Pharmacy Urgent Repeat Medication (PURM) Service:

West Yorkshire Urgent & Emergency Care (WYUEC) Vanguard

Findings from an External Developmental Evaluation

July 2017

Prepared by: Dr Eileen McDonach and Professor Mohammed A. Mohammed
for the WYUEC Vanguard Primary Care Workstream on behalf of YHAHSN
Date: Final Report 28 July 2017

Yorkshire & Humber Partners Academic Health Science Network Ltd
Unit 12 Navigation Court, Calder Park
Wakefield WF2 7BJ
Tel +44 (0) 1924 664710

Company Registration No: 8887451 England | VAT Registration No: 183 5404 08

Table of Contents

Acknowledgements

The YHAHSN commissioned local evaluation team would like to acknowledge and thank all the patients and staff who participated in and/ or helped to facilitate the local evaluation of the PURM service in West Yorkshire.

Special thanks to the key members of the PURM project team (and their respective organisations) for their assistance and invitations to their project meetings, engagement with the evaluation process, continued advice and access to data which helped the evaluation team better understand the PURM service and provide key insights into the benefits and challenges experienced at different stages of its development. The original PURMs team included: Ruth Buchan (CPWY), Robbie Turner (CPWY), Denise Stevens (LCD), Andrew Nutter (LCD), Michaela Littlewood-Prince (NHS 111) Usha Kaushal (NHS 111), Karen Sellars (NHS 111) and Andrew Cooke (NHS 111).

Thanks too, for the input of the Primary Care Workstream led by Dr Andy Withers and Carol McKenna and project managers Lynne Parkes and more recently Nina Birt from Attain, and the WYUEC Programme Manager, Keith Wilson.

The advice and input of the members of the intelligence led priorities (ILP) workstream in the evaluation process, led by Dawn Lawson and Stephen Stericker at the Yorkshire and Humber AHSN is also gratefully acknowledged.

Executive Summary: Local Evaluation WYUEC Vanguard - PURM Service

Background

In July 2015, West Yorkshire was one of eight Urgent and Emergency Care (UEC) Vanguards selected by NHS England as part of its New Care Models Programme[1]. The WYUEC Vanguard was re-scoped in May 2016, with three transformation workstreams: 1. Hear See & Treat, 2. Primary Care, 3. Acute Care; and two enabler workstreams: Intelligence Led Priorities and Technology.

The Pharmacy Urgent Repeat Medication (PURM) service was part of the WYUEC Primary Care transformation workstream and aimed to facilitate: "appropriate access to repeat medication out-of-hours (OOH) via community pharmacy, relieving pressure on urgent and emergency care services by shifting demand from Local Care Direct (LCD) to community pharmacy." (Appendix 1: PURM logic model). The PURM service predates the WYUEC Vanguard and its evaluation.[2]

Summary of Intervention – PURM Service

The PURM service has involved joint working across West Yorkshire, and requires (non-clinical) NHS 111 call handlers to: (1) triage patients who phone requiring urgent repeat medication out of hours; and (2) refer them to the appropriate PURM community pharmacy (41[3]) listed on the Directory of Service (DoS) instead of the OOH GP service provided by Local Care Direct (LCD).

The PURM process involves the community pharmacists meeting certain requirements, including:

- Checking their NHS.net email accounts every 30 mins for patient referrals from NHS 111, then:
- Contacting the patient to assess need within 30 mins of receipt of referral,
- Using their professional judgement to decide about medication supply (or not); and/or providing advice to the patient; and/or referring to another PURM pharmacy if medication out of stock; and/or referring back to LCD for further clinical assessment if required.

In August 2016, the OOH GP disposition (provided by Local Care Direct) was 'switched off', i.e. removed from the DoS, meaning NHS 111 staff could only make urgent repeat medication referrals to PURM pharmacies resulting in a significant change in the patient pathway.

Developmental Evaluation Approach

The Yorkshire and Humber AHSN was commissioned to provide robust, but, light touch, external local evaluation support for the WYUEC Vanguard. For the PURM Service, a theory-based, mixed-methods, developmental evaluation approach was agreed and included:

- Analyses of routinely collected data from NHS 111, CPWY and LCD
- Online survey of staff (n =75) in NHS 111, CPWY, LCD and community pharmacies
- Semi-structured interviews (n =5) with project team and clinician with PURM experience
- Postal survey of patients attending PURM pharmacy (n=7)
- Focus group NHS 111 call handlers (n=4)

Key Findings

Fidelity of the Intervention

[1] A total of 50 Vanguards across five New Care Models made up the entire national programme at that time. UEC vanguards emerged in response to the Keogh review of Urgent and Emergency Care and the NHS Five Year Forward View.

[2] In November 2014, the PURM Service was scaled up across all ten CCG areas in West Yorkshire, following a pilot in two areas; Kirklees and Huddersfield. It was internally evaluated by Community Pharmacy West Yorkshire (CPWY) in April 2015.

[3] Originally. 43 PURM pharmacies were included, but two PURM pharmacies discontinued involvement in December 2016 due to local flooding.

Graphical analyses revealed compelling evidence of material process changes across all data sets (NHS111, LCD and CPWY) coincident with LCD being switched off from DoS in August 2016. It is not possible to determine other aspects of fidelity, such as:

- Pharmacist's adherence to the PURM protocol in checking their nhs.net accounts every 30 minutes OOH and contacting patients within 30 minutes of receipt.
- The number of call backs to NHS 111 from pharmacists or patients, which was considered a 'breach' of the PURMs protocol (as LCD should be contacted for any further follow up).

Discrepancies are also noted between LCD and CPWY datasets in the number of LCD call backs from PURM pharmacists. Also, a doubling in the number of calls from NHS111 to GP OOH providers other than LCD was seen. The available data did not allow more in depth analysis and further work is required to reconcile these differences and understand the potential impact on the service and patient experience.

Primary Outcomes

NHS111 PURMS Data (Nov 2014 to Feb 2017)

- There were no PURMS related calls passed from NHS111 to LCD, via the DoS, after LCD was switched off from DoS (before 373.59 per month versus 0 after).
- The number of calls per month from NHS111 to pharmacists for urgent repeat prescriptions doubled (358.45 before versus 721.83 after).
- The number of calls per month from NHS111 to GP OOH providers other than LCD more than doubled (15.64 before versus 44.0 after).
- There were non-significant increases in the number of calls per month classified as PURMS calls in NHS111 data after LCD was switched off; as well as in the number of calls per month from NHS111 to "other" destinations.

Local Care Direct PURMS Data (Apr 2013 to Feb 2017)

- Calls for repeat prescriptions per month into LCD reduced by 2/3 after LCD was switched off from DoS (362.76 before versus 111.00 after).
- However, according to LCD data there were 375 call backs during 18 Aug 2016 to 27 Feb 2017, following referral back from the community pharmacists of which 36.3% closed with clinician advice, 19.2% closed with a repeat prescription, 10.4% had a face-face consultation, 5.1% had a home visit with the remainder (29%) being recorded as "other" or "failed contact".

Community Pharmacy West Yorkshire Data (1 Nov 2014 to 26 Feb 2017)

- The number of records per month in the CPWY database more than doubled after LCD was switched off from the DoS (270.14 before versus 638.7 after).
- There was a significant 18% reduction in the percentage of records where medication was supplied (75.85% before versus 62.34% after).
- There was a significant increase in the percentage of records which indicated the patient was referred back to LCD (10.58% before versus 17.85% after).
- There was a significant decrease in the proportions of records which indicated that the patient was referred back to NHS111 (1.01% before versus 0.29% after).

Staff Experience and Satisfaction

Staff Online Survey

N= 75 staff involved in the PURM service (community pharmacists, and NHS 111 and LCD call

handlers and clinicians) participated, with the majority (80%) rating the service positively, and most (85%) recommending its extension to other areas. The majority (75%) of respondents also rated the PURMs process as easy, with specific aspects (e.g. quicker; ease of access; relieving pressure on OOH; freeing up GP time, and improved patient and staff experience) highlighted as working well. Benefits reported by over 60% staff, included: more efficient and improved patient experience, reduced OOH GP pressure, staff satisfaction, and improved patient outcomes. Most (84%) agreed PURMs had potential to reduce pressure on A&E and OOHs.
The main challenges and tensions reported by staff were inter-professional/organizational, and were mirrored by their recommendations for improvements. These identified the need for better staff (especially NHS 111 and pharmacists) training to facilitate mutual awareness and understanding of PURM service and protocols, inappropriate referral for medications (such as controlled drugs), as well as the management of patient expectations about their medication.

Qualitative Interviews and Focus Group
Qualitative interviews (n = 5) and a focus group (n=4 participants) indicate a generally positive view of PURMS and its impact, with participants identifying multiple beneficiaries:

- LCD is perceived to benefit with reduced pressure on the OOH service, and reduction in GP and admin workload, with resulting efficiencies in time spent on urgent repeat prescriptions, and on more urgent cases, especially in times of high demand;
- Patients have more seamless, quicker and simpler access to urgent repeat medication OOH, and a potentially improved experience when compared to waiting in the LCD queue for OOH GP involvement.
- Community Pharmacists are reported to benefit from being a previously underutilised profession, now providing this enhanced service across West Yorkshire, utilising specialist pharmacy skills and knowledge, raising the profile of their pharmacy and receiving financial payment for the service.
- NHS 111 required iterative process changes to implement PURMs, including training staff, and changes to the Directory of Service, but thought to potentially benefit from patients ringing back less and improved patient and staff experience.

Challenges noted by participants included the need for on-going monitoring to address fidelity issues, understanding and responding to the issue of frequent callers, and defining the notion of 'urgent' and managing patient expectations.

Critical success factors identified by the PURM project team included the following:

- Project: dedicated funding which enabled effective project management; led by data and experience, small-scale testing, and iterative development of intervention and implementation which included a 'soft launch'; and developing good communication and joint working relationships between organisation.
- Intervention/Implementation: learning included the need to have sufficient geographical coverage of PURM pharmacies, especially on bank holidays; seven-day supply of medication (rather than a month supply) to discourage patients from circumventing the preferred in-hours prescription process; and pharmacist access to technology such as nhs.net email to receive secure referrals, and PharmOutcomes to record consultations and simplify payment claims.
- Scale Up: The potential absence of identified success factors in the proposed national scale up pilot: NHS Urgent Medicine Supply Advanced Service (NUMSAS) was a point of concern for some participants.
- The additional professional skills and knowledge that pharmacists bring to medication was also

noted by several participants and benefits to the system of an enhanced service from an underutilised profession, which has potential to be extended further.

Patient Experience and Satisfaction

Obtaining independent patient feedback was challenging due to common information governance constraints, and the logistics of recruiting patients across a wide geographical area, who are using OOH services, at times which are difficult to predict. However, there was positive support for the PURM scheme, particularly in relation to speed of receiving repeat prescription and medication.

Internal Community Pharmacy West Yorkshire counterfactual data has methodological limitations and possible response bias, but patient self-reports to pharmacists suggest benefits of PURMs to the UEC system in potentially preventing patients using other services (OOH, A&E, urgent care centre, or GP) for urgent repeat medications; or indeed going without medication. The majority of patients also agreed that the advice they received from the pharmacist would help them to avoid running out of medication, to remember it in the future, and to use their local pharmacy in the future.

Learning and Recommendations

- Key Findings from this local developmental evaluation of PURMs provide compelling evidence of a convincing process change post LCD switch off (August 2016) with decreased number of calls referred to LCD for urgent repeat prescriptions by NHS 111 and increased number of PURM records in CPWY per month.
- This would support the service redesign 'theory of change' and the important role of the LCD switch off on the NHS 111 DoS as an 'active ingredient'. Prior 'tinkering' with the process before this date may have seen improvement but did not produce the 'channel shift' seen by removal of LCD from the DoS. However, the increased proportion of 'no supply made' by PURM pharmacists post LCD switch off (28%, n = 1,237) when compared to pre-switch off (15%, n = 826) indicates a more complex theory of change which warrants further investigation.
- The reduced number of calls to LCD for repeat prescriptions has implications for reduced LCD workload in terms of GP and administration time on PURM requests. However, this needs to be offset with the increase in pharmacy reported 'refer-backs' to LCD and NHS 111 'forced' referrals.
- PURM pharmacists report reduced number of PURM requests referred back to NHS 111 post LCD switch off. If no other coinciding process changes at this time, this may reflect increased fidelity of intervention/ implementation by pharmacists. An improvement in fidelity is supported by some of the staff feedback.
- Although identified in the logic model work as possible benefits of PURMs, it is not possible using data currently available to the evaluation team to calculate empirically potential reductions post LCD switch off in (1) time spent by NHS 111 call handlers and clinicians on PURM requests and (2) patient waiting times.
- It is also not possible within current data sources to determine the extent to which PURM pharmacists adhered to all the components of the agreed protocol.
- This local evaluation generates new and important insights from patients and staff (independent from the PURM project team) about their experience of PURMs, which were not previously available. The Framework method of qualitative analysis enables systematic, transparent exploration of patterns within the data. This process has highlighted areas of consensus among health professionals involved in PURMS around its perceived strengths including: quicker, easier referral and access for patients which may improve patient experience, free up GP OOH time, and relieve pressure on the OOH service. However, it has also surfaced inter-professional (but inter-

related) differences in perceived concerns and improvements required including: Pharmacist awareness/adherence to protocol, better NHS 111 Call- handler training, particularly in relation to inappropriate referrals e.g. controlled drugs and managing patient expectations. These tensions are likely to continue if not addressed directly.

Future Development

The PURM service predates the WYUEC Vanguard, but provides important learning about perceived critical success factors including, dedicated funding and project management to enable effective joint working, relationship building and data sharing. In relation to future scale up, concern was noted by participants that key learning from PURMs may not be sufficiently incorporated into the planned national pilot, such as identified 'active ingredients' of project management, sufficient geographical coverage, 7 day supply safeguards, pharmacist access to secure technology, and simple reporting and payment tools and processes.

Optimising and capitalising on the reported critical success factors and key learning from PURMs identified by the project team and frontline staff should be considered in future development of PURMs and its successors such as the national pilot NUMSAS. Future developments should also consider the benefits of regular, independent, systematic feedback by key stakeholders to identify potential sources of tension (inter-professional or organizational), areas in need of clarification, and the potential improvements required.

Methodological Limitations and Recommendations

A number of potential improvements to address current methodological challenges in evaluating PURMs have been identified. These include:

- Better data linkage, from end to end, with individual level linked dataset (NHS 111, CPWY and LCD) using NHS number, date of birth, gender, and surname as identifiers. This may also help to identify fidelity issues at different stages of the PURM process, address data discrepancies between current datasets and better understand the system wide impact of PURMs. It is worth noting that the internal CPWY evaluation in Nov 2015 recommended exploring the discrepancy between NHS 111 referrals and those received by community pharmacy. In May 2016, a CPWY led PURM audit found that 31% of NHS 111 referrals to PURM service were not recorded by a pharmacy as a PURM consultation on PharmaOutcomes as consultation/ supply. This issue was followed up the PURMs project team.
- Consideration of pre-determined controlled comparisons.
- Strengthened measurement framework, particularly around patient outcome and experience, and consistency of data capture.
- Consider independent recruitment of staff for evaluation feedback.
- Follow up of PURM patients and subsequent healthcare utilization of those where supply is made, not made or referral back to LCD.
- Timely and early access for evaluation team to relevant data

Introduction to PURMs Local Developmental Evaluation Report

This report provides a summary of the YHAHSN supported local evaluation of the Pharmacy Urgent Repeat Medication (PURM) Service as part of the WYUEC Vanguard local evaluation.

