



Evaluation of the use of Florence within NHS Highland

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Executive Summary

Florence is a simple telehealth service which has been used by NHS Highland since November 2015 and is funded by the Scottish Government's 3-year £30 million Technology Enabled Care (TEC) Programme. The project will cease to be funded by the Scottish Government in September 2018. This report aims to contribute to discussions about the future sustainability of Florence within NHS Highland.

Named after the founder of modern nursing, Florence Nightingale, Florence aims to change how people look after their own health. It works by sending a series of automated text messages to patients to support them in managing their health condition. Florence can be used to provide an electronic self-management action plan, by asking for medical readings (e.g. peak flow, SATS) and then responding with appropriate advice for the patient to act on (e.g. continue with your inhalers as usual, start your rescue meds). Readings submitted to Florence by patients can be viewed by their clinician; this enables patient trends to be built up over time. Patient readings can also be used to diagnose conditions or inform medication titration. Florence can support patients to self-manage their condition by providing information, advice and reminders about what they should do to keep well, and can monitor self-reported symptoms (e.g. pain, cravings), use of self-management techniques (e.g. physio exercises, using ice), and wellbeing. There is no charge to patients for using Florence.

The concept of using technology to diagnose and monitor conditions remotely has been present in both national¹ and NHS Highland discussions about the future provision of healthcare for a number of years. This is currently embedded within the NHS Highland Strategic Quality and Sustainability Plan² which identifies changes in care which support people to be more independent, and the use of technology, as two of the measures which could help NHS Highland deliver its required outcomes. Telehealth solutions, such as Florence, can contribute towards meeting both local and national objectives. An external evaluation report³ delivered to NHS Highland in 2017 provided evidence that Florence reduced hospital admissions and GP appointments for patients with Asthma, COPD and Heart Failure who used Florence to support self-management.

NHS Highland is now actively using 25 Florence protocols to support different patient groups⁴. Seven of these protocols were evaluated for this report: Asthma; Low FODMAP Diet; COPD; Pelvic Floor Health; STEPPS; Healthy Weight; and Blood Pressure Monitoring. Quantitative and qualitative data was gathered to provide evidence of how successful the deployment of the individual protocols has been, and how outcomes, including National Health & Wellbeing Outcomes, have been met.

¹ The Scottish Government (2012) *A National Telehealth and Telecare Delivery Plan for Scotland to 2015*; SCTT *Scottish Centre for Telehealth and Telecare Business Plan*

² Mead, E. *NHS Highland Strategic Quality and Sustainability Plan: 2017/18 to 2019/20*

³ Wolters, M. (2017) *Service Evaluation of Three Telehealth Services for Monitoring Patients with Asthma, COPD and Heart Failure*, Delivered to NHS Highland

⁴ The full list of protocols is provided in Appendix H. Individual evaluations have been undertaken for a further 15 of these protocols, available on request.

There is evidence provided across all the evaluated protocols that patients using Florence are managing their conditions better than they did previously. Patients have reported feeling more supported when using Florence, and have increased levels of confidence in making decisions about their health. The clinicians who were interviewed are very supportive of Florence, as it gives patients the tools to self-manage their conditions, leading to better patient outcomes. However, a number of challenges were reported, these included mobile phone signal issues, and a lack of uptake within departments where not all staff want to use Florence.

If NHS Highland is to meet the expectations of using technology to change the way we deliver healthcare, as recommended by the Scottish Government, a commitment is needed from strategic decision makers to ensure Florence, and other telehealth services are embedded into NHS Highland care pathways.

1. Introduction

Florence is a UK-wide NHS telehealth service which can be used to provide advice, support and monitoring to patients to enable them to manage their health condition more effectively. Florence is delivered via automated text messages and there is no charge to the patient. NHS Highland started using Florence in September 2015; since then a wide range of protocols have been developed by the Technology Enabled Care team. The protocols can be divided into the following categories:

i. **Electronic Action Plans**

These are protocols where the patient submits a medical reading in response to a text message. Florence then texts back with specific advice for action to be taken by the patient. Example protocols include Asthma, COPD⁵, Diabetes and Heart Failure.

ii. **Supported Self-Management**

This group includes protocols which support patients to self-manage their condition by providing information and advice about what they should do to keep well, reinforcing healthcare advice provided by clinicians, and monitoring adherence. Examples include protocols to support people with Intermittent Claudication, IBS, and Pelvic Floor issues. In addition, this group includes protocols which support patients who are attending NHS-run courses, in person or remotely; Florence text messages are used to reinforce learning from the courses, and remind patients to complete home study between course sessions. Examples include protocols to support people attending Pain Management and Mental Health courses (including Decider Skills, Mindfulness and STEPPS⁶).

iii. **Diagnosis**

Diagnosis protocols assist clinicians in diagnosing a medical condition; within NHS Highland only the Blood Pressure Monitoring protocol currently falls under this category. Florence is particularly appropriate for diagnosing hypertension, as it avoids the problem of white coat syndrome, a phenomenon in which patients present a higher blood pressure in clinical settings.

iv. **Prevention & Early Intervention**

These protocols focus on encouraging patients to make lifestyle changes which will improve their general health and could prevent the development of long-term or life-threatening health conditions. These protocols rarely show immediate cost savings, but could result in a large reduction in demand on primary and secondary care in the future. Example protocols include Smoke Free, Healthy Weight, My Steps Count and Diabetes Lifestyle Changes.

⁵ Chronic Obstructive Pulmonary Disease

⁶ Systems Training for Emotional Predictability and Problem Solving

This report aims to provide an insight into how successful the implementation of Florence has been within NHS Highland. To give an understanding of this, the effectiveness of the following protocols has been analysed⁷:

- Asthma (*electronic action plan*)
- Low FODMAP Diet⁸ (*supported self-management*)
- COPD (*electronic action plan*)
- Pelvic Floor (*supported self-management*)
- STEPPS (*supported self-management*)
- Healthy Weight (*prevention & early intervention*)
- Blood Pressure Monitoring (*diagnosis*)

Criteria for selecting the protocols to be included in the evaluation were:

- Currently in use within NHS Highland
- A patient cohort larger than 20 persons
- Availability of data to be analysed
- Protocols from the different categories listed above.

2. Methods

2.1 Introduction

This is a mixed methods study, which has used a range of different data sources, including both quantitative and qualitative data.

2.2 Data collection

Quantitative data sources include:

- TEC Minimum Dataset as defined by the national Technology Enabled Care Programme;
- Data generated by Florence;
- Text message surveys delivered as part of each Florence protocol;
- Service Evaluation Report, Wolters, M. (2017⁹);
- Departmental Academic Poster Presentations produced by clinicians using Florence *and*
- List of equipment provided to patients enrolled on Florence.

Qualitative data sources include:

- Paper based patient questionnaires sent by post to Florence users;
- Face-to-face semi-structured interviews with clinicians;
- Case-studies and work stories prepared by clinicians *and*
- Informal verbal feedback provided by clinicians.

A comprehensive methodology is included as Appendix F.

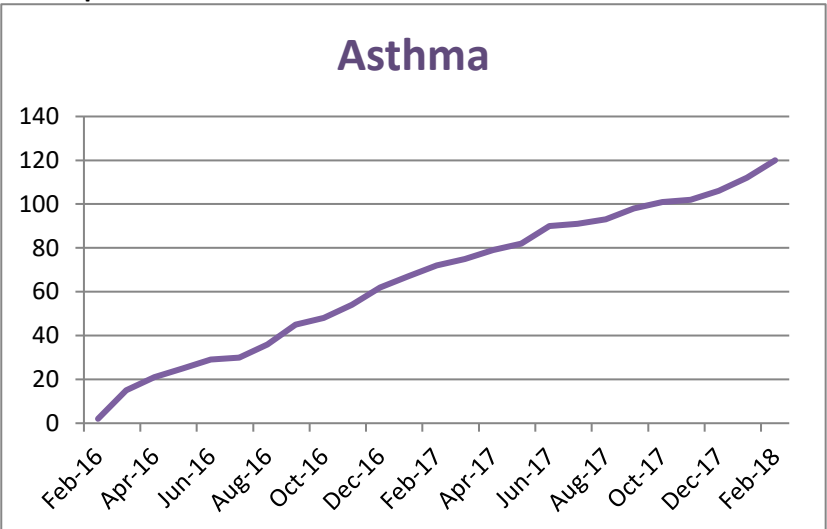
⁷ Evaluations of a further 15 protocols have also been undertaken (see Appendix H).

⁸ Low Fermentable Oligo-, Di-, Mono-saccharides and Polyols Diet

⁹ Wolters, M. (2017) *Service Evaluation of Three Telehealth Services for Monitoring Patients with Asthma, COPD and Heart Failure*, Delivered to NHS Highland.

3. Protocol Evaluations

3.1 Asthma

Asthma																													
Type of protocol:	Electronic Action Plan Protocol																												
Protocol overview:	<p>This protocol was developed to help support asthma patients to self-manage their condition by increasing their awareness of their symptoms and providing support and advice remotely. It has been specifically designed for patients with a confirmed asthma diagnosis who have either had a previous acute hospital admission or been directly referred to an asthma clinical specialist.</p> <p>The Florence Asthma protocol is considered an electronic Asthma Action Plan as it texts the patients twice a day to ask for their peak flow reading; Florence then responds appropriately. The peak flow model is included as Appendix C. Patients are evaluated before being enrolled onto Florence and are then put on a protocol specific to their own best peak flow, so it uses a person-centred approach.</p>																												
<p>Development and deployment: Developed: February 2016</p> <p>First patient signed up: February 2016</p> <p>Patients to date: 120</p> <p>Since its deployment, the number of patients using the asthma protocol has increased steadily. There is an average of five new patients enrolled each month</p>	<p>Take-up:</p>  <table border="1"> <caption>Asthma Take-up Data</caption> <thead> <tr> <th>Date</th> <th>Number of Patients</th> </tr> </thead> <tbody> <tr><td>Feb-16</td><td>0</td></tr> <tr><td>Apr-16</td><td>20</td></tr> <tr><td>Jun-16</td><td>30</td></tr> <tr><td>Aug-16</td><td>40</td></tr> <tr><td>Oct-16</td><td>50</td></tr> <tr><td>Dec-16</td><td>60</td></tr> <tr><td>Feb-17</td><td>70</td></tr> <tr><td>Apr-17</td><td>80</td></tr> <tr><td>Jun-17</td><td>90</td></tr> <tr><td>Aug-17</td><td>100</td></tr> <tr><td>Oct-17</td><td>110</td></tr> <tr><td>Dec-17</td><td>115</td></tr> <tr><td>Feb-18</td><td>120</td></tr> </tbody> </table>	Date	Number of Patients	Feb-16	0	Apr-16	20	Jun-16	30	Aug-16	40	Oct-16	50	Dec-16	60	Feb-17	70	Apr-17	80	Jun-17	90	Aug-17	100	Oct-17	110	Dec-17	115	Feb-18	120
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<p>Corresponding national outputs and outcomes:</p> <p>NHW = national health and wellbeing</p> <p>HMHM = taken from the Scottish Govt.'s HMHM logic model</p> <p>See Appendices A and B for full lists of outcomes</p>	<p>Achievement of the anticipated outcomes listed below would contribute towards:</p> <ul style="list-style-type: none"> • Personal responsibility (NHW outcome) – by assisting patients to take responsibility for their own health by taking their peak flow readings regularly • Quality of life (NHW outcome) – by contributing to better management of the patient's health condition • Cost effective (NHW outcome) – by reducing the number of clinic appointments and hospital admissions • Improved access to services (HMHM outcome) – by enabling health advice to be given to patients when they require it • Better adherence (HMHM output) – by reminding patients to measure their peak flow daily and take action depending on which zone they are in 																												

