



## Improving population health outcomes for hypertension:

Evidence on what's working and the key components

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## Introduction

Uncontrolled high blood pressure is one of the biggest challenges facing the NHS. Today, around 30% of adults are living with hypertension and 4.2 million people may be undiagnosed in the UK.<sup>1</sup> The clinical management of hypertension accounts for 12% of visits in primary care.<sup>2</sup> And as a key risk factor for cardiovascular disease, it can be associated with one million hospital admissions in England and 5.5 million bed days. The cost to the system? Around £7.4 billion.<sup>3</sup>

We know prevention and proactive management could have significant benefits for population health and the system at large.

Purely speaking in health terms, a 10mmHg reduction in blood pressure results in a reduced risk of coronary heart disease (17%), stroke (27%), heart failure (28%) and all-cause mortality (13%).<sup>4</sup>

While projections from UCLPartners' Size of the Prize resource also make for stark reading as to wider possibilities. Using integrated care board data to illustrate potential gains of blood pressure optimisation, it shows current optimisation rates at around 67% percent.

## Introduction

Advancing hypertension control with population health models

With an increase to 80%, approximately 16,000 heart attacks and strokes could be prevented over three years, equating to £180 million in savings.<sup>5,6</sup>

And that doesn't even begin to quantify the gains in clinical capacity that could be delivered as a by-product of such results.

But these numbers are not easy to achieve.

Indeed, while some pockets of the system are attaining such results, there is still substantial variation.

Why? There are a multitude of factors from dwindling clinical resource down to funding. At the same time, we know hypertension is complex and has a variety of determinants, both genetic and environmental that contribute to its development.

This necessitates a population health approach. With increasing focus across the system on blood pressure targets and challenging goals to achieve, this paper takes a closer look at how practices, PCNs, ICBs and ICSs are tackling hypertension. Along the way, we explore what's working and some key components of population-based blood pressure control programmes.



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**There are not many interventions that would deliver this level of population health impact with the accompanying reduction in demand for expensive health and social care.**

- Is QOF bad for your heart? <sup>6</sup>

## Chapter One

# Enabling early detection and outreach

“ The starting point for living well with hypertension and preventing complications is early diagnosis and early, effective treatment – the longer a person lives with undiagnosed and inadequately treated hypertension, the worse their health outcomes are likely to be.

- The World Health Organisation global report on hypertension <sup>7</sup>

There are several barriers to effective hypertension control, but it invariably always starts with detection. With no ‘visible clues’, the first ‘symptom’ may unfortunately be a heart attack or stroke.

This ‘symptomless’ nature makes timely diagnosis problematic for both individuals and healthcare providers. In 95% of cases, the cause of hypertension is unknown.<sup>8</sup> Obtaining a diagnosis often relies on an optimal intersection between patients, clinicians, communities and the system.

Despite national initiatives such as the NHS health check for over 40s, earlier detection has remained a persistent problem.

Patient engagement has been an issue while limited funding and a reliance on GP capacity to facilitate the programme have presented further obstacles.



Compounding these problems is a major lack of public awareness. One need only look at data on perception of hypertension and screening. In a survey commissioned by NHS England of over 40s:<sup>9</sup>

- **41%** didn't know untreated high blood pressure could lead to heart disease
- **22%** were not aware hypertension causes heart attacks or strokes
- **44%** were unaware of free blood pressure checks at pharmacies
- **59%** didn't know they would not need an appointment to get checked

Thus, a population health approach to not only care delivery but also public awareness is required to effectively case-find undiagnosed patients, or what's been termed "the missing millions" among the UK population.

### Systematic outreach

Recently, we have seen national campaigns promoting the hypertension case finding service within community pharmacies offering free blood pressure checks.

'Hypertension Leaves No Clues' has been accompanied by placements on TV, social media, PR and advertising.<sup>10</sup>

Similarly, at a local level, some systems have launched

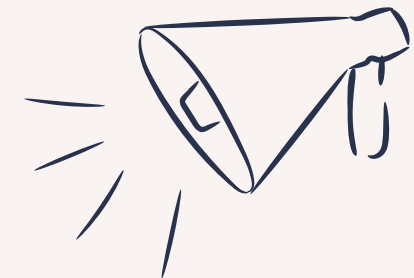
their own awareness campaigns such as 'Take The Pressure Off'.<sup>11,12</sup>

Alongside such efforts, there is a drive to test individuals within workplaces, sports venues and at community events. While free blood pressure monitors are also being made available to residents.

This type of systematic outreach is essential. Indeed, it has been identified as a key component of population-based hypertension control programmes, particularly where individuals infrequently access medical services.<sup>13</sup> This includes engaging hard-to-reach communities through mandatory annual screening in places of employment.

“

The interest generated by these efforts may increase community visibility, generating support for hypertension screening programs.



## Chapter One

Enabling early detection and outreach

But how effective are such programmes? Although some studies do express scepticism as to whether these strategies significantly improve community hypertension awareness and control, they nevertheless do acknowledge positive impact in building vigilance of the issue at hand.

