



NHS England Medicines Optimisation Prioritisation Project

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Prepared for: NHS England
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Foreword

Medicines are the most common therapeutic intervention in the NHS in England. Helping people get the most from their medicines is the essence of Medicines Optimisation. It is critical to ensure that we obtain the maximum benefit from medicines whilst minimising harm. Many hospital admissions caused by the adverse effects of medicines can be prevented, so professionals and patients need to work much closer together to do this.

The NICE Guideline on Medicines Optimisation offers best practice advice on the care of all people who are using medicines. It applies to all people - those who take their medicines effectively, and those who don't. Shared decision-making is an essential part of this where we seek to use the best available evidence to inform decisions about the care of individuals, taking into account their needs, preferences and values.

This report by Keele University takes the recommendations from NICE and examples of best practice from around the nation to help localities prioritise those interventions that can help them deliver medicines optimisation services more efficiently. This builds on the primary objective for the NHS RightCare programme in maximising the value that an individual derives from their own care and treatment, while also maximising the value the whole population derives from the investment in their healthcare.

The national Medicines Optimisation programme is being aligned with NHS RightCare, and a process is underway to facilitate this. The alignment will include making connections across the system to realise the benefits of Medicines Optimisation and developing metrics to illustrate areas of variation for localities to investigate and use to drive population healthcare improvement.

To find out more about NHS RightCare's programme of work please visit www.rightcare.nhs.uk.



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Executive Summary

- This report summarises the process that Keele Centre for Medicines Optimisation (KCMO) has engaged in to collect, categorise and determine the opportunities for Medicines Optimisation (MO) interventions that have some evidence of effectiveness and cost-effectiveness. The report focuses on the medicines optimisation activity that takes place after diagnosis and a decision to prescribe a medicine has been made - the “dismount” part of the process.
- Following a call for evidence survey and contributions from networks, examples of best practice were collated, and scored against the principles of MO as defined by the [Medicines Optimisation guideline \(NG5, 2015\)](#) from the National Institute for Health and Care Excellence (NICE). Interventions deemed to have a high MO impact and that had data on costs and outcomes achieved were further analysed and some basic economic data extrapolated.
- It was clear from the data gathered that the published literature continues to develop and the evidence base continues to grow. Both the published literature and the case studies provided demonstrate significant benefit to both patients and the NHS.
- Most of the medicines optimisation projects that were identified were delivered by pharmacists, reflecting the care setting where most medicines are reviewed post prescribing. The multi disciplinary nature of medicines optimisation could be developed further.
- The majority of examples provided focused on improved patient outcomes; this clearly shows a move away from simple cost saving medicines management activity.
- Several case studies provided robust data that demonstrated by focusing on patient outcomes there are significant financial gains to be made for the NHS by embracing medicines optimisation principles. These crude economic estimates would benefit from further health economic analysis.
- Projects in the following areas reported the highest impact in relation to addressing the principles of medicines optimisation.
 - Use of Community Pharmacists to review patients post-discharge from hospital
 - Medicines review relating to residents of care homes
 - Medicines review relating to patients with four or more medicines
- Key barriers to successful implementation were reported to be:
 - Overcoming existing cultural barriers
 - Insufficient resources/time
 - Lack of a suitably trained workforce
 - Insufficient IT support/strategy
 - Lack of incentives for local action

1. Introduction

Keele Centre for Medicines Optimisation (KCMO) has been engaged by NHS England to develop:

“A framework to enable the NHS to determine how and where to invest its scarce Medicines Optimisation resources to deliver improved outcomes in line with the four principles of Medicines Optimisation”:

This project is overseen by the National Medicines Optimisation Steering Group as part of the wider PPRS/Medicines Optimisation Programme. The Group is co-chaired by the ABPI (Association of the British Pharmaceutical Industry) and the Chief Pharmaceutical Officer of the NHS and has the support of Government through the Ministerial Industry Strategy Group.

The aim of the project is to identify the biggest opportunities in Medicines Optimisation (MO) and how to implement the MO principles to support both national as well as local MO work and deliver best outcomes for patients, NHS and taxpayers.

The key elements of the project are:

Develop a framework to structure the different elements of MO – a simple framework to set out the different elements of what is contained within the MO space (e.g. waste, adherence, uptake of innovation medicine etc.) building on and consolidating existing work.

Set out opportunities within the framework – using the framework, quantifying the projects nationally and locally from the various elements if the Principles of MO were to be applied including the potential data sources (and gaps).

Barriers to realising the opportunities – identifying the barriers to implementation and suggest how these can be overcome.

2. Background

2.1 Principles of medicines optimisation.

By its most basic definition, medicines optimisation is, in practice, making sure patients get the most from their medicines. Good practice in medicines optimisation should not be considered in isolation but in context of other, congruent guidance on medicines use such as shared decision making from government, NICE and other professional bodies. NICE guidance and the General Medical Council (GMC) reports make it clear that the implementation of medicines optimisation initiatives is a multidisciplinary activity particularly when taking into account patients' needs wishes and preferences. (Equality and Excellence: liberating the NHS and polypharmacy, Kings Fund making shared decision making a reality: no decision about me, without me, the costs of unsafe care). The [NICE clinical guideline on Medicines Optimisation](#) adopted the Royal Pharmaceutical Society's (RPS) four key principles:

- i) an understanding of patient's experiences
- ii) evidence-based choice of medicines
- iii) safe use of medicines
- iv) making medicines optimisation part of routine practice.

These key principles have been endorsed by NHS England, the Academy of Medical Royal Colleges, the Royal College of General Practitioners, the Royal College of Nursing and the Association of the British Pharmaceutical Industry and in consultation with relevant patient groups.

The components of optimal practice in medicines optimisation are often described using Figure 1, which sets out the seven key elements of medicines optimisation, incorporating the four principles.