Asthma	
	<ul style="list-style-type: none"> • Staff engagement (NHW outcome)- by enabling the asthma nurse to be more engaged with and give appropriate support to the patient; by using Florence to support the department to offer new and advanced medicines improving the care they provide • Increase in self-management (HMHM outcome) – more asthma patients looking after their own health • Reduced hospital admissions (HMHM outcome) –fewer patients being admitted to hospital with severe exacerbations • Reduced travel (HMHM output) – fewer clinic appointments results in less travel time for patients
Timescale and costs:	Duration of protocol: 104 weeks Average cost per patient per month: £14.29 Average overall cost per patient: £318.96 (£159.48 per annum)
Anticipated Outcomes	Evidence
To increase engagement with a challenging patient group to participate in self-managing their condition <i>Protocol Planning Form</i>	<p>Clinician Interview</p> <p><i>“I absolutely believe that Florence can help patients self-manage their conditions. Because we’re so attached to our mobile phones these days, Florence really works as a prompt to do your peak flow”</i> C1</p> <p><i>“Florence allows me to build up a trend of the patient’s peak flow over weeks and months, but the most fundamental thing is that Florence acts as an electronic Asthma Plan”</i> C1</p> <p>Florence Text Message Evaluation 80% of patients who responded to the text evaluation agreed that Florence supports them and helps them track their symptoms.</p> <p>Patient Feedback - Paper Questionnaire A</p> <p><i>“I feel more in control of my Asthma and it’s made me more aware in the use of my inhaler as I used to try and not take so much – but now I use it more frequently”</i> P1</p> <p>Patient Feedback - Paper Questionnaire B</p> <p><i>“Florence helped me manage my condition and take action when needed. It helps me manage my condition at home”</i> P2</p> <p>External Service Evaluation Report – Wolters, M. 2017 Wolters reported that patients adhere well to measurement protocols (this includes Asthma) and that Florence helps patients to recognise symptoms</p>

Asthma	
Optimal Asthma Control <i>Protocol Planning Form</i>	<p>Clinician Interview</p> <p><i>“One of my patients had whooping cough and, despite having Florence, he needed to be admitted into hospital because of the nature of the condition that he had. He told me he could always pin-point when he was dipping because of using Florence. The patient commented that what makes Florence so brilliant is that it is so simple, but gives measurable feedback”</i></p> <p>C1</p> <p>Patient Feedback - Questionnaire A</p> <p><i>“I found that I started taking morning inhalers much earlier than I did before Flo and I am now in a good routine with that. It’s reassuring to know you’re not alone”</i></p> <p>P3</p> <p>TEC Staff Verbal Feedback</p> <p><i>“Florence is better than a paper asthma action plan – C1 has demonstrated that patient engagement is much better than with a paper copy. They even finds themselves that they don’t do their own peak flow if they don’t receive a text telling them to”</i></p> <p>JRG, following a meeting with C1</p> <p>External Service Evaluation Report Wolters, M. (2017) Clinicians interviewed by Wolters reported better symptom control for many patients whose control was previously poor. Patients reported that they feel more in control of their asthma symptoms.</p>
Reduction in admissions and clinic appointments <i>Protocol Planning Form</i>	<p>Clinician Interview</p> <p>Clinician C1 reported that their most critical patients have fewer, or no hospital admissions since using Florence:</p> <p><i>“The reality of Florence surpassed my expectations. I can really see the benefits – we have all this data now. I started with twelve critical patients – they are doing so well now and are not being admitted to hospital which is phenomenal. These were the patients I was losing sleep over”</i></p> <p>C1</p> <p>C1 also reported a decrease in clinic appointments:</p> <p><i>“Although the external evaluation reported an increase in clinic appointment, this was due to the introduction of biologics, where I have to see the patients regularly. With my other patients [those not on biologics] there has been a reduction in the number of clinic appointments they need”</i></p> <p>C1</p>

Asthma	
	<p>Florence helps C1 decide how frequently a patients needs to be seen by the service:</p> <p><i>“After an asthma patient is discharged from hospital, national guidelines state they must been seen within four weeks for a follow-up appointment. Data provided by Florence, reviewed at this appointment helps determine when I should see them again”</i> C1</p> <p>External evaluation report - Wolters, M. (2017) According to Wolters, since asthma patients have been using Florence, there has been a significant reduction in the number of asthma patient hospital admissions. Before the introduction of Florence, the average number of bed days per half year for asthma patients was 52 days. Since Florence was introduced that figure has fallen to 15 days per half year.</p>
<p>Reduction in mortalities <i>Protocol Planning Form</i></p>	<p>Clinician Interview</p> <p><i>“The Asthma protocol is trying to increase adherence to medicines and to increase self-management in our patient cohort to allow them to have optimal asthma control. Doing these things will lead to a reduction in mortalities”</i> C1</p> <p><i>“Even the patients who have been hospitalised since starting using Florence – what we’re noticing is that they are presenting to us far earlier, before they are in a sticky wicket. The patient has noticed their peak flow is falling and they are acting accordingly. The patients who are using Florence are not waiting at home when something goes wrong, so we’re not having to send out an ambulance to them”</i> C1</p>
<p>Changes in practice</p>	<p>C1 is responsible for what they describe as the “<i>difficult asthma population</i>” which includes patients at high risk of exacerbation, patients who struggle to manage their asthma and patients who are on biologic therapies. How these patients are cared for has changed since the implementation of Florence. Florence is fully embedded into the Asthma Service and has changed the way care is delivered to asthma patients. For example, in cases where the patient is on biologic therapies, Florence is integrated into the care pathway and used as an intervention. Every patient who receives biologic therapy is also enrolled on Florence.</p> <p><i>“Patients on biologic therapies, have to have the injection administered by a specialist nurse. This means they are coming in every two or four weeks. Florence enables us to get an objective measure of their response to their treatment”</i> C1</p>

3.1.1 Results Commentary

Since its implementation in February 2016, 120 patients have been enrolled. Both clinician and patients have reported positive experiences in using Florence. 80% of patients who responded to the text evaluation agreed that Florence supports them to manage their asthma, and overall the feedback from paper questionnaires was very positive.

Clinician C1 is clear that:

- Florence had led to a greater number of asthma patients self-managing their condition
- Florence's ability to reiterate health education has led to an increase in adherence in patients, and led to greater understanding of their asthma
- Both the above have contributed to fewer hospital admissions, and a reduction in the risk of asthma-related mortalities
- Use of Florence has led to a reduction in the number of clinic appointments

These findings are supported by the external evaluation undertaken by Wolters, M. (2017) which included the following evidence:

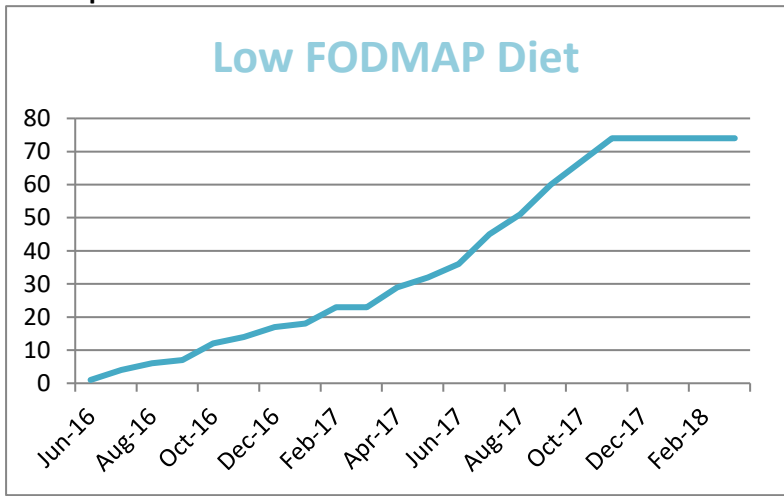
- Asthma patients who use Florence are more aware of self-management and have better control over their symptoms. This was demonstrated by a rise in the number of medication prescriptions among Florence asthma patients.
- Patients using Florence feel more connected with their clinician
- The number of hospital admissions for asthma patients using Florence has reduced

Florence has changed the way care is delivered to C1's patients, and its implementation has been very successful, as reported by the clinician and the patients. The success of this protocol can be attributed to the following:

- Very positive staff attitude. A single member of staff is responsible for a large cohort; this means Florence developments happen at one pace.
- Patients using Florence feel more supported and more likely to comply with health advice, therefore improving personal outcomes
- Florence is used as a medical intervention and enables the Respiratory Services Department to offer new and advanced medicines

Although the success of Florence within the Respiratory Services Department can be greatly attributed to the clinician responsible, having only one person responsible for the use of a Florence protocol can have its challenges. A successful protocol should not rely on only one member of staff to ensure its future.

