Northern Care Alliance

Project Closure Report
SRFT – Medication Pouch
Dispensing pilot

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Summary

The purpose of this project closure report is to review the pilot of the supply of medications to the Salford Intermediate care units in a pouch form, using the 'PillTime' Automated pouch dispensing model.

Future Digital

In June 2018, The 'Future Digital Factory' was created with a mission to 'Make Better Decisions, Faster'. The Factory operates an agile process conducting tests of change and has the mantra 'Think Big, Start Small, Scale Fast'.

It is based on understanding operational problems in specific areas of the business e.g. Flow for Inpatients and associated discharge challenges for nursing, bed management and patients. It looks at opportunities in the process where technology can support and build solutions that can then expand and scale at pace.

Future Digital funds initiatives through four gateway phases:

1. **Visualise – initial use case**
2. **Lab test – confirm technical viability and assurance**
3. **Live test – confirm solution suitable for live environment and support business case development**
4. **Wider deployment or closure**

If the process above does not result in a successful business case by the time it reaches phase 4 the initiative will be closed down and the business will revert to its previous ways of working.

Problem Background

The two main staff groups handling medicines are:

- Nursing staff administering medications
- Pharmacy staff supplying and dispensing medications

Nursing staff

Demand for nurses has been increasing over the years and the UK Government has taken multiple steps to increase the nurse-to-patient bed day ratio. While reducing patient bed days and hiring from agencies has to some extent resolved the demand for nurses, the problem is yet unresolved. With an ageing population, demand for nurses as well as the time commitment per nurse is increasing.

Digging deeper into the issue reveals that nurses in intermediate care units and wards currently spend up to 90 minutes nursing time four or more times every day to administer drugs. This is coupled with multiple medications and manual de-blistering making the process of drug administering labour intensive and at risk of errors occurring. Medication pouch dispensing makes drug administration easier and safer for nursing staff.

Pharmacy staff

The complexity of prescriptions for many frequent problems like dementia caused by old age, mental problems and cancer, means as many as 15-20 drugs can be administered at one time. This makes medicine dispensing complex and repetitive. Although traditional compliance aids (or dosette boxes) provide simplification of administration for nurses and carers, the time taken to produce and verify makes them unsuitable for use in an inpatient ward setting. Two Pharmacy technicians would have to spend as much as 40 minutes each in preparing a single compliance aid for a patient.

The automated dispensing of medications into pouches provides a means of delivering drugs to all patients, with the simplicity of a compliance aid, which previously would not have been possible via traditional delivery methods given the timescales involved.

Funding and Scope

The project was funded and resourced by the Future Digital programme, SRFT Pharmacy team and PillTime – an external online pharmacy provider.

The overall objective of a unit dose dispensing system is to simplify clinical process pathway for pharmacy and nursing staff. The clinical process change along with technical systems enhancement will contribute to higher efficiency and improved patient safety:

- The PillTime unit dose dispensing solution used a state-of-the-art digital robotic system which identifies sorts and organises patient medication into easy-to-open pouches.
- The medication pouches are personal to each patient, indicating the specific day and time when each pouch needs to be opened and the tablets taken.
- The pouches are produced and validated via robots as opposed to being delivered via a manual and labour intensive process by pharmacy staff.
- One of the recommendations to reduce medication errors and harm is to use the "five rights": the right patient, the right drug, the right dose, the right route, and the right time. The unit dose dispensing system contributes to improvements in this area

The project was set up to test whether, in a controlled environment, we can successfully use the PillTime unit dose dispensing model to package and distribute medication to patients within Salford care homes and intermediate care units. (Pendleton Suite, Hartley Green and the Limes)

Scope for initial pilot:

In scope:

- All Patients in Pendleton Suite who are having medications administered as part of a drug round - November
- All patients in Heartly Green who are having medications administered as part of a drug round – January
- Discharges from Pendleton Suite to Heartly Green - January
- All patients in The Limes who are having medications administered as part of a drug round – January 2019
- Discharges from Pendleton Suite to The Limes – January 2019

Out of scope:

- Patients in Heartly Green, The Limes and Pendleton Suite currently using a compliance aid and self-medicating
- Patients in Heartly Green, The Limes and Pendleton Suite currently self-medicating without compliance aids
- Patients being discharged to home from Heartly Green, The Limes and Pendleton Suite.