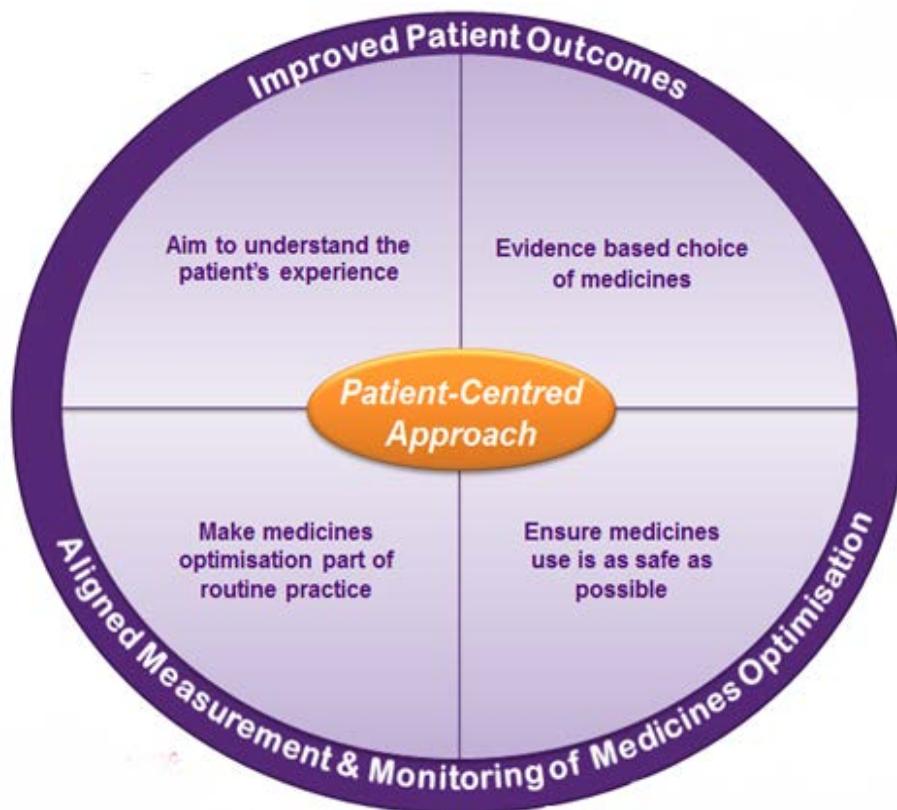


Figure 1: Medicines Optimisation principles [reproduced from “[Medicines Optimisation: Helping patients to make the most of medicines](#)”, Royal Pharmaceutical Society 2013]

2.2 Evidence from published literature

Faria *et al*¹ used the RPS definitions to review the literature and seek published work evidencing medicines optimisation to establish the cost effectiveness of projects. Their review demonstrated that the literature is incomplete, focusing primarily on medicines adherence, inappropriate prescribing and prescribing errors. Interventions tended to be specific to particular stages of the disease management pathway and focused on intermediate process rather than clinical outcomes. The reasons why the literature is incomplete are complex. It may be that good medicines optimisation practice goes unreported as those undertaking such initiatives are frontline healthcare practitioners with limited time and training to write up their work in academic journals. In addition, there are myriad examples where innovation in healthcare always takes time to disseminate and become routine.² Such evidence informed decision making requires a conscious effort to address the complexity of implementation.³

The **key priorities for implementation of medicines optimisation** were identified in the NICE guideline <https://www.nice.org.uk/guidance/nq5> on medicines optimisation. The three main priorities were identified as:

¹ The economics of medicines optimization: policy developments, remaining challenges and research priorities. Faria R, Barbieri M, Light K et al. British Medical Bulletin (2014). Available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4154397/pdf/ldu021.pdf>

² Getting a better grip on research: the fate of those who ignore history. Maskrey N & Greenhalgh T. InnovAiT, Vol. 2, No. 10, pp. 619–625, 2009, available at <http://ino.sagepub.com/content/2/10/619.full.pdf>

³ MeRec Bulletin Vol 22. No. 1 (2011) Making decisions better
http://centreformedicinesoptimisation.co.uk/files/merec_bulletin_vol22_no1.pdf

- Systems for identifying, reporting and learning from medicines related patient safety incidents, with organisations using multiple methods to identify medicines related patient safety incidents.
- Medicines related communication systems** that have the ability to share relevant information about the person and their medicines when a person transfers from one care setting to another.
- Medicines reconciliation** - ensuring that medicines reconciliation is carried out by a trained and competent health professional – ideally a pharmacist, pharmacy technician, nurse or doctor.

Additional guidelines included the implementation or continued use of:

- Medication reviews**, 'structured, critical examination of a person's medicines with the objective of reaching an agreement with the person about treatment, optimising the impact of medicines, minimising the number of medication related problems and reducing waste'.
- Self-management plans**: structured, documented plans that are developed to support a person's self-management of their condition.
- Patient decision aids** to be used in consultations involving medicines to ensure that patients are able to make well informed choices that are consistent with the person's values and preferences.
- Clinical decision support software** used to support health professionals to manage a person's condition.
- Medicines-related models of organisational and cross-sector working**. The use of a variety of skills of various health and social care practitioners to meet the needs of patients and to encourage innovation in models of care across health and social care settings.

Figure 2 shows the potential mechanisms by which new ideas and best practice move from the research base to individual shared decision making. As summarised in the MeReC Bulletin⁴, the current disconnect at the implementation stage is possibly a function of the usual inertia in disseminating information (reluctance to move from the intuitive system 1 to the more purposeful system 2 processing⁴) and the considerable amount of organisational "churn" over the last few years.

