



**DORSET**  
Local Enterprise Partnership

Dorset Local Enterprise Partnership

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Getting Building Fund (GBF)

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End of Project Report

**Remote Management of Hypertension**

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March 2022

## PROJECT SUMMARY

Hypertension is one of the most important preventable causes of premature morbidity and mortality in the UK. It increases the risk of atrial fibrillation and is a major risk factor for stroke, myocardial infarction, heart failure, chronic kidney disease (CKD), cognitive decline and premature death. Raised blood pressure is one of three main modifiable risk factors for cardiovascular disease, which accounts for 80% of all cases of premature coronary heart disease (CHD).

The Dorset Intelligence & Insight Service (DiiS) has enabled the development of some of the most advanced Population Health Management (PHM) intelligence in the UK and allows us to continue to drive data led planning, design and delivery of services within primary care and the wider Integrated Care System using a holistic, integrated and whole system approach. This will place us in a strong position for intelligence led planning and delivery of services based on local population needs, as part of COVID 19 reset and recovery and beyond.

We must look to reduce the effect of uncontrolled hypertension and know that there is variation in hypertension control across Dorset, contributing to this rise in Cardiovascular Disease (CVD). We need to transform the way we deliver the management of hypertensive disease and are committed to a remote monitoring offer.

Our experience during the Covid-19 pandemic has dramatically changed the way we work, the way that people have managed their own health, and exposed gaps in care and a need to reduce health inequalities.

This project aimed to provide hypertension remote monitoring, together with education and support, to an identified group of people with hypertension whose health outcomes and life chances will be dramatically improved as a result.

## Objectives

We used a population health management approach to identify patients at risk of hypertension in Dorset, separating patients initially into two groups, **High Risk groups: Patients most likely to require admission to hospital in the next 12 months** and **Rising Risk Group: Patients who are not in the high-risk groups, but are still at risk of increased morbidity and mortality due to multiple risk factors. This helped us to understand which patients were most in need of support.**

- We worked with Omron, a med tech company to procure a digital solution to remote monitoring of hypertension
- We aimed to provide a personalised self-management approach to improve the management of hypertension within the population of Dorset, which we have achieved through utilisation of the Hypertension plus platform from Omron. However, we have been unable to measure this by patient activation measure (PAM)<sup>1</sup> currently. We have been conducting in app surveys to patients to understand their activation and engagement and have seen a general overcompliance with using the platform.
- We have integrated the remote monitoring data into our current digital system, to include in care records and further population health management and are working

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<sup>1</sup> <https://www.insigniahealth.com/products/pam-survey>

to link in the API data in the future so that we may benefit from seeing this in more detail.

- Accelerate intervention where required to help someone stay healthier for longer. We are already seeing patients being monitored and supported on the Hypertension Plus platform, who may otherwise have not been provided with any intervention until an exacerbation or hospitalisation had occurred.
- Increase in productivity through the ability for clinicians to assess patient data remotely without seeing the patient and swiftly make changes to patient's care pathways where needed. We have already seen this evidenced in one of our practices that we conducted a case study and saw that simply by allocating 30 minutes per day they were managing to support 15 patients, whereas a traditional face to face consultation would have only allowed them to see 3 patients in this timeframe.
- To evaluate the impact of this in operational changes, savings, and cost avoidances. This is something we will start to see evidenced as we roll out further across Dorset and into consequent years for those already actively onboarding patients.

This fits into the work that has been mandated by NHSE around CVDPrevent and the NHS Long Term Plan.

Project start date	30 <sup>th</sup> October 2020
Project completion date	31 <sup>st</sup> March 2022

## CHANGE REQUEST

We requested the removal of 215 blood pressure wearable devices deployed to patients, in December 2020 - we were adopting an approach solely based on blood pressure cuffs as a means of remote monitoring as this enabled us to widen our scope of patients supported.

