

Exploratory on using Digitally Enabled Technology in the Remote Monitoring of Long Term Conditions

Dr Sanna Rimpiläinen; Ciarán Morrison; Laura Rooney

Document reference number	DHI041016E0001 <ul style="list-style-type: none"> ○ E = exploratory report ○ L = lab report ○ F = factory report ○ S = summary document ○ LR = literature review ○ RR = research report ○ MR = market research ○ MAP = mapping ○ V=video ○ O= other
----------------------------------	---

Publication date	04/10/2016
Revision date	
Revision number	

Purpose of document	Exploratory report
Event detail (delete row if appropriate)	Exploratory event for the Academic Health Science Partnership (AHSP) in Tayside, on the 4th of October, where the use of digitally enabled technology in the remote monitoring of long term conditions was discussed by clinicians and other stakeholders.
Project detail (delete row if appropriate)	Report on the exploratory and workshops for the academic health science partnership
Other detail (delete row if appropriate)	

Related projects	Names and doc reference numbers
Keywords	Remote Monitoring; telehealth, telecare, telemedicine, workshop

Report on the Exploratory and workshops for the Academic Health Science Partnership on the 4th October 2016

Introduction

The Digital Health & Care Institute (DHI) hosted an Exploratory event for the Academic Health Science Partnership (AHSP) in Tayside, on Tuesday the 4th of October. The Exploratory ran from 12.00-16.45pm, and was held in the Westpark conference centre in Dundee. The event brought together approximately 30 clinicians and various other stakeholders in healthcare to explore the use of Digitally Enabled Technology in the Remote Monitoring of Long Term Conditions.

The aim of the event was to inform and inspire the participants to consider remote monitoring as an alternative to the traditional methods for monitoring long term conditions, and to identify a group of interested clinicians to start making remote monitoring a reality in Tayside. The day began with a welcome from Professor Dilip Nathwani, Co-Director and Joint Chair of the AHSP, and Brendan Faulds, the COO of DHI, followed by a series of short presentations. The presentations introduced the concept of and need for remote monitoring solutions, the efficiencies and savings that could be made through their implementation, and showcased a number of examples of existing remote monitoring technologies.

In the afternoon the Research and Knowledge Exchange team of the DHI ran three workshops, in parallel to each other, to get the participants to consider the benefits and risks associated with using digitally enabled technology in the remote monitoring of long term conditions. The workshop participants were assigned to groups in accordance with their clinical speciality, where applicable. The specialities were diabetes, cardio-vascular diseases and respiratory diseases. The groups were asked to identify which technologies they would ideally use in remote monitoring within their speciality, what changes would be needed to help make remote monitoring a reality and how these changes could be implemented in Tayside. This report outlines the content of the day's presentations, discusses the outcomes of the workshops and suggest next steps towards implementing digital remote monitoring in NHS Tayside.

Presentations

Remote monitoring solutions: A view from the Scottish Centre for Telehealth and Telemedicine (SCTT)

James Ferguson, Professor of Remote Medicine at RGU and the Clinical Lead for the SCTT, highlighted the need for the current healthcare service to renew itself. The existing models of health and care are no longer financially viable, and many patients would prefer to be cared for at home rather than in a hospital.

In comparison, financial services are largely digital nowadays, but people still can, when they need to, get face-to-face service at banks. However, most of the people prefer to self-manage their finances.

Prof Ferguson addressed how the same approach could apply to health care – using digital technologies to enhance, if not replace, existing health and care services. The priorities of the Technology Enabled Care programme entail extending the use and availability of digital health and care monitoring services across health and social care sectors. It has been evidenced, conclusively, that telehealth is a safe and secure service, and that it is at least as effective as conventional care, with some populations benefitting from its use more than others. Economic evidence, however, is still unclear, and there is currently no evidence about the effectiveness of telehealth when applied at a larger scale. Furthermore, there is no evidence of the transferability of best practices in telehealth.