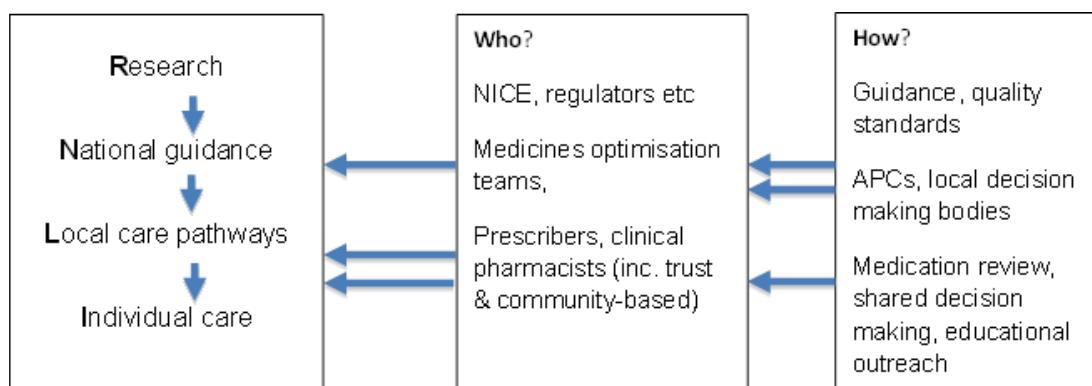


Figure 2: The “RNLI” model [[http://blogs.bmj.com/bmj/2014/08/21/neal-maskrey-tipping-the-balance-towards-individualised-care/1](http://blogs.bmj.com/bmj/2014/08/21/neal-maskrey-tipping-the-balance-towards-individualised-care/)]

⁴ System 1 and system 2 thinking are forms of information processing described by Daniel Kahneman in his 2001 book “Thinking, fast and slow”. System 1 relates to fast, automatic, frequent, emotional, stereotypic, and subconscious processing while System 2 relates to slow, effortful, infrequent, logical, calculating, and conscious processing.

This report aims to address the gaps in the literature by seeking case reports from practice to supplement the published work, classify case reports according to pre-defined definitions, and then prioritise them in terms of their potential impact on healthcare. In this way we aim to make the localisation of the national initiative achievable by providing pragmatic examples of best practice that have been achieved within the constraints of the current NHS environment.

The focus for this report is medicines optimisation activity that takes place after diagnosis and a decision to prescribe a medicine has been made - the “dismount” part of the process.⁵

2.3 The NHS England Medicines Optimisation Dashboard

The NHS England Medicines Optimisation dashboard (MOD) was developed in collaboration with CCGs, Trusts, the RPS, BSA, HSCIC and the pharmaceutical industry to build on the principles of Medicines Optimisation.⁶ The prototype Dashboard was designed to “encourage CCGs and Trusts to think more about how well their patients are supported to use medicine.” By providing benchmarking standards its purpose was to encourage CCGs and Trusts to work together and encourage Local Professional Networks and Academic Health Science Networks to use the data contained therein to prioritise medicines optimisation activity and work in collaboration with patients, CCGs, Trusts and the pharmaceutical industry to support local improvement.

The MOD was targeted at a broad spectrum of users across the health care community: CCG Clinical Leads, CCG Accountable Officers, CSU Managing Directors, Care Trust CEOs, Foundation Trust CEOs, NHS England Regional Directors, Directors of Finance, GP Medical Directors, NHS England Regional Directors, AHSNs, LPNs, Pharmaceutical Sector Boards, and Allied Health Professionals.

Two annual evaluations of the MOD have been published on the [Medicines Optimisation Dashboard website](#). In summary the MOD was successful in encouraging benchmarking and allowing health care organisations to compare themselves with their peers.

One of the possible outcomes for this prioritisation exercise is to demonstrate the relevance and applicability of medicines optimisation at different levels in healthcare organisations and provide examples that may inform future iterations of the MOD.

⁵ Ensuring Safe and Effective Use of Medication and Health Care: Perfecting the Dismount. DeWalt DA. JAMA 2010; 304 (23):2641-2642.

⁶ Royal Pharmaceutical Society (2013). Medicines Optimisation: Helping patients to make the most of medicine. Available at: <https://www.rpharms.com/promoting-pharmacy-pdfs/helping-patients-make-the-most-of-their-medicines.pdf> [Accessed: March 2015].

3. Collection of evidence: case studies and call for evidence survey

The first stage of the process was a call for evidence carried out between November 2015 and February 2016, with the collaboration of the steering group who were representatives of both NHS stakeholders and the pharmaceutical industry (Box 1 below).

Box 1: Membership of panel :

Clare Howard	Clinical Lead Medicines Optimisation, Wessex AHSN (Chair)
Nick Beavon	Chief Pharmacist, Wandsworth CCG
Richard Seal	Chief Pharmacist, NHS Trust Development Authority
Andy Cooke	Head of Medicines Management, Bedfordshire CCG
Ann Jacklin	Visiting Professor, Imperial College London
Neil Watson	Director of Pharmacy, Newcastle Hospitals NHS Foundation Trust
Harriet Lewis	Medicines Optimisation Programme Lead and Regional NHS Partnership Manager (North), Association of the British Pharmaceutical Industry
Debra Montague	Customer Experience Lead, Pfizer UK
Andrew White	Head of Medicines Optimisation, North West Commissioning Support Unit
Theresa Curtis	Patient and Public Involvement Lead
Neal Maskrey	Honorary Professor of Evidence-informed decision making, Keele University
Martin Duerden	GP and Clinical Senior Lecturer, Centre for Health Economics and Medicines Evaluation, Bangor University
Julian Parkes	GP prescribing lead, Wolverhampton CCG
Robbie Turner	Chief Executive Officer, Community Pharmacy West Yorkshire
Catherine Armstrong	Lead Pharmacist, Pharmicus, Royal Pharmaceutical Society representative
Clair Huckerby	Pharmaceutical Adviser, Dudley Metropolitan Borough Council
Stephen Chapman	Head of Medicines Optimisation & Enterprise / Deputy Head of School, Keele Centre for Medicines Optimisation
Jonathan Underhill	Medicines Optimisation Lead, Keele Centre for Medicines Optimisation
Harry Ward	Commissioning and Economic advisor, Keele Centre for Medicines Optimisation

3.1 Description of the Call for Evidence Survey

An online survey tool, SurveyMonkey (<https://www.surveymonkey.com/>) was used to streamline the process of data collection. The design and implementation of the survey was completed by KCMO with oversight and input from the prioritisation steering group. The survey is shown in Appendix 1. The distribution list for the survey is shown in Box 2 below.