IT /Infrastructure Requirements

The Automated Medication Pouch Dispensing Solution comprises 3 main IT components as follows:

1) **Eureka Software** – Used to enter patient details and prescriptions ready for dispensing plus the maintenance of stock levels.
2) **Medication Pouch Dispensing Robot** – Medications are contained within specific canisters that are dispensed into appropriate pouches depending on the individual patient's needs.
3) **Pouch Inspector**- Provides an automated optical check of the pouch contents against the expected medication contained in the prescription. Any deviation from instructions with regards to shape, size or colour raises an alarm in the pouch inspector. In case of such an alarm, ACT would manually check the pouches to make sure the final products in the pouches matches the prescription with 100% accuracy.

All these components were added to the SRFT domain, encrypted and trust AV software installed as part of the deployment.

Pharmaceutical Limitations:

I.   No liquid can be packed in these pouches.
II.   No Controlled Drugs.
III.   No PRN Medications.
IV.   One pouch can hold only 6 medicines, thus prescriptions more than that need to be allocated 2 or more pouches.
V.   The pouch does not move across the above machines automatically. Thus they require manual intervention in between machines.
VI.   Not very effective if there are frequent changes in prescription as cumulative time saved become less. Most effective when large batches of repeat prescriptions are packaged
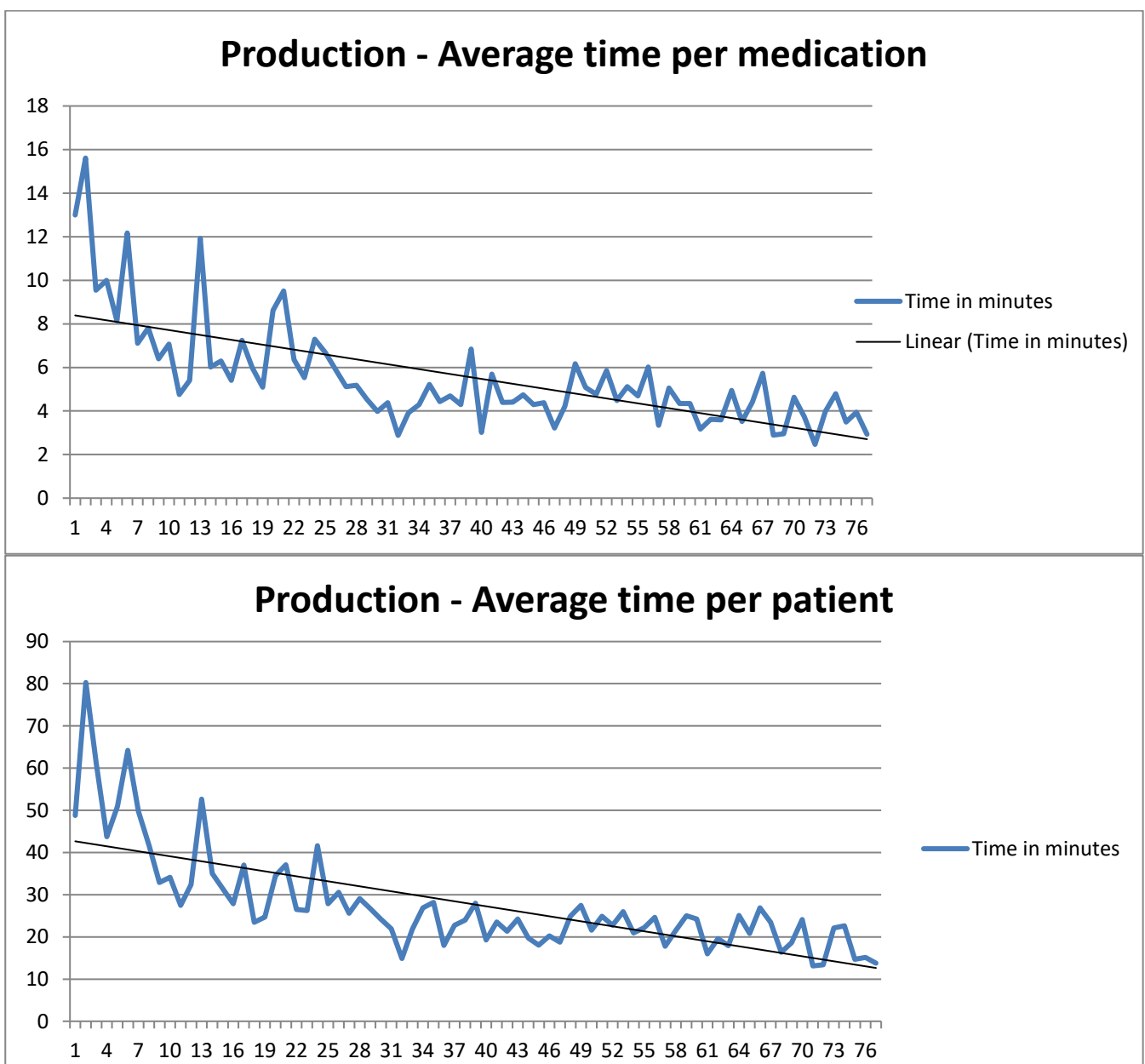
Outcomes

