare systems and reduce health inequalities. Clinically they offer effortless, real-time and longitudinal blood pressure monitoring in the community, which has long been difficult to achieve, while creating conditions for more advanced, AI-based risk prediction.

The UK can become a global leader in evaluation and responsible adoption. The next wave of digital revolution is coming. The strategic shift now required is building the evidence, infrastructure, and policy confidence to move from episodic blood pressure measurement to continuous, community-based, digitally enabled prevention.



**Alex McIntyre MP**  
Member, Health and  
Social Care Committee

Think of people living with high blood pressure and chances are you picture an older man, perhaps a smoker. But the evidence today suggests a rapidly changing profile of people being diagnosed with hypertension. In fact, studies suggest that 1 in 8 adults aged 20 to 40 will be affected and almost 1.3 million younger sufferers will not be receiving treatment for it.

The challenge of rising rates doesn't sit in a silo. As part of a new prevention focused NHS model, we need to start a national conversation about how everyone in our country can lead a healthier lifestyle, avoiding conditions like high blood pressure in the first place. The Health and Social Care Select Committee is examining the role obesity plays in ill health and the impact of promoting a healthy diet and more active lifestyles. Our report is due later this year.

We need to act now and act earlier to identify young adults suffering with hypertension and offer them the right support. The current NHS Health Check Programme invites 40-74 year-olds who don't have a pre-existing condition to a health check every five years. Including 18-39 year-olds with a risk factor such as obesity could identify this at-risk cohort earlier.

Another key shift highlighted in the government's 10-Year Plan is to care in our community. I would like to see community pharmacies up and down the country being used to perform these checks. Together, these changes would rapidly reduce the number of young adults living with untreated hypertension, avoid future heart attacks and strokes and potentially save lives.



**Prof Jacob George**  
Chief medical and  
scientific officer, MHRA

We should strengthen the MHRA's role in the regulating of digital blood pressure monitoring technologies across their full lifecycle.

The MHRA already plays a key role ensuring devices using software and AI-enabled clinical decision support tools are clinically validated and effective for use at scale.

Not all digital hypertension tools meet robust clinical validation standards, demonstrate reliable real-world performance or integrate safely into NHS systems. Clear regulatory expectations, and the provision of regulatory advice and support to manufacturers, can help developers navigate UKCA marking requirements, generate relevant clinical evidence and design proportionate clinical investigations.

MHRA oversight helps enhance lifecycle performance requirements, interoperability and cybersecurity, ensuring technologies can integrate securely with NHS digital platforms. This supports innovation and maintains patient safety, data integrity and public confidence.

Crucially, MHRA's role extends beyond pre-market assessment, using real world data to monitor ongoing performance, identify device inaccuracies, algorithmic drift, cybersecurity risks or inequities across populations, taking regulatory action where needed.

Through these measures, MHRA can support the deployment of safe, accurate digital hypertension technologies, enabling earlier detection, improved adherence and a shift to prevention-focused care – delivering improved population-level blood-pressure control. ●

# How to make monitoring a community effort

Remote, continuous blood-pressure monitoring is changing hypertension management, offering patients greater control over their health

By Greg Noone

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Every other weekend, Farooq Mohammed organises a football match for players aged over 50 with heart conditions – though those without such a diagnosis are welcome to come if they dare. Watching from the sidelines, Mohammed describes how the latter group are quickly disabused of any illusions about their fitness. “They come onto the pitch, and they’ve probably not exercised in many years,” Mohammed says. “It’s literally like watching Bambi on ice.”

The founder of Dodgy Tickers, a community programme for over-50s eager to improve their cardiac health, Mohammed more closely resembles an off-duty firefighter than the stereotypical vision of someone with a heart condition. But no matter his fitness level, he still needs to monitor his blood pressure (BP), lest he rejoin the third of adult Britons estimated to have hypertension. Unlike the thousands of people who visit their local GP or pharmacist, Mohammed chooses to check it himself using a dedicated app on his iPhone. “My clinician has not asked me to monitor my blood pressure daily,” he says. “I choose to do it.”