Box 2: Survey distribution list

-
- NICE associates
 - Academic Health Science Networks
 - Members of the Royal Pharmaceutical Society
 - Pharmaceutical Advisory Group mailing list
 - Association of Teaching Hospital Pharmacists mailing list
 - Industry via the ABPI
-

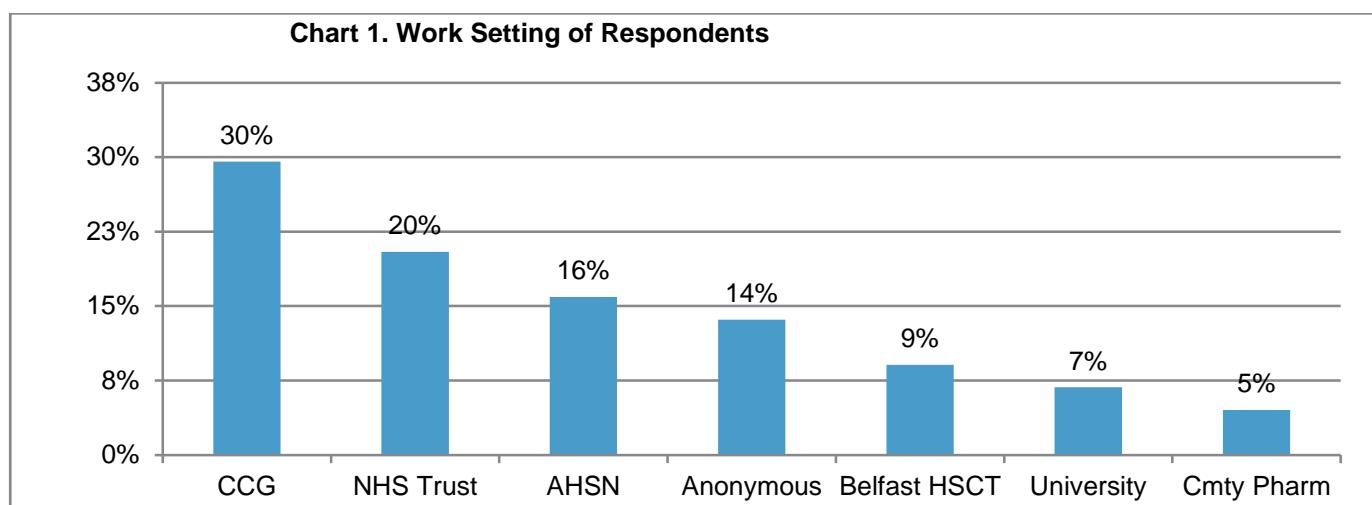
The survey questions used were a mix of free-text responses and multiple choice questions. The free-text questions enabled in-depth description of the interventions being submitted, costing information, and details of additional supporting evidence. The multiple choice questions enabled some basic analysis of:

- The types of interventions being submitted
- The Medicines optimisation principles addressed according to the RPS document [Medicines Optimisation: helping patients make the most of their medicines](#)
- The types of Medicines Optimisation interventions being used; categories were suggested from the [NICE guideline on Medicines Optimisation \(NG5\)](#)
- The types of patient populations most frequently targeted
- The type of outcomes measured
- Which health professionals carried out the interventions (Pharmacist, GP, secondary care physician)
- The barriers to implementation of the medicines optimisation intervention

3.2 Survey Results

3.2.1. Work setting of respondents

A total of 45 respondents, from a variety of settings, completed the survey. Chart 1 shows their place of employment.



3.2.2. Description of the interventions submitted

Participants were given the opportunity to describe their interventions in their own words. Here they provided details of the projects being submitted, the costs and challenges associated with implementation. The descriptions were then classified by the authors into categories based upon the details of these descriptions. All respondents had either completed or initiated medicines optimisation projects.

A total of 33 MO projects were described in some detail. These projects came from across care settings and included a variety of topics. The projects are summarised below in Box 3.

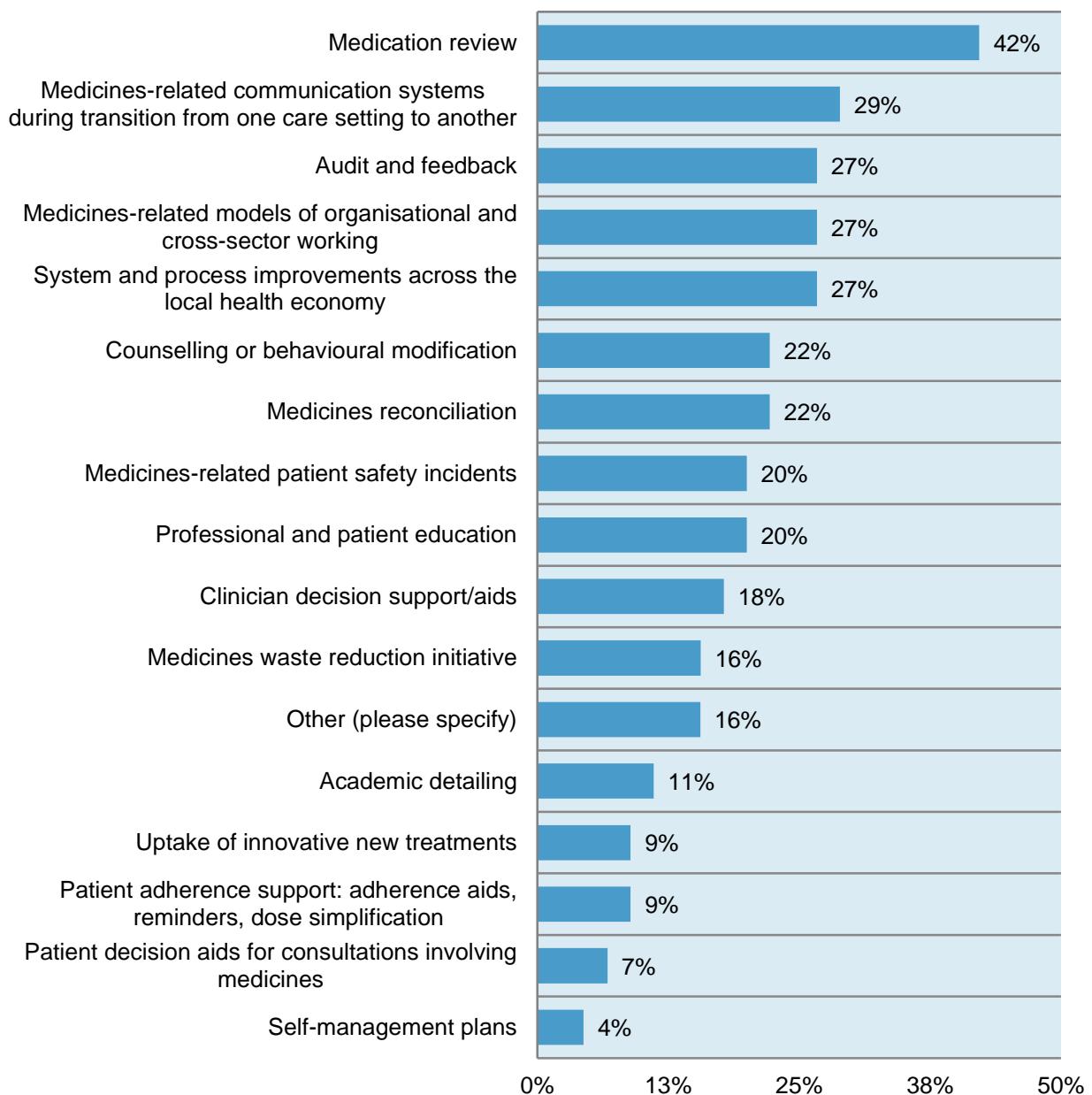
Box 3: Summary of MO projects described by respondents