3.2 Low FODMAP Diet

Low FODMAP Diet																									
Type of protocol:	Supported Self-management Protocol																								
Protocol overview:	The Florence Low FODMAP Diet was developed to provide additional support and symptom tracking to IBS patients following the Low FODMAP diet. The protocol was specifically designed for patients with a confirmed IBS diagnosis who have been seen for initial dietary advice either one-to-one or in a group setting. The protocol is unique among NHSH protocols in that it includes an "Ask a Question" function which allows for patients to ask specific questions directly to their dieticians via Florence.																								
<p>Development and deployment: Developed: April 2016</p> <p>First patient signed up: June 2016</p> <p>Patients to date: 75</p> <p>The number of patients using the low FODMAP protocol increased steadily between June 2016 and November 2017 with an average of four new patients enrolled each month. The lack of sign ups since November can be attributed to both clinicians being absent from work. C3 has been on maternity leave since December and C2 has had two months of absence in 2018</p>	<p>Take-up:</p>  <table border="1"> <caption>Low FODMAP Diet - Patient Enrollment Data</caption> <thead> <tr> <th>Month</th> <th>Number of Patients</th> </tr> </thead> <tbody> <tr><td>Jun-16</td><td>0</td></tr> <tr><td>Aug-16</td><td>5</td></tr> <tr><td>Oct-16</td><td>10</td></tr> <tr><td>Dec-16</td><td>15</td></tr> <tr><td>Feb-17</td><td>20</td></tr> <tr><td>Apr-17</td><td>25</td></tr> <tr><td>Jun-17</td><td>30</td></tr> <tr><td>Aug-17</td><td>40</td></tr> <tr><td>Oct-17</td><td>50</td></tr> <tr><td>Dec-17</td><td>75</td></tr> <tr><td>Feb-18</td><td>75</td></tr> </tbody> </table>	Month	Number of Patients	Jun-16	0	Aug-16	5	Oct-16	10	Dec-16	15	Feb-17	20	Apr-17	25	Jun-17	30	Aug-17	40	Oct-17	50	Dec-17	75	Feb-18	75
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Low FODMAP Diet	
Timescale and costs:	Duration of protocol: 9 weeks Average cost per patient per month: £1.99 Average overall cost per patient: £4.37
Anticipated Outcomes	Evidence
Improved compliance with complex dietary intervention through tips and advice <i>Protocol Planning Form</i>	<p>Clinician Interview</p> <p><i>"We have a higher return rate, fewer DNAs in people that interact and engage with Florence"</i> C2</p> <p>Clinician Verbal Feedback</p> <p><i>"Florence enables us to look back and see how many patients the intervention was successful for"</i> C3</p> <p>Patient Feedback - Paper Questionnaire A</p> <p><i>"Flo gives me guidance on how to correct what I was doing wrong"</i> P4</p> <p>Patient Feedback - Paper Questionnaire B</p> <p><i>"It clearly illustrated with the repeat questioning that my condition was improving by following the advice given"</i> P5</p> <p><i>"Helpful reminders for self-management and good assessment of progress"</i> P6</p> <p><i>"I found the tips really helpful. It was also really good to have that extra piece of encouragement and motivation. It was a welcome little boost which I sometimes needed. I was great to know the support was there and I felt I wasn't on my own"</i> P7</p> <p>Three out of the four people (75%) who have completed Paper Questionnaire B agreed that Florence was supportive and helped them remember health information and advice. 50% agreed that Florence helps them comply with health advice.</p> <p>Patient Feedback - Florence Text Message Evaluation</p>

Low FODMAP Diet	
	<p>75% of patients who responded to the evaluation delivered by text message agreed that Florence supports them while they are on the Low FODMAP diet and helps them track their symptoms</p> <p>Clinician Interview C2 offers Florence to all IBS patients, except in circumstances when there is a significant reason not to do so. C2 cited lack of mobile phone signal, educational and geographical barriers as possible reasons for not offering Florence.</p> <p><i>“Mobile signal is a massive issue; some patients don’t bother having phones. As we move into a pan-Highland service, Caithness and Sutherland have particularly noted this issue”</i> C2</p>
<p>Easier access to direct dietetic support through question function <i>Protocol Planning Form</i></p>	<p>Clinician Interview</p> <p><i>“We’ve ended up in a time-neutral situation, which is really nice. Because patients can ask questions on Florence they are not phoning me, and I don’t have lots of messages to phone patients back, or six emails needed a response. Instead you’re in the moment responding to the questions rather than stories; this is much better”</i> C2</p> <p>Patient Feedback - Paper Evaluation A</p> <p><i>“If questions are seen on the system someone answers them”</i> P8</p>
<p>Ability to direct timely and effective patient care on the basis of Florence data readings <i>Protocol Planning Form</i></p>	<p>Clinician Interview</p> <p><i>“It can take up to six weeks for the Low FODMAP diet to make a difference to a patient....there are also some potential risk if a patient follows the diet for an extended period of time. What we were finding is that we introduced the diet to patients, but were unable to follow-up at the appropriate time. Now we set them up on Florence, and we don’t make a follow-up appointment until Florence alerts us that the patient is ready to move onto the reintroduction stage of the diet. This means we’re making the appointment at the right time for that patient.”</i> C2</p> <p><i>“We are able to spend more time improving the Florence service because we’ve ended up in a time-neutral situation”</i> C2</p>

Low FODMAP Diet	
	<p><i>"There is a higher return in the people who interact with Florence [who attend the group session]"</i> C2</p> <p>Clinician Verbal Feedback</p> <p><i>"Florence helps us to decide how closely we need to monitor patients"</i> C2</p>
Clinician will be able to remotely monitor the symptoms of a large number of patients at one time <i>Protocol Planning Form</i>	<p>Interview</p> <p><i>"Florence is one of the reasons we can do the group sessions, because we now have the capacity to monitor a larger number of patients at any one time so we're able to see more people, so I can see twelve to fourteen patients in a couple hour period in comparison to two over two hours"</i> C2</p>
Reduced amount of time spent by the clinician doing email and telephone follow-ups with patients. <i>Academic Poster Presentation</i>	<p>Interview</p> <p><i>"Because patients can ask a question using Florence it means they are not phoning me, I'm not getting lots of messages or emails waiting for me. Instead of there being paragraphs and paragraphs, I'm now responding to questions and not stories, which is much better"</i> C2</p>
Changes in practice	<p>C2 reported that Florence is one of the reasons they have seen a reduction in the departmental waiting list since Florence enables the clinician to see a larger cohort of patients at one time due to its monitoring capability. C2 also reported a reduced number of DNAs, stating that there is additional departmental evidence to back this up. This data has been requested from the department, but has not yet been seen by the Technology Enabled Care team.</p> <p>Florence has changed the way dieticians interact with their patients. The "Ask a Question" function has allowed patients to ask a personalised question directly to the clinician in a streamlined way. C2 prefers this method of interacting with their patients as it takes less time than phone calls and emails, yet the patients still feel they are being supported.</p>

3.2.1 Results Commentary

Overall, the patients who participated in the evaluation reported a positive experience of Florence. 75% of patients who responded to the text evaluation agreed that Florence supports them while they are on the Low FODMAP diet and 60% of those who completed the first paper questionnaire would recommend Florence to other people in their circumstances.

Patients believe that Florence has helped them significantly change the way they manage their health, though some patients reported no change in the way they look after themselves. Although no patients reported an overall negative experience with Florence, there is a near 50-50 split between patients who find it very useful and those who have a neutral opinion. There is substantial scope available to

collect additional evaluation evidence, as some patients have provided details to be contacted for further feedback.

The Low FODMAP Florence protocol is unique in NHS Highland as it is currently the only Florence protocol which enables patients to ask questions directly of the clinician and allows the clinician to give a personalised answer. The protocol is also only one of a few across NHS Highland where the department has fully embedded Florence into their service, and thus changing and improving how their service is delivered to patients.

“We couldn’t do without it now – it’s part of what we’re doing; we’d feel in the dark without it”

C2

The success of this protocol can be attributed to the following:

- Staff attitudes – the clinicians involved with this protocol have fully embraced Florence and make improvements to the protocol following staff or patient feedback
- Florence enables dietetic staff to see larger numbers of patients at once, thereby reducing waiting lists
- Patients using Florence feeling more supported and are more likely to comply with health advice, therefore improving personal outcomes
- Florence enables clinicians to answer patient queries directly, reducing the time clinicians spend answering patient queries, and streamlining their responses

3.3 COPD

<h2 style="margin: 0;">COPD</h2> <h3 style="margin: 0;">Electronic Action Plan Protocol</h3>	
<p>Protocol overview:</p>	<p>The COPD protocol was developed to help support COPD patients self-manage their condition by increasing their awareness of their symptoms and providing support, advice and monitoring remotely. Using Florence provides an electronic action plan to COPD patients. Patients are given advice to act on, depending on their SATS readings and reported symptoms. Florence’s responses to these readings and messages are based on the Chest, Heart and Stroke Scotland (CHSS) COPD Traffic Lights (see Appendix D). COPD patients who use Florence are asked to text MEDS to tell Florence they have started their rescue medication if they get a ‘red traffic light’ in responses to their SATS and symptoms. This sends an alert to the clinician, letting them know the patient has started treatment.</p> <p>The protocol was specifically designed for patients with a confirmed COPD diagnosis who:</p> <ol style="list-style-type: none"> a) Have already received CHSS (Chest Heart & Stroke Scotland) Living with COPD booklet b) Have a written self-management plan – CHSS Traffic Lights for COPD c) Are at risk of having an exacerbation of COPD <p>There are four members of the COPD respiratory team; two of them provided feedback about their experience with Florence, both informally and in a semi-structured interview setting. Both clinicians who were interviewed had direct input into the development of the COPD protocol.</p>
<p>Anticipated outcomes:</p>	<p>The aim of the protocol is to support patients with COPD to self-manage and understand their condition better by self-monitoring their symptoms and providing an electronic action plan. The anticipated outcomes are:</p> <ul style="list-style-type: none"> • Increased personal responsibility • Patients will see the link between worsening clinical signs and symptoms and learn to take action at the right time • Increased confidence in patients • Reduced exacerbations • Fewer hospital admissions • Fewer clinic appointments
<p>Corresponding national outputs and outcomes:</p> <p>NHW = national health and wellbeing</p> <p>HMHM = taken from the Scottish Govt.’s HMHM logic model</p>	<p>Achievement of these outcomes would contribute towards:</p> <ul style="list-style-type: none"> • Personal responsibility (NHW outcome) – by assisting patients to take responsibility for their own health by self-reporting their SATS; by enabling patients to self-report starting rescue medication • Quality of life (NHW outcome) – by contributing to better management of the patient’s health condition and increase confidence in making health decisions, such as starting steroids • Cost effective (NHW outcome) – by decreasing the number of COPD clinic appointments and hospital admissions

COPD

Electronic Action Plan Protocol

See Appendices A and B for full lists of outcomes

- **Improved access to services** (*HMHM outcome*) – by enabling patients to report their symptoms more regularly and receive immediate advice; patients feel more cared for and confident
- **Better adherence** (*HMHM output*) – by reminding patients to measure their SATS, think about changes in their symptoms, and take action depending on the result
- **Increase in self-management** (*HMHM outcome*) – more COPD patients looking after their own health
- **Reduced hospital admissions** (*HMHM outcome*) – fewer patients being admitted to hospital with severe exacerbations
- **Reduced waiting times** (*HMHM output*) – fewer clinic appointments can lead to reduced waiting times
- **Staff engagement** (*NHW outcome*) – by alerting the clinician that a patient has started rescue medication, because they have a ‘red traffic light’, allowing the clinician to intervene if needed