## OUTPUTS AND OUTCOMES:

We have:

1. Purchased 2000 Blood Pressure Cuffs which have now been distributed to patients/practices to enable use of the platform and to help reduce any health inequalities for patients who may not be able to purchase a blood pressure cuff to take their readings.
2. Purchased the Hypertension Plus Software for 38 GP Practices across Dorset.
3. Conducted the Evaluation online seminar for the project on 6th April 2022 and this was recorded and circulated across Primary care and CCG via the comms team.
4. Shared progress of the project so far back in October at the Best Practice Nursing Conference, where Louise Bell presented to a large audience at the NEC.
5. Presented at the Innovation hub for an audience of health, social care, and industry partners from within Dorset as a means of highlighting the opportunity between Health and Digital in Dorset with a focus on MEDtech.
6. The Innovation Hub in Dorset (one of 4 in the Country with a focus on the adoption and scale of innovations) have been involved in supporting with the SHIP study (Study of Hypertension in Primary Care) which has yet to be published.

The intended outcomes of the project are as follows:

OUTCOMES MATRIX – Long term condition remote management of hypertension		Unit	FY 2020/21	FY 2021/22	FY 2022/23	FY 2023/24	FY 2024/25	Total PROJECTIONS
Outcome	Definition		ANNUAL PROJECTIONS					
Retained jobs	The total number of newly created and safeguarded permanent full-time equivalent jobs as a direct result of the intervention at predetermined employment sites.	FTEs	5	5	5	5	5	5
Up-skilled jobs		FTEs	10	140	-	-	-	150
Volunteer positions		No.	5	30	-	-	-	35
1 fellowship/mentorship		No.	-	1	-	-	-	1
Health trial participants		No.	1,000	4,214	-	-	-	5,214
Productivity value increase (GVA)		£	-	£87,425	£174,851	£349,701	£349,701	£961,678
Private sector businesses engaged		No.	-	1	1	-	-	2
Private leveraged investment	This is any additional private sector funding or wider investment that is spent in the area as a result of the GBF intervention.	£	-	£100,000	£100,000	-	-	£200,000
Strokes or heart attacks avoided		No.	-	-	-	-	5	5
Reduction in CO2 emissions (tonnes)		Tonnes	-	-	-	-	14.1	14.1 tonnes
Knowledge Exchange Activities	The Applicant shall commit to defining and delivering a reasonable and practical range of knowledge exchange activities that will strengthen the ability for the Dorset med tech business community to understand future potential commercial opportunities and report back to Dorset LEP on the plan put in place to achieve this.  The Applicant shall report back to Dorset LEP what was actually delivered through the knowledge exchange activities on bi-monthly basis as part of highlight reports until 31 March 2022 as well as through quarterly outputs and outcomes reporting until 31 March 2025, including feedback from the Dorset med tech business community.	Activities	-	3x webinar 1x symposium	-	-	-	3x webinar 1x symposium

To date the investment from the LEP in pump priming this work and project teams have:

- 1) Exceeded our projected outcomes for retained positions, volunteer positions and fellowships, as well as our productivity value increase of £181,420.
- 2) Helped in demonstrating that the use of technology can help manage patients' needs in a different way, utilising a different part of the workforce that has been traditionally a GP until now. This project has shown that Pharmacists and Advanced nurse practitioners, as well as non-clinical roles, can manage our hypertensive population, escalating to a GP when appropriate.
- 3) Strengthened partnership with industry having engaged with four private businesses right at the outset. A continued partnership into year two now. These partnerships have demonstrated our ability to enthuse and engage the private sector in supporting change management and new models of care in general practice.

At this stage of deployment, it is difficult to evidence the reduction of strokes and heart attacks however, from the existing cohort we have had:

- Of those who accepted the clinical recommendation to remote monitor their hypertension 62% are men with 38% being women
- Of these 78% are between the ages of 40-65yrs (working population) with only 19% between the ages of 65-80yrs.
- More than 8,000 blood pressure readings recorded
- 20 escalations of patients recording blood pressure readings that are too high and need review by a clinical member
- 6 escalations of patients recording blood pressure readings are too low which equally required a review by a clinical member.
- 193 overall actions (39%) resulting in medication updates for patients who show via their blood pressure readings that they continue to be uncontrolled and therefore at elevated risk of a cardiac event.