-
- 14 Integrated MO projects
 - 5 Care-homes related projects
 - 3 Projects involving implementation of NICE guidance
 - 2 Anti-coagulation related projects
 - 2 Projects related to COPD management
 - 2 Projects focusing on professional education
 - 1 Project each relating to:
 - biologics,
 - lithium monitoring,
 - health coaching,
 - a patient education leaflet, and
 - waste-management/recycling.
-

3.2.3 Types of MO interventions used in projects

All respondents were asked to indicate all the types of interventions used within their projects. The results are shown in Chart 2 below. By far the most common intervention used was medication review at 43%, with approximately one third of projects using medicines-related communication systems, audit and feedback, and cross-sectional working.

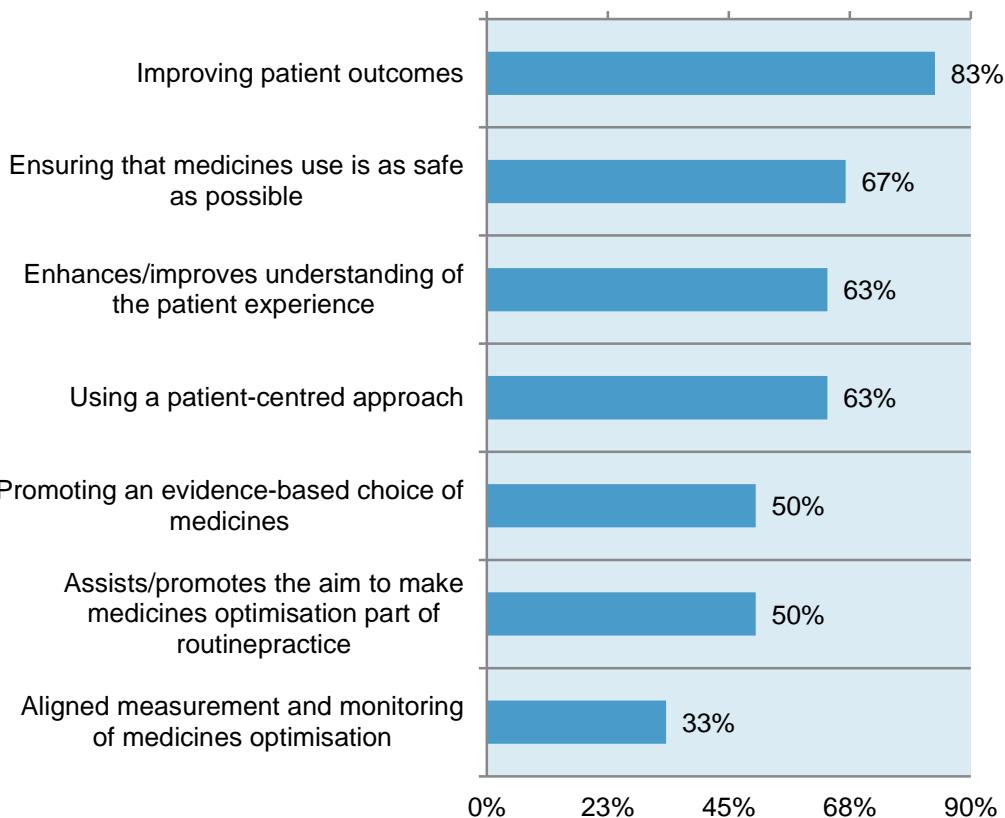
Chart 2. To which of the following topics does your Medicines Optimisation project or intervention relate?



3.2.4 Principles of Medicines Optimisation Addressed in the Projects

Respondents were asked which of the principles of medicines optimisation were addressed by their projects. Improving patient outcomes was targeted by 83% of the projects while two thirds of projects targeted safe medicine use, improving patient experience, or patient-centred care. Full responses are shown in Chart 3 below.