- Section 1 describes the background to the WYUEC Vanguard and PURM Service
- Section 2 outlines the evaluation approach, key questions, and methods
- Section 3 provides a summary of the key findings (quantitative and qualitative)
- Section 4 discusses key learning points and recommendations

Section 1: Background: WYUEC Vanguard and PURM Service workstream

West Yorkshire Urgent and Emergency Care Vanguard

The West Yorkshire Urgent and Emergency Care (WYUEC) Vanguard was part of NHS England's New Models of Care initiative, established in 2015 by NHS England in response to the Keogh UEC review and the NHS Five Year Forward View. The policy context is complex and shifting as illustrated in Appendix 2. The WYUEC Vanguard was a complex programme of multiple activities in response to UEC challenges:

> "There are significant and unsustainable pressures in urgent and emergency care (UEC) across West Yorkshire. Provision is challenged by unmet targets and services are un-coordinated, disconnected and inefficient. Our vision is to deliver a standardised and coordinated UEC model, at scale across West Yorkshire, reducing A&E attendances and emergency admissions, increasing levels of self-care and improving patient experience, outcomes, quality and service sustainability." (WYUEC Vanguard, and PURM logic model, Appendix 1).

Multiple partners were involved in the design and delivery of the WYUEC Vanguard including the WYUEC Network/Healthy Futures Board, eleven West Yorkshire clinical commissioning groups, five West Yorkshire system resilience groups (which include primary care and local authority partners), six NHS acute and community providers, three NHS mental health service providers, Local Authority, Yorkshire and Humber Academic Health Science Network, West Yorkshire Healthwatch organisations, West Yorkshire Police, and West Yorkshire Fire and Rescue Service.

The original WYUEC Vanguard was large in size and ambition. Reduced funding in early 2016 resulted in substantial re-scoping and subsequent contraction of planned Vanguard activity. Three transformation workstreams remained: (1) Hear, See and Treat, (2) Primary Care and (3) Acute Care. Two additional workstreams served as enablers: (4) Technology and (5) Intelligence Led Priorities (led by the Yorkshire and Humber AHSN which commissions and oversees the local evaluation). Improvement and efficiencies were anticipated to result from the following workstream activities:

1. **Hear, See and Treat:** The development and implementation of a Clinical Advisory Service (CAS) to provide care navigation and specialist clinical advice to 111, 999 & front line healthcare professionals and the development of a range of priority pathways including Falls Response, Mental Health, Palliative Care and Frequent Callers.

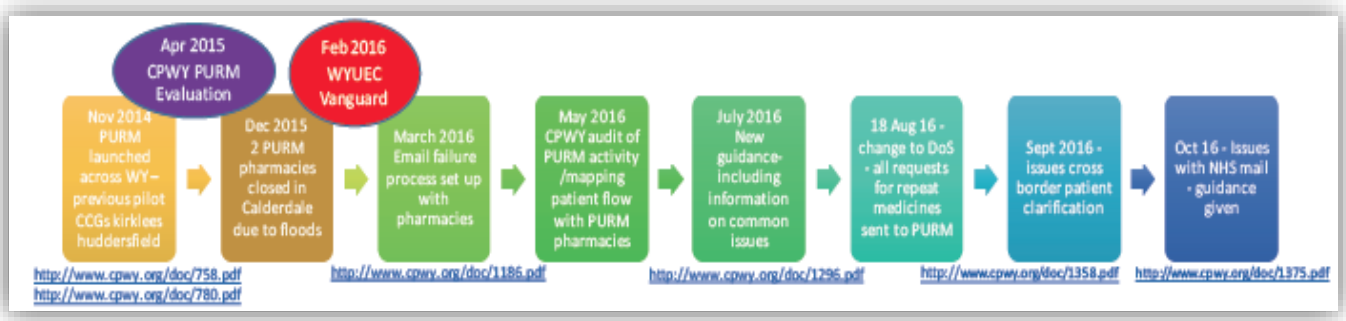
2. **Primary Care:**
    - The Pharmacy Urgent Repeat Medication Service (PURMs) aims to facilitate appropriate access to repeat medication out-of-hours (OOH) via community pharmacy, relieving pressure on urgent and emergency care services by shifting demand from Local Care Direct (LCD) to community pharmacy.
    - The introduction of direct booking of GP appointments 'in hours' to make more appropriate use of primary care services and reduce pressure on A&E and out-of-hours services.
3. **Acute Care:** The development of an Imaging Collaborative to support the joint procurement and implementation of one common imaging system across multiple Acute Trusts to replace existing systems.
4. **Technology:** To design, test, build and deliver the technical capability, focussed on eight IUC criteria, including direct booking and shared care record. Other workstreams will provide the change management.

The WYUEC Vanguard workstreams were at different stages of development, some pre-dated Vanguard status and had undergone significant local testing and scaling up (e.g. PURMS), while others were still in the early stages of procurement, development and piloting (Clinical Advisory Service, Direct Booking and the Imaging Collaborative). The evaluation team were commissioned to conduct the local evaluation in November 2016 and due to complete by the end of March 2017. This was extended to June 2017. The Yorkshire Health Economics Consortium (YHEC) were also commissioned separately by the YHAHSN to conduct economic modelling for the WYUEC Vanguard (Hanlon et al, 2016).

Pharmacy Urgent Repeat Medication (PURM) Service

In November 2014, (pre-Vanguard) the PURM Service was scaled up across all ten CCG areas in West Yorkshire following a successful pilot in two areas; Kirklees and Huddersfield. The PURM service has developed over time, learning from small-scale testing of change, led by data and experience, it involved ongoing stakeholder engagement, changes to commissioning arrangements, protocols and 'training' of staff across multiple organisations. A monitored 'soft launch' took place prior to the final LCD switch off in August 2016. The PURMs service is essentially a service redesign resulting in a change in the patient pathway; i.e. removal of OOH GP disposition from the NHS 111 Directory of Service. A timeline of key dates and PURM documents are shown in Figure 1.

Figure 1: Timeline of Key PURM dates and PURM documents (source CPWY, compiled for Evaluation Dress Rehearsal May 2017)



In 2015, PURMs was internally evaluated by Community Pharmacy West Yorkshire (CPWY). Four key recommendations at that time included:

1. Working with commissioners to:
   - Explore reasons for non-uptake of PURM by patient and non-referral NHS 111 call handler
   - Explore discrepancy between NHS 111 PURM referrals and those received by community pharmacy
   - Explore what happens to patients not supplied when pharmacist is out of stock.
   - Better link the PURM service with A&E and other urgent care settings (e.g. walk- in-centres)
2. Routine monitoring of PharmOutcomes data by the commissioners to ensure the appropriateness of medication selected from the DM+D database by the pharmacist for remuneration.
3. Explore reasons for variation in number of referrals per pharmacy and patient outliers travelling more than 5km to access PURM service.
4. Reinforcing to pharmacies importance of patient experience questionnaire completion and subsequent transfer onto PharmOutcomes.

PURM Service Aims

The PURM service aimed to:

> "facilitate appropriate access to repeat medication out-of-hours via community pharmacy, relieving pressure on urgent and emergency care services by shifting demand from Local Care Direct to community pharmacy." (PURM logic model – Appendix 1).

PURM Service Primary Outcomes

The following key outcomes were identified (among others) during development of the logic model by the PURM project team:

1. Reduction in referral of PURM requests from NHS 111 to LCD OOH
2. Increase in PURM referrals from NHS 111 to PURM Pharmacies
3. Reduction in time spent by LCD GPs and admin staff on PURM requests

4. Reduction in time spent by NHS 111 Call Handlers and Clinicians on PURM requests
5. Reduction in repeat call backs to NHS 111 from same patient for same PURM request
6. Reduction in patient waiting time to access repeat medication Out of Hours
7. Patient experience and satisfaction with PURM Service
8. Staff Experience and satisfaction with PURM service

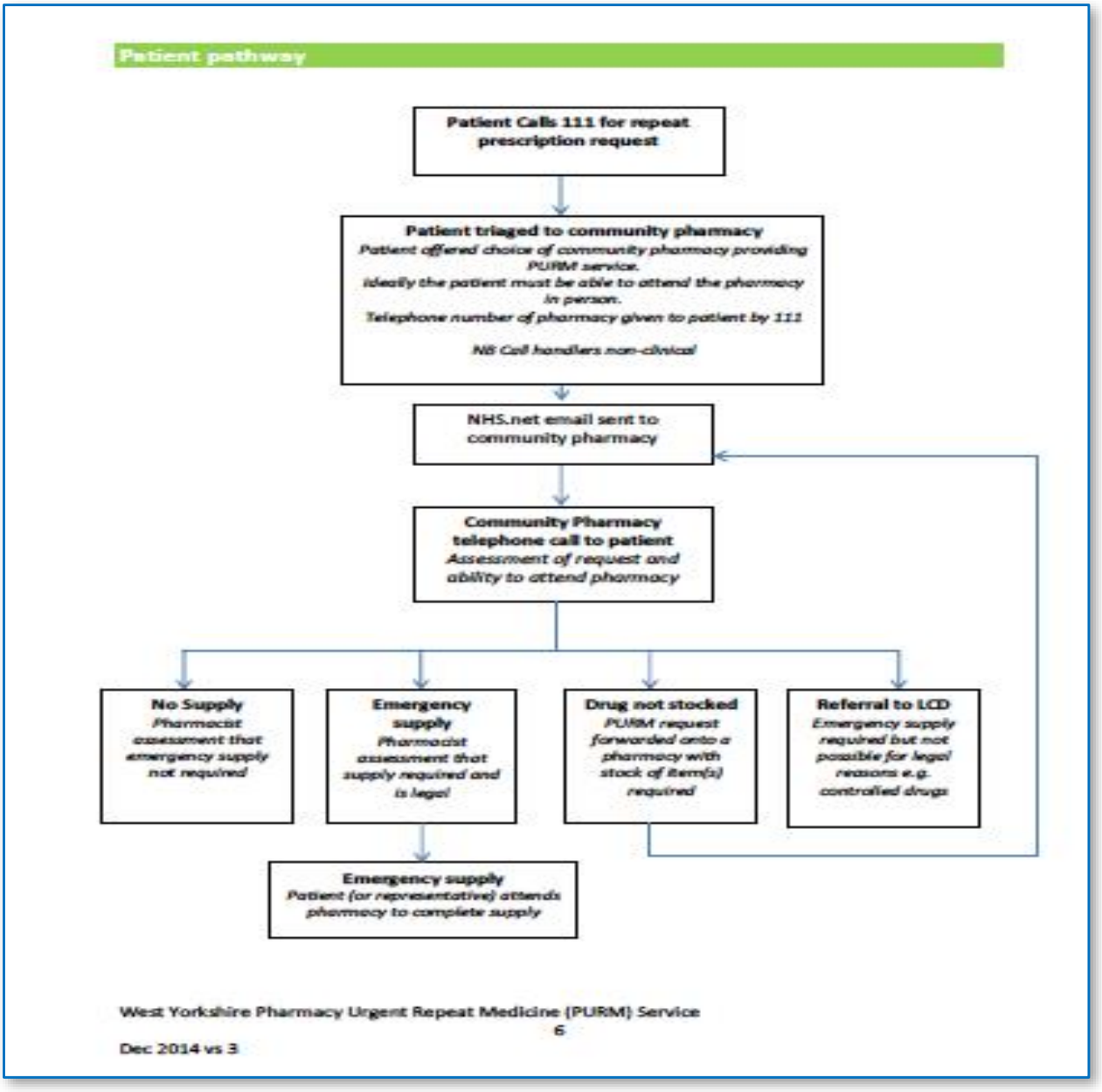
The Intervention - PURM Service redesign and Patient Pathway

The key components and activities of the PURMs patient pathway redesign (Figure 2) were as follows:

- Patients who call for urgent repeat medications are triaged by NHS 111 call handler (who is non- clinical) and offered choice of PURM pharmacy displaying on DoS. Post Event Message is sent to patient's GP (PEM);
- Pharmacist monitors and receives referral via NHS email and phones patient (within 30 mins of receipt) to assess patient request and ability to attend pharmacy;
- Five outcomes are possible: (1) No supply, (2) Emergency Supply, (3) onward PURM pharmacy referral if out of stock, (4) Referral to LCD, and (5) Unable to contact patient;
- If supply approved, patient or representative attends pharmacy to collect prescription; expected to be patient where possible:
- Patient or representative receives up to maximum 7 days' supply[4].
- Those not exempt from prescription charges pay full amount (for seven days' supply).
- Pharmacist to provide advice to patient on avoiding running out of medication;
- Pharmacist records on the POM register, PURM record, PharmOutcomes, PMR;
- Pharmacist receives PURM payment per patient (even if supply not made), plus cost of medication supplied;
- Pharmacist must adhere to agreed PURM service specification
- PURM involvement requires pharmacy access to relevant secure technology systems such as NHS.net mail and PharmaOutcomes

[4] PURMs emergency supply was set at 7 days. This was noted by member of the project team as an important aspect learned during development of the service and deliberately set to discourage circumvention of usual repeat prescription channels.

Figure 2: PURM Patient Pathway Redesign (Source CPWY, Nov 2014)



PURM Service Principles and Process

The PURM service was underpinned by key principles set by local service specifications and by national statutory regulations (Figure 3). A flowchart of the PURM process (Dec 2014) is provided in Appendix 3.

Figure 3: Key principles underpinning PURMs - Source: CPWY, Dec 2014

Key elements
The PURM service **must** be available for **all** pharmacy opening hours which fall into the Out of Hours period (6.30pm to 8.00am on weekdays and all day at weekends) with **no** break in service for holidays/ staff sickness etc.
Throughout the PURM service the pharmacist will use their professional judgement to determine the most appropriate course of action for the patient Each request should be considered on a case by case basis Pharmacists are professionally accountable for their actions and the decisions they make
All supplies made must both meet the requirements of the Human Medicines Regulations 2012 and be within the terms of the Service Specification

Section 2: Evaluation Approach

A theory-based, mixed-methods, developmental evaluation approach was agreed, which provided local evaluation support to the WYUEC Vanguard in evaluating the PURM service. Notably, the PURM project predates evaluation involvement, therefore a retrospective before-and-after design (quantitative data) was adopted with key stakeholder reflections conducted post intervention (survey and qualitative data). It was not possible to include retrospective controlled comparisons within the design.

Developmental Evaluation has been proposed as an alternative to traditional formative/summative approaches to evaluation (Patton, 2011, 2016). It acknowledges the complexity, uncertainty, and non-linearity of complex initiatives in dynamic contexts (such as healthcare settings) and the real-world limitations of randomised controlled trials and experimental designs, which may not be feasible, or indeed, desirable in these settings.

Local evaluation support was provided by Dr McDonach and Professor Mohammed on behalf of the Yorkshire and Humber AHSN. Our approach (Figure 4) aimed to combine frontline expertise and knowledge, with academic/evaluation insights in key areas which have traditionally proved challenging in complex, quality improvement initiatives and their evaluation (e.g. Ovretveit & Gustafson, 2002).

