



Case Study / Clinical Evidence
Hypertension

Sustained Reduction in Blood Pressure, Sustained Saving of Clinical Time

A summary of evidence from 10 independent clinical studies demonstrates how Florence changes patient behaviour and leads to lasting health benefits while saving clinical time and resources.

Intelligent health messaging service Florence is proven to have a lasting effect on the wellbeing of patients suffering from hypertension and in enhancing the productivity of the clinicians delivering their care, leading to significant cost savings.

- Using Florence decreases SBP readings in hypertensive patients by 10-15% resulting in a 10% drop in the proportion of patients with poor BP control.
- Use of Florence leads to patient behavioural change as evidenced by the sustained reduction in BP beyond the intervention period.
- Average monthly contact time with GPs halves from 1.2x to 0.6x following implementation of Florence for six months leading to release of appointment capacity.
- 100% of clinicians agree Florence aids them with decision making, with fast confirmation of hypertension, adjustments to medication, and discharge of patients with good blood pressure control.
- 84% of patients prefer sending BP readings via Florence over attending a clinic, with 97% of patients reporting taking their medication regularly.
- £1,800 cost savings per 100 patients estimated from productivity gains from remote blood pressure monitoring.

Sustained improvement through behaviour change

Florence delivers precise, psychology-based, two-way health messaging that engage patients continuously to change their behaviours and create better, sustained outcomes. Clinicians consistently report greater level of patient engagement and patients a greater level of control: Florence “helped me to learn to live with the disease and become more involved in monitoring my own health.”¹

An RCT in Stoke on Trent showed how the average systolic blood pressure in telemonitored patients dropped by 15% even from the first month of intervention and was sustained beyond the three-month intervention period demonstrating a positive shift in the behaviour of patients.² This was further confirmed by the 6.55mmHg drop in systolic blood pressure over the period of a year in intervention patients evaluated as part of the NHS Lothian’s Scale Up project compared to the 3.5mmHg drop for non-participants.

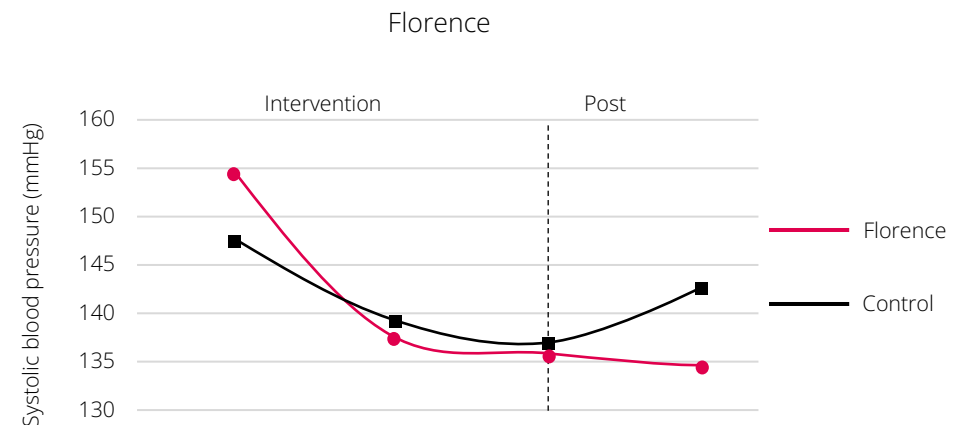


Figure 1 : Blood pressure readings at baseline and months 1, 3 and 6 post recruitment among all Florence and control patients who had systolic hypertension at baseline (systolic blood pressure (SBP)>130 mm Hg if patients had chronic kidney disease (CKD) stages 3-4 or SBP>140 mm Hg if no CKD stages 3-5).