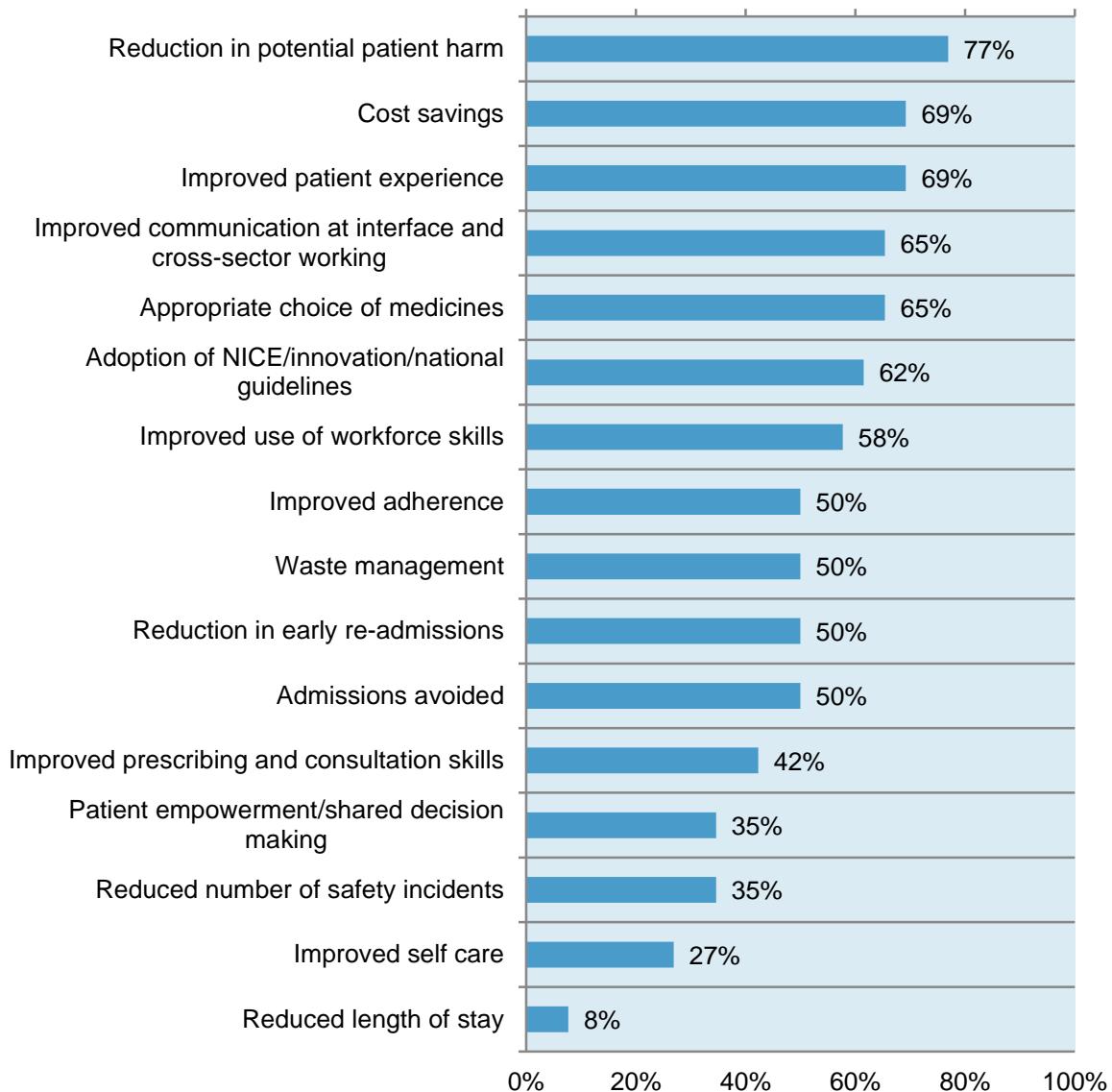
Chart 3. Principles of Medicines Optimisation Addressed by Projects



3.2.5. Outcomes achieved by the projects

Respondents were asked about the outcomes or benefits they had achieved as a result of their project. The majority of people who responded had already completed their projects (47%) however a few respondents used interim data to answer this question. The number one benefit achieved was the reduction in potential harm (77%) followed closely by cost-savings and improved patient experience (both 69%), improved cross-sector working and communication, and improved appropriate choice of medicines (both 65%). For full results see Chart 4 below.

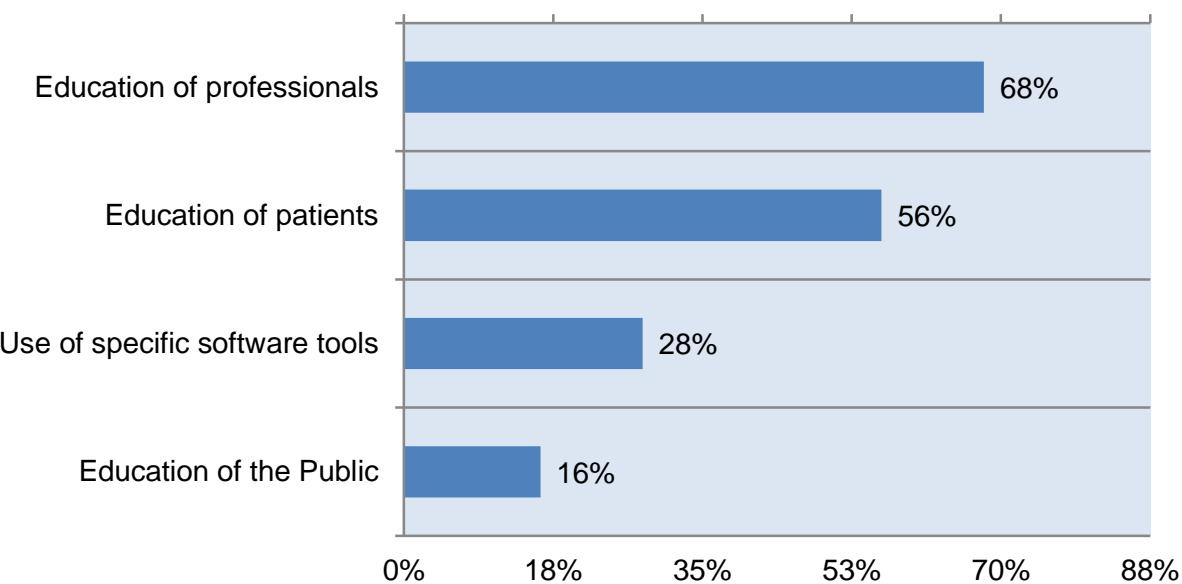
Chart 4. What outcomes or benefits were achieved?