Furthermore, there is evidence that global awareness campaigns such as May Measurement Month can produce results. In 2018, 224,285 individuals were identified as requiring treatment and 111,214 were found to be inadequately treated. Key components of the programme similarly include on-demand blood pressure kiosks and availability of automatic monitors.<sup>14</sup>

### Reaching people 'where they live'

These initiatives may be broadly bucketed under the umbrella of patient activation strategies, borne out of a need to reach people where they are and empower change. Patient activation has been defined "as the ability and willingness to take an active role in managing a health condition."<sup>15,16</sup> This vitally recognises the need to inspire action on behalf of individuals.

Studies have found that patient activation is associated with better hypertension control.<sup>15</sup> There are said to be four levels of patient activation (shown right).

Awareness campaigns are a key tool that cut across many of these four stages. But what other approaches could we take?

## The four levels of patient activation



Adapted from Hendriks M, et al. BMC Health Serv Res. 2014; 14: 393 <sup>17</sup>

## SMS models

Some teams have developed bespoke pathways using SMS-based outreach which increased early detection of undiagnosed hypertension.<sup>18</sup>

In this model, the primary care network is working collaboratively with local GP practices and community pharmacy to identify patients. Patients are invited by text to take blood pressure readings at home or visit a pharmacy. The individual can also upload results via their smartphone. Within the text message, links are provided to Google Maps showing pharmacies that offer the service specific to each ICB area. A link is also included to the national service finder.

Results from the programme include:

**77** new patients diagnosed

**1,519** patients responded out of 2,683 contacted

**50/50** split in patients who went to pharmacy or had their own monitor

Certainly, SMS offers a simple, convenient and relatively cheap means to reach individuals where they are, but it may just be scratching the surface of what could be possible with technology in the years to come.

## Leveraging innovation

Indeed, in an effort to bring the importance of blood pressure control closer to home in individual's daily lives and generate greater self-awareness, technological innovations are set to play a major role.

Smartphone sensors could help detect changes in blood pressure.<sup>19</sup> And by combining AI contactless technology in smartphones and tablets, it may be possible to track microblushes.<sup>20</sup> This information can then be translated into data on blood pressure, heart rate and respiration.

There's also the emergence of risk prediction tools utilising AI of course. However, commentators have rightly identified that when using real-world patient or clinical data for such a model, there is always the possibility of data being skewed due to inequalities that may emerge from an individuals' access to health services.<sup>21</sup> To use these tools effectively will require special care alongside further development of analytical skills or we may risk increasing health inequalities.

“ Some patient groups may be over or under represented, due to differences in the way people access health care, leading to an incomplete picture of health need.

- How can the NHS make the most of risk prediction tools? <sup>21</sup>

On the other hand, models that do not require clinical or genetic data are beginning to show some promise.

In a study of machine learning algorithms predicting risk of hypertension, random forest models utilising indicators such as gender, age, occupation, family history, BMI, waist circumference and four lifestyle indicators (healthy diet, smoke, drink and physical activity), showed it could distinguish high-risk and low-risk populations for hypertension based on these easy-to-collect variables. This may point to a potentially less invasive route for prediction and prevention in large populations in the future.<sup>22</sup>

While we await the outcomes of such innovations, the system must continue on this path to facilitate earlier diagnosis. In our next chapter, we explore management strategies.



## Success story

Enfield South West PCN tasked Suvera to fully manage their hypertensive population. Part of North Central London ICB and with an overall list of 50,000 patients, one of the key aims was to help all practices achieve normotensive ranges for HYP 003/007 QOF indicators with a target of 77%.

Suvera conducted outreach across the PCN footprint to engage and case find patients. Individuals were enrolled in Suvera's virtual clinic and given support for condition and medication review. Suvera delivered an average 83% target achievement across all practices.

“ Suvera were easy to engage with, understanding our needs and ways of working. The induction process was well organised and easy to follow, and they are extremely responsive to any queries or issues.

- Dr Arjuna Yogaskaran, PCN Clinical Director Enfield South West PCN - NCL ICB Digital Lead



## Chapter Two

# Delivering proactive management at scale

Once hypertension is identified, what does optimal management look like? Some have called for a shift away from one-off interventions and opportunistic assessment incentivised by systems such as QOF to year-round approaches that focus on proactive optimisation of blood pressure.<sup>6</sup>

While ongoing management is the ideal, it is easier said than done. Long-term conditions continue to outstrip available resource to manage them. And ever-present and immediate demand challenges pose an ongoing obstacle. One need only look at how optimisation rates tend to fall off at the end of QOF year as teams inevitably return to grappling with the day-to-day.<sup>6</sup>

Thus, the will is there, but the way may be missing or currently blocked. The cycle caused by the supply-demand mismatch may be leaving care providers' hands tied in a proverbial catch 22 situation.