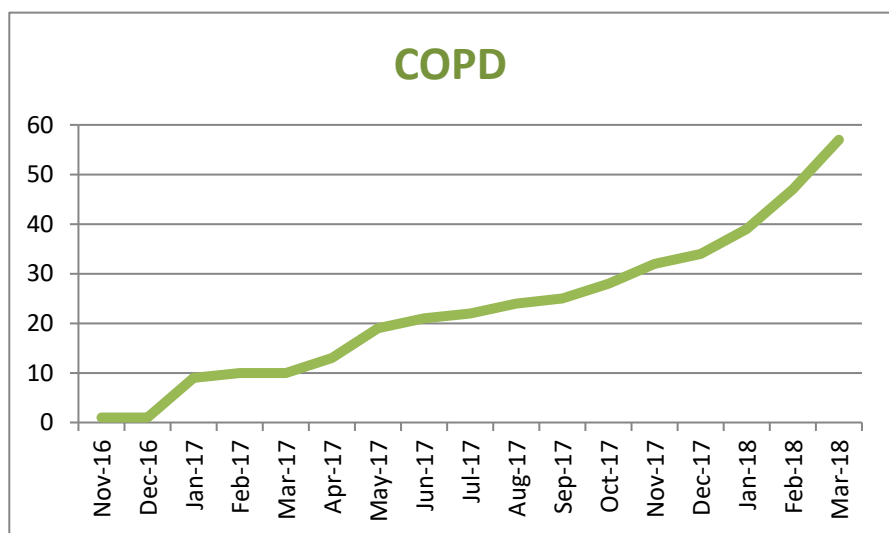
Development and deployment:

Developed: October 2016
First patient signed up: November 2016

Patients to date: 57

Uptake of the protocol started slowly, but increased steadily between May 2017 and December 2017. Patient numbers have risen dramatically in 2018

Take-up:



Timescale and costs:

Requires a pulse oximeter (£19)

Duration of protocol: 12 weeks
Average cost per patient per month: £8.51
Average overall cost per patient: £25.53

Clinician feedback:

Key quotes from clinician interviews:

"I describe Florence to my patients as their self-management plan delivered via their mobile phone"
C4

"An integral part of the initial COPD consultation is talking about exacerbations. I offer Florence as a help to reinforce their own understanding of their condition and to help them recognise their own symptoms and early signs of exacerbations"
C4

COPD

Electronic Action Plan Protocol

	<p><i>"Florence has helped patients self-manage their COPD. Patients have said that they understand their condition more now"</i> C4</p> <p><i>"Some of my patient's spouses really like Florence. They see it as a 'back-up' and an 'extra-nag', it gives them the confidence to care for their partners"</i> C5</p> <p><i>"I see that a patient has started taken some medication, I ask them if they would have done that without Florence prompting them to do so – they say no, they would have left it another few days. Patients who come to the end of using Florence say they are now in the habit of checking their stats every day. It embeds something into their daily routine. They feel connected, well cared for and not so isolated"</i> C5</p> <p>Measuring outcomes During an initial COPD consultation, the patient usually takes a COPD assessment test (CAT), this gives the clinician the patient's baseline data. It can be taken at a later date as a re-evaluation tool. C5 believes that a CAT could be used to measure if Florence has helped patients improve their symptoms.</p> <p>Workforce story Clinician C4 was asked to contribute to a Workforce Story by the Technology Enabled Care team. When asked what they thought the benefits of using TEC in their job role they submitted the following response:</p> <p><i>"I'm increasingly confident that Flo supports patients with COPD and their families by reinforcing the messages we give around early recognition of worsening symptoms in exacerbations. Also, Flo reminds them of the techniques which help keep them well, such as pacing their activity and using their breathing control methods in their daily activities"</i> C4</p>
<p>Patient feedback:</p>	<p>Florence enables patients to take personal responsibility (NHW outcome):</p> <p><i>"I liked the fact that Florence could alert me to a possible level drop in my oxygen and let me know before a negative outcome! I would welcome the idea of having Florence on a long-term basis"</i> P9</p>

COPD

Electronic Action Plan Protocol

	<p><i>"Florence always texts at the same time and gives me advice on what I should do depending on my SATs. It's like having a doctor on call when I'm not sure whether to take antibiotics and steroids"</i> P10</p> <p><i>"Florence helped me keep a check on my blood oxygen levels"</i> P11</p> <p>Improved quality of life through better management (NHW outcome):</p> <p><i>"It has helped me to understand and control my condition a lot more with positive results, as I haven't had to rescue medication for months"</i> P12</p> <p>Patients like the way Florence works:</p> <p><i>"Florence made me feel safe – someone was keeping an eye on me"</i> P13</p> <p>Florence text message evaluation:</p> <ul style="list-style-type: none"> • 87% of patients agreed that Florence has helped them understand and manage their own health • 71% of patients would recommend Florence to other people in their circumstances <p>Florence Data</p> <ul style="list-style-type: none"> • So far 22 COPD patients have used Florence to send an alert to their clinician they have started using their rescue medication, by texting MEDS to Florence <p>Patient Feedback - Paper Questionnaire B</p> <ul style="list-style-type: none"> • 100% of patients who responded agreed that the COPD Florence Protocol was encouraging and motivating and helped them manage their own health. • 83% of patients agreed that Florence helped them remember health information and advice and to comply with health advice. • 67% of patients agreed that Florence helped them control their symptoms.
<p>COPD Case Study</p>	<p><i>Mrs Smith is 60 years old and has a confirmed diagnosis of COPD. Before being enrolled on Florence, she contacted the respiratory department on a regular basis and was very anxious about her condition. Following being put on Florence, this patient initially had increased contact with clinical staff, but as the understanding of both her COPD and Florence grew, she became more confident and the contact became less frequent. By the last third of the protocol she was below her normal rate of contact with the team. Since</i></p>

COPD Electronic Action Plan Protocol	
	<i>being on Florence she is willing to submit sputum samples, which previously she was uncomfortable doing. Mrs Smith is now less anxious about her COPD and Florence made her feel reassured that she has the support she needs; this feeling has continued following the end of the protocol.</i>
External evaluation report:	An external evaluation report ¹⁰ delivered to NHS Highland in 2017 provided evidence that COPD patients using Florence have: <ul style="list-style-type: none"> • Reduced hospital admissions • Reduced number of bed days • Reduced GP appointments • Reduced clinic appointments
Benefits identified:	<ul style="list-style-type: none"> • Patient-led protocol allows patients to anticipate exacerbations and, when they need it, get help at an appropriate time • Reports of reduced anxiety levels in patients; patients feel more reassured • Reports of patients and their family members feeling more supported
Challenges:	<ul style="list-style-type: none"> • Not all members of the team use Florence, the clinicians who have been involved with the development of the COPD Florence Protocol, have more patients enrolled onto Florence than those who do not • Clinicians do not always remember to offer Florence to patients
Changes in practice:	Predicted: <ul style="list-style-type: none"> • One of the four COPD clinicians now offers Florence to all patients. In the past Florence was primarily only offered to very anxious or very unwell patients. In the future, all COPD patients could be offered Florence as part of their care pathway. • Florence will be used to measure clinical outcomes • Patients on Ward 7A who haven't been referred to the specialist nurse are going to be offered Florence by ward staff

¹⁰ Wolters, M. (2017) *Service Evaluation of Three Telehealth Services for Monitoring Patients with Asthma, COPD and Heart Failure*, Delivered to NHS Highland.

3.4 Pelvic Floor

Pelvic Floor, incontinence; Pelvic Floor, prolapse Supported Self-management protocol																																			
Protocol overview:	The Pelvic Floor protocol was developed to support patients with pelvic floor problems. There are two discreet protocols which support patients which either incontinence issues or a prolapse. The protocol was deployed in December 2017.																																		
Anticipated Outcomes:	<p>Aims and main anticipated benefits:</p> <ul style="list-style-type: none"> • To support patients with information and regular exercise reminders • Patients will find it easier to exercise more regularly and make progress faster 																																		
<p>Corresponding national outputs and outcomes:</p> <p>NHW = national health and wellbeing</p> <p>HMHM = taken from the Scottish Govt.'s HMHM logic model</p> <p>See Appendices A and B for full lists of outcomes</p>	<p>Achievement of the anticipated outcomes listed above would contribute towards:</p> <ul style="list-style-type: none"> • Personal responsibility (NHW outcome) – by assisting patients to take responsibility for their own health by doing their pelvic floor exercises and using the tips and advice • Quality of life (NHW outcome) – by contributing to better management of the patient's health condition • Cost effective (NHW outcome) – Florence reminds patients to do their exercises, which means the clinician doesn't have to, saving clinician time • Improved access to services (HMHM outcome) – patients are remotely reminded to do their exercises • Better adherence (HMHM output) – by reminding patients to do their pelvic floor exercises, increasing the number of times they do them • Increase in self-management (HMHM outcome) – more pelvic floor patients looking after their own health • Reduced waiting times (HMHM output) – fewer clinic appointments can lead to reduced waiting times 																																		
<p>Development and deployment:</p> <p>Developed: May 2017</p> <p>First patient signed up: June 2017</p> <p>Patients to date: 59</p> <p>Continence protocol: 44</p> <p>Prolapse protocol: 15</p> <p>Uptake of the protocol started quite slowly, but increased rapidly between March 2017 and October 2017. Since October 2017 fewer patients have been enrolled.</p>	<p>Take-up:</p> <table border="1"> <caption>Pelvic Floor Health - Patient Take-up</caption> <thead> <tr> <th>Month</th> <th>Number of Patients</th> </tr> </thead> <tbody> <tr><td>Dec-16</td><td>0</td></tr> <tr><td>Jan-17</td><td>2</td></tr> <tr><td>Feb-17</td><td>8</td></tr> <tr><td>Mar-17</td><td>20</td></tr> <tr><td>Apr-17</td><td>25</td></tr> <tr><td>May-17</td><td>28</td></tr> <tr><td>Jun-17</td><td>38</td></tr> <tr><td>Jul-17</td><td>42</td></tr> <tr><td>Aug-17</td><td>48</td></tr> <tr><td>Sep-17</td><td>52</td></tr> <tr><td>Oct-17</td><td>55</td></tr> <tr><td>Nov-17</td><td>58</td></tr> <tr><td>Dec-17</td><td>59</td></tr> <tr><td>Jan-18</td><td>60</td></tr> <tr><td>Feb-18</td><td>60</td></tr> <tr><td>Mar-18</td><td>60</td></tr> </tbody> </table>	Month	Number of Patients	Dec-16	0	Jan-17	2	Feb-17	8	Mar-17	20	Apr-17	25	May-17	28	Jun-17	38	Jul-17	42	Aug-17	48	Sep-17	52	Oct-17	55	Nov-17	58	Dec-17	59	Jan-18	60	Feb-18	60	Mar-18	60
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Pelvic Floor, incontinence; Pelvic Floor, prolapse Supported Self-management protocol	
Timescale and costs:	Duration of protocol: 36 weeks Average cost per patient per month: £3.10 Average overall cost per patient: £25.42
Clinician feedback:	<p>C7 commented that all team members know how to use Florence, but not all of them do so. They went on to explain this is probably due to there being only two specialist pelvic floor nurses, with other physios having mixed workloads and Florence maybe wouldn't be at the top of their priorities as they treat a large range of conditions.</p> <p>The Pelvic Floor team also tells patients about an NHS app to help them manage their pelvic floor health. This is a paid-for app which also reminds them to do exercises and gives tips and advice. Patients can choose between the app and Florence. However, sometimes patients are offered neither:</p> <div style="border: 1px solid #f4a460; padding: 5px; margin: 10px 0;"> <p><i>"If someone was very motivated and I was confident they wouldn't need any support, I don't think I would offer Florence"</i> C7</p> </div> <p>C7 used to spend a lot of time chasing patients to remember to do their exercises. If a patient is enrolled onto one of the pelvic floor protocols, that job is done by Florence:</p> <div style="border: 1px solid #f4a460; padding: 5px; margin: 10px 0;"> <p><i>"If the patient is being prodded by text message, they don't need to be prodded by me quite so often"</i> C7</p> </div> <p>Overall, C7 is very happy with Florence and believes it supports their patients:</p> <div style="border: 1px solid #f4a460; padding: 5px; margin: 10px 0;"> <p><i>"The patients love it, even though they do sometimes get fed-up with the text messages, but that means they are doing the job"</i></p> </div>
Patient feedback:	<p>Florence enables patients to take personal responsibility (NHW outcome:</p> <div style="border: 1px solid #f4a460; padding: 5px; margin: 10px 0;"> <p><i>"Florence has helped me to do my exercise for my bladder and I am still continuing with the exercises"</i> P14</p> </div> <div style="border: 1px solid #f4a460; padding: 5px; margin: 10px 0;"> <p><i>"Was like a nagging mother in a nice way. Messages were more spaced out as time went on, it was like I was being trusted"</i> P15</p> </div>