“Flo messages for blood pressure were very motivational and helped me increase my activity levels and improve my diet.”⁴

¹ (Cottrell, et al., 2012)

² (Cottrell, et al., 2012)

³ (Cottrell, et al., 2012)

⁴ (De, et al., 2016)

Easy and accessible for patients, better data for clinicians

Key to improved health outcomes is Florence's accessibility and ease of use for patients and the provision of more and better data for clinicians that enables more accurate diagnosis and ongoing treatment and monitoring in a highly efficient manner.

All interactions with Florence are via text messaging on any mobile phone; no internet is required and no app to download. 97% of patients reported it was easy to send vital signs or clinical information over Florence with no concerns over privacy, with others citing they'd rather submit blood pressure readings using Florence than paper charts, preferring it to coming to the surgery particularly if they didn't have their own transport.

“Flo is really easy to use and is reassuring after a worrying diagnosis” according to one blood pressure patient.

NHS Lothian reported 83% of patients submitted over 20 readings, and 23% over 100 readings over a year, and a study in Stoke on Trent showed that “significantly (13,12,10) greater numbers of BP readings were obtained by patients using Florence than those receiving usual care (average 0.2 readings / month.)⁵

Improved medication management

Clinicians agree telemonitoring measurements based on multiple readings make facts hard to ignore, and with this enhanced data feedback the results are palpable; 27% of patients had their blood pressure medication adjusted, and 46% were discharged with good BP control. NHS Lanarkshire was able to identify “white coat syndrome amongst a third of their intervention patients and confirm 16/115 with hypertension. Adjustments made to medication are timely and appropriate (BMJ Open 2012 revealed 0.31 changes were made to medications versus 0.08 of the controls) and with adjustments based on long-term monitoring the responsiveness in patients is greatly increased (a rise from 89% to 97% of patients reported taking their medication regularly between months 1-3 while being telemonitored.)⁶

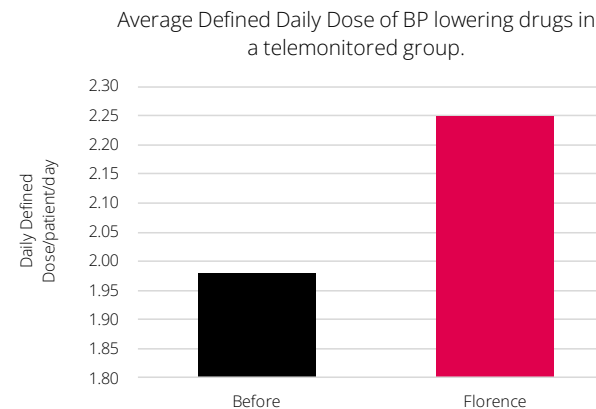


Figure 2: The change in Defined Daily Doses of BP lowering drugs in the telemonitored group in the periods before and after commencing telemonitoring.⁷

Through Florence's gentle nudges to patients to take their blood pressure readings, and take their medication, there is an enhanced feeling of supported independence and self-awareness promoting a change in patient behaviour.

⁵ (De, et al., 2016)

⁶ (Cottrell, et al., 2015)

⁷ (Hammersley, et al., 2020)

Saving clinical time & resources

The result for clinicians of being able to safely monitor patients in a socially unobtrusive and productive way is a reduction in appointments requested, fewer unnecessary visits, shorter appointment times and a more productive use of appointment time, all leading to a freeing up of clinician time and staff and significant cost savings.

“Time spent in all appointments in the year was significantly reduced in the telemonitoring group.”⁸

Contact time with patients from community and practice nurses and GPs is reduced and potential emergencies are averted. 45% of clinicians reported they had fewer contacts with their patient once they started Flo and in the case of community nurses, travel time and costs were significantly reduced. Significant savings come through reduced appointment time: NHS Lanarkshire cited the average number of contacts avoided involving 115 patients over 90 days with 14 GP practices was 4.4 per patient resulting in avoided 416 appointments.

NHS Lothian reported 19% fewer face to face appointments over a year in its evaluation group and East Renfrewshire reported 1400 face to face appointments saved in the 14 months to November 2018.