### Risk stratification

As a means of bridging capacity gaps, risk stratification is key. Interrogating available data and prioritising patients who need timely intervention may feel obvious, but it is the foundation for success. Using search and stratification tools effectively can help plan activity, forecast required resource and coordinate care efficiently.

Certainly, evidence points to the positive impact such an approach can have on capacity pressures when primary care resource is stretched. There are also numerous examples which have been shared by UCLPartners on the results of proactive care frameworks to date.<sup>23</sup> Equally, here at Suvera, the impact of adopting a risk stratification-based approach has resulted in significant gains for our partners.



### Did you know?

Suvera virtual clinics saved 4670 clinical hours in primary care for one partner.

## Chapter Two

Delivering proactive management at scale

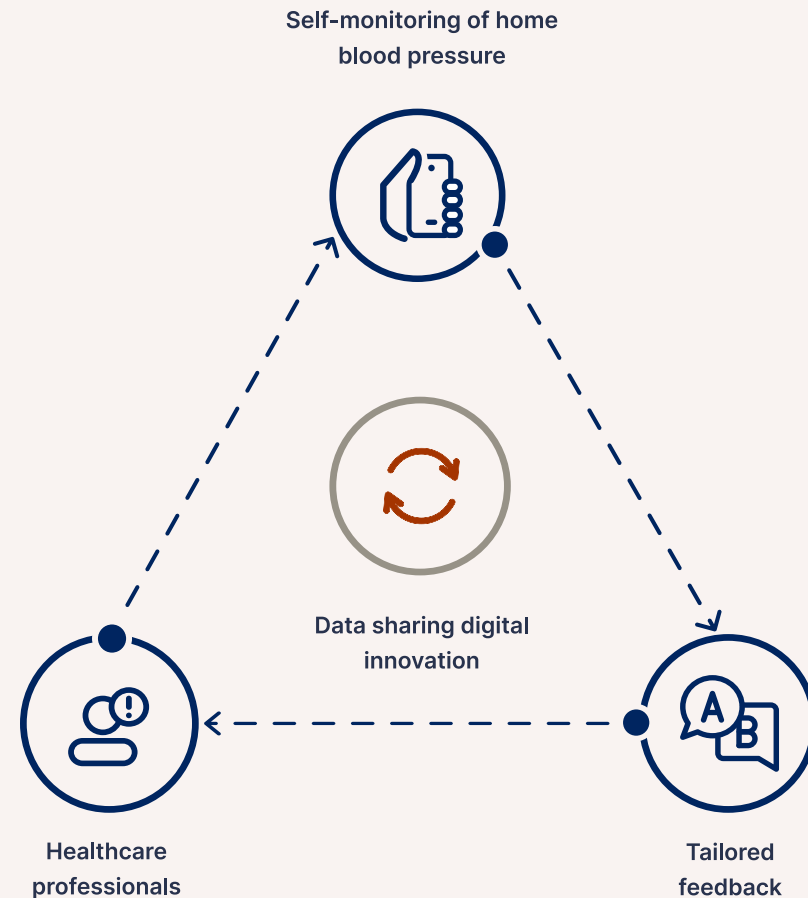
### Holistic care

What else is working? The ability to collate data on multiple conditions in a single touchpoint can facilitate a holistic approach to condition reviews, while data dashboards can give clinicians a view of real-time patient lists, recall and target data and enable efficient planning of contacts.

The right technology can also help to automate sequences of care and support teams to get ahead with QOF work. At the same time, utilisation of patient-facing apps for self-monitoring to track progress and facilitate remote management is another key element.

Such an approach can create an optimal intersection between all stakeholders. As aforementioned, management of hypertension is complex and shaped by patients, clinicians and the health system. Thus, as blood pressure management evolves in the digital age, technology must seek to bridge gaps between all three to enable more proactive care and overcome the supply-demand mismatch facing care providers.

### Blood pressure management in the digital age



Adapted from Fujiwara T, et al. [Hypertension Research](#) volume 47, 1087–1089 <sup>24</sup>

## Chapter Two

### Delivering proactive management at scale

#### Use cases

Across the system, we can point to several examples that have delivered results in this regard. Let's take a closer look.

#### Telemonitoring at scale

In one case study shared by NHS England, patients remotely measuring blood pressure and submitting readings by text message delivered a reduction in systolic blood pressure of 6.55mmHg and diastolic blood pressure of 4.23mmHg on average.<sup>25</sup> This programme utilised persona-based smart messaging to engage patients to record readings and support behaviour change.

If required, patients were enrolled in a care plan. Appointment numbers reduced by 8% and face-to-face appointments by 15%. While total consultation time reduced by 15 minutes.

#### Digitally-enabled population health management

In another study, a PCN delivering a primary prevention service combining risk stratification along with app support for patients reduced average systolic blood pressure by around 12mmHg and has seen more than 500 patients treated to target from a group of 1000 participants.<sup>26</sup> Patients could submit blood pressure readings and were monitored by healthcare assistants

and advanced nurse practitioners, and also given the ability access remote consultations where required.