Impact on pharmacy activity

During the initial stages, the current resources available from pharmacy were deemed insufficient to enable a successful completion of the Live test phase. Staff were being provided when available with no dedicated ACT resource as part of the team.

To this end, the Future Digital team funded a dedicated Salford ACT on a temporary contract to support until the end of the project. This resource was provided in addition to the PillTime operative, also funded by the Future Digital programme, for the purposes of the pilot.

During the initial stages of production, the time taken to process and produce the medication pouches was substantial. Once the dedicated resources were put in place, the production times reduced considerably:

Production - Average time per medication

Legend: Time in minutes; Linear (Time in minutes)

Production - Average time per patient

Legend: Time in minutes

Impact on nursing activity

The Live Pilot commenced on November 20, as part of a 12-bed trial on our Pendleton Suite. The benefits to the nurses were recognised almost immediately, and this was soon followed by a rollout across the whole of Pendleton suite.

Frontline nurses on Pendleton suite described it as saving them up to 30 minutes per cohort (12 patients) on a typical full medication round. This was backed up by timings taken by the future digital team – approximately 15 minutes on the lunch / teatime rounds, approx. 30 minutes on the morning and evening rounds – averaging 87 minutes saved over the small sample of patients timed.

The service was then rollout out to two intermediate care homes over the next few months – Heartly Green and The Limes – and was continued to be well received by the nursing team.

The potential time savings are detailed below with the equivalent cost savings (based on a mid-point band 5 nurse). This was dependant on the numbers of patients in scope on a particular day:

Ward	Beds	Time saved daily (minutes)	Benefit daily	Benefit Weekly	Benefit Monthly
Pendleton Suite	49	355.25	£110.25	£771.72	£3,341.55
Heartly Green	28	203	£63.00	£440.98	£1,909.46
The Limes	28	203	£63.00	£440.98	£1,909.46
Total					£7,160.47

Staff feedback

Staff expressed a more-calmer atmosphere on the wards and increased interaction with patients. The nurses also stated they had more manageable trolleys and also found the pouches reduced stress when dealing with patients who has a wide selection of medications on drug rounds.