Due to the way our Health System works across partners, there is not always coded data to show impact across organisations and so it is vital we hear from partners. A good example of this is a case study conducted on one of the practices that had implemented BP@Home which showed a patient who had commenced BP@Home and submitted dangerously high blood

pressure readings that we would refer to as malignant. Had he not submitted those blood pressure readings and the clinician received the urgent alert via the clinician's dashboard that he was at incredibly elevated risk for CVA (stroke) but this was prevented with the initiation of antihypertensive therapy by his GP. Another case shows a patient who received advice and guidance from a health coach when registering for BP@home and subsequently used the education provided within the platform to make lifestyle changes that saw him lose weight, stop smoking, and control his blood pressure readings. From traditional research the reduction in alcohol, smoking cessation, loss of weight and being more active are the main factors to reducing risk of developing long term conditions or multimorbidity's.

The outcomes we have yet to achieve are:

- Health trial participants - this is due to the delayed start to the project because of covid pressures meaning we are now starting to see the rapid increase of patients on the platform and project to be back on track by the end of the next financial year. Because of the impact we have been able to demonstrate so far, the project has been given another year of funding and all primary care networks in Dorset have been commissioned to implement.
- Up-skilled jobs - Due to the success of the deployment so far, the primary care networks have submitted operational plans for 2022/23 and many are looking to recruit digital care coordinators that have proven critical to the success of such deployments. During 2021/22 there were 5 recruited and a further 5 are currently in recruitment with others adding digital care coordination responsibilities to existing roles.
- Healthcare Symposium and further work to promote what we are doing with Digital Access to Services @Home (D@SH) in general will come in the next financial year, once governance approvals are in place. This has been delayed due to internal restructuring and the transition of Dorset CCG into an Integrated Care Board (ICB)

## **BENEFITS REALISED TO DATE**

The delivery of this project has already demonstrated an improved management of patient's condition through access to diagnostic blood pressure readings as well as a reduction in visits to GP. Naturally, this has contributed to an improved quality of life, which although we have yet to conduct a full survey on patients to confirm this, we have had several patient testimonials reflecting that this is already the case.

Our partnership with LiveWell Dorset has helped us to improve access to services and coordinated signposting via social prescribing teams and health coaches.

The benefits for the NHS that have been realised so far are that we have delivered a personalised digital health diagnostic tool for patients with long term conditions. Using our Dorset Intelligence and Insight Service (DiiS) we have been able to gauge uptake of the digital diagnostic intervention and gather real-world evidence of its impact on patients, although there is far more data to be gathered as the adoption of this intervention accelerates.

The optimisation of care pathways with digital self-management diagnostics is fast becoming integral to the needs of not only the NHS but the patients, and through this work we are already seeing the wider benefits of this, with pathways becoming more direct, more easily accessible and reaching much of the population regardless of deprivation, digital literacy, and other potential limiting factors.

Whilst delivering this intervention we have begun to gather a real view of patient's attitudes to their health issues and assess areas of improvement. We have done this by requesting the patient inform us of their digital literacy levels upon registering for the platform and have also provided in-app questions to understand the patients' attitudes throughout their monitoring journey. We hope that in the long term we will be able to alleviate Hospital demand for

monitoring clinical situations and prevent unnecessary admissions through rapid intervention and medication titration using the data provided by the patients.

## FINANCES

The initial budget awarded was £300,000. Of this, we overspent on the software to enable patients to use the platform and blood pressure monitors to be given to patients.

The total value of the Call-Off Contract was £312,684 inclusive of VAT  
Software 38 practices\* for 18 months: GBP 213,750 (excl VAT), £256,500 (incl VAT) \* equates to 8 PCN's Devices  
2,000 devices at £23.41 = £46,820 (Excl VAT), £56,184 (Incl VAT)  
Total = £312,684 inclusive of VAT

There has been £332,296 match funding to support delivery of this project, through resource, training and support provided to deliver, implement, and embed this intervention.

Due to the success of the deployment so far there has been an additional digital investment of £278K for 2022/23 to continue to scale up across Dorset with further funds made available to General practice / Primary Care Networks to adopt this new way of working over the next 12 months.