Appointment time is also used more productively; the average contact with GPs declined from 1.21x to 0.63x following the implementation of Florence for 6 months in the East Midlands and in the study carried out by NHS Lothian the proportion of patients with low blood pressure control (>150) fell from 13.6% to 3.4% allowing backlogs to be cleared, patients to be discharged and clinicians to be able to prioritise those patients most needing intervention.

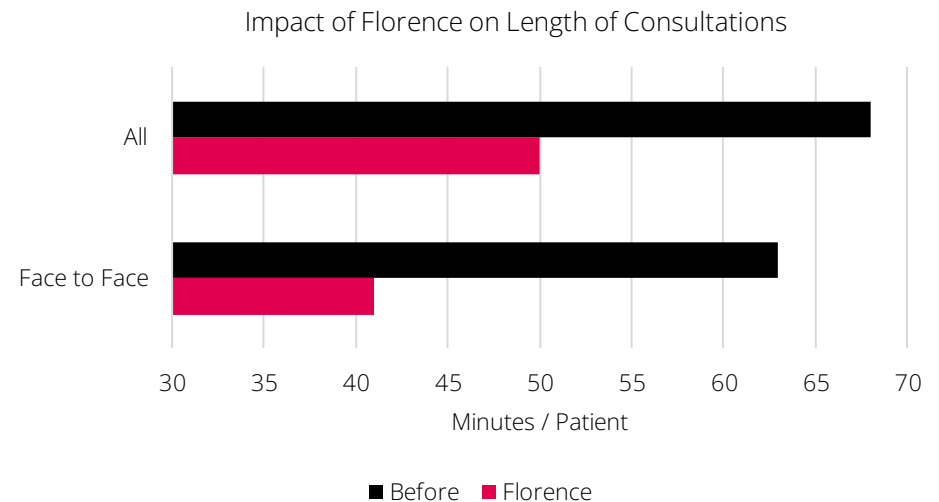


Figure 3: Change in face-to-face consultation length in people with hypertension participating in telemonitoring⁹

⁸ (Hammersley, et al., 2020)

⁹ (Cund, et al., 2015)

Cost savings

Cost savings from freed up appointment time were highlighted as £11,663 when the national average per outpatient attendance was £109, leading to a net savings of £9,334.¹⁰

A more recent evaluation into the economic case studies in Lanarkshire, Ayrshire & Arran and the Western Isles concluded that using HMHM (Home & Mobile Health Monitoring) is cost effective in each scenario; and that there were further cost savings that were not included in the calculations, such as reduced travel time (both patient and clinician) and the recycling of blood pressure monitors.¹¹

The most significant savings come from the release of staff capacity from reduced face to face contacts and reduced need for 24-hour ambulatory blood pressure monitoring with substantial further savings from the long-term benefits of improved blood pressure control in the form of reduced heart disease and strokes. "Probably through intensification of anti-hypertensive therapy, if sustained, would be expected to lead to a greater than 15% reduction in risk of stroke and a greater than 10% reduction in risk of coronary heart disease."¹² Just the enhanced productivity gain is estimated at £1,800 per 100 patients if they are monitoring their blood pressure remotely.

According to Jeane Freeman, Health Secretary of Scotland (2018-21)

“This technology brings significant benefits to patients. It enables them to have more control over how they manage their condition and greatly cuts down on the number of appointments they have to attend.”

Dr Ruth Chambers OBE, a GP in Stoke-on-Trent, Chair of Stoke-on-Trent Clinical Commissioning Group and Clinical Lead for Long-Term Conditions at the West Midlands AHSN, said in January 2016, "Using technology will not only enable us to shape services to suit the needs and preferences of individual patients; embracing it will also help us take on the challenges we face every day." In this post pandemic era, with waiting lists soaring and patients suffering, her words could not have been more apt.

¹⁰ (De, et al., 2016)

¹¹ (Michael, et al., July 2019)

¹² (Hammersley, et al., 2020)

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