Pelvic Floor, incontinence; Pelvic Floor, prolapse Supported Self-management protocol	
	<p>Improved quality of life through better management (NHW outcome):</p> <p><i>"I liked the fact that it jogged my memory re exercises and motivated me to do them even when was lazy about them"</i> P16</p> <p><i>"I like the useful tips"</i> P17</p>
Benefits identified:	<ul style="list-style-type: none"> • Better compliance with an exercise regime and therefore better clinical outcomes • Provides tips and advice to patients which makes them feel supported and helps them self-manage their condition • Unlike the apps available, can be used by patients with only a basic mobile phone
Challenges:	<ul style="list-style-type: none"> • Has to compete with existing apps, that may have more features • Not all NHS physios offer Florence due to mixed work loads
Changes in practice:	Proven: Clinician spending less time chasing patients to adhere to exercise regime

3.5 STEPPS

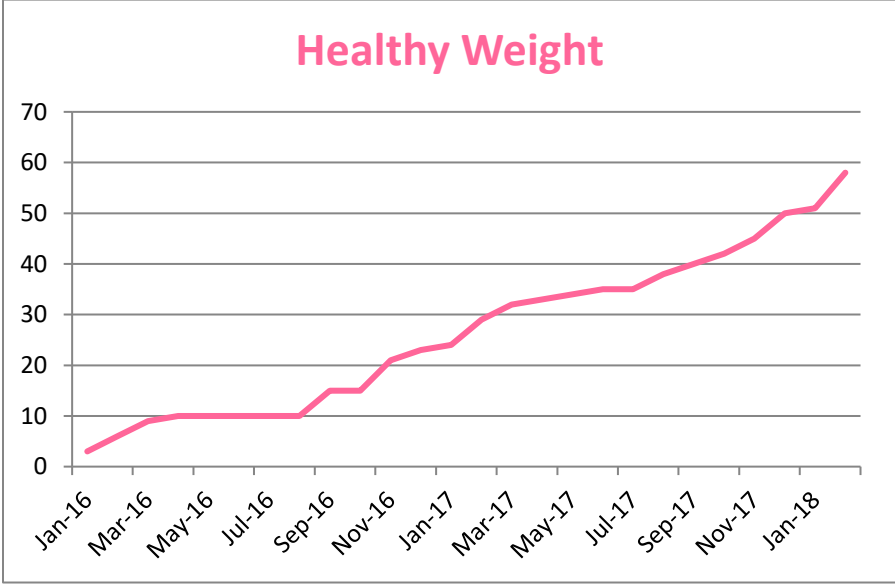
STEPPS Supported self-management protocol																																					
Protocol overview:	<p>The protocol was designed to support patients who are attending a STEPPS course. The course is one of several psychosocial interventions within the Personality Disorder Integrated Care Pathway.</p> <p>STEPPS is a CBT-based programme for people with borderline personality disorder. The course lasts for 20 weeks, with patients attending a two-hour session weekly.</p>																																				
Anticipated Outcomes	<p>Aims and main anticipated benefits:</p> <ul style="list-style-type: none"> • To reinforce learning from the group sessions • To remind patients to complete home assignments • To enable patients to be more aware of emotions they are experiencing 																																				
Corresponding national outputs and outcomes: NHW = national health and wellbeing HMHM = taken from the Scottish Govt.'s HMHM logic model See Appendices A and B for full lists of outcomes	<p>Achievement of the anticipated outcomes listed above would contribute towards:</p> <ul style="list-style-type: none"> • Personal responsibility (NHW outcome) – by reminding patients to complete homework and remember learning from the group sessions • Quality of life (NHW outcome) – by contributing to better management of the patient's health condition • Cost effective (NHW outcome) – Florence reminds patients to do their exercises, which means the clinician doesn't have to. This saves the clinician time • Improved access to services (HMHM outcome) – patients are remotely reminded to complete homework • Better adherence (HMHM output) – by reminding patients to practice techniques they have learned in group sessions which leads to better outcomes • Increase in self-management (HMHM outcome) – more STEPPS patients looking after their own health 																																				
Development and deployment: Developed: October 2016 First patient signed up: November 2016 Patients to date: 66 The initial STEPPS group signed up to Florence in November 2016; because there are a limited number of groups per year, some months will have no patient enrolments onto Florence	<p>Take-up:</p> <table border="1"> <caption>STEPPS Take-up Data</caption> <thead> <tr> <th>Month</th> <th>Number of Patients</th> </tr> </thead> <tbody> <tr><td>Nov-16</td><td>10</td></tr> <tr><td>Dec-16</td><td>10</td></tr> <tr><td>Jan-17</td><td>10</td></tr> <tr><td>Feb-17</td><td>10</td></tr> <tr><td>Mar-17</td><td>10</td></tr> <tr><td>Apr-17</td><td>10</td></tr> <tr><td>May-17</td><td>22</td></tr> <tr><td>Jun-17</td><td>22</td></tr> <tr><td>Jul-17</td><td>22</td></tr> <tr><td>Aug-17</td><td>25</td></tr> <tr><td>Sep-17</td><td>32</td></tr> <tr><td>Oct-17</td><td>32</td></tr> <tr><td>Nov-17</td><td>42</td></tr> <tr><td>Dec-17</td><td>42</td></tr> <tr><td>Jan-18</td><td>52</td></tr> <tr><td>Feb-18</td><td>66</td></tr> <tr><td>Mar-18</td><td>66</td></tr> </tbody> </table>	Month	Number of Patients	Nov-16	10	Dec-16	10	Jan-17	10	Feb-17	10	Mar-17	10	Apr-17	10	May-17	22	Jun-17	22	Jul-17	22	Aug-17	25	Sep-17	32	Oct-17	32	Nov-17	42	Dec-17	42	Jan-18	52	Feb-18	66	Mar-18	66
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STEPPS Supported self-management protocol	
Timescale and costs:	Duration of protocol: 20 weeks Average cost per patient per month: £0.97 Average overall cost per patient: £4.46
Clinician feedback:	<p>C7 reported that they are the only member of their team who uses Florence; however since the interview several different Community Mental Health teams are offering Florence to STEPPS groups.</p> <p>Clinician C7 reported that all patients attending a STEPPS group will be offered Florence. Patients who attend the course can be very vulnerable; during the interview C7 emphasised the importance of making it clear to patients that Florence is not an emergency service:</p> <div style="border: 1px solid #e91e63; padding: 5px; margin: 10px 0;"> <p><i>“I make it very clear that it’s not a system that the patients should use in times of crisis”</i> C7</p> </div> <p>The protocol prompts patients to complete their homework and offers some tips and advice and C7 believes that Florence has helped patients to manage their condition and think about skills. Florence text messages are used to help reinforce the learning from the group, and also to remind patients to complete recording sheets and any homework given to them. The completion of these is critical to the delivery of the group, as half of each session is spent reviewing work done during the week and the recording sheets are used as an outcome measure for the patient. The messages are time-sensitive as they directly reflect what was discussed in the group session that week.</p> <div style="border: 1px solid #e91e63; padding: 5px; margin: 10px 0;"> <p><i>“in the first 8 weeks of the programme a new skill is introduced – text goes out that reminds patients to think about what was discussed in group”</i> C7</p> </div> <div style="border: 1px solid #e91e63; padding: 5px; margin: 10px 0;"> <p><i>“I agree that Florence has changed my patients’ behaviour – more of them complete their homework!”</i> C7</p> </div> <div style="border: 1px solid #e91e63; padding: 5px; margin: 10px 0;"> <p><i>“Florence has made the patients think about skills”</i> C7</p> </div> <div style="border: 1px solid #e91e63; padding: 5px; margin: 10px 0;"> <p><i>“On the whole, Florence has been very positively received by our patients, they don’t find it intrusive”</i> C7</p> </div>

STEPPS Supported self-management protocol	
Patient feedback:	<p>Florence text message evaluation 66 patients have completed the STEPSS protocol to date. Only 18% of patients answered the text evaluation questions. 83% of these would recommend Florence to other people in their circumstances and 60% believe Florence has supported them whilst they attend their STEPSS course.</p> <p>Paper evaluation A 22 people have been sent paper evaluations via post. However, there has only been one response to date. The single respondent likes that Florence is delivered by text:</p> <div style="border: 1px solid #e67e22; padding: 5px; margin: 5px 0;"> <p><i>“it is the most likely technology I will respond to”</i> P18</p> </div> <p>, but thinks the messages can be a bit unvaried and commented</p> <div style="border: 1px solid #e67e22; padding: 5px; margin: 5px 0;"> <p><i>“If I wasn’t feeling anything big, I felt it was pointless to text back my emotions and rating”</i> P18</p> </div> <p>When asked how Florence could be improved, the patient commented:</p> <div style="border: 1px solid #e67e22; padding: 5px; margin: 5px 0;"> <p><i>“Put in more random pick-me-ups; even though they can be annoying at the wrong time, they still cheer me up!”</i> P18</p> </div> <p>Patients attending the first STEPSS group that used Florence, reported untimely text messages, however, since then, there have been no complaints about the frequency or timing of the texts.</p>
Benefits identified:	<ul style="list-style-type: none"> • Florence prompts patients to complete homework • Patients become more aware of the emotions they are experiencing • Positive changes in patient behaviour – clinician reported patients using Florence are more likely to complete their homework
Challenges:	<ul style="list-style-type: none"> • Challenging patient cohort due to nature of condition • Patients can be unwilling to have messages sent to their phones, again due to the nature of their condition • It would not be appropriate for text messages to be sent to a family member’s phone due to the sensitive nature of the course
Changes in practice:	<p>Proven: Florence has prompted patients to complete homework, which means contact time with patients during the sessions is spent more appropriately which leads to better outcomes</p>