Figure 4: Key components of our Developmental Evaluation Approach

- Describing the **intervention in sufficient detail** to inform fidelity and potential scale up or replication
- Co-producing **logic models** to develop **robust evaluation measurement framework** (Appendix 1) which were subsequently approved by the WYUEC Vanguard leadership team. The local evaluation team noted the challenges of using such a 'linear' static tool within a complex intervention, in an evidently dynamic, complex adaptive system with multiple uncertainties. However, reported benefits of using 'programme theory' in evaluation include: better designed interventions which articulate: (1) what is the intervention and its key components or 'active ingredients'; (2) how the intervention is implemented and delivered with fidelity; and (3) as a tool for planning, monitoring, evaluating and communication.
- Co-producing **programme theory/ theory of change** to understand and test hypothesized 'active ingredients' and key 'mechanisms' by which change may (or may not) take place.
- Strengthening **project design** and exploring opportunities for **controlled comparisons**.
- Monitoring the **fidelity of the intervention and its implementation**.
- Using quality improvement **small scale testing** and **measurement of change**.
- Applying **theoretical approaches to behaviour change** (where appropriate).
- Obtaining **views/ experiences** of those closely connected to initiative over time (positive and negative).
- Instilling a culture of openness and **opportunity for learning** within 'Evaluation Dress Rehearsals' where emergent data and learning can be reviewed and appropriate action agreed.

Evaluation Questions

The evaluation focused on key questions about the context in which the PURM service is being delivered, the nature of the intervention, its fidelity and implementation, outcomes of the project, stakeholder's views and experiences, and emergent learning for improvement, replication or scale-up. Specific questions included:

1. What is the context in which the PURM service is taking place?
2. What are the active ingredients/ key components of the PURM Service?
3. Is the PURM Service implemented with fidelity?
4. Are the expected outcomes of the PURM service realised?
5. Were the mechanisms of change as expected? If not, why not?
6. What are key stakeholders' views and experiences of new falls response models over time?
7. What worked well and what can be improved with the PURM Service?
8. What are the perceived critical success factors?
9. What key lessons can be shared for future development?

Evaluation methods, data sources and metrics

The mixed-methods evaluation involved collating and validating quantitative, routine, internal project data and generating additional survey and qualitative data. This 'light touch' approach was used to

reduce burden on the organisations and optimise value for money. A before and after design (quantitative data) was used as it was not possible to include retrospective controlled comparisons.

Early scoping work involved co-production of a PURM logic model by the project team, facilitated by Dr McDonach (Appendix 1). The logic model formed the basis of the evaluation metrics and detailed the rationale, contextual inputs, proposed key activities, short and medium-term outcomes and longer-term impacts of PURMs. It was also used to identify the range of key stakeholders to be included in the qualitative component of the evaluation. The process was repeated with the other WYUEC Vanguard transformation work streams. The evaluation team adhered to appropriate ethical standards with confirmation of service evaluation sought, and information governance and data sharing arrangements established with the Leadership Team at the outset.

Quantitative Data Collation/Analyses

Quantitative data was collated from routinely collected data in LCD, YAS NHS 111 and CPWY. The data from LCD (Apr 2013 to Feb 2017) and YAS NHS 111 (Nov 2014 to Feb 2017) were summary counts of the number of cases that were included in the PURMS activity and the data from CPWY (1 Nov 2014 to 26 Feb 2017,) were (de-identified) individual records of patients that were recorded in the CPWY data base and included n=9775 valid records after excluding n=321 records (with invalid dates). Challenges in obtaining the necessary data within the timescales of the evaluation prevented a more detailed analysis of some of the findings that emerged.

Graphical analyses revealed step changes in key variables from all data sets after LCD was switched off from DoS (18 Aug 2016) and so subsequent analyses are presented as before versus after comparisons. To be consistent across all data sets we defined all data up to and including 31 Aug 2016 as being in the 'before' period. This was necessary because the summary count data from NHS111 and LCD was monthly. To assess the impact on count based activity outcomes we used Poisson regression model with a single binary intervention covariate (before/after).

Qualitative Data Collection/ Analyses

Qualitative data was collected independently by the evaluation team to underline the impartiality of the evaluation and thus the potential for participants to feel able to report both positive and negative views and experiences of the PURM service (should they wish to do so). Qualitative data for the PURM local evaluation was collected in several ways (shown in Table 1 earlier) and outlined below:

- An online survey of staff from key organisations involved in delivering the PURM service (NHS 111, Community pharmacists and LCD) was undertaken. This allowed comparison of key themes across professional groups. Although the survey was conducted independently by the evaluation team, Information Governance (IG) constraints required that distribution of emails containing evaluation information and the online survey link was controlled by key people in each of the relevant organisations. Survey participants were able to take part anonymously by using the online link and responses were only available to the evaluation team.
- A paper/postal survey of patients attending the pharmacy for PURMs was identified by key stakeholders as the most appropriate method. This met the dual challenge of meeting

Information Governance requirements and the logistics of recruitment of patients in a geographically dispersed and unpredictable OOH context. Pharmacists in each of the 41 pharmacies were asked to distribute the survey to the first five patients who attend for PURM requests. Patients were asked to complete the survey anonymously and return in the pre-paid envelope to the pharmacist or by post. Potential sample bias was acknowledged as this method included only those who attended pharmacy and received medication and relied on pharmacist to select and recruit patients.

- Semi-structured qualitative interviews with project team members and a clinician with experience of PURMs were conducted. It is worth noting that all of the project team were invited to take part by email and given the option of face to face or telephone interviews.
- A focus group with NHS 111 call handlers was also undertaken as part of wider WYUEC Vanguard evaluation work, one section of the focus group explored participants' views and experiences of PURMs
- In addition, the PURM team shared key papers and minutes which documented the context and development of the service.

Interviews were audio taped and transcribed. Framework Method (Ritchie & Spencer, 2003; Ritchie et al, 2013) was used to develop a common coding frame to identify key themes and patterns within the data to address evaluation questions, explore the proposed theory of change, and help develop explanatory accounts. This approach offers a systematic and robust method of thematic analysis of qualitative data, facilitating transparent, comprehensive (rather than partial) data treatment which avoids 'cherry picking' of data. It also enables comparison between groups (important follow on from purposive sampling) and interrogation of 'discriminant' cases which do not fit patterns to optimise potential learning. The same approach was taken with the online survey and findings compared and contrasted across methods.

Framework method is often used in applied health research and is a potentially useful approach when working with interdisciplinary teams (Gale et al, 2013). The approach moves through various stages from familiarising and indexing the data, to charting and developing matrices to identify patterns and key themes. Essentially, the focus shifts from merely describing the data to trying to explaining it. This method is also useful in presenting formative information to the team as in during evaluation dress rehearsals.

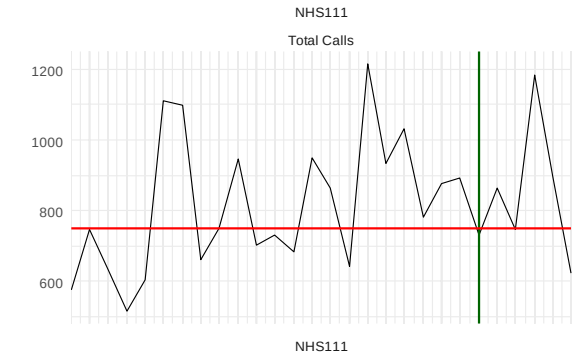
Section 3: Key findings from Local Evaluation

PURMs Quantitative Data

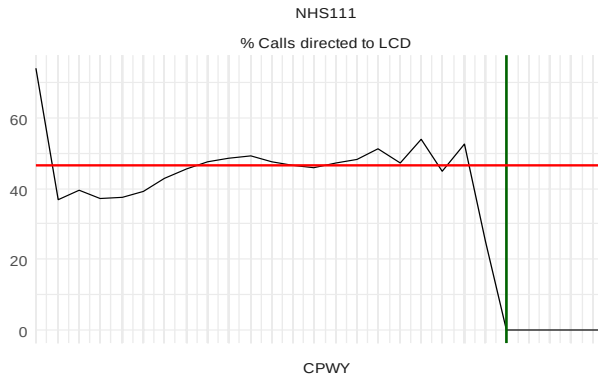
Fidelity of the Intervention/ Implementation:

Graphical analyses revealed compelling evidence of material process changes across all data sets coincident with Local Care Direct being switched off from DoS in Aug 2016. (See Figure 5). The impact of switching LCD off from the DoS was visible in all three data sources – NHS111, Local Care Direct and Community Pharmacy West Yorkshire

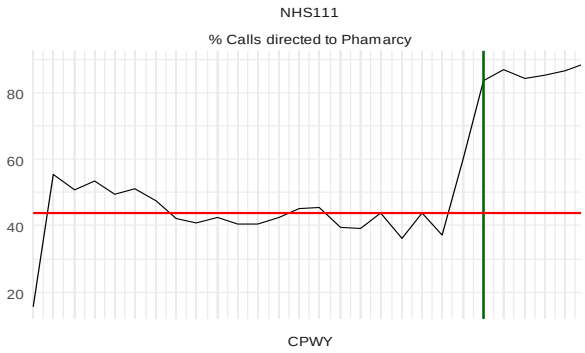
Figure 5



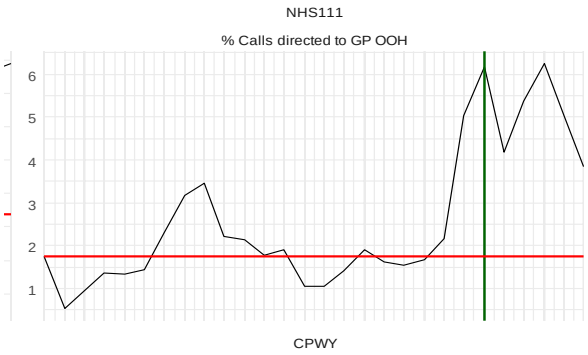
1.



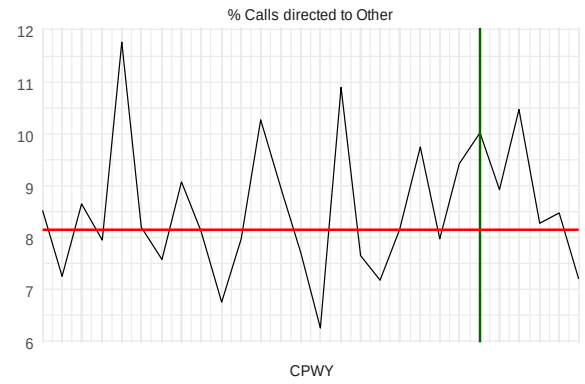
2.



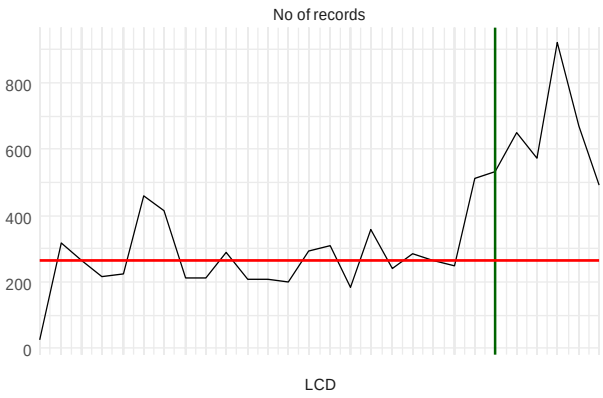
3.



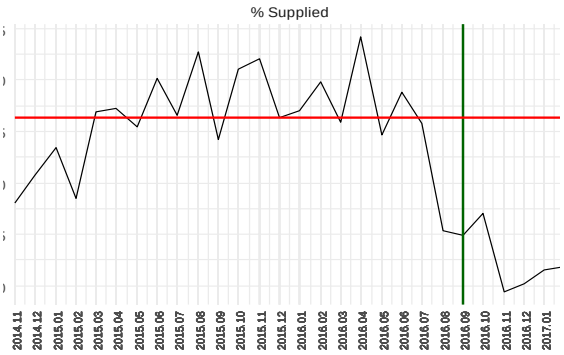
4.



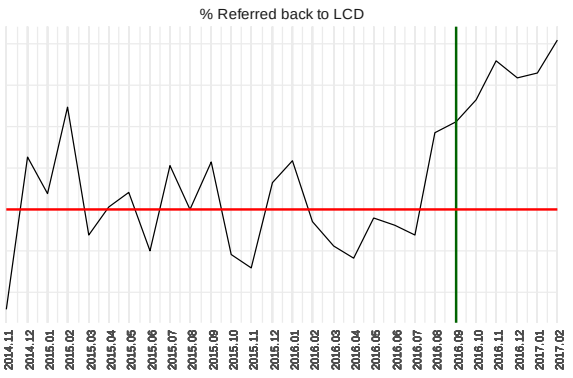
5.



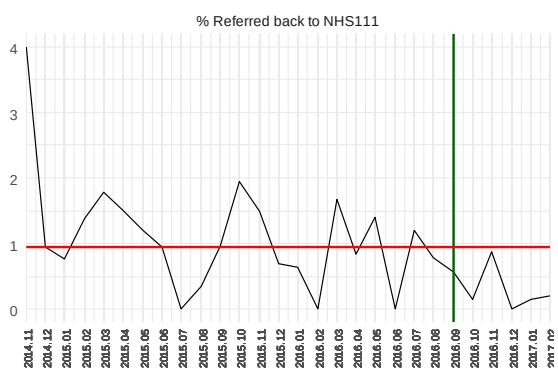
6.



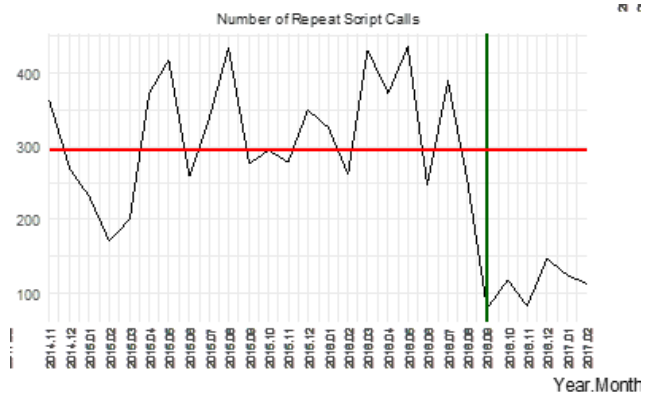
7.



8.



9.



10.

