Social Care Digital Innovation Programme
Discovery phase review

Name of council:

Cambridgeshire County Council

Type of local authority:

County Council

Council Lead Officer

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Project name:

Medical Adherence Project (MAP)

Discovery phase review

Introduction

The Discovery phase of this project has been a useful opportunity to engage with stakeholders within the Medicines management sector. Within the Discovery Phase we have engaged with local residents to gather feedback on their preferences for medicines management, to gather feedback on our proposed solutions and to prototype the solutions on a small scale with service users. This work has enabled us to: test our assumptions about how monitoring and escalation systems could support service users' wellbeing and independence, test the appetite within the sector to deploy these interventions and understand how a service that facilitates such interventions needs to be designed.

Problem to solve

The problem that Cambridgeshire County Council has set out to address is how we might introduce the ongoing practice of evaluating the impact of medical adherence equipment that the team issues and feed this intelligence into an evidence-based approach for testing new medical adherence solutions in order to develop our digital offer for medicine management. This will feed into a Service redesign on the basis of the findings from the Medicines Management team.

Research methodology

The approach that we have taken for this Discovery exercise has been to gather qualitative feedback from experts, stakeholders and service users about the current offer and proposed solutions. Alongside this we have prototyped two possible digital solutions with a small group of service users.

1.0 Expert interviews

Rita Bali, Executive Officer, Local Pharmacy Committee	We carried out an interview with Rita Bali who has worked within the sector for over 15 years and also and works at Lloyds Pharmacy part-time.
Agnieszka Moszczynski, Clinical Pharmacist, GP Federation	We interviewed Agnieszka from the GP Federation. Her role has been created as part of a new initiative in which 6 pharmacists have been placed within GP surgeries across the county in order to support patients with pharmacy-related support needs and carry out medicines reviews to improve adherence levels.
Pippa Scrimshaw and Marion Rayner, Specialist Pharmacy Technicians, Cambridgeshire and Peterborough Foundation Trust	We have worked in partnership with Pippa and Marion to evaluate the digital and non-digital solutions within the medical adherence market and interviewed the Specialist Pharmacists about the strengths and weaknesses of the equipment that we issue.
Claire Mundell, Chief Pharmacist, Cambridgeshire and	We held a meeting with Claire Mundell on the 7th August and gathered her feedback on the Discovery Phase plan and the digital solutions that we planned to test. Clair was supportive of the project and stated that if we went ahead with the Implementation Phase of the project, she would be keen for us

Peterborough Foundation Trust	to use the next phase to trial further expansion of the CPFT Medicines Management service within Cambridgeshire.
Emma Bines, Lead Pharmacist, Department of Medicine for the Elderly (DME) and Specialist Advice for the Frail Elderly (SAFE), Addenbrookes Hospital	On the 9th August, Emma arranged for Lucy (TEC Team manager) to speak to a group of pharmacy colleagues. All that were present were very positive about the potential of a YOURMeds-style system and indicated that they would be happy to participate in implementation and work closely with community pharmacy colleagues already.
Jacqueline Young, Specialist Dementia Nurse, Addenbrookes Hospital	On 12th September Lucy updated Jacqueline who was very positive and understood the existing problems with getting PivoTell filled. She was very positive and has contacts across Addenbrookes and has offered assistance in arranging training for a network of dementia champions across the site to raise awareness of TEC and these new digital solutions.
Reablement team, Cambridgeshire County Council	Carried out a demo of YOURmeds at *TEC First training* with a group of Reablement staff. The group we were collectively excited about the potential as they are often visiting to prompt with medication and often cannot get any pharmacists to fill the PivoTell. Lucy advised the staff members present to refer to the CPFT Pharmacy Technicians for referrals.

2.0 Contextual interviews with service users

We carried out contextual interviews with service users at Cherry Trees Day Centre in Cambridge as well as demos of YOURmeds. This was a valuable opportunity to understand what was important to service users and to gather feedback on our two proposed solutions.

3.0 Telephone questionnaires with new service users

We used the Discovery Phase to test out a new process for evaluating the impact of TEC equipment on service users' adherence levels within the Technology Enabled Care team. To date the staff have a process of making ad hoc review calls to service users approximately 2 weeks after a piece of equipment has been issued by the team.