3.6 Healthy Weight

Healthy Weight Prevention and early intervention protocol	
Protocol overview:	<p>The Healthy Weight Florence protocol was developed to support patients who are being seen in a one-to-one setting by a dietitian, or attending an NHS-run Well Now course. The individuals who are seen one-to-one are patients who have been referred to a specialist. Members of the public can attend the Well Now courses without being seen by a dietitian.</p> <p>The criteria for patients being enrolled onto the Healthy Weight Florence protocol is:</p> <ul style="list-style-type: none"> • Patients with high BMI • Individuals who are attending a Well Now course and/or the Tier 3 Weight Management Programme who have a mobile phone <p>The Healthy Weight protocol delivers a key part of the Well Now course electronically; the Hunger-o-metre.</p>
Anticipated Outcomes	<p>The main anticipated benefits and outcomes of this protocol are:</p> <ul style="list-style-type: none"> • To support patients to respond appropriately to internal cues of hunger and fullness • Help patients feel more in control around food which enables them to make healthier food choices • Reduced binge and comfort eating • Improved self-efficacy
<p>Corresponding national outputs and outcomes</p> <p>NHW = national health and wellbeing</p> <p>HMHM = taken from the Scottish Govt.'s HMHM logic model</p> <p>See Appendices A and B for full lists of outcomes</p>	<p>Achievement of the anticipated outcomes listed above would contribute towards:</p> <ul style="list-style-type: none"> • Personal responsibility (<i>NHW outcome</i>) – by reminding patients to think about what kind of hunger they are experiencing • Quality of life (<i>NHW outcome</i>) – by contributing to better management of the patient's health condition • Cost effective (<i>NHW outcome</i>) – Patients who respond appropriately to internal cues of hunger and fullness will have better health outcomes which should reduce future healthcare needs • Improved access to services (<i>HMHM outcome</i>) – patients are remotely and regularly reminded to think about their hunger • Better adherence (<i>HMHM output</i>) – by enabling patients to make healthier food choices • Increase in self-management (<i>HMHM outcome</i>) – more Healthy Weight patients looking after their own health

<h2 style="margin: 0;">Healthy Weight</h2> <h3 style="margin: 0;">Prevention and early intervention protocol</h3>																													
<p>Development and deployment</p> <p>Developed: First patient signed up:</p> <p>Patients to date: Total: 59 One to one: 48 Group sessions: 11</p> <p>Uptake of the protocol started quite slowly, but has increased steadily since September 2016. An average of four patients are signed up every month</p>	<p>Take-up:</p>  <table border="1" style="display: none;"> <caption>Healthy Weight - Patient Sign-up Data</caption> <thead> <tr> <th>Month</th> <th>Number of Patients</th> </tr> </thead> <tbody> <tr><td>Jan-16</td><td>3</td></tr> <tr><td>Mar-16</td><td>10</td></tr> <tr><td>May-16</td><td>10</td></tr> <tr><td>Jul-16</td><td>10</td></tr> <tr><td>Sep-16</td><td>10</td></tr> <tr><td>Nov-16</td><td>15</td></tr> <tr><td>Jan-17</td><td>20</td></tr> <tr><td>Mar-17</td><td>25</td></tr> <tr><td>May-17</td><td>30</td></tr> <tr><td>Jul-17</td><td>35</td></tr> <tr><td>Sep-17</td><td>40</td></tr> <tr><td>Nov-17</td><td>45</td></tr> <tr><td>Jan-18</td><td>58</td></tr> </tbody> </table>	Month	Number of Patients	Jan-16	3	Mar-16	10	May-16	10	Jul-16	10	Sep-16	10	Nov-16	15	Jan-17	20	Mar-17	25	May-17	30	Jul-17	35	Sep-17	40	Nov-17	45	Jan-18	58
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Jan-16	3																												
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May-16	10																												
Jul-16	10																												
Sep-16	10																												
Nov-16	15																												
Jan-17	20																												
Mar-17	25																												
May-17	30																												
Jul-17	35																												
Sep-17	40																												
Nov-17	45																												
Jan-18	58																												
<p>Timescale and costs:</p>	<p>Duration of protocol: 15 weeks Average cost per patient per month: £3.45 Average overall cost per patient: £11.73</p>																												
<p>Clinician feedback:</p>	<p>Clinician C8 is responsible for the one-to-one sessions with Healthy Weight patients; C9 oversees the running of the group sessions, but does not directly facilitate them.</p> <p>Thus far, 80% of people using the Florence Healthy Weight protocol have been enrolled by the specialist dietitian. Take-up by people attending Well Now courses has been slower to take off, in part due the large number of Well Now facilitators, who did not have any involvement in developing the protocol, and perhaps feel little commitment to its use.</p> <p>C8 reported that their patients find Florence helpful in managing their eating habits:</p> <div style="border: 1px solid #ff69b4; padding: 5px; margin: 10px 0;"> <p><i>“Patients have reported that Florence has helped them make positive decisions about what they are eating”</i></p> <p>C9</p> </div> <p>When asked if they offer Florence to all patients C8 commented:</p> <div style="border: 1px solid #ff69b4; padding: 5px; margin: 10px 0;"> <p><i>“It’s a case of professional judgement, we know that all patients need support to continue to manage behaviour changes so if I think Florence would be useful I will offer it to them...I think you have to be sure that Florence isn’t going to overwhelm a patient, some of them have a lot going on”</i></p> <p>C9</p> </div>																												

Healthy Weight Prevention and early intervention protocol	
	<p>Currently the Healthy Weight protocol is only being offered to patients who are already engaged with the Weight Management service. C8 and C9 believe that the protocol could be offered as a stand-alone tool for individuals who might find it useful.</p> <p>Florence is used more by the one-to-one patients, C9 believes this is partly due to Florence still being rolled out in all the groups, but also:</p> <div style="border: 1px solid #ff69b4; padding: 5px; margin-top: 10px;"> <p><i>“Florence may be more successful in the one-to-one sessions, as the patients are sitting across from someone who knows more about Florence”</i></p> <p>C9</p> </div>
Patient feedback:	<p>Florence enables patients to take personal responsibility (NHW outcome):</p> <div style="border: 1px solid #ff69b4; padding: 5px; margin-top: 5px;"> <p><i>“Receiving regular reminders and health tips is reminding me to take more responsibility for my own healthcare”</i></p> <p>P19</p> </div> <div style="border: 1px solid #ff69b4; padding: 5px; margin-top: 10px;"> <p><i>“Flo makes you stop and think about how you are feeling. What type of hunger, are you really hungry etc. I think Flo is a fantastic service – I would be happy to continue using it”</i></p> <p>P20</p> </div> <p>Improved quality of life through better management (NHW outcome):</p> <div style="border: 1px solid #ff69b4; padding: 5px; margin-top: 5px;"> <p><i>“Florence makes me think more about why I’m eating – is it boredom or am I hungry or thirsty?”</i></p> <p>P21</p> </div>
Benefits identified:	<ul style="list-style-type: none"> • Florence prompts patients to think about what kind of hunger they are experiencing • Patients become more aware of the emotions they are experiencing • The protocol supports patients to build good self-worth
Challenges:	<ul style="list-style-type: none"> • Not all Well Now course facilitators offer Florence • Uptake of Florence in Well Now groups has so far been very low
Possible future developments:	<p>At the present, Florence is used to help support patients making positive choices about eating. In the future, a separate protocol could be developed which would specifically support individuals attending the group sessions and help deliver some of the learning on the course.</p> <p>C10 commented that part of the reason Florence may not be offered to all course participants is because the facilitators have very little time to deliver a large amount of information. The department could use Florence in a way which could assist this.</p>

3.7 Blood Pressure Monitoring

Blood Pressure Monitoring Diagnosis protocol																							
Protocol overview:	The Blood Pressure (BP) Monitoring protocol is a simple protocol which asks for a patient's BP readings twice each day for 1 week, 10 days or 2 weeks, depending on the preference of the individual GP practice.																						
Anticipated outcomes:	<p>The aims of the protocol are to obtain BP readings to enable GPs to diagnose hypertension and/or titrate medication. The anticipated outcomes are:</p> <ul style="list-style-type: none"> • Increased personal responsibility • Reduction in travel to attend GP clinic appointments for BP monitoring • Reduction in clinic appointments for BP monitoring • More timely and accurate diagnosis of hypertension & condition control 																						
Corresponding national outputs and outcomes: NHW = national health and wellbeing HMHM = taken from the Scottish Govt.'s HMHM logic model	<p>Achievement of these outcomes would contribute towards:</p> <ul style="list-style-type: none"> • Personal responsibility (NHW outcome) – by assisting patients to take responsibility for their own health by taking their own BP readings • Quality of life (NHW outcome) – by contributing to better management of the patient's health condition • Cost effective (NHW outcome) – by reducing repeat visits to the GP practice for BP readings to be taken • Improved access to services (HMHM outcome) – by enabling faster and/or more reliable diagnosis and avoiding white coat syndrome 																						
Existing pathway:	The existing pathway for BP diagnosis varies between GP practices, with some using 24 hour ambulatory monitors, some asking patients to come to the clinic for BP readings to be taken and some loaning a BP monitor with readings to be recorded by the patient, on paper																						
Enrolment process and new pathway:	Using Florence patients are shown how to use a BP monitor, and loaned one to take home; they are given a Florence leaflet and asked to sign a consent form, and are then enrolled on Florence. The GP or practice nurse can review their BP readings sent in by the patient, at any time, or download the readings and work out the average using Excel. If readings do not indicate hypertension, the patient may be informed over the phone																						
Development and deployment Developed: May 2017 First patient signed up: Jun 2017 Patients to date: 87 Uptake of the protocol started quite slowly but has been increasing rapidly since Dec'17 with 8 GP practices now actively using it	<p>Take-up:</p> <table border="1"> <caption>Blood Pressure Monitoring - Patient Take-up</caption> <thead> <tr> <th>Month</th> <th>Number of Patients</th> </tr> </thead> <tbody> <tr><td>Jun-17</td><td>5</td></tr> <tr><td>Jul-17</td><td>10</td></tr> <tr><td>Aug-17</td><td>15</td></tr> <tr><td>Sep-17</td><td>20</td></tr> <tr><td>Oct-17</td><td>25</td></tr> <tr><td>Nov-17</td><td>30</td></tr> <tr><td>Dec-17</td><td>35</td></tr> <tr><td>Jan-18</td><td>50</td></tr> <tr><td>Feb-18</td><td>70</td></tr> <tr><td>Mar-18</td><td>87</td></tr> </tbody> </table>	Month	Number of Patients	Jun-17	5	Jul-17	10	Aug-17	15	Sep-17	20	Oct-17	25	Nov-17	30	Dec-17	35	Jan-18	50	Feb-18	70	Mar-18	87
Month	Number of Patients																						
Jun-17	5																						
Jul-17	10																						
Aug-17	15																						
Sep-17	20																						
Oct-17	25																						
Nov-17	30																						
Dec-17	35																						
Jan-18	50																						
Feb-18	70																						
Mar-18	87																						