## LESSONS LEARNT

Some of the key lessons learnt during the delivery of this project were:

- Training Delivery - Ensure all testing and technical elements are completed prior to setting up any training. When arranging/delivering this training ensure clear expectations of follow up actions are tangible and set out clearly
- Establish and invite all necessary roles required to participate in the project to an implementation call/meeting and ensure that every one of these is communicated with before commencing the project and understands their part to play in the process
- Provide a robust 'implementation pack' to support practices at every step of the project, to include all documentation as well as patient/workforce comms etc
- Set up group feedback huddles and ten-minute check-in with the teams as soon as project delivery commences, with the Digital Nurse fellows and anyone in the PCN involved in the project to help establish that solid communication and two-way conversation right at the outset. Understand where in the process each PCN is and bring in outside support from industry partners where necessary and appropriate.
- Consultation with Primary care teams on the initial patient engagement process. Although we did this with our patient engagement group (and had positive feedback on the patient experience) we did not gather this from a workforce perspective. Run initial onboarding with one PCN to begin with to identify these issues early on and ensure a better experience for those that follow
- Now that we have completed the initial deployment, we will buddy up PCNs with those that have already been through the process; this will enable us to provide reassurance to new PCNs by supplying someone who has already gone through the end-to-end process.
- Were we to deploy this again from scratch then we would bring in the National Association of Primary Care (NAPC) 'on the ground' support sooner to help overcome some of the concerns raised and physically support those first few sessions of using the software within a new operational procedure (this was impacted due to COVID-19 and social distancing)
- Taking a population health approach and segmenting the 133,563 hypertensive population in Dorset into three categories of risk helped in reaching those most in

clinical need. The data was taken from the electronic patient record latest BP reading in the past 12 months. The lists were sent to each PCN and cleansed by reviewing the cohort and removing those from the exclusion criteria as part of clinical safety. During this process we discovered a percentage of patients that were coded as hypertensive but not diagnosed due to having not completed a monitoring week as per NICE Guidelines. This helped diagnosis and correction of patient records.

## **RISKS & ISSUES**

Some of the main risks/issues we faced were:

- **Integration:** Between Omron platform powering hypertension remote management and the GP Platform, SystemOne. There were significant delays in deployment. The interoperability of the two software platforms talking to each other faced several barriers such as firewalls blockers from one party to another and this led to large amount of testing and then regression testing. Had this issue not been overcome then the project would have been seriously limited in adoption due to duplication in effort for completion of tasks on two separate platforms.
- **Impact for ongoing investment:** Covid-19, workforce sickness /social isolation due to close contact with members of the household that were positive of Covid-19 and mass vaccination programmes put stress on the workforce, particularly in General Practice, and hindered capacity to focus on anything new having already change fatigue from the constant changes and updates from NHS England regarding response to the pandemic. Such delays to go live impacted the offer to patients and therefore adoption to evidence impact. This was mitigated by continuing to encourage and motivate the practices on a weekly basis and when restrictions were lifted to have all practices visited for 2 days with a nurse specialist from the National Association of Primary Care to help embed the new model of care. This proved beneficial as numbers have continued to increase at a steady rate since. This led to enough data to show benefits for year two.
- **Cultural:** General Practice is cautious regarding remote monitoring due to liability and capacity concerns. This was confused further by NHS England increasing focus on virtual wards and these being 24/7 models of care. This was mitigated by obtaining a letter of support from the clinical director and circulating comms around benefits / data emerging. The terms being used now are 'surveillance' of patients within a primary care setting.
- **Potential for low engagement from the patient population –** We contacted patients by text initially to invite them to participate in the project and there was a risk that we may have low numbers responding. This links into our evaluation question around the readiness of the population to be onboarded to a project in this way. We mitigated this by working with our Patient Engagement Group to help word the messages in a way that would be more acceptable to the public and introduced a follow up call as part of our process to reassure patients of the legitimacy of the contact.

## **SUCCESS STORY**

From the outset, this has not been a question of whether a digital health technology can support healthcare providers or patients to better understand, manage and consequently improve their long-term health; it has been a question of how we can engage these stakeholders and show them the benefits.