"Since using the PillTime Pouches we have found increased efficiencies within the administration processes. We no longer spend long lengths of time having to de-blister several different medications for patients, nor do we have to continually return to and from the clinic in search of medication. The time saving has also allowed to provide advice to patients on medication usage and also more personal engagement with them. The descriptions on the pouches for all medication make for simpler and faster administration. This also increases patient safety when cross referencing with our EPR system allowing for safer administration. Please can we get all patients onto PillTime pouches? I also like the fact that the medicines trollies are neater as medications take up less space. Additionally, timely deliveries have resulted in less missed doses. It also has been easier and less time consuming using EPR to order Patient's medications rather than a duplication of efforts using a second system (Vision) as I usually do.

Earl Thomas (Pharmacy Technician), The Limes Intermediate Care Home

Nadine mentioned that she was finding the pouches to be extremely helpful and have been saving her personally around 30-40 minutes per round. With the clear information on the pouches, it has also raised awareness of medication that could potentially have been missed. The tablet information also helps prevent errors but also makes it easy to quickly cross reference against the inhouse EPR system. With this time saving, Nadine has been able to engage more with patients and get to know more about them. The PillTime pouches have made for efficient drug rounds, a calmer, relaxed atmosphere on the ward and also enabled more-tidier and manageable trolleys. Nadine would like to continue with the Pouches rather than revert back to original pack dispensing.

Nadine Keats (Nurse), Pendleton Suite

Media around the PillTime solution at Salford

Medication is pre-sorted into easy-to-open pouches, by dose, in the order that they need to taken, providing peace of mind that patient medication is correct and ready to take.
Every dose is labelled with a full contents description, as well as the date and time it needs to be taken. Our clear packaging helps you take each dose exactly as prescribed.

Costs

A breakdown of the costs incurred during the project is detailed below. Initially the SRFT policy was to allow no modifications to the pouches, which meant should any errors be detected as part of the process, the patients' prescription would have to be re-dispensed and the roll discarded. This contributed to a higher wastage figure than would normally be expected.

As part of the project a heat sealing device was trialled which enabled individual pouches to be replaced within the roll – this reduced the wastage costs considerably. Also the patients being discharged home were sent with original packs rather than pouches – if discharge medications were dispensed in pouches this is another costs that could be reduced.

Costs									
	Oct-18	**Nov-18**	**Dec-18**	**Jan-19**	**Feb-19**	**Mar-19**	**Apr-19**	**May-19**	**Total**
Cost of implementation - Future Digital (not included in costs)									
Project resources	£25,000	£0	£0	£0	£0	£0	£0	£0	**£25,000**
Cost of Maintaining Change									
PillTime Operator resource and support	£0	£0	£12,000	£12,000	£12,000	£12,000	£12,000	£12,000	**£72,000**
Band 5 ATC	£0	£0	£0	£2,618	£2,618	£2,618	£2,618	£2,618	**£13,092**
Drug wastage	£55	£272	£351	£602	£1,239	£1,015	£572	£490	**£4,596**
Total costs	**£55**	**£272**	**£12,351**	**£15,220**	**£15,857**	**£15,633**	**£15,190**	**£15,109**	**£89,687**

Of the **£4595.50** wastage incurred during the course of the project, this was broken down into the categories below:

Discharges from SRFT where the medications have been returned to pharmacy: **£2,643.50**
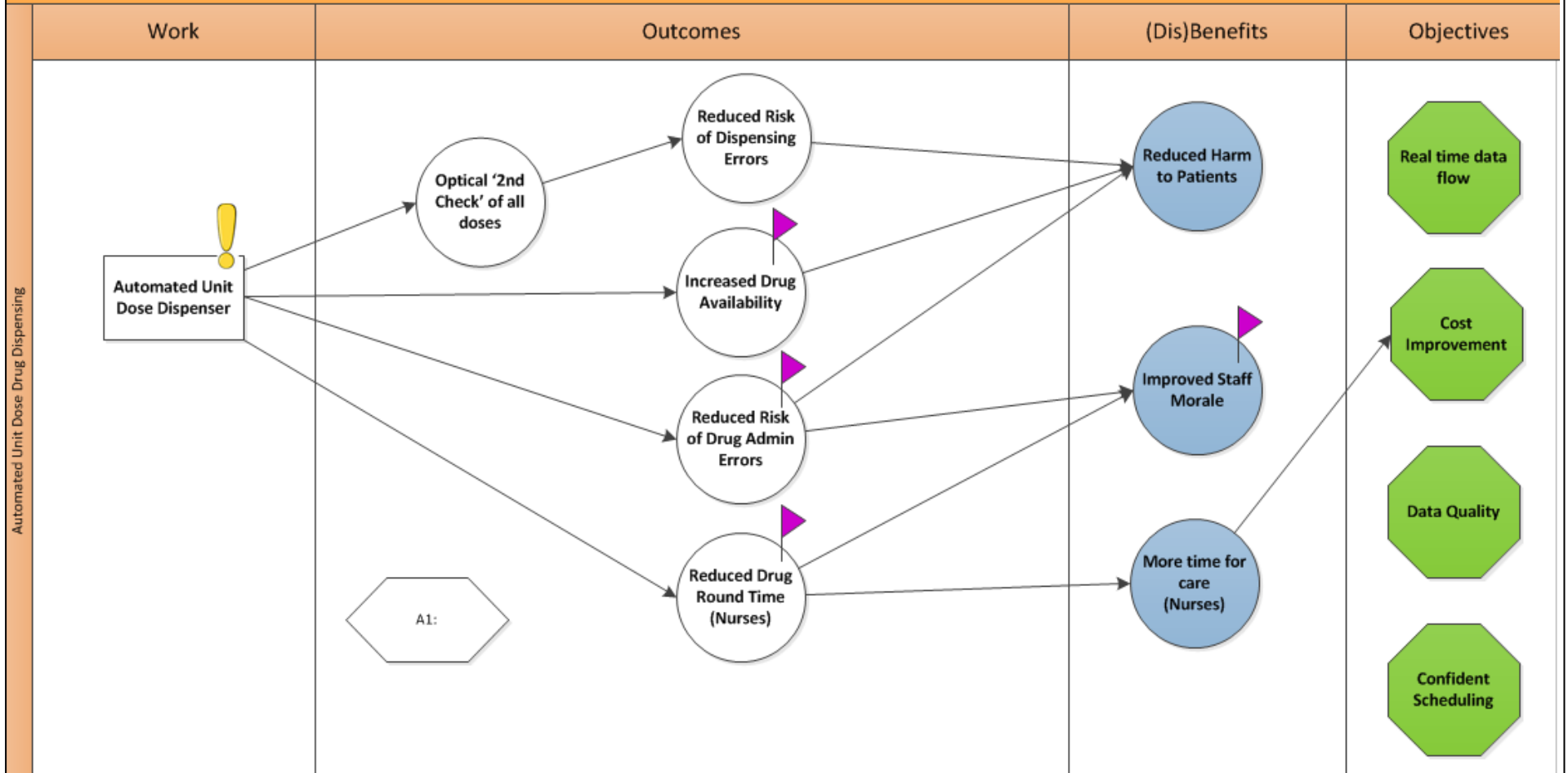
Wastage due to re-runs, machine or operator error: Wastage incurred as part of testing / dress rehearsal **£1821.51**