#### Controlling blood pressure in general practice

GP practices worked in collaboration with their integrated care system to deliver a digitally-enabled population health project that resulted in a 30% increase in patients treated to target.<sup>27</sup> Patients were able to submit readings via blood pressure monitors at home and received review by clinicians. Practice staff saw a 75% reduction in administrative time, and time spent contacting hypertension patients to book blood pressure reviews reduced from 20 hours per month to just four hours.

#### Using a logic model for population health management evaluation

Across three PCNs, a risk stratification framework was utilised to improve blood pressure control.<sup>28</sup> A logic evaluation tool guided interventions and was used to evidence impact. Notable results indicate increased patient self-management skills around blood pressure monitoring and associated positive feelings with 81% finding the process to be easy. 67% reported at least one lifestyle change.

Across all these examples, we begin to get a clearer picture of what good can look like in terms of a proactive care model. A key part of that model of course will be treatment itself. And in our final chapter, we turn to how we can ensure optimal treatment outcomes.





## Success story

Shrewsbury PCN engaged Suvera to support their practices with chronic disease management and hypertension registers. Suvera analysts risk stratified patients lists and engaged the population. Patients could submit key health readings in the Suvera app, and were monitored in real-time by the Suvera care team.

The virtual clinic has helped to proactively manage patient needs, enabling prevention and early intervention at scale. For practice teams, the clinic has also streamlined care coordination and patient outreach, providing additional chronic care capacity to the system.

By taking care of tasks like collation of condition data, Suvera has freed up in-practice resource, collecting 22,000 blood pressure readings from patients since September 2022. The result? Suvera saved Shrewsbury PCN over 4,839 hours in appointments and approximately £345,000 in 2023.

“ We have more capacity to deal with other things like acute workload but also it's just about giving people a little bit of headspace, allowing a GP to have a lunch break for example, which is really rare.

- Dr Charlotte Hart, Clinical Director, Shrewsbury PCN



### Did you know?

Suvera is delivering a 12.65 mmHg average change in systolic blood pressure across services

## Chapter Three

# Ensuring optimal treatment outcomes

In the first ever World Health Organisation global report on hypertension, it was reported that approximately four out of every five people with hypertension are not adequately treated.<sup>7</sup> We know high blood pressure can be managed effectively with low-cost medications, and yet today, only one in five people with hypertension are at target. So why these numbers?

### Adherence

Adherence remains a major barrier to optimal outcomes and is multifactorial in nature (See right).

Broadly speaking, we know hypertension can be tackled through a combination of lifestyle modification and medicine. When behaviour change may be the best course of 'treatment' for some individuals, sticking to that course and producing long-lasting change is never easy.

Lifestyle habits around diet, activity, smoking and alcohol consumption can be 'hard to kick' and present significant barriers. Equally adherence to antihypertensive therapy can be affected by complexity of treatment regimen and tolerability issues.

## The five dimensions of adherence



Health system/  
HCT-factors



Social/economic  
factors



Therapy-related  
factors



Patient-related  
factors



Condition-related  
factors

Adapted from World Health Organisation, The five dimensions of adherence <sup>29</sup>

“ Low patient adherence to antihypertensive medication is the most significant modifiable patient-related barrier to achieving controlled blood pressure.

- Barriers to and determinants of medication adherence in hypertension management: Perspective of the CoSMO study <sup>30</sup>

Furthermore, as evidenced by NHS England's Core20Plus50 approach, health inequalities often go together with inadequate hypertensive control. In England, prevalence of hypertension is said to vary by area deprivation, ranging from 23% in the least deprived quintile of indices of multiple deprivation to 40% in the most deprived.<sup>31</sup> And access to treatment will always be an issue when individuals have inequitable access to health services.

Let's look at some possible approaches to tackle some of these problems.

### Treatment protocols

The WHO Hearts Technical Package highlights a range of strategies including the use of a standardised drug- and dose-specific treatment protocol,

uninterrupted access to quality-assured medications and follow-up and referral systems as essential to improve treatment outcomes.<sup>7</sup>

While other studies point to a number of potential interventions to reduce burden of treatment.

This includes single pill combination therapies which have been reported to improve adherence in comparison to free-equivalent combinations.<sup>32</sup> Equally, other studies have pointed to reduced pill burden and time to target.<sup>13</sup> And wider benefits have been highlighted when two medications from complementary pharmacological antihypertensive classes are used within population health models:

“ This is key to implementing a population-based approach to hypertension control because it can simplify a treatment protocol by eliminating the need to have separate medicine recommendations for different groups.

Developing population-based hypertension control programs <sup>13</sup>

Looking to the future, continuing advancements in the field of gene therapy may provide a means to further improve compliance.<sup>14</sup> Although, while recent genetic research shows that some of us may be more predisposed to hypertension than others, the emergence of treatment in this class could be some time off still.<sup>33</sup>

### Team-based care

Beyond the pill, team-based care can have a dual benefit in: a) leveraging specialist expertise such as clinical pharmacy to optimise treatment and improve adherence, and b) providing services where capacity and access are persistent issues.