Through delivery of BP@Home we have started to see some valuable impacts already, even during the first year. To name but a few we have seen how we are reaching patients who may otherwise have neglected their health due to geography, availability or simply because they are unwilling or unable to prioritise visits to their GP practice. We have supported patients in all areas regardless of the levels of deprivation and we have seen a positive

correlation between patients adopting the support of a health coach or social prescriber service and the use of this platform. We wanted not only to tackle the rising problem of hypertension and its increasing threat to the wellness of the population, but also the demand on the NHS in a time when pressures continue to increase, and resources are stretched.

We set out to empower and educate the hypertensive population of Dorset, working with a MEDtech provider who could deliver the platform to make this possible but also collaborating with other key partners to make this a reality. Ernst & Young provided the project support needed for planning and initial deployment, alongside the National Association of Primary Care (NAPC) who continue to support us not only at the outset of the project through consultancy and planning but in the later stages of embedding and troubleshooting by providing a faculty staff member on the ground to visit each Primary Care Network. We worked with one of our existing partners MJOG by Livi to create the templates we would use to invite patients to join the project, and this included coding responses so that we could monitor and evaluate uptake and digital literacy of patients. Working with the Dorset Intelligence and Insight Service (DiiS) we were able to visualise and surface this data in a way that has not been seen before and truly helps to demonstrate the value and impact of the work we are doing in an interactive way with real time data. Our final collaboration was with LiveWell Dorset, through funding a dedicated Digital Health Advisor to support patients on the platform we were able to not only provide support and assurance to those not as capable or confident in their digital skills but also prompting the wider conversations about hypertension, its impact on lifestyle and wellness and what measures besides simply increasing medication could be taken to improve the patient's quality of life and overall health.

One of the key risks we faced was the lack of engagement by the Primary Care Teams and not seeing the value that this solution might provide. All the usual barriers were faced- time, training, understanding, capacity, resource... to name but a few. One of the outputs from this project was the necessity for a new role within Primary Care, a role to support digital and the inevitable increase in its prevalence going forward, a bridge between the commissioners and the primary care teams who would be implementing these interventions, a point of contact and support for the patients and someone who understands the demands of a GP practice but the benefits of digital in helping to overcome these. When we began this project, one Primary Care Network (PCN) recruited a Digital Care Co-ordinator, a brand-new role, funded through the additional roles reimbursement scheme (ARRS) to relieve some of the pressure and support with engaging patients and supporting colleagues on their digital journey. Now, less than 18 months later, there are 9 Digital Care Co-ordinators active across Dorset with many other PCNs looking to follow suit; it has already become an essential role and one of the first of its kind within the NHS.

A comprehensive support package was provided to all PCNs consisting of Digital Huddles, One to one check-ins, on the ground support, a dedicated training site as well as training sessions. These combined with excellent support from the project team and our partners is why we were able to overcome many of the barriers we faced at the outset.