CapGemini: Digital Health & Social Care for Tayside

In the second presentation Richard Heynes from CapGemini talked about a vision of Digital Health and Social Care for Tayside. The open source company provides a cloud-based, integrated and interoperable health records system that enables citizens to take control of their own care. The system can also assist with health and social care integration. In order to develop a digital health economy to drive innovation in healthcare it is crucial to ensure that digital skills are locally available for innovation. This includes a strategy not only for training but also for skills retention. The health and social care sector need to support the local market and local economy, while the offered solutions need to be cost-effective. Capgemini are supporting this type of regional innovation e.g. in Wales. The company operates within 40 countries worldwide, and are keen to expand into Tayside.

Diabetes

Professor McCrimmon and Dr Cunningham gave a short presentation around the work they have been doing in the remote monitoring of Diabetes. They spoke of the SCI-DC, which is a cloud database that stores all the diabetes-related data of every diabetic patient in Scotland. They then described MyDiabetesMyWay, an interactive self-management platform for diabetes patients. The platform is linked into the SCI-DC, so that every patient who logs into their MDMW account has access to relevant health data related to their health. This includes their blood sugar levels as well as their Blood Pressure readings, Body Mass Index and much more. They can also view how the parameters have changed over the course of their condition since diagnosis. This platform has proven hugely useful for self-management of diabetes. Patients have access to their data and can upload their blood sugar readings without going to the clinic. The clinician can view the results and see if the patient requires more support. The uptake of the platform has generally been good and through an increased uptake it is hoped that more patients can self-manage their condition away from primary and secondary care services. The potential for other conditions to be remotely monitored in this fashion is great.

Remote Patient Monitoring & Value-Based Healthcare

In the next presentation Martin Clark from Medtronic outlined the scale of the problem with regards to delayed hospital discharges, highlighting how 2015 saw 2.7 million lost bed days (a 35% increase since 2014), costing NHS hospitals £900 million. The effect of each bed day on patients is a 5% reduction in patient's muscle power. More specifically, NHS Scotland delayed hospital discharges in 2015/16 showed that 567,853 bed days were occupied by delayed discharge patients (a 9% reduction). Nearly 75% of beds are occupied by over 75s. In 2015 1 in every 12 occupied bed days were due to delayed discharges.

It was outlined that accelerated hospital discharge service could be achieved through technology enabled discharge through remote patient monitoring technology, system integration, and equipment logistics. Mr Clark discussed how Medtronic's patient-managed service layer allows for patients at least risk to be discharged first, using various remote non-clinical/clinical tools, telephone health-coaching as well as signposting and education for patients.

Following this, Mr Clark explained market barriers within hospitals (including need for standardised evidenced protocols, and a clear economic justification) and the home setting (including a lack of a 'gold

standard' trial prior to implementation, misaligned healthcare incentives, the finances of tech solutions and a holistic, interoperable/open technology platform).

The presentation finished with an outline of the connected care ecosystem required to drive market adoption: technology, data, and clinical settings need to be connected, and underpinned by a commercial model based on outcomes.

'The Art of the Possible' within advanced digital care

Gary Robinson from the DHI gave a talk about Advanced Digital Care in the community. His presentation highlighted how fragmented and siloed the current health and care landscape is, pointing out how a lot of the technologies currently used for remote care are analogue and date back to the 1960s. Communication between the carers and the cared-for person remains largely one-way (e.g. red emergency buttons). The carers have no way of assessing the acuteness of the care need of their wards. In addition, with the pending switch to digital, a lot of the current analogue technologies will not reach the end of their economic life expectancy. Overall, the use of analogue technologies is no longer economically viable. Robinson presented several digital alternatives to the current health and care models.

The future will be built around digitally enabled, integrated health and care systems, which enable secure communication and sharing of information between those involved in an individual's care. These can include both the health and care as well as other social services and the person's family members. It will be possible to remotely monitor people's wellbeing in their homes through various technologies, such as digital door entry control, digital fire systems interface, reminders and prompts to take medicines, GPS enabled care devices that help track someone with memory problems. These technologies will increase individual's independence, help their carers, provide reassurance and improve personal safety.