Again, the WHO Hearts Technical Package identifies a number of cost-effective strategies that may be implemented at a primary care level to control blood pressure and prevent heart attack, stroke and other complications. The role of multidisciplinary teams is highlighted as a core component. This includes leveraging specialist expertise of pharmacists, nurses, counsellors, social workers, nutritionists and community health workers.<sup>7</sup>

Equally, UCLPartners' Proactive Care Frameworks point to the benefits of redistributing work across all primary care staff for long-term condition management.<sup>34,35</sup>

These frameworks may reduce GP workloads and are built around four key principles:<sup>35</sup>

1. Virtual where appropriate and face-to-face where needed
2. Underpinned by digital tools and other resources
3. A step change in support for self-management
4. Mobilisation of the wider primary care workforce

## Chapter Three

### Ensuring optimal treatment outcomes

Certainly, the role of pharmacists has been found to be effective within team-based care in addressing nonadherence and providing guided interventions in combination with digital tools.<sup>32</sup>

A prescribing pharmacist can judge whether a condition is properly under control, and, if not, review and adjust medication to better meet the needs of a patient. Pharmacists can also provide ongoing disease education and information on management.

While the patient may be able to access support more conveniently than they would at their GP surgery when capacity is an issue.

Such services can provide effective remote management outside of GP practices and also extend access to hard-to-reach and deprived areas through digital platforms.

### Self-management

Of course, hypertension is a lifestyle disease and behaviour change is often our first line of defence. Thus, we need to encourage ongoing healthy choices and behaviours while empowering action outside of the consultation room. But self-management has its own adherence challenges as discussed at the top of this chapter.

So, how should such initiatives be delivered to ensure maximum impact?

Digital education programmes have been shown to be effective in delivering significantly greater changes in ambulatory systolic blood pressure vs standard lifestyle modification.

Key features of programmes include interactive guidance on how to implement lifestyle changes, as well as self-planning and evaluation.<sup>37</sup>

And providing more convenient ways to help patients 'know their numbers' can also deliver results.

“

Being the most accessible health care provider, the pharmacist can play a substantial role in the care of patients with chronic diseases and namely hypertension. Pharmacists can contribute to hypertension management in various ways, including disease state education, patient counselling, blood pressure measurement, and monitoring, adherence monitoring, and medication therapy management.

- The pharmacist role in hypertension management in the community setting<sup>36</sup>