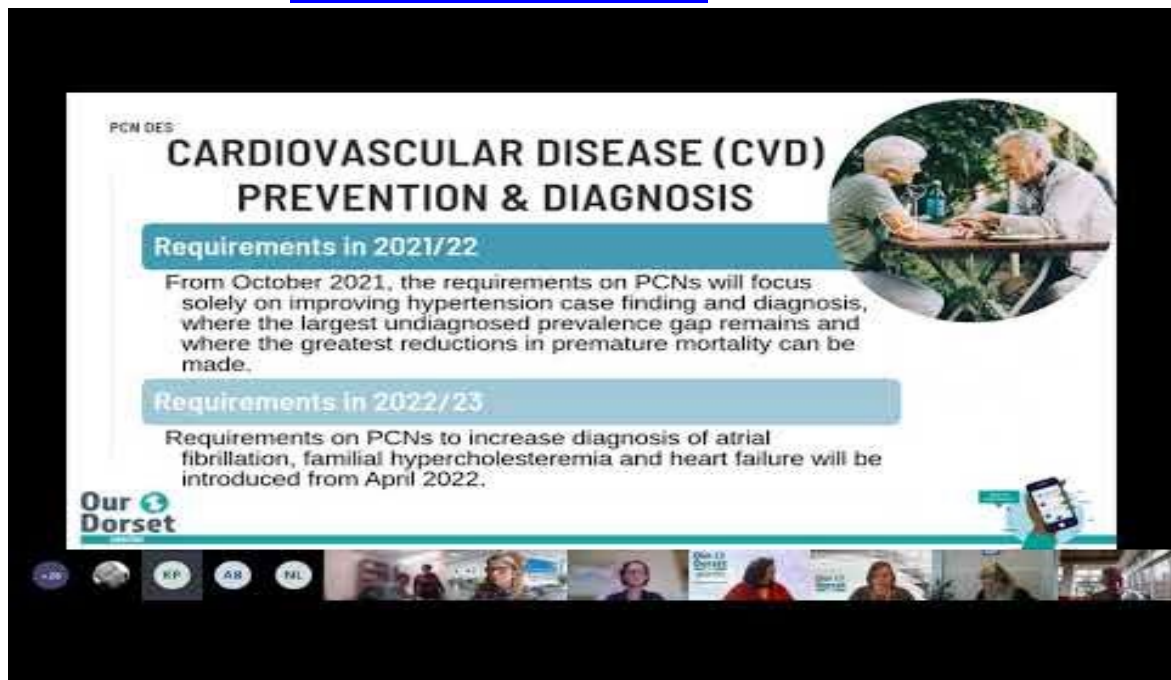
Despite a slow start due to integration issues and the redirection of workforce due to covid, meaning we did not onboard any patients to the platform until August 2021, we now have over 220 patients on the platform which is growing daily and are already seeing the benefits for both those patients and the workforce. Some of these testimonials can be seen in our Evaluation Webinar hosted on 6<sup>th</sup> April 2022 to highlight the work we have undertaken so far



(link below). During this webinar we heard from LiveWell Dorset and some of their success stories such as patients losing weight and giving up smoking since they started participating in BP@Home.

We have also seen a reduction in average blood pressure readings of 7mmHg for patients on the platform as well as an overcompliance when it comes to taking the readings; this demonstrates the readiness of the population to adopt an intervention such as this and an interest in their own health and wellbeing.

Evaluation Webinar - [BP @ Home - Evaluation Webinar](#)

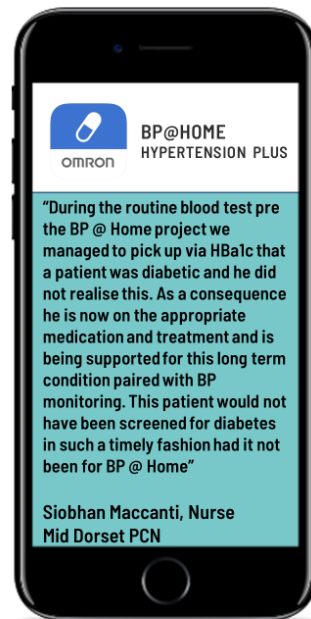


MEASURING THE IMPACT SO FAR

## WORKFORCE TESTIMONIALS



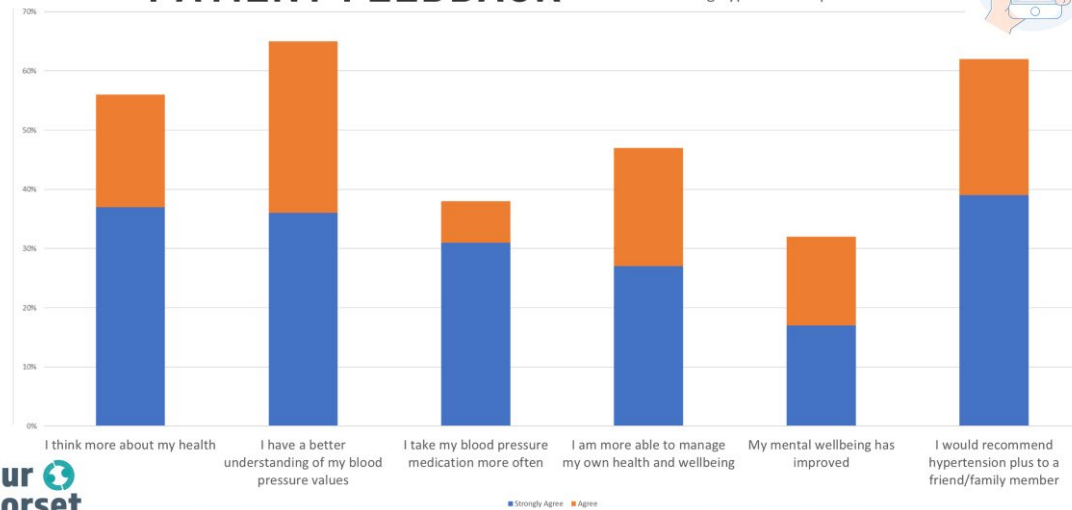
"A patient commenced BP @ Home and submitted dangerously high blood pressures that we would refer to as malignant. Had he not submitted those blood pressures and the clinician received the urgent alert via Dr Dashboard he was at incredibly high risk for CVA (stroke) but this was prevented with the initiation of antihypertensive therapy by his GP"