GI Endoscopy

In the final presentation Professor Bob Steele gave a talk on the use of the remote monitoring solution PillCam. He started his presentation with an introduction to colonoscopies, discussing their use in investigating symptomatic patients, including surveillance and screening. He outlined how the current method for colonoscopy allowed for high quality visualisation of the large intestine, and enabled biopsy and the removal of residual material during the procedure. He countered this by highlighting how

expensive, uncomfortable and potentially dangerous the procedure could be, as well as underlining its requirement to be performed in the hospital.

In comparison, PillCam shows good visualisation of the large bowel (possibly better than colonoscopy), it is safer and more comfortable than a colonoscopy, it doesn't require sedation and is deliverable in the community. However, it is an expensive device, requiring a highly skilled workforce to read the data. Furthermore, it does not allow biopsy or polypectomy. PillCam's potential lies in its ability to increase the satisfactory examination rate when investigating symptomatic patients, and in being used as a primary screening and surveillance test. Other advantages arise from savings made from being able to screen patients in remote areas in the communities: this reduces absences from work, cost and time required for travel, accommodation during hospital trip, as well as utilization of hospital resources.

To accelerate the adoption of this remote monitoring technology Bob Steele proposed a clustered randomised trial in which randomised GPs could have access to the Pillcam, allowing an assessment of its use in endoscopy services. This would help in providing a cost-benefit analysis.

The Workshops

Following the presentations and a short coffee break the participants were split into three different speciality groups: cardiovascular, diabetes and respiratory. The workshops ran in parallel, each consisting of 8-10 participants, a scribe and a facilitator. The workshops entailed guided discussions and ranking exercises, with the topics being set by the facilitators and the outputs noted by the scribes, or by the participants themselves. The following is an analysis of the discussions and an outline of what the participants would like NHS Tayside to work on when implementing digitally enabled remote monitoring.

Workshop Analysis

Current Monitoring Pathways and Use

The workshop began by asking if the participants were aware of any remote monitoring solutions (RMSs) and if any were currently being used as part of the participants' own clinical practices.

Within the cardiovascular group, the RMSs identified were:

- My Patient View: this is an interactive monitoring and self-management platform which allows you to view your results and medicines. (<https://www.patientview.org/#/>)

- Monitoring of patients with pacemakers
- Alivecor: This is a EKG monitor which remotely measures a patient's heart rhythm so that both the patient and clinician can be kept informed about the activity and health of the patient's heart.
(<https://www.alivecor.com/en/>)

Within the Diabetes group, RMSs identified were as:

- MyDiabetesMyWay: please see above for the description of this platform. (Link: <http://www.mydiabetesmyway.scot.nhs.uk/>)
- Remote Questionnaires
- Movember: This is remote monitoring or 'active surveillance' which patients with Pancreatic cancer carry out on themselves to ensure their condition is still stable. This is preferred to the unnecessary radical treatment that may cause incontinence or erectile dysfunction.
(<http://www.southampton.ac.uk/news/2015/05/22-movember-provides-prostate-cancer-funds-for-southampton-researchers.page>)

Within the respiratory group, RMSs identified were:

- Piko-6, a digital peak flow meter, is used for screening and monitoring of COPD
- Jabber Guest, an online real-time communications system (<http://jabborate.com/jabborate-jabber-guest.php>)

Risks and Benefits of RMSs

During the second task the participants in each workshop were further divided into subgroups representing three perspectives: patients, communities and healthcare providers. The subgroups were asked to discuss potential risks and benefits associated with RMSs from the different perspectives.

Generally, across the three specialties the benefits of remote monitoring had to do with savings and convenience; patient empowerment and continuity of care. Overall, remote monitoring generated more risk scenarios for patients, while healthcare providers were seen to have more benefits from utilizing remote monitoring. See Table 1 below for a closer look and comparison of the benefits and risks discussed across the workshops.