3.2.6. Use of Education in the Projects

The use of education was examined by asking respondents about the types of education that were used in their projects. The education of professional was the most common form used in the projects (68%), followed by patients education (at 56%). Use of specific educational tools occurred in a quarter of projects and the education of the public occurred in only 16% of projects (see Chart 5).

Chart 5. What did the medicines optimisation project or intervention involve?

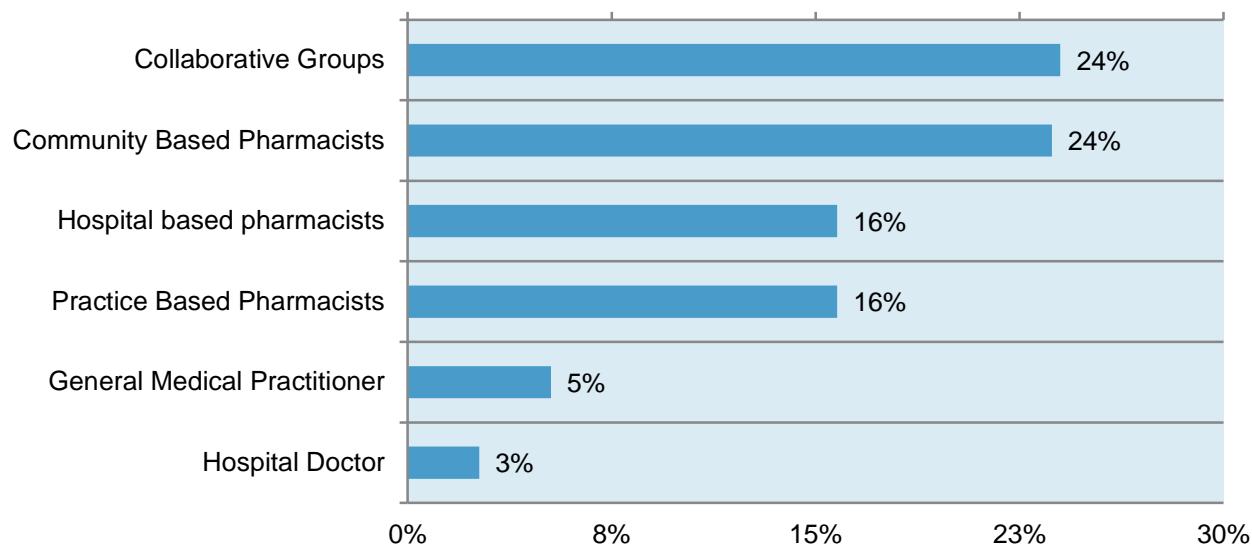


When specific software tools were deployed they were identified as: Solace (6 responses), Pharmoutcomes (to help community pharmacies provide services more effectively, 2 responses), Bluspier to generate electronic discharge letters, an in-house Excel spreadsheet, shared decision making tools: (NICE, MAGIC), and STOPP-START (a toolkit to support medication reviews in older patients).

3.2.8 Who carried out the medicines optimisation intervention?

Fifty six percent of medicines optimisation interventions were carried out by pharmacists (Chart 6), with the majority conducted by community pharmacists. A minority (less than 8% of interventions) were completed by physicians.

Chart 6. Who delivered the MO Interventions?



3.2.9 Summary of Survey Findings

The Interventions

The surveys produced a diverse collection of projects related to the implementation of medicines optimisation from diverse settings. Comparing the interventions identified from the survey (Chart 2) with the NICE implementation guidelines shows a great deal of overlap between the two, with the majority of interventions being identified as priorities by NICE.

The top three implementation priorities identified by NICE were incorporated into many of the projects.

- **Systems for identifying, reporting and learning from medicines related patient safety incidents.** Twenty percent of projects explicitly targeted medicines-related patient safety incidents as part of their interventions. Whilst it is conceivable that the 27% of projects that incorporated some form of audit and feedback may have touched on safety incidents, this is not explicit from the data.
- **Medicines related communication systems:** The second most common intervention used in projects was communication systems. Twenty nine percent of projects included some form of medicines related communication software.
- **Medicines reconciliation** was used as an intervention in 22% of interventions.

The additional NICE guidelines included the use of:

- **Medication reviews:** Medication reviews were the most common intervention by a large margin. Forty two percent of projects included reviews as part of their interventions. Additionally 16% of projects incorporated a medicines waste reduction initiative, identified by NICE as a goal of medicines reviews.
- **Self-management plans:** Despite being identified within NICE guidelines only 4% of projects utilised self-management plans as part of their intervention.
- **Patient decision aids:** Similarly the use of patient decision aids was low, 7%, despite being identified within the guideline.
- **Clinical decision support software** was used in 18% of the interventions to support health professionals in managing patient conditions.
- **Medicines-related models of organisational and cross-sector working:** Twenty seven percent of projects incorporated models of organisational and cross-sector working with 27% of projects also identifying system and process improvements across the local health economy.

There were several, additional themes of patient empowerment that were identified as part of the interventions, including the use of counselling or behaviour modification (22%), professional and patient education (20%), and patient adherence support (9%). Of particular note is the very low use of two of the interventions identified by NICE guidelines that focus on patient empowerment, that of self-management plans add the use of patient decision aids. It is possible that these have not yet been fully embraced, and would benefit from a more user friendly format.

Whilst the importance of learning from medicines related patient safety incidents is a priority for NICE only 20% of projects explicitly addressed this issue. However, it is possible that the

identification of errors and then learning from them happens within many of the other interventions but is not explicitly documented here.

The use of professional education only marginally outweighed the use of patient education in the projects with 68% providing professional education compared with 56% providing patient education (Chart 5).

The vast majority of the interventions were carried out by pharmacists (56%) or a collaborative group of individuals (24%) (Chart 6).

The principles of medicines optimisation addressed by the projects were strongly weighted around patient benefit and empowerment and around safety (Chart 5). Eighty-three percent of projects sought to improve patient outcomes while 63% aimed to enhance patient experience, and focussed on patient centred approaches while safety was identified as a priority in 67% of projects.