<h2 style="margin: 0;">Blood Pressure Monitoring</h2> <h3 style="margin: 0;">Diagnosis protocol</h3>	
Timescale and costs: Requires a reusable BP monitor (£12)	Duration of protocol = 1 week to 2 weeks Average cost for text messages per patient per day = £0.48 Average overall cost for text messages per patient = £3.36 to £6.72
Clinician feedback:	<p>Two clinicians who have used Florence to diagnose hypertension have contributed feedback.</p> <p>Diagnosis:</p> <div style="border: 1px solid #00ff00; padding: 5px; margin-bottom: 10px;"> <p><i>"I agree that Florence aids diagnosis of hypertension and contributes to a more accurate diagnosis"</i></p> <p>C10</p> </div> <p>Clinicians like using Florence:</p> <div style="border: 1px solid #00ff00; padding: 5px; margin-bottom: 10px;"> <p><i>"Using Florence takes approximately the same amount of time as loaning a BP monitor and the patient recording readings on paper"</i></p> <p>C11</p> </div> <div style="border: 1px solid #00ff00; padding: 5px; margin-bottom: 10px;"> <p><i>"Patient's prefer using Florence, I prefer it to the 24hr monitor we previously offered"</i></p> <p>C10</p> </div> <div style="border: 1px solid #00ff00; padding: 5px;"> <p><i>"I like using Florence and plan to keep using in in the practice"</i></p> <p>C10</p> </div>
Patient feedback:	<p>Florence text message evaluation</p> <p>Responses from 41 patients, out of 70 sent the text message survey (response rate = 59%) – a reasonable response rate</p> <ul style="list-style-type: none"> • 100% would recommend Florence to other people in their circumstances • 92% felt that using text messages was a good way of recording their BP readings for their GP practice (n=36) <p>Paper Questionnaire B</p> <p>Responses from 21 patients, out of 69 sent the questionnaire (response rate = 30%)</p> <ul style="list-style-type: none"> • 86% found Florence easy to understand, and felt that Florence had helped them manage their own health condition • 76% found Florence encouraging and supportive, and felt that Florence had enhanced their experience of NHS Highland healthcare • 71% found Florence motivating and informative, and felt that Florence had helped increase their independence • 67% felt Florence had reduced the need for them to attend clinic appointments <p>Patients like the way Florence works:</p> <div style="border: 1px solid #00ff00; padding: 5px; margin-top: 10px;"> <p><i>"It reminds you to take blood pressure when you should. Great thing!"</i></p> <p>P22</p> </div>

<h2 style="margin: 0;">Blood Pressure Monitoring</h2> <h3 style="margin: 0;">Diagnosis protocol</h3>	
	<p><i>"I like that Florence reminds me to do BP. No improvement needed to the service – more items like this are needed to take pressure off the NHS"</i> P23</p> <p>Florence enables patients to take personal responsibility (NHW outcome):</p> <p><i>"I liked being in control of my monitoring. I also know a lot more about blood pressure"</i> P25</p> <p><i>"I know now when I have episodes of high BP and my baseline is within 'normal' range"</i> P26</p> <p>Florence is convenient and cost effective (NHW outcome):</p> <p><i>"I could do it at home"</i> P27</p> <p><i>"I liked being able to do it without taking up the nurse's time"</i> P28</p> <p>Improved quality of life through better management (NHW outcome):</p> <p><i>"I found out I don't have high blood pressure"</i> P29</p> <p><i>"Adjusted medication"</i> P30</p>
Benefits identified:	<ul style="list-style-type: none"> • The patients who have been enrolled on Florence for BP monitoring have engaged well with the protocol, and sent in their BP readings, which have been used for the diagnosis of hypertension or ruling out such a diagnosis • Patients who have responded to questionnaires are generally very positive about using Florence
Challenges:	<p>Challenges have included:</p> <ul style="list-style-type: none"> • Rolling out use of Florence for BP diagnosis has involved engaging with 64 GP practices, arranging visits, introducing Florence, chasing them up for a decision about use of Florence, training those who decide to go ahead, etc. • So far a total of 12 GP practices have been trained in use of Florence for BP, with 3 more signed up, but no training date yet scheduled. So far, only 8 GP practices are actively enrolling patients. • A few patients experienced logistical difficulties with using Florence for example not being enrolled on Florence immediately, or receiving text messages from Florence after they had returned the BP monitor • A few patients believe there have been problems with their readings not being received by the GP. This appears to be a training issue, possibly resulting from the use of Florence by locums who were not fully familiar with the system.

4. Conclusion

Florence was developed to help patients self-manage their conditions, or to make positive changes to their lifestyle, in order to improve their health outcomes. The evidence submitted in this report goes some way to prove that Florence has been successfully implemented within NHS Highland. However, further deployment across the health board is still needed in order to make the most of what Florence has to offer. This will require commitment from strategic decision makers, clinicians and patients alike.

The quotes and stories from patients in this report demonstrate how much the patients appreciate and value the support given to them by Florence. The clinicians are also overwhelmingly supportive of Florence, as it enables power to be handed over to the patient and encourages them to self-manage their conditions, which in turn leads to better patient outcomes. Patients report that Florence makes them feel less isolated, and clinicians are appreciative that they can remotely monitor patients in a time-efficient manner. It is also clear that, in some cases, hospital admissions have been avoided due to Florence helping patients to detect when their condition was deteriorating.

There are practical challenges facing a wider roll-out of Florence across NHS Highland. For example, patients and clinicians have reported on-going problems with mobile phone signals which prevent or deter patients from being enrolled onto a Florence protocol. Although Florence messages can be received via a landline, this would be at an extra cost to the health board and is widely considered to be a less appropriate service.

In order for Florence to become a sustainable service, changes in culture throughout NHS Highland will be required, from the most senior levels down to individual patient-facing clinicians. There should be an expectation that all departments will make use of Florence, enabling changes to existing care pathways to take advantage of the opportunity for home health monitoring through Florence, and encouraging and enabling patients to self-manage. Embedding this approach throughout within the whole organisation will require changes to both existing staff culture and to patients' expectations.

Senior managers should actively seek to ensure that Florence is considered a means of achieving their strategic goals for using technology, and there should be an expectation that, when a Florence solution is available, all members of a clinical department will actively use it, rather than take-up being limited to one or two clinicians, as is sometimes currently the case. The existing situation raises a patient-equality issue, since whether patients are offered Florence or not currently depends on which clinician they happen to see. Patients should be increasingly encouraged to take personal responsibility for their own health and for management of their health condition by using Florence.

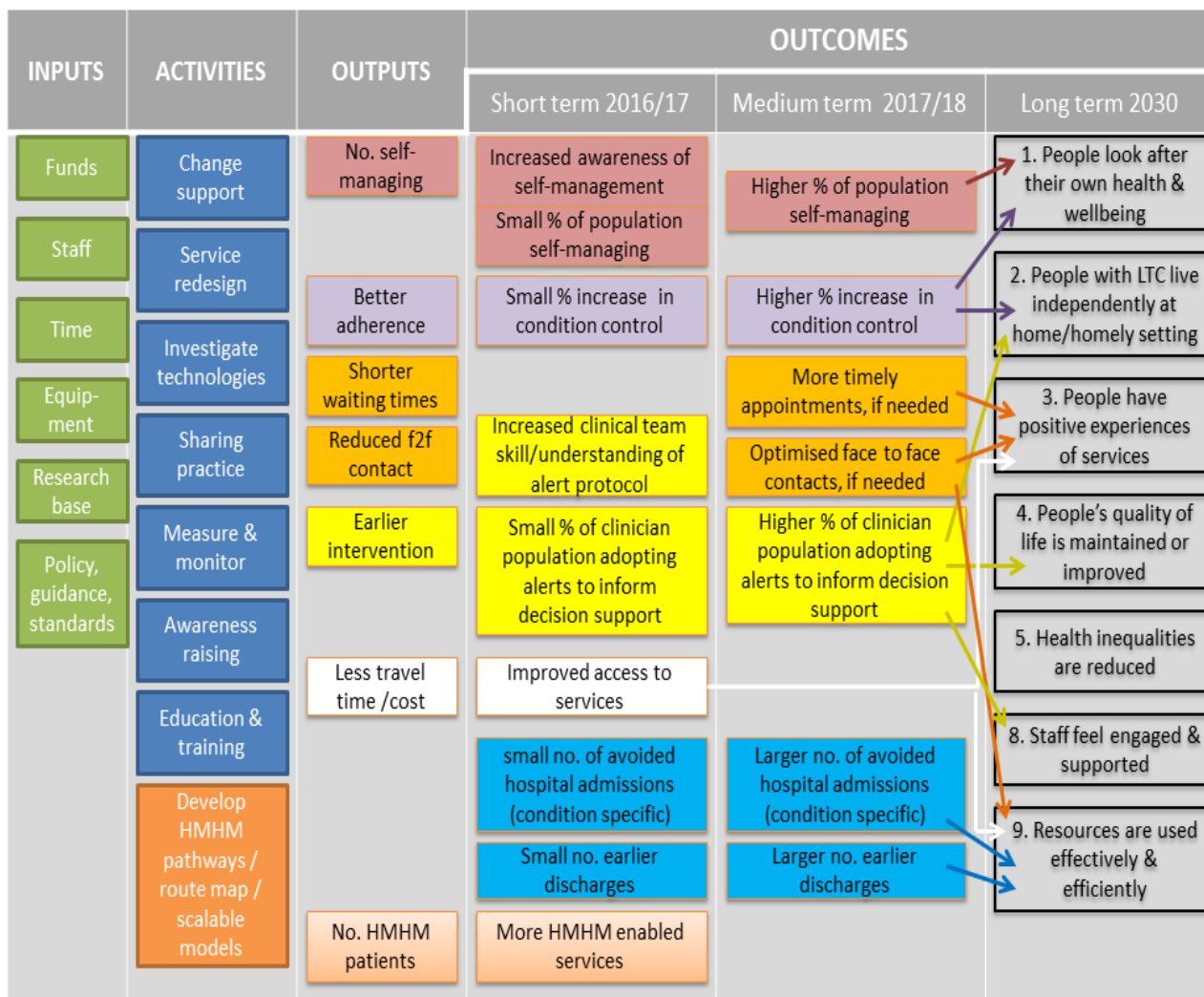
This report has shown the valuable contribution Florence and the Technology Enabled Care team can make to securing a more sustainable future for NHS Highland. Overcoming the barriers that exist and embedding the use of Florence into NHS Highland will help to secure this future.

Appendices

Appendix A – National Health & Wellbeing Outcomes

National Health & Wellbeing Outcomes	
1. Personal Responsibility	People are able to look after and improve their own health and wellbeing and live in good health for longer.
2. Independent Living	People, including those with disabilities or long term conditions, or who are frail, are able to live, as independently at home or on a homely setting in their community.
3. Dignity and Respect	People who use health and social care services have positive experiences of those services, and have their dignity respected.
4. Quality of Life	Health and social care services are centred on helping to maintain or improve the quality of life of people who use those services.
5. Reduce Inequalities	Health and social care services contribute to reducing health inequalities.
6. Carer Support	People who provide unpaid care are supported to look after their own health and wellbeing, including to reduce any negative impact of their caring role on their own health and wellbeing.
7. Safety	People using health and social care services are safe from harm.
8. Staff Engagement	People who work in health and social care services feel engaged with the work they do and are supported to continuously improve the information, support, care and treatment they provide.
9. Cost Effective	Resources are used effectively in the provision of health and social care services.