In order to enable more comprehensive evaluation of the impact that equipment is having on service users' perceived quality of life, we proposed that:

- **A.** A baseline survey was introduced to the part of the process whereby team members get in touch with service users following receiving a referral, and;
- **B.** A follow-up questionnaire was introduced to the review call but in a defined timescale (kept at 2 weeks). No processes for checking whether either questionnaire was being used by the team at these check in points were agreed.

Having engaged with the CPFT and YOURmeds, the feedback that we received was that the questionnaires would need to be succinct and easy to integrate with existing business processes (i.e. not on a new system or survey platform). The options for quantitative measurement methods were:

Method	**Drawbacks**
Pill Count Carer, Pharmacy etc. count how many meds are left when the packaging is returned	Patients may simply have emptied the meds in the bin. There is no independent verification of whether a patient even accessed their meds.

Use Review Patients are asked whether they are taking their medication. Could be by GP, Meds Management Specialist etc.	Requires Patients to recall accurately: accurate recall is unlikely for this client group.
Telephone Survey Patients are called and asked to respond to questions	Patients may perceive that they have been more adherent than they actually have been.

4.0 Prototyping YOURmeds

We set a target of setting up to 20 service users onto the YOURMeds system during the Discovery phase. So far we have signed up 5 service users to the system.

5.0 Case study: Leeds City Council

We engaged with the Head Pharmacy Technician Team at Leeds City Council (Leeds CC) as we had been told by YOURmeds that they had previously carried out a 4 month pilot of YOURmeds with Leeds CC.

6.0 Customer journey mapping (service user)

We held a workshop with the TEC team manager and CPFT leads and gathered information about the customer journey of service users.

7.0 Customer journey mapping (TEC team)

As above.

Research findings

1.0 Expert interviews

1.1. *Rita Bali, Executive Officer, Local Pharmacy Committee*

Rita's main feedback was that the Council would need to compensate pharmacies for supporting the monitoring of medical adherence aids as most local pharmacies have limited staff capacity and funding. She shared valuable insights about the contextual challenges and opportunities of introducing YOURMeds in partnership with local pharmacies:

- Pharmacists were once more open to trialling medical adherence devices. Now most pharmacies have less capacity to do this due to low staff numbers following funding cuts.
- Pharmacies are only funded to give prescriptions. Their obligations are only to make a reasonable adjustment if people have a disability (could be large-print labels).
- Likewise Pharmacists in GP surgeries are "thin on the ground"
- The dosset boxes take a lot of time to refill. The refilling and charging requirement of the YOURmeds devices poses additional work for Pharmacists in the context of funding cuts
- Cambridgeshire County Council should consider funding the pharmacists to facilitate this service
- "YOURMeds is better than PivoTell, we should get rid of the other equipment"

Rita also offered the following insights about *YOURMeds'* pharmaceutical *uses*:

In scope
• "This is for a limited group of people that are not taking other types of medication, without carers, and are taking medication that fits into the boxes." • There would need to be fixed criteria • Pharmacists should have a list of medication that can't go in the YOURMeds devices

In scope	
• Suitable conditions would be: Diabetes and Mental Health issues	
Facilitative measures	**Out of scope**
For Rita, the answer was not from digital solutions in isolation. She suggested that the tech would need to be supplemented by the following measures: • Rita's belief was that the most effective intervention was Medicine Use Reviews (MURs) which involve Pharmacist having conversations with patients convince them to want to take their medication. She stated that the message needs to be reinforced as the patients' needs and health condition(s) change and that there needs to be a process of continual review over the years. • Another part of promoting adherence should be medicines reviews that assess whether service users still need to be on all their medication. Often people are kept on historic medication that they no longer need • Rita stated that the CPFT Community Pharmacists would be well placed to act as partners for this initiative • She also suggested that we look into working with Pharmacists based at GP surgeries	• Dosset box and system doesn't accommodate variety of medicines (i.e. not just pills). On account of this, the YOURMeds system could not be used (as a stand-alone measure) for an individual with a medical regime that includes medicines that are not provided in pill form (eye drops, inhalers etc.). • Patients still need to receive Medicines Use Reviews to enable them to understand the value in taking their medication. Rita mentioned that YOURMeds would not impact the 'quick-fix mentality' of discharge practitioners and nurses that discharge someone on a compliance aid and then believe they are "sorted" • It would not be suitable for patients with certain stages of dementia • It may not be suitable for patients with live-in carers and Care Homes residents • The dosset boxes cannot hold certain large tablets e.g. water tablets • Many pharmacies deliver but in future more may charge for deliveries

> "It's all about who is the right patient to use the aids."