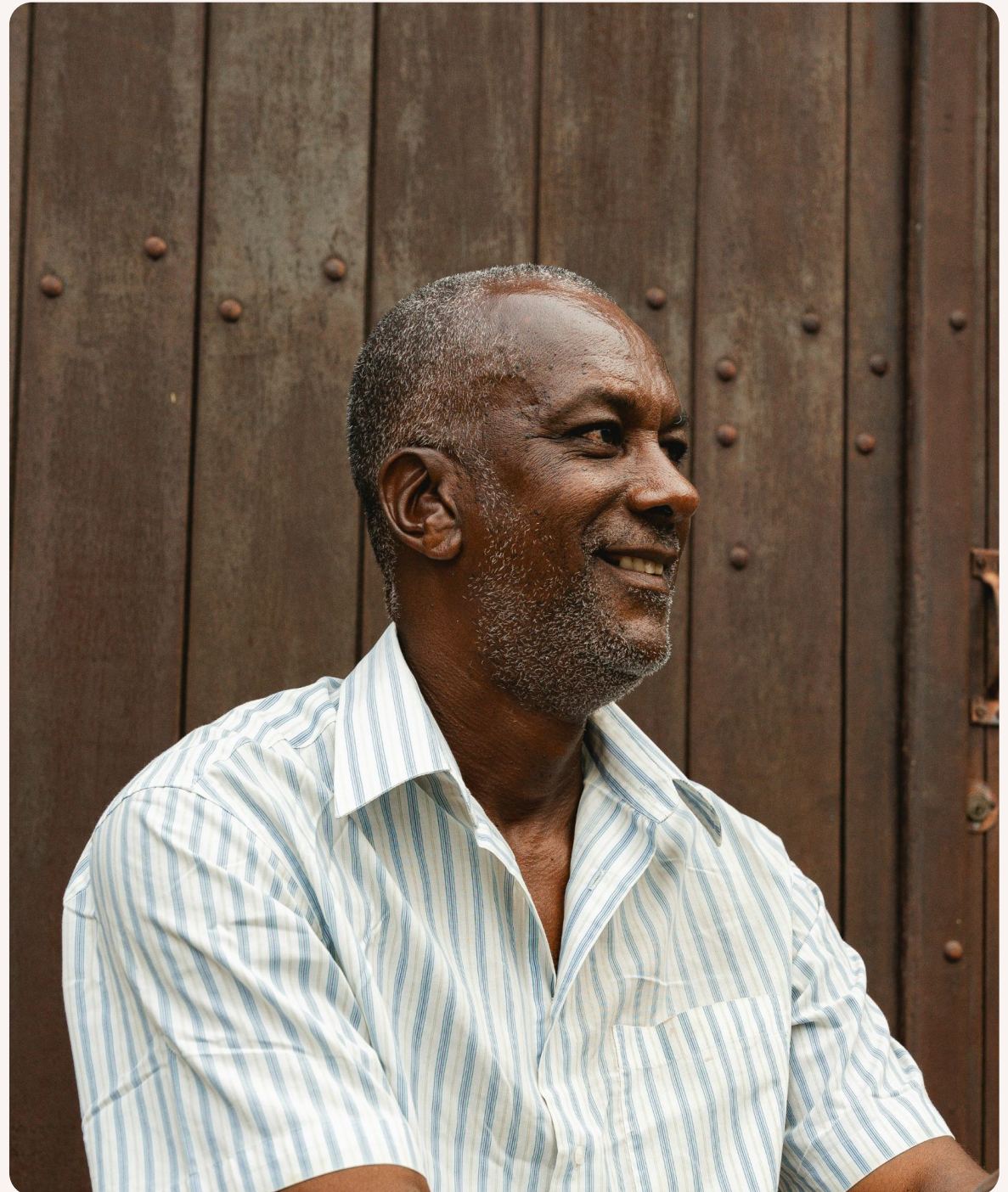
### Chapter Three

#### Ensuring optimal treatment outcomes

When individuals actively record and track health data in digital platforms, it can foster greater ownership of health. Such tools can also provide a source of ongoing education and lifestyle advice, and enable remote monitoring.

In addition, lifestyle management of hypertension is increasingly extending to include new strategies on stress reduction, sleep quality and mindfulness practices like meditation, yoga and deep breathing techniques. Evidence suggests such methods can also improve control.<sup>38,39</sup>

A study of the mindfulness-based stress reduction (MBSR) programme demonstrated improvement in physical and mental wellbeing, as well as promoting blood pressure reduction. A minimum of eight weekly sessions of MBSR and over 30 minutes of meditation reduced stress, mood swings and systolic and diastolic blood pressure by 6.6 and 2.5mmHg respectively. While a systematic review reported that 45 minutes of yoga a day reduced systolic blood pressure by 6.5mmHg and diastolic blood pressure by 2.8mmHg in a 12-week program.<sup>38</sup>





## Success story

Part of North West London ICB, Half Penny Steps enlisted Suvera to support hypertension management and boost QOF performance. Half Penny Steps serves a diverse population of 6000 patients with high levels of deprivation in the surrounding area. A key goal for the service was achievement in HYP 003/007 QOF indicators, in which the practice had previously achieved 62%.

Through the virtual clinic, patients were empowered to engage in condition management through the Suvera app. Working as an extension of the practice, the Suvera care team took on end-to-end management of hypertensive patients, including medication and care plan review as well as prescribing and monitoring. Suvera helped deliver an average 85% target achievement, far surpassing previous performance.

“ Suvera is an exceptional clinical service to support our long-term condition registers. Most importantly, our patients are well looked after and giving great feedback on their user experience with Suvera, whilst we are achieving better than ever core performance indicator targets.

- Dr Earim Chaudry, GP Partner & Clinical Director, Half Penny Steps Health Centre (NWL ICB)