Appendix B – Logic Model for National HMHM 2016 to 2018



HMHM Outputs (from Logic Model for National HMHM 2016-2018)

1. Better adherence
2. Reduced waiting times
3. Earlier intervention
4. Reduced travel

HMHM Outcomes (from Logic Model for National HMHM 2016-2018)

1. Increase in condition control
2. Increase in self-management
3. Improved access to services
4. Reduced hospital admissions
5. Clinician population adopting alerts to inform decision support

Appendix C – Peak Flow Model for Asthma Patients

Zone	Peak Flow	Florence Response
1	Patient's peak flow is 80-100% of their best value	<i>Continue to take your preventer inhaler as prescribed, even when you are feeling well. See you later, Flo</i>
2	Patient's peak flow is 60-80% of their best value	<i>Increase use of both your preventer and blue inhalers as agreed with your doctor or asthma nurse. If you are often in Zone 2 ask for an asthma review</i>
3	Patient's peak flow is 50-60% of their best value	<i>Continue to use both your preventer and reliever inhalers and start taking your rescue steroid tablets as directed. Please tell your doctor or asthma nurse within 24 hours.</i>
4	Patient's peak flow is <50% of their best value	<i>If you can't speak in a sentence dial 999 or call your GP urgently. Take up to 10 puffs of reliever inhaler every 5 minutes until you improve or help arrives</i>

Appendix D – CHSS COPD Traffic Lights

Zone	Symptoms	Actions	Corresponding message from Flo
GREEN <i>I feel OK</i>	<ul style="list-style-type: none"> Your symptoms are under control 	<ul style="list-style-type: none"> You should continue with your usual medication, breathing and chest clearance exercises as before 	<i>Green Zone - your symptoms seem to be fairly stable, so carry on with your usual activities, medication and breathing exercises. Enjoy the rest of your day, Flo</i>
AMBER <i>I feel I am getting worse</i>	<ul style="list-style-type: none"> You are having to use your reliever inhaler more often You have a new or increased cough You are more short of breath or wheezier than normal You are coughing up more sputum Your sputum has changed colour towards greener You have a loss of appetite You have new or increased ankle swelling You have reduced energy and feel more tired than normal 	<ul style="list-style-type: none"> You should increase use of blue inhaler Rest while you can Use your breathing techniques Use your chest clearance exercises Drink plenty of fluids, don't get dehydrated Eat small amounts often Keep monitoring how you feel in case you are having a flare up 	<i>Amber Zone - your symptoms are a bit worse than usual, check your traffic light card for actions to take, in case it's the start of a flare-up. Take care, Flo</i>
RED <i>I feel much worse</i>	<ul style="list-style-type: none"> You are extremely breathless or having difficulty breathing You have chest pain You feel drowsy or confused You have a high temperature 	<p><i>If you have been in the Amber Zone for 24-48 hours and are not feeling any better – it's time to alert your GP/Respiratory Nurse</i></p> <p><i>If you feel too unwell to wait for the doctor or nurse to phone back, dial 999</i></p>	<p><i>Red Zone – you may be having a 'flare-up'. Check your traffic light card. If you need to take your rescue meds text MEDS to tell me & remember to inform your GP</i></p>

Appendix E – Participant Reference Table

Patients

IDs	Protocol	Modality
P1, P2, P3	Asthma	Questionnaire
P4, P5, P6, P7, P8	Low FODMAP Diet	Questionnaire
P9, P10, P11, P12, P13	COPD	Questionnaire
P14, P15 P16, P17	Pelvic Floor	Questionnaire
P18	STEPPS	Questionnaire
P19, P20 P21	Healthy Weight	Questionnaire
P22, P23, P24, P25, P26, P27, P28, P29, P30	Blood Pressure Monitoring	Questionnaire

Clinicians

ID	Protocol	Role	Modality
C1	Asthma	Respiratory Clinical Nurse Specialist	Interview; Verbal feedback; Email
C2	Low FODMAP Diet	Gastroenterology Specialist Dietitian	Interview; Verbal feedback; Email
C3	Low FODMAP Diet	Gastroenterology Specialist Dietitian	Verbal feedback
C4	COPD	Advanced Practice Respiratory Nurse	Interview; Verbal feedback; Email
C5	COPD	COPD Advanced Nurse Practitioner	Interview
C6	Pelvic Floor	Clinical Specialist Pelvic Health Physiotherapist	Interview
C7	STEPPS	Clinical Area Manager	Interview
C8	Healthy Weight	Lead Dietician	Interview
C9	Healthy Weight	Senior Health Improvement Specialist	Interview
C10	Blood Pressure Monitoring	GP	Email
C10	Blood Pressure Monitoring	GP	Verbal feedback

NHS Highland Technology Enabled Care Staff

ID	Role
JRG	Technology Enabled Care Project Support Manager
FMJ	Technology Enabled Care Project Support Officer

Appendix F – Methodology

Methods used for Patient Feedback

Patients are sent a set of five evaluation questions, by text message, at the end of their Florence protocol or, in the case of longer protocols, when they have been using Florence for a significant time (usually 40 or more days). Four of these questions are standardised, being exactly the same in all the Florence protocols, with one question being specific to the individual protocol. The text messages are structured so that receiving a response to each of the questions triggers the next question to be sent. A user who does not answer the first question will not be sent the second, and so on. This has the effect that the number of responses to each of the 5 questions tends to be lower than the one before.

The final question sent by Florence asks the patient if they would be happy to be contacted for further feedback. If they respond yes, or if the question was not answered, patients are sent a more in-depth questionnaire by post with the option to respond on paper, or online. This questionnaire is normally sent out within a few months of the patient being enrolled on Florence, being sent to all patients who have used Florence, unless they declined further contact.

There have been two versions of the paper-based questionnaire to date; for the purposes of this report they will be referred to Paper Questionnaire A and Paper Questionnaire B.

- Paper Questionnaire A was originally designed to gather information primarily about how easy patients find Florence to use, including issues relating to unfamiliarity with using a mobile phone in general or text messaging in particular, and issues relating to mobile phone signals and warnings about being charged. The questionnaire did not focus on the perceived benefits of using Florence or the difference it had made to the patient, though patients were asked what they most liked and disliked about Florence. Paper Questionnaire A was sent to patients enrolled on Florence from February 2015 until December 2017.
- Paper Questionnaire B was developed to provide a greater focus on the difference Florence has made to patients. The questionnaire includes a number of questions requiring tick box responses, plus some questions asking for free text responses.

Patients who fill out the paper questionnaire are able to opt in for further individual feedback. While we plan to contact some patients by telephone, to provide such feedback, no patients have so far been contacted.

Methods used for Clinician Feedback

At the start of the process of developing their Florence protocol clinicians are normally asked to complete a Protocol Planning Form, which guides the clinician's thinking, in terms of the patient group they are aiming to support using Florence, how patients will be selected, the aims of the protocol, how success will be measured, etc. Unfortunately, however, a Protocol Planning Form has not been completed in all cases.

For this evaluation, clinicians were contacted via email to ask if they would be available for interview and whether they were happy to contribute to an internal evaluation project. All clinicians contacted were happy to be involved. In most cases, the clinicians invited to take part had been responsible for the design of the Florence protocol from the start and had played a key role in the promotion of Florence within their department.

An interview schedule, which includes questions relating to the original aims of the clinician's protocol, as detailed in their Protocol Planning Form was developed and a pilot interview was conducted in October 2017. Following this, no major changes were made to the interview schedule and all clinicians have been asked the same questions. A copy of the full interview schedule can be found below as Appendix G. Due to the conversational nature of a semi-structured interview, the length of the

interviews varied between 25 and 45 minutes. All interviews were recorded. All participating clinicians have been sent Florence case-study templates with a request to complete them. However, only one department has so far been successful in doing so. Since some protocols did not have Protocol Planning Form available to inform the evaluation, the clinicians for these have been asked to resend, or retrospectively complete a form. Additional qualitative evidence has been taken from informal meetings between clinicians and members of the TEC team.

Analysis

Quantitative data was primarily analysed using Microsoft Excel with the exception of data which was extracted directly from Survey Monkey. Qualitative data was analysed using thematic analysis.

Evaluation Framework

The main outcome measures used for each Florence protocol were taken from the Protocol Planning Form which had been completed by the clinician at the initial stage of the protocol development. When appropriate, additional measures were taken from sources including Academic Poster Presentations and the face-to-face semi-structured interviews.

To further develop the evaluation framework, each protocol outcome measure was paralleled with corresponding National Health & Wellbeing Outcomes (Appendix A), and the HMHM Outcomes and Outputs which were extracted from the Technology Enabled Care Programme's Logic Model for National HMHM 2016-2018 (Appendix B).

Appendix G – Clinician Interview Schedule

All interviews were conducted and recorded by FMJ

1. How did you hear about Florence?
2. How long have you used Florence?
3. What protocol(s) do you use?
4. What are your criteria for deciding whether a patient should be enrolled onto Florence?
5. What reasons have you had for not offering Florence to a patient?
6. If someone doesn't have a mobile phone or has difficulty using a mobile phone, have you thought about offering Florence text messages to be sent to a family members/carer's phone
7. How do you describe Florence to your patients
8. Do you find it easy to sign up a patient to Florence?
9. What is your Protocol trying to achieve?
10. Do you believe Florence helps patients to self-manage their conditions
11. Do you think Florence has changed your patients' behaviour at all?
12. What feedback have patients given to you about Florence?
13. Do you have a system in place to measure outcomes?
14. How much time do you spend on Florence?
15. Do you find the clinician interface easy to use?
16. What were your expectations of Florence?
17. What do you find most challenging about using Florence?
18. How could the Florence experience be improved?
19. How was relationship with TEC team and JG?

Appendix H – Florence Protocols actively in use by NHS Highland

Protocol/Patient Group	Enrolled to Mar'18
Asthma	120
Attending for Surgery	138
BP Monitor	89
Claudication	83
COPD	57
Decider Skills	26
Diabetes Type 2 (Lifestyle)	44
Diabetes (Monitoring)	39
Falls Prevention	24
Foetal Movement Awareness	104
Foot care	23
Healthy Weight	59
Heart Failure	32
Inflammatory Arthritis	28
Low FODMAP Diet	74
Lymphoedema	18
Medication Reminders	17
Mindfulness	17
My Steps Count	56
Pain Management	92
Pelvic Floor Health	44
Postnatal Care	76
Pulmonary Rehab	14
Smoke Free	51
STEPPS	66
Words Up Key Messages	208