1.2. *Pippa Scrimshaw and Marion Rayner, Specialist Pharmacists, Cambridgeshire and Peterborough Foundation Trust*

As mentioned above, we asked the Specialist Pharmacists about the strengths and weaknesses of the following digital and non-digital solutions within this area. They assessed the digital and non-digital equipment as follows:

	Non-digital			Digital		
	Blister packs	Alarms	Pivo Tell	YOUR meds	PivoTell GSM	Care Calls
Strengths						
Portable	✓	✓	✓	✓	✓	✗
Organises tablets for people getting muddled	✓	✗	✓	✓	✓	✗
An alarm to remind patient to take their tablets	✗	✓	✓	✓	✓	✓
Tablets with the alarm in the same pack	✗	✗	✓	✓	✓	✗
Helps people with poor dexterity (less likely to drop tablets if popping 1 section rather than popping put from multiple packs)	✓	✗	✓	✓	✓	✗
Just a pick and tip, no poking through sections to get tablets	✗	✗	✓	✗	✓	✗

	Non-digital			Digital		
	Blister packs	Alarms	Pivo Tell	YOUR meds	PivoTell GSM	Care Calls
People with poor sight can be trained to feel the pack to use it	✓	✗	✓	✓	✓	✗
Most pharmacies fill	✓	✗	✗	Not tested	✗	✗
Options with five or six daily compartments, (useful for patients taking medication more than four times a day)	✓	✗	✗	✗	✗	✗
Can be used to remind patients whether tablets in original packets, a self-filled or family filled dosett box or pharmacy filled mds	✗	✓	✗	✗	✗	✗
Will always be wherever the patient is	✗	✓	✗	✗	✗	✗
Possible to have aural and pictorial reminder alarms	✗	✓	✗	✗	✗	✗
Can have a specific message left in a familiar family voice or our voice and we can mention their name with message	✗	✓	✗	✗	✗	✓
Alarm repeats until it is switched it off *talking reminder alarm only	✗	✓	✗	✗	✗	✗
Patients do not have to know day and time to take tablets	✗	✗	✓	✓	✓	✓
Alarm has 4 choices so usually one most people can hear	✗	✗	✓	✗	✓	✓
Suitable for patients that are deaf/ hearing impaired due to flashing light	✗	✗	✓	✓	✓	✗
Automatically changes hour with clock change	✗	✗	✓	✓	✓	✓
Alarm can be customised e.g. set to go for a long period of time before it stops	✗	✗	✓	✓	✓	✗
Reminder at 20% battery power to change batteries	✗	✗	✓	✗	✓	✗
Carers get alerted to tablets being taken from pack whether correctly or incorrectly and see when doses are taken	✗	✗	✗	✓	✓	✗
Peace of mind to family that patient is up and taking tablets when they receive notifications	✗	✗	✗	✓	✓	✓
Does not need to be plugged in, pharmacy charge it for patient which makes it portable	✗	✗	✗	✓	✗	✗
Carers can be monitoring adherence from another country	✗	✗	✗	✓	✓	✓
Carers can alter other settings remotely	✗	✗	✗	✓	✓	✓
Pharmacy retrieve pack weekly so can easily and frequently pick up on issues e.g. a small tablet getting stuck in pack	✗	✗	✗	✓	✗	✗
Works if left upside down	✗	✗	✗	✓	✗	✗
Weaknesses						
If patient is day/time unaware they could take from the wrong sections	✓					
Fails if patient forgets to wear it (watch alarm only)		✓				
Non-portable as it must be plugged into mains, long memory works is vulnerable		✓				