MEASURING THE IMPACT SO FAR

## PATIENT FEEDBACK

Since I started using hypertension plus...



MEASURING THE IMPACT SO FAR

## PATIENT TESTIMONIALS



"USING THE APP HAS MADE ME TAKE MORE NOTICE AND HAVE A BETTER UNDERSTANDING OF MY BLOOD PRESSURE".

"GOOD SEEING MY BP AND BEING ABLE TO MONITOR IT AND WATCH THE PROGRESS".

"I LIKE BEING ABLE TO SEE THE HISTORY AND HOW I'VE IMPROVED".

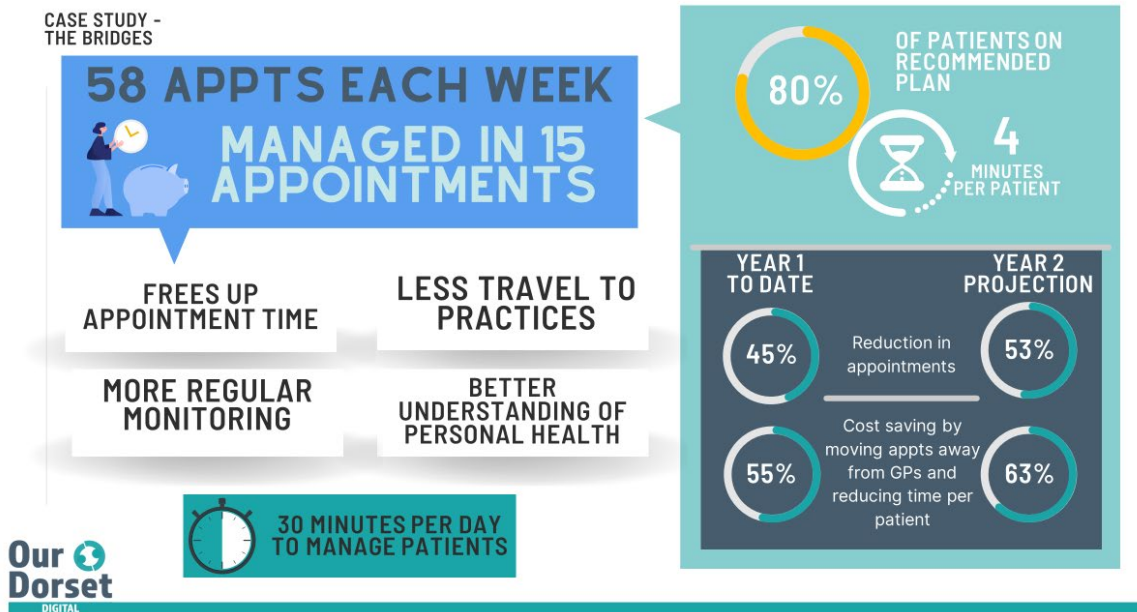
"I WAS A LITTLE WORRIED ABOUT IT BUT NOW I CAN SEE THE IMPROVEMENT".

"I LIKE THE FACT IT REMINDS ME TO TAKE MY MEDICATION".

"USING THE APP HAS ENCOURAGED ME TO MAKE IMPROVEMENTS".

"I'VE USED THE TIPS TO IMPROVE MY LIFESTYLE. I'VE REDUCED RED MEAT AND SALT".





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<https://www.dorsetlep.co.uk/Remote-Management-of-Hypertension>

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