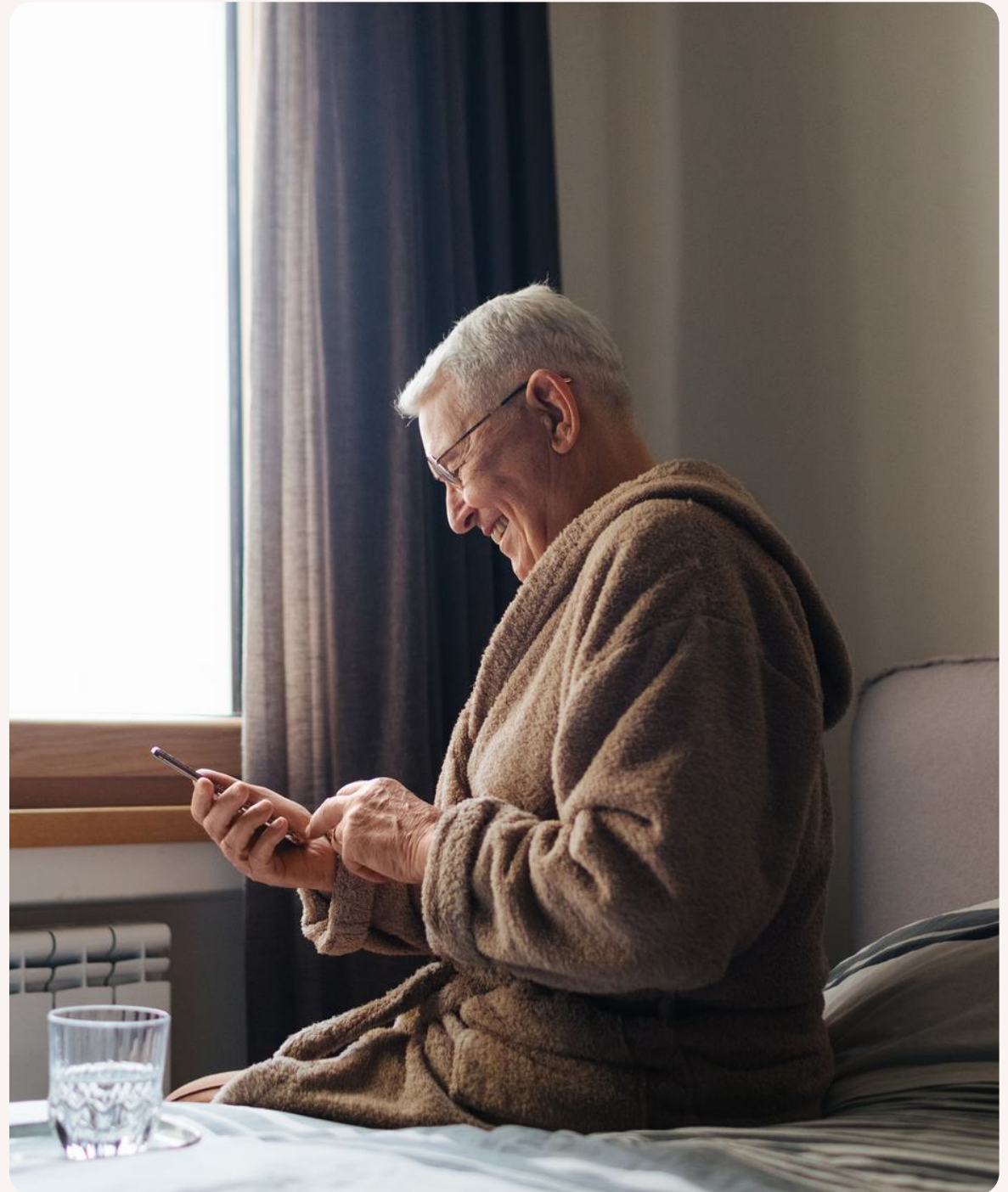


## Conclusion

Improving blood pressure control across populations necessitates more proactive and preventative models of care. This is the foundation on which the system may overcome awareness barriers, engage people where they are and reduce risk of chronic disease.

A focus on earlier detection, treatment and ongoing management is vital. And, as explored in this paper, there are a number of examples across the NHS that have delivered results in that regard that may serve as future blueprints for success and 'what works'.

Core components of these models include a prevalent focus on risk stratification, team-based care and digital technology as well as self-management, remote monitoring and education to support optimal treatment outcomes. The ability to scale such models will be integral to improving population health and ensuring the future sustainability of the health system.



## Conclusion

# Need support? Talk to us.

If you're working in the system, you'll be all too aware of the increasing focus within the NHS on tackling high blood pressure in a more effective and efficient way. Whether it's delivering proactive, earlier interventions to hypertensive populations who are uncontrolled, or finding the 'missing millions' not currently diagnosed.

With this comes challenging goals. The national objective is for 80% of patients with hypertension to be treated to

target. A lofty ambition for sure, but is it possible?

In a word, yes. Here at Suvera, we've seen first hand what can be accomplished working with our practice, PCN and ICB partners. We're delivering a 12.65 mmHg average change in systolic blood pressure across our services.

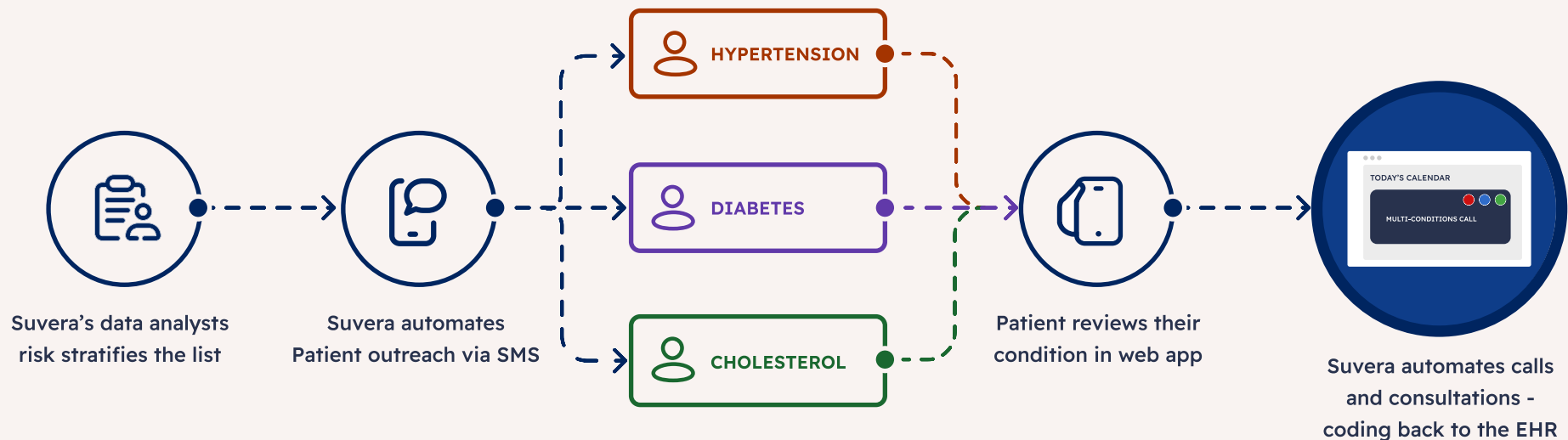
And with our virtual clinic model, we have helped partners attain an average 83% target achievement in