Figure 5: Showing various metrics from each data sources (NHS11, CPWY and LCD) over 28 months (Nov 2014 to Feb 2017) with a vertical solid line at Sep 2016 indicating the period after LCD was switched off from the DoS. The red line is the median before LCD was switched off. Refer to points below for key statistical results from each data source:

NHS 111 Summary PURMS Data (Nov 2014 to Feb 2017)

- There was a 3% increase in the total number of calls per month classified as PURMS calls in NHS111 data after LCD was switched from the DoS. This increase was not statistically significant (before: 840.33 calls per month versus 815.50 after, ratio 1.03 (95% Confidence Interval (95%CI): 1.0 to 1.06, p=0.06).
- There were **no** PURMS related calls referred to LCD after they were switched off from DoS (before 373.59 per month versus 0 after) Refer to graph 2
- The number of calls per month from NHS111 to pharmacists for urgent repeat prescriptions doubled from 358.45 before versus 721.83 after (ratio 2.01, 95%CI 1.94 to 2.09, p<0.001). Refer to graph 3
- The number of calls per month from NHS111 to GP OOH (other than LCD) increased from 15.64 before versus 44.0 after (ratio 2.81, 95%CI 2.40 to 3.30, p<0.001). Refer to graph 4.
- The number of calls per month from NHS111 to "other" destinations increased by 10% but this was not statistically significant (before 67.82 vs after 74.5, ratio 1.10 95%CI 0.99 to 1.22, p=0.08).

Community Pharmacy West Yorkshire Data (1 Nov 2014 to 26 Feb 2017, n=9775 valid records after excluding n=321 records)

- The number of records per month more than doubled from 270.14 before versus 638.7 after LCD was switched off from the DoS (ratio: 2.36, 95%CI 2.27 to 2.46, p<0.001). Refer to graph 6
- There was an 18% reduction in the percentage of records where medication was supplied before 75.85% (4508/ 5943) versus after 62.34% (2389/3832) (ratio 0.82, 95%CI 0.80 to 0.85, p<0.001). Refer to graph 7.

- There was a significant increase in the percentage of records which indicated that the patient was referred back to LCD - before 10.58% (629/5943) versus after17.85% (684/3832) (ratio 1.69, 95%CI 1.53 to 1.86, p<0.001). Refer to graph 8
- There was a significant decrease in the proportions of records which indicated that the patient was referred back NHS111 - before 1.01% (60/5943) versus after 0.29% (11/3832) (ratio 0.28, 95%CI 0.15 to 0.54, p<0.001). Refer to graph 9
- There was a 5% increase in the number of unique providers per month before (36.73) versus after (38.67, ratio 1.05, 95%CI 0.91 to 1.22, p=0.49) but this was not statistically significant.

Local Care Direct Summary PURMS Data (Apr 2013 to Feb 2017)

- Calls for repeat prescriptions per month into LCD reduced by 2/3 from 362.76 calls before versus 111 calls after LCD was switched off from DoS (ratio: 0.31, 95%CI 0.28 to 0.33, p<0.001). This is a substantial reduction but the "source" of these remaining 111 calls per month is not clear from the data supplied. Further analysis could be useful.
- According to LCD data there were 375 call backs during the period, 18 Aug 2016 to 27 Feb 2017, following referral back from the community pharmacists of which 136 (36.3%) closed with clinician advice, 72 (19.2%) closed with a repeat prescription, 39 (10.4%) had a face-face consultation, 19 (5.1%) had a home visit with the remainder (n=109, 29%) being recorded as "other" or "failed contact".

It is not possible within current data sources to calculate the extent to which pharmacists adhered to the PURM protocol, for example, in checking their nhs.net accounts every 30 minutes OOH and contacting patients within 30 minutes of receipt (i.e. fidelity of intervention). Staff respondents in the online survey and focus group (see Section 3), do, however, perceive a quicker service for patients who are now referred to PURM pharmacies rather than waiting for a call back from the out of hours GP at LCD.

Another fidelity challenge noted by NHS 111 staff who took part in the evaluation (see Section 3) was call backs from pharmacists, considered a 'breach' of the PURMs protocol (as LCD should instead be contacted for any follow up). Some NHS 111 staff reported that this improved over time. Discrepancies are noted between LCD and CPWY datasets in the number of LCD call backs from PURM pharmacists. Further work is required to reconcile these differences and understand the potential impact on the service and patient experience.

Discrepancies are also noted between LCD and CPWY datasets in the number of LCD call backs from PURM pharmacists. Also, a doubling in the number of calls from NHS111 to GP OOH providers other than LCD was seen. Further work is required to reconcile these differences and understand the potential impact on the service and patient experience.

PURMS Qualitative Data

Patient and staff experience of the PURM service was collected using multiple qualitative methods as detailed in Section 2. Recruitment is summarized in Table 2 below. This included: (1) an online staff survey; (2) a paper survey of patients or their representatives attending one of the 41 PURM pharmacies; (3) a focus group of NHS 111 call handlers and (4) semi-structured telephone and face to face interviews of project team members and a clinician with experience of PURMs.

Table 2: Qualitative data sources, participant and analyses

Data Source:	Sample: Pre-Intervention	Sample: During Intervention	Content/ Conducted by	Analysis/Outputs
Anonymous Online Questionnaires During Intervention	N/A – evaluation is retrospective	N = 75 staff involved in PURM across three organisations: • N= 15 PURM pharmacy staff • N= 39 NHS 111 Call Handlers • N = 4 LCD Call Handlers • N = 17 'Other' including dispensers, locum pharmacists, clinicians and managers from NHS 111/LCD.	Content: 12 items including job role and volume of PURM requests dealt with plus free text options. Designed by evaluation team and conducted Mar- Apr 2017	Summary of descriptive statistics and thematic analysis of free text items
Anonymous Patient Experience Paper Survey	N/A – evaluation is retrospective	N = 7 patients or their representatives attending one of the 41 PURM pharmacies after referral from NHS 111	8 items plus demographics Designed & conducted by YAS Patient Relations Team	Summary of descriptive statistics and thematic analyses of free text items
Telephone & Face to face semi-structured Interviews	N/A – evaluation is retrospective	N= 5 interviews • N= 4 Project Team • N= 1 Clinician with PURM experience All key project team stakeholders invited	Schedules Designed & Interviews Conducted by Evaluation Team. Feb – March 2017 N = 2 interviews revisited for clarification May 2017	Thematic analyses
Focus Group	N/A – evaluation is retrospective	N= 4 NHS 111 Call Handlers	Topic Guide Designed & Conducted by Evaluation Team.	Thematic Analyses
Attendance at Project/ Board Meetings	N/A	N/A	Several 2016	Co-production of logic model and metrics
Evaluation Dress Rehearsal	N/A	May 2017	Led by Evaluation Team – joint participation with PURM team	Review of data quality, validity and emergent findings

PURM Staff Online Survey – Key Findings Summary

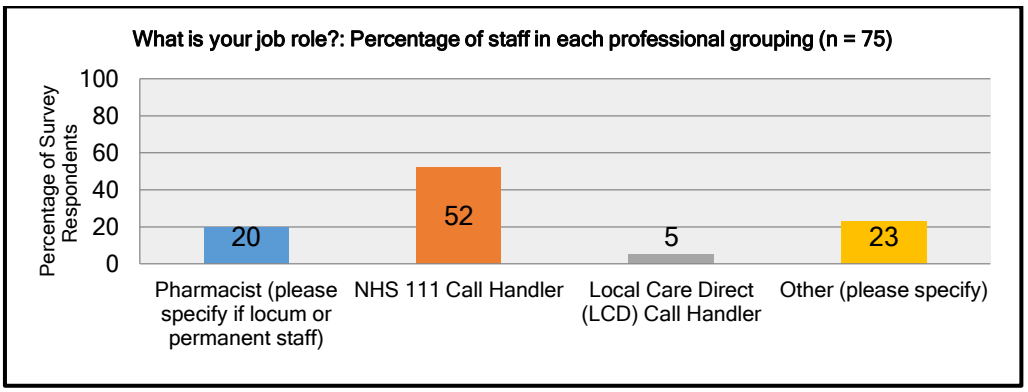
Findings from the online staff survey (n=75) indicated a high degree of belief in the PURM Service among the majority of staff who completed it, with positive ratings for perceived 'experience' of PURMs (80%), 'ease' of PURMs process (83%), 'benefits' of PURMs (65%), 'impact' on patient outcomes (60%); and potential for PURMs to 'reduce pressure' on out of hours services (84%). 85% of staff in the survey would 'recommend' extension of PURMs to other areas and 58% had 'no concerns' about PURMs. There was also some consensus among staff on what works well about the scheme. However, the staff survey

also highlighted areas of potential concern to staff and aspects which they felt could be improved. Further examination and cross comparison using the Framework method indicates inter-professional differences in reported challenges and suggested improvements. Further details of the survey sample and comparison of staff responses is provided below.

Online Survey - Sample

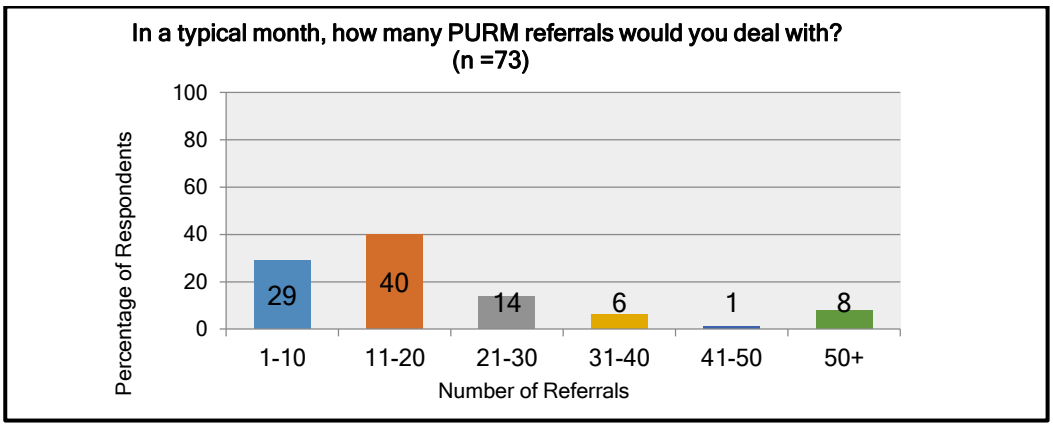
N= 75 staff took part in the online PURM survey, representing staff across the key organisations involved (Community Pharmacy, NHS 111 and LCD). Figure 6 shows the professional breakdown of staff: 20% were pharmacists (n = 15); 42% NHS 111 call handlers (n = 39); 5% were LCD call handlers (n = 4) and 23% (n = 17) identified as 'other' staff which includes clinicians and managers from both NHS 111 and LCD, pharmacy dispensers, technicians and locums.

Figure 6: Percentage of staff in each professional category - PURM staff online survey



There was some variation in staff experience of PURM referrals in a typical month (Figure 7) with 40% indicating they would deal with between 11-20 PURM referrals, 29% dealt with 1-10 referrals and 8% dealt with 50+. The 50+ category had representation from pharmacy, NHS 111 and LCD Call handlers.

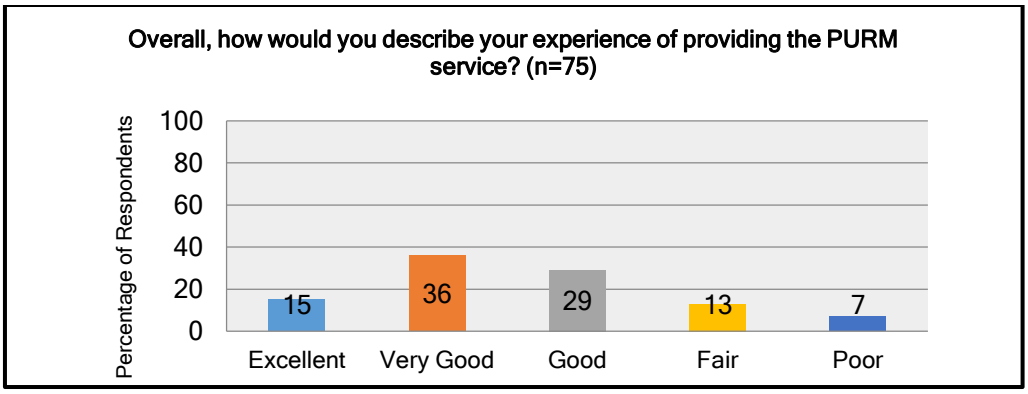
Figure 7: Percentage of staff reporting number of referrals in a typical month - PURM staff online survey



Online Survey - Staff Experience of PURMs

The vast majority of staff respondents (80%, n=60/72) rated positively their experience of providing the PURM service as either 'good', 'very good' or 'excellent' (Figure 8).

Figure 8: Overall Description of PURM Service – Online Staff PURM Survey



Five staff (7%) rated their experience of PURMs as 'poor'. Comparison of eight free text comments highlight differences by professional role. Three NHS 111 call handlers report lack of awareness/ adherence to PURM protocols by pharmacists and inappropriate referral back to NHS 111, although this may be improving over time:

> "Some small problems in pharmacies not contacting ooh gp service directly if they have a problem, and asking patient to call back [NHS 111], instances of this are becoming fewer as time goes on." (NHS 111 Call Handler).

Another NHS Call Handler noted the need to continuously update DoS to reflect pharmacy availability:

> "I have been refused this service before when they have said they were too busy to deal with the patient as had back log of work- they should be taken off DOS if this is the case." (NHS 111 Call Handler).

Two pharmacists indicate negative PURM experiences but do not provide further details:

> "Didn't find 111 staff helpful or polite" (PURM pharmacist)

> "Absolutely shocking service" (PURM pharmacist)

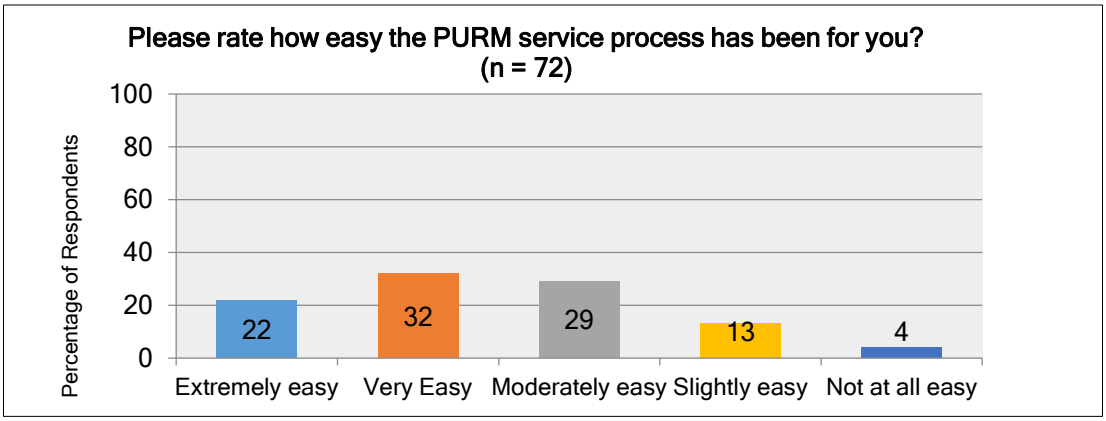
One pharmacy dispenser suggests NHS 111 give more information to patients regarding certain drugs which need to be dispensed. It is not clear if this relates to 'controlled' drugs as this was a source of tension for pharmacists elsewhere in the survey.

Online Survey - Staff View on 'Ease' of PURM Process

83% (n =60/72) of staff found the PURM process 'easy' (either 'Extremely', 'Very' and 'Moderately') as shown in Figure 9. An NHS 111 Clinician notes:

> "The service is very easy for patients to understand and really streamlines their experience with the service as a whole."