	Benefits	Risks
Patients	<ul style="list-style-type: none"> • Convenience in terms of time and money saved • Increased access to and control of own data • Increased understanding of their own data and health • Earlier care interventions • Continuity of care 	<ul style="list-style-type: none"> • Lack of face-to-face contact for those who are lonely • Not all patients trust these technologies • Patients might not understand how to use technologies
Healthcare Providers	<ul style="list-style-type: none"> • Hospital resources used more effectively • HCPs would have better tools at their disposal 	<ul style="list-style-type: none"> • Patient-generated data may not be as accurate in comparison to HCP-collected data • Time and money will need to be set aside to train staff • There is the issue of responsibility – who will oversee all of the data?
Communities	<ul style="list-style-type: none"> • The benefits of remote monitoring could be expanded across health boards to increase quality. • Carers in the community would have better tools to care for their patients 	<ul style="list-style-type: none"> • Potential for generational alienation – risk of marginalisation • Increased inequalities within groups since some people cannot access digital technologies • There is the potential for loss of data

Table 1. This table shows the collected benefits and risks raised in the workshop discussion groups. As this is an aggregated format we are able to see the specific issues raised. The table does not however show that more risks for patients were raised than benefits and vice versa when discussing HCPs. For more details, see Appendix 2.

Ideal digital remote monitoring solutions and their patient groups

In this section of the workshop facilitators tasked participants with choosing which remote monitoring solutions they would use, and what patient groups they wished to interact with. Within the cardiovascular group the use of remote monitoring for obese patients, recording their weight and reacting with an associated dosage of medication was discussed. Alongside this, remote ECG monitors (e.g. AliveCor ECG App) were chosen. The Diabetes workshop were very enthusiastic about implementing MDMW and PillCam towards their associated patient groups, namely diabetes patients and those over 50 years of age. The Respiratory workshop selected COPD and Asthma patients as their targeted group using solutions like Piko-6 and nSpire to identify risk of readmissions, and the potential of telehealth (e.g. Jabber Guest) to help with pulmonary rehabilitation.

What needs to change or be put in place prior to implementation

The fourth task of the workshop was a carousel exercise in which the participants were asked to discuss what they felt was required of NHS Tayside services from the perspective of patients, community and healthcare professionals before implementing digital remote monitoring solutions. Participants were asked to consider their answers in terms of technology, infrastructure, processes and practices. Each workshop discussed the issue and the facilitator and scribe collected the relevant information. The aggregated information was analysed and three primary themes emerged.

These themes revolved around **patient empowerment, accessibility and service re-design**. All three themes are inherently connected as they feed into each other. The workshops highlighted that RMS's needed to empower patients. This was seen as being achieved through granting patients access to their personal health related data and ensuring that services are designed around the patients and their needs. It was seen as essential that patient groups undergoing remote monitoring are not marginalised from the healthcare process and that face-to-face contact is still available when necessary, or as an alternative to those who prefer that to remote monitoring.

The theme of empowerment had obvious connections to the theme of accessibility where participants discussed the need for patient convenience and a need for responsibility in relation to data ownership/security. This point was reinforced when participants discussed how healthcare providers had a responsibility to ensure health data is analysed and stored by the correct personnel. It was also underlined that healthcare professionals must be equally supported throughout the process of change

management. Furthermore, the issue of improving digital literacy on both the part of the patient and the health care provider was raised to ensure access is equal for all users.

These issues of responsibility and digital participation led directly into the discussion of service redesign. On this topic it was universally agreed across all specialities that the need for service redesign was paramount and that change requires a whole systems approach, not just a fragmented one involving primary and secondary care services. Again it was wholly agreed that the entire process of change needed to be user led, to include not only the health care staff but also patients and their carers, with digital RMS's being integrated as part of an end to end care plan.