key QOF hypertension indicators.

And with our virtual clinic model, we have helped partners attain an average 83% target achievement in key QOF hypertension indicators.

By combining a population health platform, virtual clinic and chronic care capacity, we help NHS partners improve chronic condition management at scale.

## How it works



## Conclusion

Need support? Talk to us.

# Clinical impact in our GP Partnerships

The graph shows patient's managed by Suvera, and the stages which they have improved from their first to last reading

On average, 70% of patients reach normal blood pressure control within 28 days of joining the service.

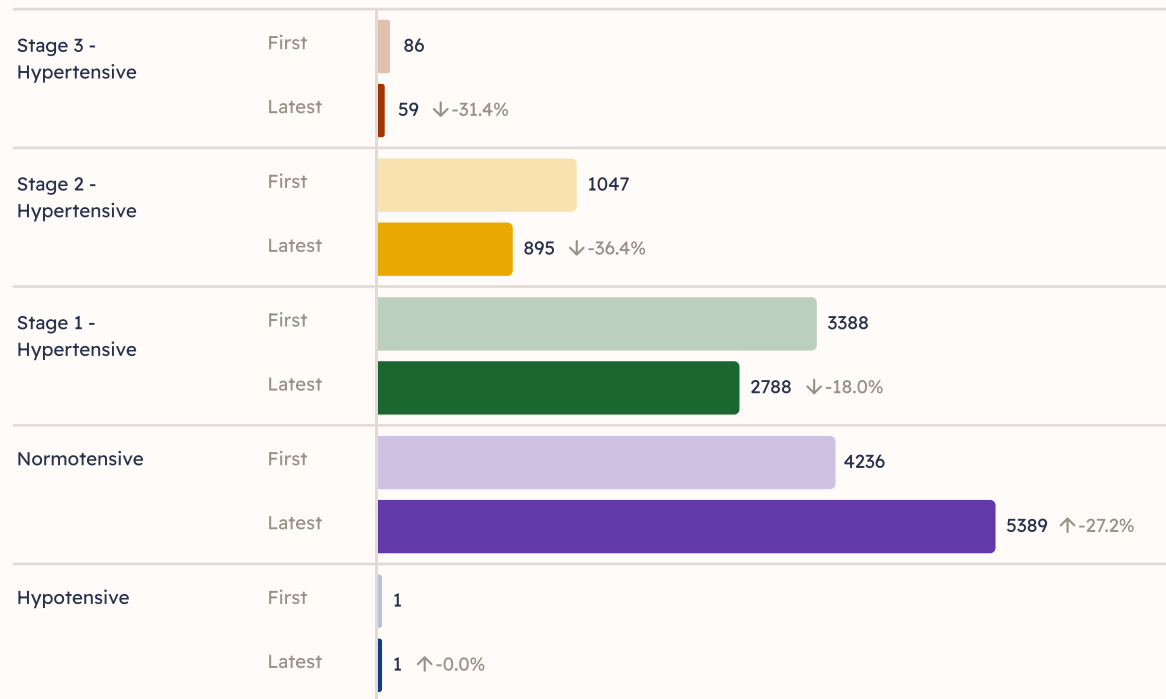
**Stage 3 -Hypertensive**  
≥ 175 mmHg Systolic and/or ≥115 mmHg Diastolic

**Stage 2 -Hypertensive**  
≥ 150 mmHg Systolic and/or ≥95 mmHg Diastolic

**Stage 1 -Hypertensive**  
≥ 135 mmHg Systolic and/or ≥98 mmHg Diastolic

**Normotensive**  
< 135 mmHg Systolic and/or ≥85 mmHg Diastolic

**Hypotensive**  
< 90 mmHg Systolic and/or ≥50 mmHg Diastolic





Providing NHS services

We support GP practices, PCNs, Federations and ICBs.

If you'd like to discuss what's possible for your population, contact our team on [partnerships@suvera.co.uk](mailto:partnerships@suvera.co.uk) or [book a meeting](#)

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