Wastage incurred as part of testing / dress rehearsal **£130.49**

Benefits

	Phase	Benefit Name	Benefit Description	BI Query	Baseline and Date Range	Target and Date	Value	Type*
1	Live test	Reduced harm to patients relating to medication	Reducing risk of errors and missed doses will lead to a reduction in incidents patient harm	Proxy measure for pilot as can only measure over longer term	NA	NA	Unknown	Benefit
2	Live Test	Reduction in Drug Administration errors	Dispensing medicines from pouches with the right medicine for the patient rather than from traditional packets of tablets will reduce the risk of administration errors.	Number of medicines related incidents reported to Datix per month for the Pendleton Suite	2	1	£0	Outcome (non-financial)
3	Live Test	Drugs Availability – less missed doses	Removal of the current manual process of checking stock levels for each patient and as a result will increase drug availability leading to less missed doses	EPR Report	EPR Report - (Omitted Doses Report)	EPR Report - (Omitted Doses Report)	£0	Outcome (non-financial)
4	Live Test	Safer (Increased Checking)	Use of the Optical Checker provides an automated, "second check" of all unit dose pouches to ensure the correct tablet is dispensed.	Qualitative – this will change from 0% to 100% when confirmed as achieved	0% Checking currently	100% Checking with the robot	£0	Outcome (non-financial)
5	Live Test	More time to care for nurses - faster medicines administration process	Reduction in time taken to complete the Drug Round for Nursing Staff allowing more time to be spent on other care activities	Minutes per day for drug round on Pendleton Suite for pilot cohort (12 patients)	192 Sep18-Oct18	105 Nov18-Dec18	£9,850 per year (x4 for full ward)	Outcome (financial non-cash)
6	Live Test	Staff Satisfaction / Morale increased	As a consequence of staff working in a safer, more efficient environment they are happier in their work.	Questionnaire	Questionnaire Scores / Report	Questionnaire Scores / Report	£0	Benefit
7	Live Test	Reduced Cost	As a result of delivering pouches for a 7 day period rather than the current 28 days, there will be a reduction in drug wastage	Meds Management Housekeeper	Pharmacy Returns recorded at Pendleton Suite	Pharmacy Returns recorded at Pendleton Suite		

Future Digital - Automated Unit Dose Drug Dispensing

Work	Outcomes	(Dis)Benefits	Objectives

Automated Unit Dose Drug Dispensing

- Automated Unit Dose Dispenser

- Optical '2nd Check' of all doses
- Reduced Risk of Dispensing Errors
- Increased Drug Availability
- Reduced Risk of Drug Admin Errors
- Reduced Drug Round Time (Nurses)
- A1:

- Reduced Harm to Patients
- Improved Staff Morale
- More time for care (Nurses)

- Real time data flow
- Cost Improvement
- Data Quality
- Confident Scheduling

Summary and conclusions

Prior to the end of the pilot, the project was reviewed as part of the trusts 'Investment Committee' chaired by the COO James Sumner.

After review, it was felt that although the solution provided great benefits in terms of patient safety and time saving for nurses, there weren't currently enough 'Cash releasing' benefits to justify further investment.

Any future rollout of this technology should be included as part of an organisational change, and factored into the business case as part of a larger programme of work.

Potential areas to include should the solution re-considered in future:

1. Other wards within SRFT – Stroke rehabilitation, Renal
2. The service could be extended to include other Intermediate Care units within the Northern Care Alliance and potential Mental Health services.
3. The service could be offered to other private nursing homes in the NCA region
4. The service could be potentially used for issuing discharge medications for patients.
5. Deploying a solution as part of a centralised pharmacy service for NCA or even GM

Any further re-consideration should also look to include an interface to the EMIS dispensing system as well as integration with Allscripts KBMA solution as part of the 'Closed Loop' prescribing product.

The table below shows the potential increase in benefits should the service be rolled out beyond the original pilot units:

Ward	Beds	Time saved daily (minutes)	Benefit daily	Benefit Weekly	Benefit Monthly
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Heartly Green	28	203	£63.00	£440.98	£1,909.46
The Limes	28	203	£63.00	£440.98	£1,909.46
Ward A	*28*	*203*	*£63.00*	*£440.98*	*£1,909.46*
Ward B	*28*	*203*	*£63.00*	*£440.98*	*£1,909.46*
Ward C	*28*	*203*	*£63.00*	*£440.98*	*£1,909.46*
Total					**£12,888.85**