More should be asking, argues Dr Wajid Hussain, NHS England’s chief medical information officer. Hypertension is a chronic condition that affects millions of adults in the UK, he explains, but with careful management, its impact can be mitigated. Key to any successful outcome, however, is keeping that management front of mind for the individual. Home, remote and continuous BP monitoring make it more visible in daily life – a reminder that diet and exercise are prerequisites to living with hypertension or heart disease.

Multiple global studies have found that home and remote blood-pressure monitoring, particularly when linked to clinical support, can improve blood pressure control among patients. One person benefiting from such a regime is Donna. A 65-year-old British woman of West African descent,

she uses the Lifelight app to regularly monitor her BP. While Donna did not initially understand the seriousness of her condition, a combination of prescription medication, exercise and improvements in her diet has seen her come to terms with managing her hypertension. She even feels empowered by participating in medical research. “Participating in these trials,” she says, “has made me feel that I am contributing to scientific knowledge that may help others in the future.”

Donna’s story also points to a wider opportunity: more flexible forms of blood-pressure monitoring may help reach groups who experience higher rates of hypertension, later diagnosis and poorer outcomes, particularly where traditional clinic-based models are not enough.

Healthcare providers also stand to benefit. Without remote monitoring, says Hussain, checks need to be built into as many routine care touchpoints as possible, from pharmacies to GP practices. These checks are valuable, but they still require appointments, staff time and repeated contact with overstretched services. Enabling more people to monitor their blood pressure in the community, and in the context of their everyday lives, could make hypertension easier to detect, easier to manage and less dependent on clinic-based encounters. Done well, it empowers patients while helping the NHS move from episodic checks to earlier intervention and prevention. But patient compliance remains a complicating factor. One study by researchers at Mass General Brigham Hospital, Boston, found that out of 3,000 patients enrolled in a remote hypertension management programme, almost half didn’t take enough readings to prove clinically useful. One third, didn’t take any readings at all. “These patients had the cards stacked in their favour: they all received free blood-pressure cuffs to use, as well as instruction and regular contact with navigators,” the study’s lead author told



**Groups like Happy Tickers offer invaluable health support and education**

Medscape. Even so, for many patients, sitting down to measure their BP twice a day “proves too much of a hassle”.

Hussain acknowledges that compliance can be lacklustre; he often has enough trouble convincing patients to take their BP medication twice a day, let alone strap a cuff to their arm. But that challenge may point towards the value of more continuous forms of monitoring, reducing the burden on patients to repeatedly stop and submit readings. Doctors should therefore tailor monitoring strategy to how willing and able patients are to engage with them.

**I**s all this data useful? From his own conversations with members of Dodgy Tickers, Mohammed suspects that many clinicians think patient-generated data is inferior to measurements taken in hospital or at the GP surgery. Hussain says that’s a regressive way of thinking. The most accurate measurement possible, he explains, is achieved by sticking a tube into the patient’s artery. It’s also not clear that clinic-based readings are always the next best thing, as recent research suggests that merely stepping into a doctor’s office can elevate an individual’s blood pressure. Remote and continuous monitoring might

not be perfect, says Hussain, but it can provide a more rounded, everyday picture of blood pressure.

The potential benefits for wider population health are also huge, the cardiologist argues. Hypertension is, by and large, a hidden condition: though a third of Britons probably have it, many patients do not realise they have high blood pressure until it causes a stroke or heart failure. Clinicians will never be able to convince all patients that monitoring their blood pressure outside clinical settings is practical or useful. But if it is rolled out at scale, says Hussain, it could provide a “massive benefit” for the population at large.

Mohammed is certainly doing his bit. As well as monitoring his own BP twice a day, he is busy organising physical activities galore for its members, with many willing to travel an hour across London to attend the group’s adapted football matches. Dodgy Tickers is also collaborating with the British and Irish Hypertension Society to offer free checks later this month. The atmosphere will be welcoming, jovial and, above all, empowering, because “it won’t be people in white gowns coming along to do that,” says Mohammed, but “heart patients who are already using that technology” and helping others understand their own numbers. ●

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