Figure 9: Overall Description of PURM Service process – Online Staff PURM Survey



Three respondents (4%) reported it to be 'not at all easy'. Nine free text comments suggest professional groups may experience different challenges in the PURMS process. For example, three NHS 111 Call handlers identify the problem of pharmacist lack of awareness or adherence to the PURM protocol:

> "Although, had several calls with patients ringing back saying the pharmacist does not do it or has been problems accessing patient records or that the pharmacy needs to speak to gp" (NHS 111 Call Handler)

> "Whilst the actual referral process is easy - the amount of calls back into the service due to pharmacists not referring back to LCD and telling patients to ring 111 causes frustration for the patient." (NHS 111 Call Handler)

> "Had many cases where callers have called and told that the pharmacy have told them to call for 111 to fax over a prescription which creates confusion." (NHS 111 Call Handler)

The issue of perceived inappropriate PURM referral was noted by an LCD respondent in relation to controlled drugs and impact on patient experience:

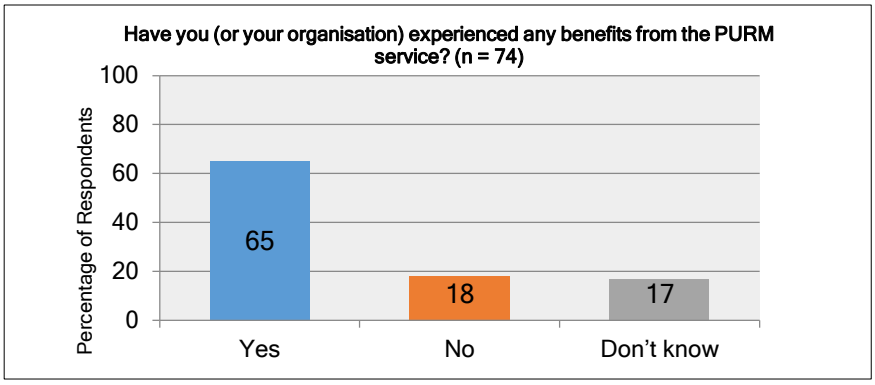
> "Challenging when controlled drugs and Z drug requests sent to PURM inappropriately from 111 - have to manage patient experience and time delays within OOH" (LCD)

An NHS 111 respondent notes the issue of controlled drugs from a different perspective which highlights the complexity involved in these type of prescriptions:

> "When dealing with palliative care patients, a lot of them are using controlled medications and this can be harder to organise a repeat for." (NHS 111)

Online Survey - Staff Perceived benefits of PURMs/ Degree of belief
65% of staff (n=48) who took part in the online survey report experiencing benefits from the PURM service (either individually or as an organisation) see Figure 10.

Figure 10: Perceived benefits from PURMs - PURM staff online survey



Seven key benefits of PURMS across organisations were identified by respondents in 44 free text comments; inter-professional consensus and differences are summarised in Table 3 below.

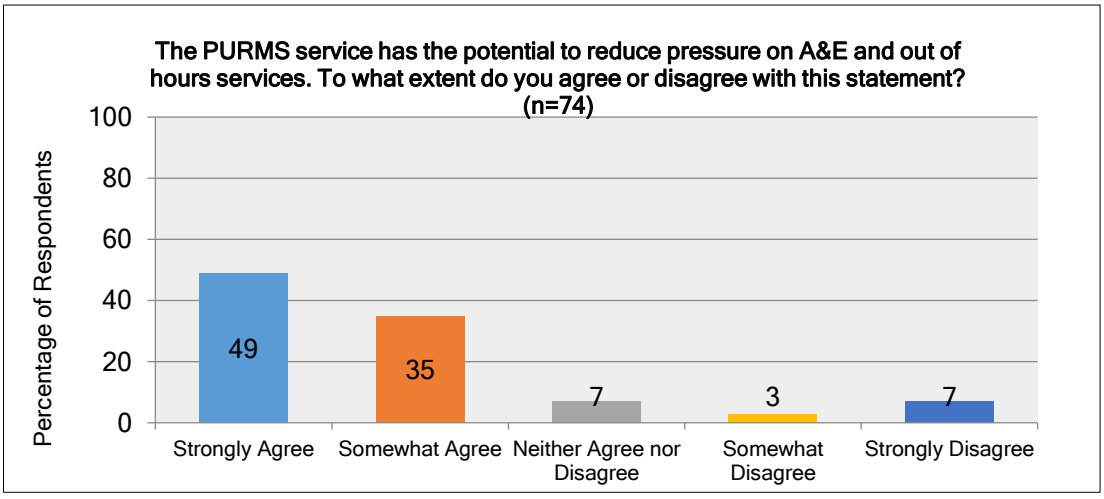
Table 3: Perceived 'Benefits' of PURMs – PURM online staff surveys.

'Benefits' Theme	Pharmacists	NHS 111 Call Handlers	LCD Call Handlers	Others	Totals
1. Quicker	4	3	1	2	10
2. Patient Experience	3	3	1	3	10
3. Easier	2	3	0	2	7
4. Relieving OOH Pressure	0	2	2	2	6
5. Freeing up GP Time	0	2	2	1	5
6. Staff Experience	0	2	0	1	3
7. Positive for pharmacy	3	0	0	0	3

Online Survey - Staff Perceived impact of PURMs

The vast majority of staff who took part (84% n= 62) agreed ('Strongly' or 'Somewhat') that the PURMs service also has the potential to reduce pressure on A&E and OOH services (Figure 11).

Figure 11: Perceived potential of PURMs to reduce pressure on A&E and OOH - PURM staff online survey



Online Survey - Staff - Perceived aspects of PURMS which work well

Staff who answered the question (n = 60) identified six aspects of PURMs that worked well in their free text comments. Table 4 lists these themes in order of reported frequency and by professional group to highlight inter-professional differences.

Table 4: What works well? – PURM online staff survey

'Works Well' Theme	Pharmacists	NHS 111 Call Handlers	LCD Call Handlers	Others	Totals
1. Quick process	4	8	2	4	18
2. Easy process	4	9	0	5	18
3. Better patient experience	1	10	1	5	16
4. Relieving OOH pressure/ Freeing up GP time	0	7	2	7	16
5. Specific Aspect of Process	3	5	0	1	9
6. Better Staff Experience	2	3	0	2	6

Illustrative quotations from each of the six key themes are provided below:

1. Worked Well - Quick Process

> "Patients are able to retrieve the medication they are using in a timely manner." (Pharmacist)
>
> "The referral process is easy and quick." (NHS 111 Call Handler)
>
> "The way patients get their medication given quicker than ringing and waiting to speak to GP." (LCD Call Handler)
>
> "Patient care is provided faster and results in less call-backs for patients chasing prescriptions." (NHS 111 Clinician/Manager)
>
> "Patients get dealt with quicker and all in one place. This also reduces demand on the Out of hours service." (LCD Clinician/ Manager)

2. Worked Well – Easier Process

> "Makes it easier to provide emergency supply to patients who don't usually pay for their Rxs." (Pharmacist)
>
> "Easy to refer to out of hours GP if necessary." (Pharmacist)
>
> "Simple to refer to, and easy for patients." (NHS 111 Call Handler)
>
> "Being able to refer the patient direct to the pharmacist who can help them immediately rather than tell them they have to wait for a call back from a GP or other HCP." (NHS 111 Call Handler)

3. Worked Well - Better Patient Experience

> "The patient is able to go and sort the prescription themselves rather than wait for a call-back. This should reduce call-backs and frustrated patients." (Pharmacist)
>
> "Helping customers out." (Pharmacist)
>
> "Communication between patients and staff." (Dispenser)
>
> "A lot better for the patient and has been within easy travelling for the patient." (NHS 111)
>
> "Patients know within the hour if their medication is available." (NHS 111)
>
> "Majority of the time they are able to deal with cases, reduces call backs from patients." (NHS 111)
>
> "It's a good way to help patients." (LCD Call handler)

4. Worked Well - Relieving OOH pressure/ Freeing up GP time

> "Relieved a significant workload from the OOH clinicians for routine repeat prescription requests." (LCD Clinician/Manager)
>
> The ease on demand on the OOH GPs means that fewer patients call back chasing up their GP call backs. You just click a button and it's done, great stuff! (LCD Clinician/Manager)
>
> The PURM service takes a lot of pressure off the out of ours doctors by filtering out prescription (LCD Clinician) requests that can be dealt with directly by the pharmacies, meaning that the Drs and other non-clinical staff are able to prioritise on more urgent matters. The PURM service has greatly improved patient experience ensuring that the majority of prescriptions are dealt with quicker. (LCD Call Handler)
>
> being able to refer patients to a more appropriate service, easing the pressure on gps, and A and E and 111 clinicians (NHS 111 Call Handler)
>
> "Being able to send a patient directly to pharmacists rather than taking up the time of ooh gp services when there is no need." (Pharmacist)

5. Worked Well - Better Staff Experience

> Patients get their medication in timely manner - gives job satisfaction also pharmacy get paid for every part/process we do for this service (Pharmacist)
>
> The patient is able to go and sort the prescription themselves rather than wait for a call-back. This should reduce call-backs and frustrated patients (Pharmacist)

6. Worked Well - Specific aspects of process

> "We have a process in place to ensure all staff members (and Locums) know what to do with PURM referrals." (Pharmacist)

When items are in stock and patient able to collect them (Pharmacist)

Team leader advice and DoS instructions." (NHS 111 Call Handler)

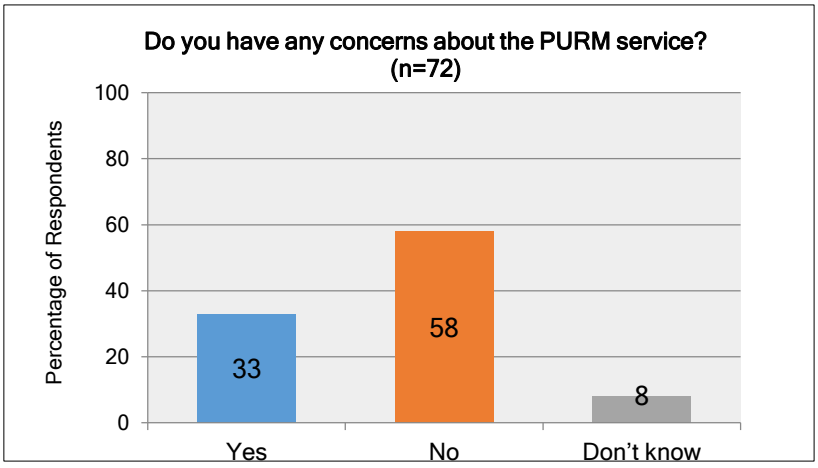
"Great when the people who have signed up for PURM know what they are doing." (NHS 111 Call Handler)

"Wide range of Pharmacies presenting on DoS." (NHS 111 Call handler)

Online Survey - Staff concerns about PURMS

58% (n = 42) of staff who took part in the online survey reported 'no concerns' with the PURM service (Figure 12). However, 33% (n = 24) did report concerns. Inter-professional differences emerged in free text responses with: pharmacists concerned about inappropriate referrals and NHS 111 raising expectation of patients that they will be supplied medication; and NHS 111 staff identifying lack of awareness among some pharmacists (particularly locums) about PURM service and protocols, leading to delays. Two participants noted patients may 'abuse' the service.

Figure 12: Staff concerns about the PURM service - PURM staff online survey



Online Survey - Staff suggested Improvements to PURMs

Staff in the online survey identified potential improvements to the PURM service in seven key areas listed in order of total frequency in Table 4. Illustrative quotations are provided below and highlight inter-professional differences.

Table 5: Suggested Improvements to PURM Service – PURM online staff survey

'Improvements' Theme	Pharmacists	NHS 111 Call Handlers	LCD Call Handlers	Others	Totals
1. Pharmacist awareness/ non-adherence to PURM protocol	0	17	0	2	19
2. Call Handler Training (medications unable to supply and patient expectations)	9	3	2	1	15
3. Inappropriate referrals. e.g. Controlled Drugs	9	1	1	2	13
4. More Pharmacies/ Roll out	0	7	0	1	8
5. Patient info/ expectations	3	3	0	1	7
6. Refer Back Process (Out of Stock or LCD)	3	0	0	2	5

7. Able to prescribe wider range of medication	0	0	2	1	3

Improvement 1: Pharmacist Awareness/ Non-adherence to PURMs protocol
As outlined in Table 5 above, professional differences were observed with NHS 111 staff identifying the common challenge of some pharmacists lacking awareness and understanding of the PURM service, and/or adhering correctly to the PURM protocol:

> "Better understanding on the pharmacy side of things regarding the process the patient should go through to get their medication. I think the confusion only happens when services get added to the scheme? So maybe the issue lies with the training the pharmacy offers to the staff." (NHS 111)

> "Should only be on DoS id the pharmacy is aware they are in the scheme. I have had to ring pharmacy as they have refused the patient and referred them back to us." (NHS 111)

> "There are some PURM services where the staff are unsure how to process these actions and there are Purm services on dos which are not set up to do PURM." (NHS 111)

> "Not all chemists fully aware of procedure." (NHS 111)

> "There has been one or two occasions where the staff at the pharmacy were not aware of this service, which meant the patient rang 111 back and had to go through the whole process again." (NHS 111)

> "If the pharmacist was fully aware of the process they would not refer the patient back to us if there is a problem." (NHS 111)

Improvement 2: Call Handler Training
Inter-professional differences again emerged in relation to proposed call handler training with NHS 111 staff emphasising improved information to give to the patient and Pharmacists focusing on improved training for NHS 111 staff around what pharmacists can and can't prescribe:

> "More information for call handlers referring patients to the services to help advise and reassure patients with the care being provided." (NHS 111 Call Handler)

> "More advice for us to give the caller, i.e., guidelines to follow, what requirements are needed to be able to get the medication." (NHS 111 Call Handler)

> "Training for local care staff not to send PURMS for controlled drugs. (Pharmacist)

> "Call handlers need to be made aware of the drugs that can be given on PURM service i.e. controlled drugs." (Pharmacist)

> "Have more experienced people on the phone who know what can be given on the service and what cannot. Give them access to summary care records so they know the exact medications the patient takes." (Pharmacist)

> "NHS 111 staff may need some more training regarding what we can supply and what we can't. Patients seem to think that pharmacy get Rx, so they must get supply." (Pharmacist)

Improvement 3: Reduce Inappropriate/ Inadequate Referrals e.g. Controlled Drugs
Staff responses about 'inappropriate' PURM referral overlap with the theme above around training. Again professional differences emerged with pharmacists reporting the need to reduce the number of perceived 'inappropriate' referrals:

> "More accurate referrals e.g. no controlled drug ones or non-west Yorkshire that take time to deal with and refer back when she should never had received them in the first place." (Pharmacist)

> "A lot of inappropriate request still get sent to pharmacies, i.e. controlled drugs, also a lot of incomplete info, such as requests for repeats but no dosage/strength indicated, so chemists cannot supply." (Pharmacist)

> "Patients are referred to us through PURM for medications we cannot supply, e.g. controlled drugs, I understand the call handlers at 111 are not necessarily medically trained however the patient gets confused and cross as we refer them to 111, who then refer back to us and we again inform the patient we cannot supply." (Pharmacist)