	Non-digital			Digital		
	Blister packs	Alarms	Pivo Tell	YOUR meds	PivoTell GSM	Care Calls
to power cuts (Rosebud and memrabel only)						
Limited alarm time, just less than 1 minute and no snooze function (Rosebud and memrabel only)		✓				
Alarm sound cannot be increased (Rosebud only)		✓				
Alarm will be as loud as you speak into the recorder (Talking reminder only)		✓				
Display errors (“error” or “tilt”) have a continual alarm so batteries have to be removed. Problematic if family not local and pharmacy closed			✓		✓	
Will not work if left upside down			✓		✓	
Tablets could be taken too close together			✓		✓	
Since the start of the year local pharmacies have been declining to facilitate refilling of PivoTells as it is time-consuming for staff			✓		✓	
Cannot monitor whether tablets have been put in mouth of patient and taken	✓	✓	✓	✓	✓	✓
Cannot stop somebody taking the incorrect tablets	✓	✓		✓		✓
Needs family to be tech savvy to set up and make changes					✓	

2.0 Contextual interviews with service users

We carried out contextual interviews with service users at Cherry Trees Day Centre in Cambridge. We received the following responses:

Roy

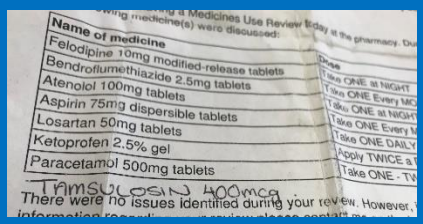
Over 65 years old ~ Receives support from Adult Social Care ~ Mobile ~ Manages his wife Yvonne’s medication usage

What do you use currently for your meds management?

- “I have an organiser and then when it’s time to take the medicines I put them in a cup (2 evening ones and 4 morning split into sections)”
- “Then I take paracetamol 4 times a day out of the packet”
- “No issues with memory”
- Wife has 4 medicines and Roy “pops them up and puts them in a cup”

If any, what other meds management equipment have you used?

- Not tried another system
- Before he got the dosset box he would take the medication from individual bottles



Pictured (above): Roy’s current medications

Arthur

Over 65 years old ~ Receives support from Adult Social Care ~ Mobile

What do you use currently for your meds management?

- Uses a dosset box and gets it from the chemist and have to pick it up
- Take 6 in the morning, 3 at 5 o clock time and 3 at night
- They've cut it down from 10 in the morning
- Cut it down after a review as he suffers with arthritis. This causes him pain with opening the equipment
- Since he has had the box he finds it easier to remember but with the box and watch it was better
- Support worker suggested that he had a box and this is working better

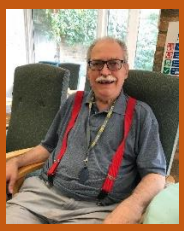
If any, what other meds management equipment have you used?

- Used to have a watch and got help to schedule the times to take his medication
- Lost the watch and called up to get another but hasn't heard anything back

Any issues with remembering to take medication?

- "I don't always tablets dead on the time sometimes I take them 30 mins later as I'm watching TV"

Michael



Over 65 years old ~ Hearing impairment ~ Diabetes ~ Previously hospitalised for non-adherence ~ Receives support from Adult Social Care ~ Mobile

What do you use currently for your meds management?

- "How I manage is a special white circle thing with a red on top - flashing at 6.30am and 4.30pm" (PivoTell)
- "Gives you a noise to know when I take the tablets"
- "The pharmacy deliver it every Thursday"
- "Very good"
- Lives in ExtraCare in Newcombe Court with 24HR care moved this year. Moved in on 31st May 2018.

If any, what other meds management equipment have you used?

- "Before I used a kit box, it was very confusing with the tablets seeing the dates at the bottom"
- "It made the tablets very confusing so they took the kit box away."
- "Then a nurse helped to give me tablets."
- "Now the white circle is better than that"

Any issues with remembering to take medication?

- In April he had a mistake with the Kit box, confusing the tablets and he went to the hospital as he missed his Diabetic medication

Susan

Under 65 years old ~ Receives support from Adult Social Care ~ Wheelchair user ~

What do you use currently for your meds management?

- "I take a lot of medication in the morning (9) and less in the day: 1 at lunchtime, 4 at teatime, and 4 at bedtime"
- Dosset box: "that's better than taking them from the packets"
- "I self-medicate but at night they have to assist me

If any, what other meds management equipment have you used?

- None. Does not take a lot of different medication.
- But just diagnosed as diabetic so some equipment may come in handy in the future

Any issues with remembering to take medication?