What next for NHS Tayside

The final task of the workshop had the participants decide what were the most important issues facing NHS Tayside, and what work they thought needed to be done before implementing any RMSs.

The cardiovascular workshop emphasised the need for future use of RMS's to be evidence-based and focus on creating the biggest difference to the patients. Any solutions would need to have an assured ease of use, and show a degree of confidence that they will result in different outcomes from the current methods. The priority action areas for NHS Tayside according to the cardiovascular group were implementing My Patient Portal, creating network linkages across health and social care, and deploying service design approach that involves service users including staff members. Along with this, NHS Tayside needs to assure patients that data will be viewed by health care providers, and that patients have access to their data.

In the respiratory workshop participants created two project ideas for the future that would help in the expansion of RMS use in NHS Tayside. The first project would aim to improve monitoring of sleep apnoea patients using remote monitoring devices, as this could lead to reduced outpatient visits. The second project would aim to improve the diagnosis of patients with COPD through the use of a Piko-6 device (or something similar), this project could also look at enabling patients to monitor their own conditions in the community through the use of wearables. Each project would investigate the health economic, and outpatient referral impacts, these were seen as key requirements for future use of RMSs in Tayside.

In the diabetes workshop, participants highlighted the requirement for NHS Tayside to define the new pathway and disseminate how the services will change to allow for the implementation of RMSs. They

also noted that NHS Tayside must ensure patients with complex needs can still have face-to-face contact with HCPs, as some diabetes patients struggle to remain within good glycaemic control and may need more support than patients with less-severe conditions.

Going Forwards

Going forward NHS Tayside and the Academic Health and Science Partnership will review this report, and outline the next steps.

Appendices

Appendix 1:

List of attendants and their allocated workshop groups

Area		Group
Cardiology	Cardiology	B
Cardiology	Cardiology	B
Consultant Physician	Cardiology	B
NHST Director e-Health	Cardiology	B
Medtronic	Cardiology	B
Health Informatics	Cardiology	B
AHSP	Cardiology	B
Scottish Telehealth & Telemedicine	Cardiology	B
AHSP	Cardiology	B
Programme Manager, Dundee Health & Social Care Partnership	Cardiology	B
Locality Integration Improvement Manager for Technology Enabled Care, Angus H & SC Partnership	Diabetes	A
Tech Consultant, eHealth Directorate	Diabetes	A
Public Health	Diabetes	A
Director of Strategic Change	Diabetes	A
CapGemini	Diabetes	A
GI Medicine/Surgery	Diabetes	A
AHSP (Director of Health & Care Strategy)	Diabetes	A
Dundee Health & Social Care Partnership	Diabetes	A
RIS, UoD	Diabetes	A
AHSP	Diabetes	A
NHST e-health	Respiratory	C
Knowledge Exchange Manager, RIS	Respiratory	C
Consultant Respiratory Physician	Respiratory	C
Consultant Respiratory Physician	Respiratory	C
Respiratory Liaison Nurse Team	Respiratory	C
Consultant Physician	Respiratory	C
CapGemini	Respiratory	C
AHSP	Respiratory	C
Service Delivery Manager (Unified Communications), eHealth	Respiratory	C
Associate Medical Director for Primary Care, NHS Tayside	Respiratory	C

Appendix 2:

Compiled benefits and risks of remote monitoring solutions

	Cardiovascular		Diabetes		Respiratory	
	Benefits	Risks	Benefits	Risks	Benefits	Risks
Patients	Continuity of care Time savings Potential for the patient to set the agenda Know what my measures and numbers are Savings in terms of travel cost and time	Potentially loss of community (with lack of f2f contact) Risk to patient: oversight by clinicians → need clear, unambiguous protocols; Generation alienation; Need for point of contact: Lack of confidence in telehealth vs. patient contact with doctor – reassurance of process; Continuity of care at risk Widen inequalities Which product? User friendly, cost, tested,	Convenience for patients to access care remotely Real time support for patients when they need it. Earlier intervention so that patients live longer, healthier lives where possible.	Loss of face-to-face contact may be disadvantageous for some patients who are lonely. Patients may not comply with new technology. May be costly/unaffordable to implement in patients' homes.	Control and Access of their own personal health information and data Reduction in time lost due to decreased hospitalisation and visits to healthcare professionals RMS keeps patients away from A+E	There are still large uncertainties with regards to data governance and security (in reference to patient data and personal information) Current monitoring solutions still require information to be sent physically, there is a risk of delay or loss of patient data