> "111 could question patients more to establish what they need instead of sending PURMs that can't be done." (Pharmacist)

> "Stop referring Control Drugs." (Pharmacist)

> "111 team made aware of what can be done as emergency supply - patients get annoyed with us going back & forth." (Pharmacist)

> "The person writing down the medication that the patient is wanting should be a medical professional. often the medication names are spelt incorrectly, causing confusion at the dispensing stage." (Pharmacist)

Improvement 4: More pharmacies available for PURMs
Some NHS 111 staff also recommend an increase in the number of pharmacies taking part in the PURM Service:

> "In larger cities have more purm services available." (NHS 111 Call Handler)

> "All pharmacies being involved in the service and having to opt out rather than opt in." (NHS 111 Call Handler)

Improvement 5: Patient information/ managing expectations
Staff responses may also indicate some inter-professional differences in their focus on patient information and managing their expectations, with pharmacists emphasising the need for NHS 111 staff to make patients aware that they may not be able to supply medication as this can cause frustration and conflict at the pharmacy:

> "It will help if patients are given correct information about what PURM is (e.g. by NHS 111). Some patients think NHS 111 has issued a prescription for them to collect. if supply is not possible and the case is referred to LCD, there is confusion on the patient's part." (Pharmacist)

> "NHS 111 staff may need some more training regarding what we can supply and what we can't. Patients seem to think that pharmacy get Rx, so they must get supply." (Pharmacist)

> "Patients needs to know pharmacist can refer to OOH GP service if no medication available." (Pharmacist)

> More information for patients regarding the PURM service." (Pharmacist)

Improvement 6: Refer back process (if out of stock or LCD)
The potential to improve and speed up the 'refer-back' process to LCD was also noted by some pharmacists:

> "A quicker response when forwarding queries to LCD out of hours. sometimes we were on hold for 25-30 minutes." (Pharmacist)

> "Allow community pharmacies to refer back to the PURM service if they are unable to fulfil the medication request rather than pass onto OOH GP to source." (Pharmacist)

Improvement 7: Able to prescribe wider range of medication
The potential to expand the range of medication that can be prescribed within the PURM service was also suggested by some LCD respondents, including controlled drugs in certain instances:

> "Allow Controlled Drugs PURM requests for items clearly on repeat." (LCD)

> "Enable PURM requests to include low risk medications that are visible on the summary care record but may not yet have made it onto a repeat prescription list. (LCD)

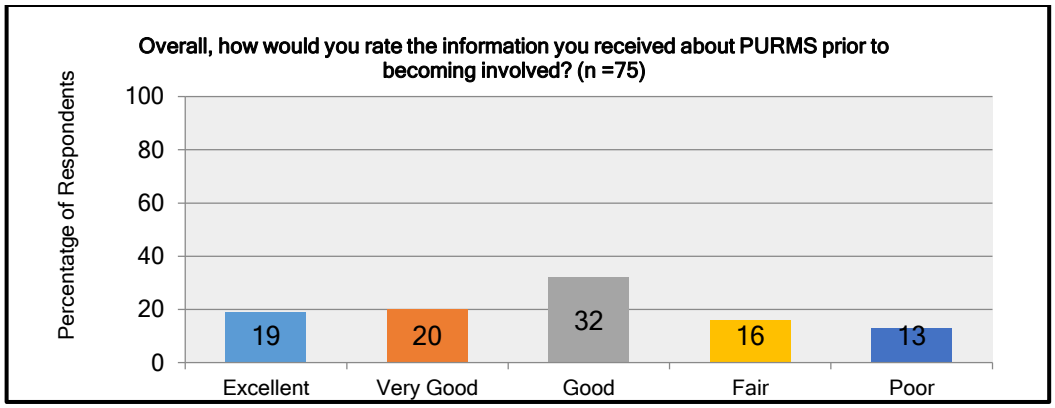
> "More on Drugs List able to be given by Pharmacists - within reason." (LCD)

Online Survey - Staff View on Quality of pre-involvement PURMs information
71% (n = 53) reported positively on quality of pre-PURM information (either 'extremely', 'very' and 'good) see Figure 13. Free text comments are, however, mixed, with two NHS 111 respondents reporting 'clear information well in advance' and PURMs being mentioned in their 'huddle'. In contrast, a pharmacist notes "poor is not the word" and another in relation to NHS 111 referral information (as opposed to implementation information) states:

> "The information we get from 111 is dangerously limited, the lack of knowledge very visible."

This issue of pharmacist perception of training and knowledge of NHS 111 Call Handlers is picked up in their reported concerns and suggested improvements discussed above.

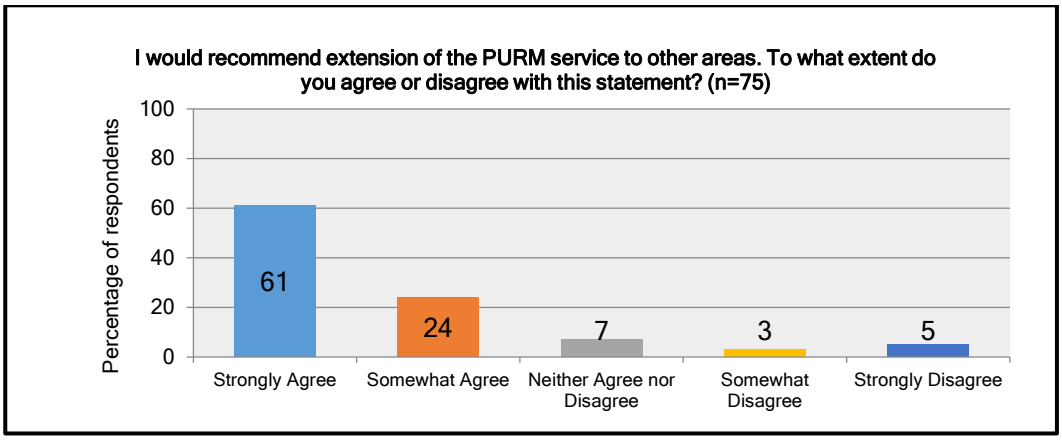
Figure 13: Rating of Information received pre-PURM involvement - PURM staff online survey



Online Survey - Staff View on Extending PURMs

85% (n =64) of staff in the online survey Agreed (either 'strongly' or 'somewhat') that they would recommend extension of PURMs to other areas (Figure 14).

Figure 14: Recommended Extension of PURMs - PURM online survey



Several free text comments about potential extension of the PURMs scheme indicate staff's positive views and experience of it:

> "The volume of calls dealt with by the purm scheme has significantly reduced the pressure on the OOH GP service and 111 in terms of speed of processing cases, patient satisfaction and call backs to the 111 service waiting for a prescription to be processed by the OOH which are seen as a low priority." (NHS 111)

> "This has been very useful and could help reduce pressure on OOH GPs" (NHS 111 Call handler)

> "This service is particularly useful on weekends when patients have "forgotten" to order their meds" (NHS 111 call handler)

However, some of the comments highlight the need to resolve current issues, prior to extension as the following pharmacists note:

"Make sure that all the known issues are ratified then the service would benefit other areas." (Pharmacist)

"NHS staff need to advise patients that it will be up to the pharmacist to decide that the supply will be appropriate or not. Also, patients do need to provide pharmacy an evi8dence that they take meds on regular basis from Doctors." (Pharmacist)

"Need additional filters at 111 so system not abused or used to access inappropriate meds." (LCD)

"Only issue is to reduce the need to source the stock our self. Too time constraining for busy pharmacy." (Pharmacist)

PURM Patient Survey

Obtaining independent patient feedback on the PURM service was challenging due to common information governance constraints and the logistics of recruiting patients across a wide geographical area, who are using out of hours services at times which are difficult to predict. A pragmatic approach of surveying patients across the 41 pharmacies was, therefore, adopted based on advice from stakeholders. Methodological limitations and potential sample bias are acknowledged. Of the small number of patients who returned the PURMs survey (n = 7):

- all 7 reported to be first time users and 2 were collecting the repeat prescription on behalf of others,
- 100 % of respondents rated PURMs either excellent (n=4) or very good (n=3)
- 5 out of 7 respondents commented favorably about the speed of receiving their repeat prescription. Other comments included 'very helpful' and 'understanding my requirements'
- Reported reasons for needing to access the PURM service: Easter weekend (n=2)/forgot/GP surgery closed (n=2)/no-one to collect from GP surgery/IT processing error

Further follow-up of patients who do not attend the pharmacy, or do not have medications supplied and the impact upon their experience and subsequent health outcomes and healthcare utilisation is warranted.

Although potentially limited, in terms of response bias and missing data, internal counterfactual data from patients when asked by pharmacists 'what they would have done if they had not received PURM service' indicates benefits to the wider UEC system which supports the PURM theory of change. CPWY data from 10,099 patients since start of service in 2014 suggests that 39% patients would have contacted OOH (N= 3937), 11% patients would have visited an A&E or urgent care centre (N = 1144); 4% patients would have contacted a GP (N = 378). Notably, 17% patients would have gone without medication (N = 1697) and 27% patient did not answer question N = 2771.

Internal CPWY data (collected by PURM pharmacists) also indicates that the majority of patients agreed the advice they received from the pharmacist would help them avoid running out (68%, n = 6826), would help them remember in the future (66%, n = 6710) and that they they would use their local pharmacy in future (67%, n = 6808). Notably, almost one third (31%) of patients did not answer any of the three questions. Response bias is also a factor as patients may feel pressure to respond in certain way when faced with the pharmacist potentially providing their medication.

PURM Qualitative Interviews - Individual and Focus Group

Interviews - Degree of belief in PURMs and perceived impact

Qualitative interview and focus group data suggests a high degree of belief in the PURMs service, across organisations and professions, and in the extent to which it has achieved its intended aims. To put it in context, the following LCD participant describes the time consuming nature of the previous process and detrimental impact on their service and patient experience:

> "Well we wanted, the actual process itself is very, very long winded. The patient calls in and the pathways that, it's when their next tablet or medicine's due, and it comes via ITK into LCD and this is where it gets complicated. It goes into a queue and that queue, a doctor picks up the call and decides whether you know, it's acceptable, reasonable, clinically appropriate to issue the medicines and then it goes over to an administrator. The administrator rings the patient back and asks them which is the nearest pharmacy. They have to check that that pharmacy is open. Then they ring the patient back and say yes, that pharmacy is open, now I'm going to ring them to see if they've got your medicines in stock and then they, if they haven't got it in stock, then they have to ring the patient back again and ask them where's the next nearest and then that's the process, and then they fax the prescription to the pharmacist. So it's a long, long winded process". (LCD)

The reported positive impact of PURMs in qualitative work relates primarily to expected key outcomes of reducing (1) LCD OOH demand, (2) improved efficiency and reduction of time spent on repeat prescriptions and a (3) more streamlined, quicker process for patients, improving their experience and (4) perhaps that of NHS 111 staff experience as shown in the following extracts:

Perceived Impact 1 - Reduced demand/ pressure on LCD:

The perceived impact of PURMs on reducing pressure on an already stretched LCD out of hours service, was shared by all project team members:

> "I think it is has done what it set out to do. It has managed to reduce the direct demand of patients wanting repeat medicines from LCD and that has made a significant impact on their workload. So although LCD small percentage of requests in numbers but they were time-consuming requests to deal with that didn't need that clinician input necessarily...allowed them to manage their clinical queue better" (CPWY)

> "Yeah. It's working really well. It's reduced by about 2% the calls that come to us (LCD) on a Saturday morning which was the time we were looking for efficiencies and then we've got a process where the pharmacy rings us, has access to a GP if they clinically need to see the patient or ask a question, but what it's enabled us to do is free up that GP for the pharmacy line." (LCD)

> "I think the bits that have worked well is they've taken pressure off the GP out of hours service (LCD) because let's be honest, the skill set for a pharmacist is very different and pharmacists can do medication reviews as well and might identify something that I wouldn't expect a GP in out of hours to notify. So you know, I think we're dispensing around 30% of medications through the PURMS Scheme at least in some areas. It's certainly taken a lot of pressure off in West Yorkshire" (NHS 111)

Perceived Impact 2 - LCD efficiency and time saving:
The perceived impact of the PURMs service on reducing pressure on LCD and the knock-on efficiency and time saving for GPs and administration staff were noted by an LCD participant:

> Our prescriptions was only, I think, 3% of the whole (LCD) activity but that 3%, as I've just explained is a very, very cumbersome process and since we've been switched off, I think we get about 1% but we've really tangibly noticed an efficiency in the call centre. (LCD)

> "So a patient gets referred direct to 111 which is a great principle, first call, first time, gets what they want and then they either go to the chemist and the pharmacist is a bit, oh I'm not so sure about this, you know, not so sure you should be having this or really I think if your condition's deteriorating I think you need to see a doctor. So we've (LCD) got more time to take those calls quicker." (LCD)

> "Oh the impact, I think I've said this already, it's been the single biggest pilot, proposal, initiative that's had an impact on our activity (LCD)."

Perceived Impact 3 - Streamlined, quicker process for patients:
Participants also note that patients now experience a timelier and 'streamlined' process, which compares favourably to the previous process where patients may have 'bounced' around the system:

> "Patient experience...In that they make the first call and they're not having to then go on a queue, wait in LCD till a doctor rings them back. Within 30 minutes I think the specification states that the pharmacist has to either ring the patient or the patient rings the pharmacist. I can't just remember which way round that is..... They were never prioritised (in LCD). They were never prioritised. I mean when I say that, I mean we'd have a queue manager looking to make sure it wasn't insulin or palliative patients, but we would do all that, but then your other patients were more of a priority. So sometimes they could ring in on a Saturday and not get dealt with til Sunday." (LCD)

> "Looking at the system that was in place previously, it seemed that patients were being bounced around the system. They had to go to 111, they then went to LCD, LCD then forwarded them, or needed the items prescribing, wrote a prescription and then had to find and contact a pharmacy to dispense the prescription, so ultimately the patient ended up going to the pharmacy with a prescription so that seemed to involve unnecessarily LCD which are an expensive service given it's a clinical service. So the aim of PURMS was not to involve LCD but to refer the patient directly from 111 to the community pharmacy and then if needed the pharmacy could refer to LCD but obviously that wasn't every single patient" (CPWY)

> "Patients who contact 111 now, it is more streamlined for them, they get straight on the phone to the pharmacy after 111 who can then for most patients deal with their request and give them the advice so pharmacists being the experts in medicines, they are able to discuss that with them. So I think it has been more timely for patients, because there was a delay in 111 referring on to LCD and LCD being able to pick up the PURM request, and there is a delay in LCD processing the request and sending it to the pharmacy whereas now, the patient is given the pharmacist

> number...they can phone straight away, so pathway is quicker as well as having less steps in it" (CPWY)

Perceived Impact 4 - Better staff experience

Interview participants also note the potential benefits of PURMs on staff experience and satisfaction both in providing what is perceived to be a better experience and the response they get from patients who are helped and less likely to become frustrated and ring back repeatedly to chase up their prescription:

> "It's made it easier for the staff and I think most patients can usually get a better experience."

Interviews - PURM Challenges

Reported challenges identified by the PURM project team and frontline staff mirror that of online survey respondents in relation to community pharmacist awareness of PURM scheme (particularly among locums) and adherence to the set protocol, namely contacting OOH LCD direct if there is an issue, for example controlled drugs and not referring back to NHS 111. The additional issues of 'frequent callers' and difficulties in defining what is meant by 'urgent' are also raised by interviewees.