"This would be useful. I have a niece nearby – she could be my carer contact. Medicine deliveries would be useful too. It would be handy in the future as I get older and older. Sometimes me and my brother can't get out." - Arthur

Recently diagnosed with diabetes ~ "Not a great lover of the Council"	otherwise they end up in the bed" • Injections: "I don't want to have injections so I will need to take more tablets for my diabetes treatment"	• "I'm fortunate as I'm *compus mentus* so don't have an issue remembering – I might take it late occasionally"

We also demo'd the proposed solutions with the service users and asked the participants for their views. We received the following responses that provide some indication of the opportunities and the barriers for these proposed solutions:

CareCalls

"This would be useful" - Arthur

"It would be tricky for the lunchtime medication because I would be at the Day Centre" - Susan

"This is not useful to us at the moment" - Roy

YourMeds

"It might be useful for someone else. If you had a client in a family unit and their memory wasn't 100% that would be good"- Susan

"My neighbour had an issue with charging his mother's device and they left it at the hospital. Lifeline might be a useful thing to have if have issues with charging etc." - Roy

3.0 Telephone questionnaires with new service users

We drafted a baseline and follow-up questionnaire in partnership with the CPFT in order to track service users' medical adherence through gathering subjective feedback from service users. During the Discovery Phase the TEC team began to run through the baseline questionnaire at the point that they got in contact with people that had been referred to the service from 7th – 24th September.

This enabled us to get a good understanding of customer needs. We have displayed the feedback that we received split out by the type of aid used to assist with remembering or organising medication doses as follows:

Pharmacy filled blister packs/ dosset box	User #1	User #2	User #3
User experience	N/A	N/A	N/A
Self-assessed adherence level (/10)	7/10	2//10	6/10
User rating of the effectiveness of the aid (/10)	7/10	2/10	6/10
Average effectiveness rating			5/10

Reminders on phone or similar device (alarm)	User #4	User #5
User experience	Reminders on phone alert the service user but by time she goes in kitchen to take tablets she has forgotten why she is there. Meds reminder ordered to go in kitchen with tablets.	Phone not working as not with the medication at the time it alarms and by the time she gets to the room with the medication in she has forgotten why she is there. Ordered medication reminder clock to be kept with meds.
Self-assessed adherence level (/10)	4/10	2/10
User rating of the effectiveness of the aid (/10)	3/10	2/10
Average effectiveness rating		2.5/10

Blister pack with clock reminder:	User #6
Experience	AA does not tolerate sound alarm, removes batteries.
Self- assessed adherence level	5/10
User rating of the effectiveness of the aid (/10)	4/10
Average effectiveness rating	4/10

4.0 Prototyping

The Project team set itself a target of setting up to 20 service users onto the YOURMeds system during the Discovery phase. So far we have signed up 5 service users and we have interviewed the service users to gather their feedback on the experience of using the system.

Due to limited availability of the Specialist Pharmacy Technicians we have experienced delays in setting up the patients and therefore have not gathered sufficient quantitative user data as yet from these participants, however we hope to be able to share this feedback alongside qualitative feedback from the prototyping exercise, at our 'Delivering your 'Vision'' Presentation on 19th October 2018.

5.0 Case studies

During 2017, Leeds City Council (CC) carried out a pilot of the YOURmeds system for four months with 12 service users. The project team consisted of 7 Pharmacy technicians. Following the pilot, four service users were happy with the system and remained on it and 8 service users changed over to care plan supported by PivoTell. However we noted that their methodology involved the local authority having no access to the reporting about compliance or the digital adherence dashboard offered by YOURmeds. All data went solely the families/ other nominated contacts.

We learned that Leeds CC decided not to procure YOURMeds after the pilot and gathered the following feedback from Patsy about the operation of the system in practice:

Barriers and pilot specific challenges	*Strengths and opportunities*
• The poor mobile reception within the area affected the function of the notification system for some service users • One of the flashing lights meant that the system was a risk for one user with epilepsy • They felt that it did not land with stakeholders within the local authority as they carried out the pilot in isolation and during the pilot the Pharmacy Technicians did not work with the primary team that would be adopting the new technology, the Technology Enabled Care team • The cohort of participants contained some 'tough patients', for which all alternative medical adherence aids had failed. The suggestion was that 'forgetting to take medication' was not the primary cause for those participants' non-adherence and other factors were responsible for these participants' historical resistance to full medical compliance • It was unclear who was taking responsibility for giving users troubleshooting support in homes if product displayed errors • On the basis of the data gathered from the pilot, savings could not be established for Leeds City	• Patsy could see the potential of YOURmeds supporting care agencies • The system provides a lot of data • Yourmeds has a familiar appearance for service users as it looks like a dosset box. Users have been put off by the appearance of PivoTell • Medication incidences are high in Leeds