		need for assessment integration				Requires patient input, therefore specific information may not be received
Community	Maps the patient population; Opportunistic benefits; Less threatening; Familiar	Multiple tech – which to choose?	<p>Convenience, people only go to hospital if they really need it and use community services in the mean-time</p> <p>Distance is no object, so remote communities can access care easily too</p> <p>Carers in the community will have much better tools at their disposal to be able to do their jobs more efficiently.</p>	<p>Resources spent on this can't be spent on anything else</p> <p>Risk of abuse of the system</p> <p>Loss of human contact for some people</p>	Certain patient's benefits can be expanded to provide economic benefits (i.e. savings through improved efficiencies) to the broader community	

<p>Healthcare Providers</p>	<p>Reduces patient anxiety; reassuring of nominal findings Demand goes up - capacity management; Resource savings; Release of HC time; Improves efficacy and use of resources; Widens the scope of tools available to HCP – not replacing but enhancing</p>	<p>Culture, changing practice Data – who processes, how to process and respond; Will identified personnel and resource be made available?</p>	<p>More efficient services Better use of multi-disciplinary team Better information to guide HCPs</p>	<p>Money doesn't follow the patient Loss of income Global lack of resource to do the 'day job'</p>	<p>Time saved through a decrease in patient visits Benefits can be expanded across various health boards helping improve efficiencies and quality across NHS Scotland</p>	<p>As patient data is coming from recordings made by the patients, there can be doubt upon its reliability</p>
------------------------------------	---	---	---	--	--	--

Appendix 3:

Carousel discussion notes

	Cardiovascular	Diabetes	Respiratory
Infrastructure	<p>My patient portal (7)</p> <p>Secure information governance (3)</p> <p>New patient testing > Scales; > Blood pressure; > Labs</p> <p>Central response centre, >equipment in homes, e.g. cellular network, dispensed from community Community Hub/Local Care Centre Guidelines and competencies</p> <p>Network linkages across health and social care (7)</p> <p>Joined up working Mobile providers</p>	<p>No signal/broadband.</p> <p>Connectivity must be broadened in rural areas to ensure the technology never 'cuts out' (2)</p> <p>Digital literacy issues need to be addressed (4)</p> <p>Money – where will the community get the funds? (1)</p> <p>Time – how long will it take to install all of these RM solutions in the community?</p> <p>People – who is involved in this, ie carers, HCPs etc. Importance of integrated joint boards (1).</p> <p>Connectivity in communities must be increased.</p> <p>Running these new solutions on existing tech may be one way to save costs but is this feasible?</p> <p>IT that talks across primary and secondary health care services and social care services.</p> <p>A way to identify a citizen online, quickly and easily.</p>	