Challenge 1: Pharmacist Awareness/ Adherence to PURM protocol/ Controlled Drugs

The issue of fidelity, i.e. to what extent the intervention took place as planned (both in terms of active ingredients delivered and following prescribed protocols) is a crucial part of any evaluation. Having sufficient confidence in fidelity is important in validating (or not) the proposed theory of change by which benefits are realised. Quantitative data available to the evaluation team at present does not enable a comprehensive assessment of fidelity. However, online survey respondents and qualitative interviews highlight the potential issue of pharmacist awareness and adherence to PURM protocols. It is not clear the frequency with which this takes place or the extent to which it has improved over time. The following extracts illustrate the point:

> "The challenge is that obviously a lot of the pharmacists who are covering at the weekend are maybe locums. They've not read the guidance; they don't actually know what their role is supposed to be or what that pharmacist is to prescribe to. (NHS 111)

> Focus Group R1: When PURMS was going live... a lot of the issues that we were having with it. Which we still have!! (laughs)...Basically what we were having with the West Yorkshire Patients, a lot of the pharmacists were not aware of it or didn't know what it was themselves or understand it. All they were given were a piece of information and that were that. The main issue we were having with WY was they were getting locum pharmacists who wasn't aware of the service...., so we would send the referral through to them and give the telephone number to the patient. They were ringing the pharmacist and they were "oh no you need a prescription for that, you need to ring 111 back. But under the agreement, if they can't deal with it, they have to ring the OOH themselves.

> R2: I was going to say, most of the call backs I get regarding PURMs are that the pharmacists don't realise they are supposed to ring LCD if they can't do it. So nearly every call back I've had has ended up with that issue.

R3: Yeah me too (all agree)

R1: So with the issue of controlled drugs, they are sending them back to us and we are going no we can't refer them through to WY now so you have to do it. (NHS 111 Call Handlers)

This inappropriate 'refer-back' to NHS 111 by pharmacists, in relation to controlled drugs is at odds with agreed PURM protocols (as pharmacists should contact LCD), but was noted by multiple NHS 111 participants, and acknowledged by the project team as the quotations below illustrate. However, without accurate data on number and reason for refer backs to NHS 111, it is not clear the frequency with which this occurs and its relative impact on the service and experience:

"But my understanding is if it's a controlled drug or something like methadone that they (pharmacist) cannot deal with, they can contact the out of hours service directly, to have the contact with them, and then the GPs would manage it, so it doesn't then come back to us. There are some instances where it has come back to us," (NHS 111)

"This is one of the ongoing messages we've had to feedback to pharmacies...we've made it really clear that all patients are referred to pharmacy for assessment. And part of that assessment they may find very quickly that the patient is asking for a drug they can't supply. That is correct that it is still referred to them. The pharmacist then needs to decide if it is actually clinically necessary and they refer on to LCD" (CPWY)

The impact on patient experience of pharmacists not adhering to the PURM protocols and referring back to NHS 111 is noted by NHS 111 respondents as illustrated below:

"The problem we've encountered is say somebody has four medications that they need, they ring the pharmacist, the referral goes electronically from the call handler to the PURMS Scheme, and one of those is a controlled drug and the pharmacist can't dispense. The pharmacist is supposed to go direct to GP out of hours and organise that. What we find is we get a lot of pharmacists coming back to us and you're just putting another step in the process and the worst scenario is when they tell the patient to ring us back. So the patient has a really bad experience and I think part of the challenge is that obviously a lot of the pharmacists who are covering at the weekend are maybe locums. They've not read the guidance; they don't actually know what their role is supposed to be or what that pharmacist is to prescribe to." (NHS 111)

A crucial aspect of the PURM process was the switch off and removal of LCD from the DoS in August 2016. As the quantitative data shows, prior 'tinkering' without the removal of LCD from the DoS did not have the same effect or process change. However, one participant notes that it is still possible to make direct referrals from NHS 111 to LCD[5], where deemed to be clinically appropriate, although the evaluation team do not currently have data on the frequency with which this happens. NHS 111 have confirmed that data is not currently easily available because it has to be manually extracted:

[5] This direct referral route from NHS 111 to LCD OOH was confirmed by NHS 111 Project Team member. However, it is not possible to easily access this data as it would require NHS 111 to process 'manually'.

> "So as the clinician then, although it's probably going against the policy I will look and go, "Mm, you called us last weekend for the same reason. You called us the weekend before, or you've called us on an evening when the GPs are closed". And it's almost like they're playing the system because they'll know it goes through to the pharmacy and the pharmacy will contact the doctors. Or the doctors will say, "No we will not prescribe it" and they'll then call us again...So in order to do an effective patient journey, I will sometimes send it directly through to the out of hours GP, to say, "This person has called us this amount of times, for the same reason and they appear to be not following the advice that they've given". Because I know that if the pharmacy was to ring them back, they're only going to ring us and say, the pharmacist can't help me, so… it's on a case by case basis." (NHS 111)

Challenge 2: Frequent Callers

The challenge of frequent callers was also noted by several NHS 111 participants as illustrated below, and was also an issue reported in an internal NHS 111 audit:

> "I think we seem to have a slight challenge with some of our frequent callers. I'm not sure that… I don't know if it is because they need a repeat prescription, or if it's an opportunity to talk but I think in the evaluation we mention that… And when I say frequent callers, I don't necessarily mean a frequent caller just because they frequently call for other reasons, because we have a group of those patients. I think I mean we have some people who call regularly and use us as their repeat prescription method. (Audit data showing sometimes up to 49 calls in a year) (NHS 111)

> "There are some instances where it has come back to us, or there's some instance where clinically I've made a decision based on that patient's previous calls to our service, because we do get repeat callers, but not frequent callers, who will call us, saying they're run out of CD2 medications, or they've lost it or they've had it stolen, and when you look at the previous calls, it's the same kind of thing… (NHS 111)

Challenge 3: Definition of urgent/ patient expectations:

Although the perceived success of the PURM Service was noted by participants, some did question the 'urgent' nature of some of the patient requests, the inclusion of over the counter medication and creating potentially unrealistic expectations for patients and shifting focus to NHS 111:

> "I'm not sure, we're in urgent care for this, I'm not quite sure that that's what we were set up to do ... and I think (historical) has created a culture for the community in West Yorkshire that you can get your prescription at any time so why would you bother being restricted by when your GP is open?" (NHS 111)

> "Yeah, it's achieved what it set out to do which was to help alleviate pressures off GP out of hours, however, I think there' s unintended consequences of that which is 'are we then shifting repeat prescription requests into out of hours that are not necessarily urgent?'...Yeah into 111 because we're not re-educating people to go direct to the pharmacy. We're just re-educating them to phone 111 and we don't even say, you know, again on the front end message, I'm not even sure and it might be worth looking at this, the evaluation, what NHS Choices advise if you run out of your prescription, if it tells you to go to your GP or to your regular pharmacist before contacting us." (NHS 111)

One respondent also noted that there are still some issues to resolve for example, high rates of LCD prescriptions dispensed but not collected by patients and the ongoing issue of faxing prescriptions which although reduced but still presents a challenge.

Interviews - PURM Lessons Learned

Lessons learned noted by the project team include: dedicated funding which enabled effective project management; data and experience-led, small-scale testing and iterative development of intervention and implementation which included a 'soft launch'; and developing good communication and joint working relationships between organisations to work at a system level:

> "Sitting down with the organisational leads in those organisations and working through it together and how valuable that was to get something that worked in the end and fits with everyone's priorities and organsations. We were doing something different and novel and you can do something different if, again you work together as a system." (CPWY)

> "a lesson that I've learned is that we need to have everybody on-board with this scheme to make it work. So by speaking to Community Pharmacy West Yorkshire, getting the call handlers and clinicians involved, when it works it works brilliantly. It's a fantastic scheme, it's a great scheme for patients to access their medication quickly and effectively and efficiently. I think the other… Those are some of the lessons that we've learnt." (NHS 111)

> "I think for myself, I think that we've got to have one system throughout Yorkshire and the Humber. In West Yorkshire we switched off the DOS and GP out of hours. I think the commissioners have got to make the decision to do it for all of them because it creates a two tier system and confusion." (NHS 111)

The importance of responding to iterative and incremental learning and constructive feedback for all involved across the whole system is also identified:

> I think what we learned as well was how important it was for the feedback. So I think ... you can commission something, but if you leave it on its own and don't give any feedback I don't think it works. I think what we showed to you was by giving feedback to community pharmacies, asking them what their issues were, feeding back issues that were maybe they had created in other parts of the system so that the system were learning as they went along so pharmacies kind of you know was both on individuals if we had a particular case which hadn't gone well, because maybe the pharmacy hadn't appreciated why that person was referred to them, it was about explaining whether that was correct for that or feedback to the call handler, you know the patient was given the expectation they were going to get a supply of medicines and that just couldn't happen. So about managing the message and the conversation. So feedback and using that as a constructive kind of feedback on learning rather than you know this is really not good and you can't do it like this and I think that was a really positive out of this as well so that we could learn and we developed and we amended things as we went along. (Project Team)

> "I think we've learnt that we need to make sure that we communicate. Things do change, pharmacists do fall sick, they have to get locums in, so the quicker we find that out, the quicker we can get them taken off DOS. That's been one of the things.

> So if a pharmacist is not able, they can't do it, the quicker we can get them taken off the system and they can get referred to another one, otherwise we keep referring and can be so much on a weekend. Before you know it you've referred 10 for a pharmacy not commissioning, so you know, that's something that we've learnt that we need to make sure that the call handlers are aware that if a pharmacist is… You get a call back, they feed it to team and we get it taken off DOS and then we can carry on with functioning." (NHS 111)

In terms of the intervention itself, team learning had included: the need to have sufficient geographical coverage of PURM pharmacies, especially on bank holidays:

> "Having enough spread and cover on bank holidays and enough volume to make it business as usual" (CPWY)

The service has also developed to only offer seven-days' supply of medication (rather than a month's) to discourage patients from circumventing the preferred in-hours prescription process. It also requires pharmacist access to secure technology such as nhs.net email to receive secure referrals, and PharmOutcomes to record consultations records and simplify payment claims. The potential absence of these 'active ingredients' in the Department of Health national scale up pilot NUMSAS was a point of concern for some participants.

The additional professional skills and knowledge that pharmacists bring to medication was also noted by several participants and the potential benefits to the system of an enhanced service and greater use of an underutilised profession.

Section 4: Learning and Recommendations

Key Findings

Findings from this local developmental evaluation of PURMs provides evidence of an impactful process change post LCD switch off (August 2016) with decreased number of calls to LCD for repeat prescriptions (LCD data) and increased number of PURM records per month (CPWY data). This is combined with a high degree of belief in PURMs among most frontline staff and all project team as well as positive patient feedback (from the limited number who took part). Furthermore, this is set within a context of high demand and significant pressure on WYUEC services and LCD in particular, and recognition of the need to do things differently to address issues of demand, quality, efficiency, promotion of self-care, primary care limitations and need for system wide approach (WYUEC Vanguard Value Proposition - Jan, 2016).

Assessing fidelity of an intervention is a crucial part in testing and confirming the hypothesised theory of change and being confident that the key components or 'active ingredients' which bring about change are in place in the way they were planned. Current data does not allow a comprehensive assessment of fidelity in terms of all PURM requests to NHS 111 being referred, as per protocol, to community pharmacists instead of LCD. However, increases in number of PURM records (CPWY) and reduction in LCD calls for repeat prescriptions (LCD) suggests a level of fidelity to the protocol. It was not possible, within current data sources, to determine the extent to which PURM pharmacists adhered to all the components of the protocol.

The local evaluation findings do provide some support to the service redesign 'theory of change' and the important role of the LCD switch off on the NHS 111 DoS as an 'active ingredient' to change. Prior 'tinkering' with the process before this date may have seen as improvements to the process but did not produce the necessary 'channel shift' seen by removal of LCD from the DoS. However, the increased proportion of 'no supply made' by PURM pharmacists post LCD switch off (28%, n = 1,237) when compared to pre-switch off (15%, n = 826) indicates a more complex theory of change which warrants further investigation. It may indicate that other significant changes occurred at this time in relation to perhaps the NHS 111 PURM referral process/ algorithm or pharmacist instructions. It may also question the appropriateness of these referrals to pharmacists, although the non-clinical role of NHS 111 call handlers in PURM triage and referral has been highlighted by the project team.

The reduced number of calls to LCD for repeat prescriptions has implications for reduced LCD workload in terms of GP and admin time on PURM requests. This needs to be balanced with refer-backs from pharmacists and other NHS 111 referrals. The York Health Economics Consortium have conducted parallel economic modelling of the PURMS service as part of its WYUEC Vanguard work.

Reconciliation of data discrepancies between datasets is warranted. It is worth noting that an internal CPWY evaluation in Nov 2015 recommended exploring the discrepancy between NHS 111 referrals and those received by community pharmacy. In May 2016, a CPWY led PURM audit found that 31% of NHS 111 referrals to the PURM service were not recorded by a pharmacy as a PURM consultation on PharmaOutcomes as consultation/ supply. This issue was followed up the PURMs project team.

Within current data available to the evaluation team, it is not possible to address questions of reductions in:

- time spent by NHS 111 Call handlers and clinicians and

- patient waiting times pre and post LCD removal from NHS 111 DoS.

This local evaluation generated insights from patients and staff (independent from the PURM project team) about their experience of PURMs, which were not previously available. Frontline staff report PURM strengths including: quicker, easier referral and access for patients which may improve patient experience, free up GP out of hours' time, and relieve pressure on the out of hours GP service. This goes some way to support the WYUEC Vanguard's ambition to "deliver a standardised and coordinated UEC model, at scale, across West Yorkshire.

It is not clear, however, the specific role (if any) of PURMS in reducing A&E attendances and emergency admissions. Internal CPWY data based on self-report from patients at pharmacies, indicates potential benefits to the system, primarily in reported avoidance of out of hours contacts, but also A&E attendances and to a lesser extent in-hour GP contacts. Empirical corroboration of this self-report is required.

Future Development

Optimising and capitalising on the critical success factors and key learning from PURMs identified by the project team and frontline staff should be considered in future development of PURMs and its successors such as the national pilot NUMSAS.

Future development of PURMs or new schemes based on it (such as NUMSAS) should also consider the benefits of regular, independent, systematic feedback by key stakeholders to identify sources of tension (inter-professional or organizational), clarifications and potential improvements required. For example, in this evaluation the commonly reported issue of non-clinical NHS 111 call handlers' role in the triage and referral of patients to pharmacists who require controlled drug prescriptions.

Methodological Limitations and Recommendations

A number of potential improvements to address current methodological challenges have been identified:

- Better data linkage, from end to end, with individual level linked dataset (NHS 111, CPWY and LCD) using NHS number, date of birth, gender, and surname as identifiers. This may also help to identify fidelity to protocol issues at different stages of the PURM process, address data discrepancies between current datasets and better understand the system wide impact of PURMs
- Consideration of pre-determined controlled comparisons as a more robust methodology for evaluation
- Strengthened measurement framework, particularly around patient outcome and experience, and routine data capture of patient experience.
- Follow up of PURM patients and subsequent healthcare utilization of those where supply is made, not made or referral back to LCD.
- Timely access for evaluation team to relevant data.