6.0 Customer journey mapping (service user)

The information that we gathered was as follows:

ACTIVITY	• Referral form is submitted	• Arrange time for the visit • Home visit • Assessment of needs • Risk assessment	• Visit to local Pharmacy • Pharmacist sets out the medication schedule for the patient • Registering medication schedule onto system	• Delivery by NRS or Pharmacy
NEEDS	• Sufficient information on the form • Service user needs • Service user contact information	• Service user address • Information about service user needs • Clinical information about service user's medical history	• Access to patients' clinical data • Service user address • Service user emergency contact information	• Service user address details
ONLINE	• System One	• System One	• NHS records	• N/A
OFFLINE	• Phone call to assessment team to clarify information provided	• Phone call to users to arrange time for the visit	• Not known	• Call to confirm time of delivery
WHO	• Reablement Team Support workers • LD Team Support workers • AEH support workers • TEC team Support workers • Etc.	• CPFT Specialist Pharmacy Technicians	• Pharmacist within local pharmacy	• Pharmacist • TEC team
PROCESSES	• Referral business process	• Reporting information onto System One • Risk assessment	• Accessing clinical information to understand the meds schedule that the service user needs to be on • Set out the refilling schedule • Set out delivery schedule	• Delivery of meds aid set up by TEC team • Delivery of meds aid and meds set up by Pharmacist

PAIN POINTS	• TEC team issue some equipment directly, this means that service users miss out on the Pharmacy Technicians' holistic assessment	• Service users must self- report about their adherence levels • Not all service users have smart devices/ know how to use digital tools such as apps	• Filling certain types of equipment can be difficult and time-consuming • There can be a long lead in time before a patient start date	• Less contact with a pharmacist can increase service user loneliness

7.0 Customer journey mapping (TEC team members

The present method of tracking adherence with non-digital methods involves:

1. Referral notes/ Clinical notes on hospital admissions due to non-adherence
2. User self-reporting in phone call review of new equipment 2 weeks after the equipment is issued (TEC Team)
3. CPFT use all the data and evidence available to give patients a risk score for their risk before and after the intervention has been put in place (Meds Management)
4. Recording comments from Pharmacies on untaken doses at refills on System One (Meds Management)
5. User self-reporting about adherence levels at medicines use reviews (Pharmacies)

The information that we gathered was as follows:

	User assessment	**Order equipment/ refer to Meds Management**	**Carry out review**
ACTIVITY	• Review referral form • Ask referral source any further questions about user needs • Carry out assessment with service user	• Order equipment that is suitable for the service user from the NRS catalogue	• Visit to local Pharmacy • Pharmacist sets out the medication schedule for the patient • Registering medication schedule onto system
NEEDS	• Sufficient information on the form • Service user needs • Service user contact information	• Service user address • Information about service user needs • Clinical information about service user's medical history	• Access to clinical data • Service user address • Service user emergency contact information
ONLINE	• System One	• System One	• System one
OFFLINE	• Phone call to assessment team to clarify information provided	• Phone call to Meds management (if required)	• Spreadsheet to record feedback
WHO	• Assistive Technologist	• Assistive Technologist	• Assistive Technologist

PROCESSES	• Assessment process	• Ordering process • CPFT referral process	• Review process and reporting
PAIN POINTS	• Sometimes the Reablement teams refer directly to Meds management, sometimes to TEC – inconsistent approach leads to issues with reporting	• Reliance on NRS for stock and procurement of TEC equipment	

8.0 Financial benefits

We engaged with the Finance team and evaluated the proposed solutions against the existing modelling on the following Outcomes Calculator that was created collaboratively by the Finance and Technology Enabled Care teams:

	One off Medication management	YourMeds	CareCalls
Type of kit	*Any intervention to prompt or remind the person to take their medication. No adherence data is collected*	*Dosset box with alarms, notifications to carers to flag up instances of non-adherence and data dashboard*	*Automated reminder calls to confirm that medication has been taken, notifications to carers to flag up instances of non-adherence and data dashboard*
Cost avoided social care	Average cost of low level care package – might be 1 to 2 calls a day for 13 weeks = £1,503.32 (£115.64 p/wk)		
Cost avoided health	Hospital admission; Ambulance call out £240 and Minimum A&E attendance Cat 1 investigation and 1-2 treatments £113 = Total £353.00		
Amount	One off cost = £34.97 - £ 93.27	Yearly cost = £260	Yearly cost = £144
TOTAL SAVINGS (p.a.)	£ 1410.05 - £1,468.35	£1,243.32	£1,359.32

Here it is plain that the monitored, digital solutions are more expensive than non-digital equipment but still less expensive than the cost of a low level care package. The medium/ long term preventative impact of these solutions on social care costs across the system, is unknown.

Validating initial ideas

Goal 1: Setting up a robust evaluation process

We stated that we would seek to ascertain the effectiveness of the current interventions used by the TEC team including gathering qualitative feedback from users on the impact of the intervention. We planned to work with the CPFT team to agree the methodology for measuring adherence levels during the project and the equipment to use during the proof of concept. Regarding this area we discovered the following:

- Quantitative data is difficult to obtain without digitally-connected equipment as Pharmacists are unwilling to do pill count reporting on a systematic basis for each service user and it would be too costly and resource intensive to carry out home visits to do pill counts
- There is opportunity to make the qualitative data that is gathered more consistent through introducing baseline and follow-up questionnaires
- The gathering of qualitative data can be reinforced by a cost-effective digital solution that tracks adherence at the point of medicine usage

Goal 2: Establish whether there is evidence to support adopting a tiered approach

We set out to assess whether there was evidence for introducing a tiered approach for medicine management interventions in terms of the impact of the interventions on users with certain conditions or levels of social isolation. We discovered the following regarding this area:

- The process of assessment is carried out by the CPFT Meds Management Technicians. They carry out risk assessments of service users and assign ratings from 1 – 5 and issue equipment where service users are at risk of GP intervention, hospital admission or death
- Rather than using a persona-based or categorical approach, the Specialist Pharmacy Technicians carry out holistic assessments of service users' needs in users' homes and issue equipment on a person-centred basis
- We felt that this was preferable to adopting a rigid tiered approach
- The project team felt that this finding justified changing the business process for the TEC team so that no equipment is issued directly, but instead all service users should first be assessed by the Meds Management team

Goal 3: Test the impact of existing equipment and possible solutions on user objectives

We set out to learn more about what users think about medical adherence aids and how they impact their quality of life, adherence levels, overall health and prevention of health crises**.** We discovered the following regarding this area:

- From our contextual interviews of service users and telephone questionnaires we found that users see medical adherence as vital for maintaining good quality of life and maintaining their independence
- However we found that users tended to self-report that they didn't need equipment that they perceived as a 'high-tech' solution until later in life and did not seem motivated to self-select a preventative solution

Goal 4: Set up an effective pathway for collaborative working with Health

We set out to test the potential of implementing a solution that would be delivered in partnership with the CPFT Meds Management team only. We found during this phase that:

- There are other system partners that would be interested in supporting this system of meds management such as the GP Federation
- Partnership working with Pharmacies has been facilitated by a system in which pharmacies are paid up to £5 a week per service user out of the monitoring costs

- From Leeds City Council we learnt that collaborative working with Health in designing the implementation and evaluation processes is key to the success of any digital solutions that rely on partnership around delivery

Goal 5: Prototype possible digital solutions on a small scale with service users

We learned the following:

- Launching any digital system for meds management on a full scale will require significant time and resource from CPFT Specialist Pharmacy Technicians
- A key advantage of the digital medicine management systems is the ability to gather and share information on the service user behaviour that is collected by these devices and services. This access to a continuous flow of information has the potential of enabling better decision making when assessing the suitability and success of an intervention as well as providing the basis for tracking inconsistencies in the behaviour of service users before they reach a crisis point (such as falls or hospitalisation) that increase the overall cost of care packages.
- The monitored solutions are more expensive than 'non-monitored' solutions but we do not know yet if the monitoring and notification features will deliver greater preventative savings in the long term

Specifically with regards to the equipment and system that we have tested during this phase we have noted the following benefits:

- The YOURMeds system is reliant on Pharmacy delivery and pick up services (and recharging). Patients based at Pharmacies that do not offer a pick up, recharge and delivery service would not be able to use the system. The possible geographic spread of the YOURMeds system is unknown as yet.
- Leeds City Council we learnt about the risks associated with the product and this enabled us to establish ways to mitigate those risks: flashing lights (limit use to users that do not suffer from epilepsy), requires thorough engagement with stakeholders and delivery partners, may not function in areas with low/ limited network signal
- Each device creates an 'Asset Based Community' as every user is linked to others with a specific goal of helping the user take their medication. This system enables the LA to share a care resource with the 'connected community' and it empowers carers to adopt more flexible caring arrangements
- CareCalls may be more suitable for service users with multiple types of medication provided that they do not have high-end memory support needs/ cognitive decline

Goal 6: Measure the cost impact of equipment interventions for medical adherence on the social care.

We aimed to understand the impact of digital equipment on social care costs. We learned about the fact that digital solutions are still cheaper than low end care packages and therefore deliver a saving for the LA, however more long term evaluation would need to be done in order to understand the longer term preventative impact on users' independence and requirement for social care.

In light of this, at this stage we have found that it is too early to determine the cost efficiency/savings of each piece of equipment that we issue.

Conclusion

We have reframed this problem, in part in reflection of the key lesson that our project team learnt during this phase: that this problem is best tackled by using service design tools to establish an approach that can be embedded into the way that the Technology

Enabled Care team works with delivery partners, and to design the service with space to iterate based on insights from research. This is opposed to using all the research that we gather during this programme to support a case for one assistive technology solution that would be used for all data collection for all service users. We have found that the approach that we take to issuing equipment to service users' needs to be person-centred and not universal.

It still seems that a robust service will need to be underpinned by digital technology that can enable some quantitative monitoring of medical adherence to accompany the qualitative feedback that is gathered from service users, but the intention is for the service to adopt an iterative approach to its digital offer.

In this phase, we discovered that in order to incorporate the new practice of gathering quantitative and qualitative data from service users at defined intervals, in partnership with delivery partners, we would need to do more work around engaging with stakeholders, mapping the experience of those carrying out the evaluation work creating, understanding pain points and refining the process to reflect staff feedback as well as creating behaviour change.

Therefore it is now felt that a vital tool that would enable our council to set up sustainable and integrated care and health systems, would be a robust service model for evidence-based service delivery that is supported by embedded processes that enable continuous innovation. Therefore the Implementation Phase would seek to test our proposed service model for evaluating new assistive technology and equipment through pilots and benchmarking these evaluations against qualitative and quantitative evidence that the Technology Enabled Care team gathers about currently issued technology.

Learning from Discovery phase process

The lessons that we learnt from the Discovery Phase can be summarised as follows:

A. **Plan longer timescales for collaborative project scoping:** Working with our local health colleagues (Cambridgeshire and Peterborough Foundation Trust) requires a notable amount of lead-in time to get senior agreement to the partnership-working format, however no formal agreement is required. For the next phase of the project we intend to
B. **Holistic Assessments before issuing:** We learnt how much Pharmacy colleagues value Holistic Assessments of service user needs before issuing equipment. Therefore it was concluded that the TEC team should not be issuing equipment directly but should be referring people on to the Meds Management team and they will carry out review
C. **Information governance:** As a part of piloting YOURmeds we engaged in dialogue with the Cambridgeshire County Council Information Governance team who advised that we would require the explicit consent of service users to collect and share their data for this Discovery Phase work with prototyping solutions with service users. We asked users for their consent at the stage when users were assessed by the Medicines Management team. Going forward, we will need to establish full, formal data sharing agreements between all relevant parties that will govern and facilitate data sharing on a larger scale. An important early part of the implementation phase of this project will therefore be to further develop these agreements where necessary so that they are sustainable in the long-term, beyond the initial trial period.
D. **Links with the wider Technology Enabled Care strategy:** The responses we have investigated contribute to the wider developments within Cambridgeshire's established Technology Enabled Care service. For example the Next Generation Technology Project is piloting ways in which AI can be used alongside sensors in a service user's

home to monitor behaviour and notify their support network of changes in routine which might indicate the need for intervention.

E. **It is infeasible to implement certain digital solutions in isolation:** here we found that the YOURmeds devices needed to be recharged by Pharmacists as it was too much of a risk to rely on service users with memory issues to maintain this themselves.