		Adaptive legacy infrastructure needs to be able to do new processes without dysfunctionality.	
Technology	<p>Confidence in using technology (2)</p> <p>Device</p> <p>Lack of Device</p> <p>Servers and links; Web interface for all to access</p> <p>Patient portal overview (1)</p> <p>Region vs. national (3)</p> <p>User friendly to HCP and Patients (3); Accessible; Engagement & training (1)</p>	<p>Sensor Technology would be very beneficial for patients to be monitored remotely.</p> <p>My phone is old/incompatible and will not co-operate with these new RM solutions.</p> <p>Knowing what is available is to patients is imperative.</p> <p>Is it private, is it safe, who is looking at the patient's data and why?</p> <p>Personal Platform for the patient to go on and view their data would be greatly beneficial (1).</p> <p>Community view – so that the citizens can see what support is available to them in the community before resorting to formal care pathways.</p> <p>Ecologically sustainable – these solutions mustn't damage the environment (2).</p> <p>Up to date IT should be implemented which is simple for HCPs to use.</p>	<p>Wearable technologies should be available</p> <p>Activity monitors should be provided</p> <p>Domiciliary Peak-flow meters should be available</p> <p>Access to pulmonary rehab via telehealth</p> <p>Domiciliary Peak-flow meters should be available</p> <p>Community Pharmacists should allow data sharing, specifically sharing of failures to reorder drugs</p> <p>300-400 Remote Monitoring devices are required as a base number (eg. Nspire) to effectively reach the patient population demand</p>

Procurement innovation must be implemented to allow this new technology to be scaled up across services.

There should be universal accessibility of data for all of NHS Tayside services

All Remote monitoring solutions should be backed up with substantial research

Domiciliary Peak-flow meters should be available

All Remote monitoring solutions should be backed up with substantial research

There should be universal standards and policies regarding data transfer, governance and security

GP's and Community Pharmacists should be sharing Data

All Remote monitoring solutions should be backed up with substantial research

<p>Processes</p>	<p>Training (4)</p> <p>Assured that data produced is looked at (5)</p> <p>Process and protocols to respond to triggers Capacity!</p> <p>Access to the appropriate people to sort out the problem (4)</p> <p>Governance, consent, confidentiality (2)</p> <p>Change management for clinicians (5)</p> <p>We trust the tech too much; it becomes a barrier</p>	<p>I've already captured this information once for diabetes, why are doing it again for CHD? The process of capturing information may be repetitive (2).</p> <p>Pathways need to change to integrate social care more widely.</p> <p>We need to be specific about what needs to change, why and how that can be measured to see if it works.</p> <p>What does success look like?</p> <p>Diagnosis vs outcomes.</p> <p>Research priorities face community needs – ascertain what the community requires and work from there.</p> <p>Social groupings – ensure that citizens are cared for equally.</p> <p>Taking a whole systems approach not a fragmented one (3).</p> <p>Digitizing the current pathway is needed but in a way that redesigns the services and not just adds technology into traditional pathways (1).</p>	<p>Remote Monitoring should be used as part of an end to end care plan</p> <p>Remote Monitoring should be used as part of an end to end care plan</p> <p>Anticipatory care is required</p>
-------------------------	--	---	--

		<p>Changing the pathway to take advantage of technology efficiently (1).</p> <p>Defining the new pathway – what is required and how will it be implemented?</p> <p>Identifying patient group – who is at most risk, and thus how can we divide our resources accordingly to ensure all patients are equally cared for.</p>	
<p>Practices</p>	<p>Use the kit</p> <p>Use a “service design” (participatory design) approach (6)</p> <p>Overview & Clinical data being available (5)</p> <p>Trust and confidence in the system; Evidence based (2)</p> <p>Conservatism at HCO Multilingual; multicultural (1)</p>	<p>More ownership for own health data is required (1).</p> <p>Information governance – the way the data is shared or stored must be innovated (1).</p> <p>Providing the individual with their information (1).</p> <p>User Friendly interfaces are required (1).</p> <p>Sense of community among patients with similar conditions that use digital solutions to communicate remotely.</p> <p>Capacity issues of health services, can this be achieved?</p> <p>The patients might not want to change the way they receive their care.</p>	



These can be highly complex patients; would remote monitoring benefit these patients?

Not marginalising our monitored groups.

My family are not supporting me.

Neighbourhood support.

Harness patient enthusiasm or knowledge will make RM much easier to scale up.

Obsession with acute services – every service must be redesigned not just the primary care pathway (3).

Persuading clinicians to practice in new ways with new tech will be challenging but must be done. Education and training is key here.

Co-designing with stakeholders to ensure that the services are based around the users and the communities.