References

1) Community Pharmacy West Yorkshire (CPWY) http://www.cpwy.org/doc/758.pdf

2) Community Pharmacy West Yorkshire (CPWY) http://www.cpwy.org/doc/780.pdf

3) Community Pharmacy West Yorkshire (CPWY) (May 2016) Email Process Failure Set Up with Pharmacies. http://www.cpwy.org/doc/1186.pdf

4) Community Pharmacy West Yorkshire (CPWY) (July, 2016) New Guidance Including Advice on Common Issues. http://www.cpwy.org/doc/1296.pdf

5) Community Pharmacy West Yorkshire (CPWY) (Sept 2016) Issues cross border patient clarification http://www.cpwy.org/doc/1358.pdf

6) Community Pharmacy West Yorkshire (CPWY) Issues with NHS mail - guidance given (Oct 2016) http://www.cpwy.org/doc/1375.pdf

7) Gale, NK, Heath, G, Cameron, E, Rashid, S, Redwood, S (2013) Using the framework method for the analysis of qualitative data in multi-disciplinary health research. BMC Medical Research Methodology 2013, 13:117. http://www.biomedcentral.com/content/pdf/1471-2288-13-117.pdf

8) Hanlon, J et al (Oct, 2016) Economic Modelling to Support the West Yorkshire Urgent and Emergency Care Vanguard. Final Report. YHEC.

9) NHS England (November, 2013). Keogh Review of Urgent and Emergency Care.

10) McDonach, E. et al (Dec 2016) West Yorkshire Urgent and Emergency Care Vanguard. Local Evaluation Evaluation Plan. On behalf of the Yorkshire and Humber AHSN.

11) McDonach, E (May 2016) West Yorkshire Urgent and Emergency Care Vanguard. Local Evaluation Scoping Document. On behalf of the Yorkshire and Humber AHSN.

12) McDonach, E. (May, 2017) Evaluation Dress Rehearsal Presentations May 2017

13) Mohammed, M.A. (May, 2017) Evaluation Dress Rehearsal Presentation May 2017

14) NHS England (2013). High quality care for all, now and for future generations: Transforming urgent and emergency care services in England - Urgent and Emergency Care Review End of

Phase 1 Report. http://www.nhs.uk/NHSEngland/keogh-review/Documents/UECR.Ph1Report.FV.pdf

15) NHS England (October 2014). Five Year Forward View. https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf

16) NHS England (2015). *New Care Models. https://www.england.nhs.uk/ourwork/futurenhs/new-care-models/ Accessed 30 April 2016.*

17) NHS England (March 2016). *New Care Models: Vanguards - developing a blueprint for the future of NHS and care services. https://www.england.nhs.uk/wp-content/uploads/2015/11/new_care_models.pdf.*

18) Kaushal, U (2016) NHS 111 PURMs Audit. Internal Evaluation Report. Yorkshire Ambulance Service. August 2016

19) Kaushal, U (2017) NHS 111 PURMs Audit. Internal Evaluation Report. Yorkshire Ambulance Service. June 2017

20) NUMSAS National Urgent Medication Advanced Service http://psnc.org.uk/services-commissioning/urgent-medicine-supply-service/

21) Ovretveit, J & Gustaffson, D (2002) Evaluation of Quality Improvement Programmes. Quality & Safety in Health Care 2002;11:270–275

22) Patton, M.Q. (2011) Developmental Evaluation. Applying complexity to enhance Innovation and Use. The Guildford Press. New York/London.

23) Patton, M.Q., McKegg, K., Wehipeihana, N (Eds). (2016) *Developmental Evaluation Exemplars. Principles in Practice.* New York : The Guildford Press

24) Ritchie J, Lewis J: Qualitative research practice: a guide for social science students and researchers. 2003, London: Sage

25) Ritchie, J. et al (2006) Qualitative Research Practice. Second Edition. Sage Publications Ltd

26) West Yorkshire UEC Vanguard. *Value Proposition 2016/17, 2nd Draft, 08 January 2016, 14:28.*

27) York Health Economics Consortium (YHEC) (2017) Updating the WYUEC Vanguard Return on Investment Tool. Final Report. May 2017

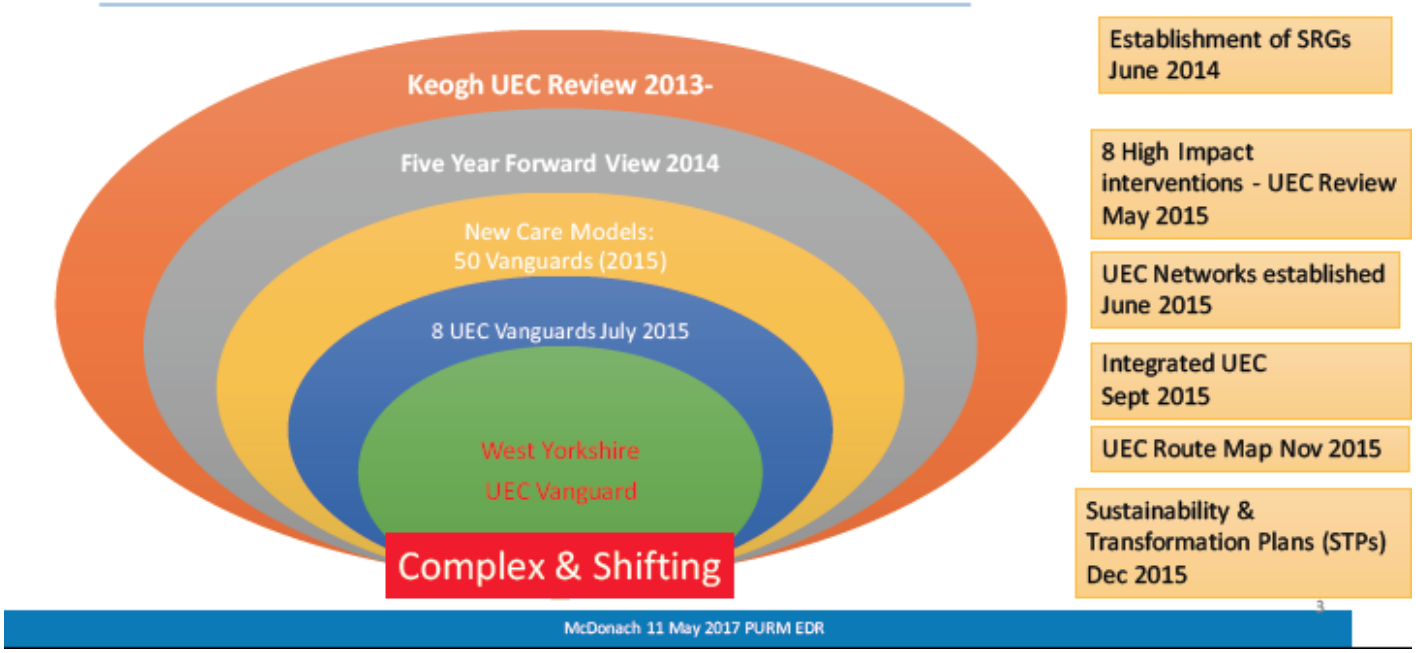
Appendices

Appendix 1: Co-produced PURM Logic Model v4 - 1 August 2016 supported by Dr McDonach

West Yorkshire Vanguard - Integrated Care Services Vison				
There are significant and unsustainable pressures in urgent and emergency care (UEC) across West Yorkshire. Provision is challenged by unmet targets and services are uncoordinated, disconnected and inefficient. Our vision is to deliver a standardised and coordinated UEC model, at scale across WY, reducing A&E attendances and emergency admissions, increasing levels of self-care and improving patient experience, outcomes, quality and service sustainability. The Prescription of Urgent Repeat Medication Service (PURMS) aims to facilitate appropriate access to repeat medication out-of-hours (OOH) via community pharmacy, relieving pressure on urgent and emergency care services by shifting demand from Local Care Direct (LCD) to community pharmacy.				
Inputs	**Activities**	**Outputs**	**Short/Medium Term Outcomes**	**Long-term Impacts**
PRIMARY CARE PURMS Scaling Up v4 1/08/16 - DRAFT				
NATIONAL AND LOCAL FUNDING **ORGANISATIONAL/ SYSTEMS LEADERSHIP** **POLICY & STRATEGY** **RELATIONSHIPS** **GOVERNANCE** **PROGRAMME OFFICE SUPPORT** **COMMUNICATIONS AND ENGAGEMENT** **KNOWLEDGE & TIME** **EVALUATION SUPPORT**	• Regular Project Team meetings - YAS/111/LCD/CPWY/CCG • Scaling up to CCG level - 44 pharmacies based on learning from pdsa/pilot • 111 call handlers training/ communications - managing expectations • Any LCD training? • Community pharmacist training/ awareness • Directory of Service (DoS) Changes? • Call Handler Script Changes? • DOS leads preparing to take away codes for LCD • Soft launch set up, monitoring, review learning, celebrating success. • Bank holiday specific activities?	**Change of Process** • No of PURM requests DOH made to 111 • No of PURM requests boh referred by 111 to community pharmacists • No of PURM requests DOH referred to LCD by 111 • No of PURM prescriptions supplied • No of PURM requests not supplied by pharmacists • No of PURMS pharmacy calls to LCD e.g. for controlled drugs/clarification • No of PURM scripts boh issued by LCD • DoS Changes implemented **Implementation/ Training/ Awareness** • No of 111 call handlers trained • No of community pharmacists trained/contacted • No of pharmacists who report to 111 lack of awareness of PURMS • No of patients given info-effective management of PURM requests • No of community pharmacist feedbacks from CPWY post bank holiday review	• Removal of LCD from DOS for PURM • 100% of PURM requests made DOH to 111 go directly to community pharmacies • Reduction in referrals from 111 to LCD for PURM requests made DOH • Reduction in time spent by LCD GPs on PURMS • Reduction in waiting time for patients to access PURM DOH • Satisfaction of patients with PURMS • Increased 111 call handler satisfaction with OOH PURMS service • Increased confidence of 111 staff to direct patients to PURMS community pharmacists • Reduction in number of repeat calls to 111 for PURM from same patient (same day/ repeat episodes?) • Reduction in time spent by 111 call-handlers (and clinicians?) on PURMs? • Increased confidence of PURM project team • Increased awareness of PURMS among community pharmacists • Satisfaction of community pharmacists with PURMS	• Patients have access to NHS supplies of urgent repeat medication through community pharmacies out of hours • Patients experience smoother, more accessible localised service • Creation of a needs-led patient pathway which provides opportunities to educate, prevent re-occurrences and carry out upstream interventions • Impact on DOH is reduced as repeat medication requests are streamed to appropriate pharmacies for action • Reduced demand for repeat medication to NHS 111 services and therefore UEC services as patient education improves • Reduced system costs? [111 call handler, clinician time, LCD GP time, admin-time faxing/posting, drug costs?] • Improved patient safety and data protection [not faxing prescriptions, reduced waiting time?) • Increased roles-utilisation of pharmacists • Transfer of workload from over-utilised to under-utilised services • Reduction in presentations to out of hours GPs and urgent care centres

Appendix 2: Policy Context of WYUEC Vanguard (Source: McDonach, May 2016)

McDonach, WYUEC Scoping Report Presentation on behalf of YHAHSN



Appendix 3: PURM Service Flowchart. Source: CPWY Dec 2014, v3

Flowchart of PURM Service

Referral from NHS 111

- Pharmacy checks the nhs.net account every 30 minutes whilst the pharmacy is open in the Out-of-Hours period
- NHS 111 emails pharmacy details of the patient requesting a supply of medication

Contact patient by phone

- Pharmacist contacts the patient using details supplied by NHS 111 within 30 minutes of the referral. The telephone consultation includes:
  - Introduction and confirmation of details
  - Interview the patient to assess:
    - eligibility to use the service
    - suitability of emergency supply (immediate need, impracticable to obtain prescription, current repeat medication etc) in line with the Emergency Supply legislation
- Pharmacist determines if a supply is in the patient's best interest and possible under the emergency supply regulations. If supply is to be made inform the patient that they must come to the pharmacy in person so they can complete the consultation.
- If emergency supply not possible contact LCD to ensure the patient is contacted by another appropriate healthcare professional

Patient visits pharmacy

- The consultation must be carried out by a pharmacist
- Pharmacist completes the emergency supply consultation
- Pharmacist makes a professional judgement as to whether there is an immediate need for the medication and whether supply will be made
- If it is not possible to make an emergency supply due to prohibitions within the legislation or other factors the pharmacist will contact LCD to ensure the patient is contacted by another appropriate healthcare professional

Advice and Information

- Pharmacist provides advice and discusses the importance of ordering prescriptions in a timely manner to avoid running out of medication in the future

Supply

- Supply the necessary medicines in accordance with the requirements of the Emergency Supply Legislation
- Supply a maximum of 7 days of medication except where it is not possible to break a pack or the legislation limits the supply to 5 days (for certain controlled drugs)
- Complete a PURM record form (either papercopy or PharmOutcomes generated) and ensure both the pharmacy and patient sections completed
- A fee equivalent to a prescription charge should be collected for each item supplied unless the patient is exempt from prescription charges

Records

- The following records must be made of the PURM emergency supply:
  - Prescription Only Medicine Register – the legal record
  - Pharmacy Urgent Repeat Medicine record form (Paper or PharmOutcomes generated)
  - PharmOutcomes - record PURM on PharmOutcomes to trigger the GP notification email. The PURM must be promptly recorded on PharmOutcomes, ideally on the same day and always within 48 hours of the consultation.
  - Patient Medication Record (PMR)

West Yorkshire Pharmacy Urgent Repeat Medicine (PURM) Service
5
Dec 2014 vs 3

Appendix 4: Qualitative Interview Schedules

PURMs: STAFF INTERVIEW SCHEDULE

PROMPTS:

- Introductions
- Confirm have received participant information and had opportunity to answer any questions
- Recap evaluation, role of interviewer, participant anonymity etc.
- Confirm happy to tape interview.
- Explain series of questions – and space to add anything they would like to

INTERVIEW SCHEDULE:

A. Participant Details:

1. What is your job role?
2. What is your role within the PURM Service?
3. How long have you been involved in the PURM Service?

B. Project Details:

4. Can you briefly describe the **main aims** of the PURM Service?
5. What is the **current status** of the PURM Service?

C. Views, Experience & Learning – Process

6. Overall, how would you **describe your experience** of being involved in the PURM Service?
7. From your experience, what has **worked well** with the PURM Service?
8. From your experience, what have been the main **benefits** of the PURM Service?
9. From your experience, what have been the main **challenges** of the PURM Service?
10. What would you **do differently** if you were doing it again?
11. What are the **key aspects** of the PURM Service which need to be in place if it was being rolled out

D. Potential Impact

12. Do you think PURM Service has achieved what it set out to do? If not, why not?
13. What do you think the main impact of PURMS Service has been? Prompts:
    - On your service/ Patient experience and outcomes/ Staff experience and outcomes/ On the system
14. Any additional comments.....

THANK YOU FOR YOUR TIME TODAY