Projects' Outcomes

The benefits gained from the interventions included outcomes addressing: safety, financial outcomes, patient experience and outcomes, professional skills, organisational outcomes and clinical outcomes. Additionally, several of these benefits reflect outcomes in more than one area.

- **Patient outcomes** included improved experience, improved adherence, and increase in patient empowerment, and improved self-care.
- **Safety** was improved through a reduction in patient harm, the reduction of safety incidents, and through improved choice of medicines.
- **Clinical outcomes** including the avoidance of admission and readmission were identified.
- **Increase in staff skill**, including an improvement in prescribing and consulting skills, but also in the more appropriate use of staff skills were identified.
- **Financial outcomes** were demonstrated through cost savings, a reduction in waste, a reduction in admissions and readmissions and reduced length of stay.
- **Organisational improvements** were made through and increased communication and collaboration and through the adoption of national guidelines.

These outcomes were all self-reported and have not been verified. It is likely that the strength of the effect varies greatly among projects and that some of these finding may also be somewhat subjectively reported rather than objectively evaluated.

3.3 Other sources of case studies

In addition to the Call for Evidence survey, case studies were identified from:

- Examples of good practice made freely available from the Royal Pharmaceutical Society source "[Medicines Optimisation in action: making the most of medicines](#)"
- Collected NHS/Industry collaboration projects, details of which were collated and made available by the ABPI.
- Additional examples known to or identified by members of the project team and expert panel.

3.4 Scope and exclusion criteria

The scope of the project was based on the broad definition of Medicines optimisation as 'a person-centred approach to safe and effective medicines use, to ensure people obtain the best possible outcomes from their medicines. Medicines optimisation applies to people who may or may not take their medicines effectively. Shared decision-making is an essential part of evidence-based medicine, seeking to use the best available evidence to guide decisions about the care of the individual patient, taking into account their needs, preferences and values'.

The projects selected for inclusion were patient-centred interventions that could be clearly mapped against the [RPS Medicines Optimisation principles](#).

The following exclusion criteria were collaboratively agreed by the expert panel :

- ☒ No medicines element
- ☒ Drug specific project (e.g. switching from one brand to another or to a generic)
- ☒ Not patient-centred
- ☒ Not Medicines Optimisation
- ☒ Not safe
- ☒ Not effective
- ☒ No outcomes data

Excluded projects are listed in Appendix 4.

3.5 Prioritisation scoring of Medicines Optimisation Interventions

Evidence was initially assessed according to a set of criteria developed by KCMO (Score 1; Table 1), with a second iteration following discussion with, and input from the Expert Panel (Score 2; Table 2).

The criteria used to assess the evidence submissions were:

- ☒ **Strength of the evidence:** based on the methodology of the [SORT criteria](#) where:
 - Weak = SORT C – level recommendation, based on consensus, usual practice, opinion or process-oriented outcomes
 - Medium = SORT B-level recommendation, inconsistent or limited-quality patient-oriented evidence
 - Strong = SORT A-level recommendation, based on consistent and good-quality patient-oriented evidence
- ☒ **Consistency of evidence:** an assessment of the number of other reports of similar interventions in the wider literature.
- ☒ **Size of the effect:** estimated from the type of outcome measured (patient or process oriented) and the number of patients impacted.
- ☒ **Number of patients impacted:** estimate from disease prevalence and the likely size of the England/Wales population affected.
- ☒ **Elements of Medicines Optimisation addressed:** reported as part of the call for evidence survey or assessed by KCMO if received as part of a later communication.

The Score 1 grid is shown below in Table 1.

Table 1: MO Intervention prioritisation grid version 1

Evidence Strength (Using SORT-inspired criteria)	Consistency of evidence	Outcome measured	Size of effect	Number of patients impacted Per 100,000 population	Cost effectiveness	Addresses Elements of Medicines Optimisation	Score (Separately for each element excluding Cost effectiveness)
Weak	1 report	Process measure	low	Low < 1,000/100000	Increased cost/improved outcomes	1 element	0
Medium	2-5 reports	Disease oriented clinical outcome	medium	Medium (1000-4000)/100000	Same cost /improved outcomes	2-3 elements	1
Strong	>5 reports	SMORE: Surrogate Marker of Reliable Evidence	high	High >4000/100000	Same outcome /reduced cost	4-5 elements	2
		Patient oriented outcome (people live longer or better)			Improved outcomes /reduced costs	6-7 elements	3
							Individual scores
							Total score =

The expert panel decided that the relative importance of criteria would be better expressed if weighting were applied to the criteria . Following this discussion and input from the expert panel the second scoring grid was developed, see Table 2 overleaf.

Table 2: MO Intervention prioritisation grid version 2

Factor	Rating (points)	Weight of that Factor	Overall score
Size of effect	Low =1 Med = 2 High = 3	7	
Number of patients impacted per 100,000 population	low (1,000) Med 2 (4,000) High 3 (>4000)	6	
Outcome measures	Process 1 Disease = 2 POO = 3 Reduced admissions= 4 lives saves = 5	5	
Degree of cost effectiveness	Low = 1 Med = 3 High = 4	4	
Number of elements of MO addressed.	1 - 1 2-5 =2 All 7 = 3	3	
SORT	Weak 1, med 2, strong 3	2	
Consistency of evidence	1 report = 1 2-5 report = 2 Greater than 5 reports	1	
TOTAL SCORE			X

The two scores for each intervention are shown in Table 3 below. Finally, a medicines optimisation classification was assigned based on the scores and on judgement of the nature of the intervention and its likely impact in practice.

3.6 Table of Evidence submissions and Case Studies

Table 3 below lists the included evidence submissions with prioritisation scores. Those entries rated to have a high MO impact were further RAG-rated (Red/Amber/Green). This rating was assigned based upon the available evidence for cost effectiveness or estimates of cost savings/cost effectiveness from currently available data. Those highlighted in green had sufficient data to enable a crude form of economic evaluation of impact, those in amber had incomplete data, and those in red had no data from which to extrapolate the economic implications.

Table 3: Selected evidence submissions and case studies

Submitting organisation	Project title	No. MO elements addressed	Score 1	Score 2	MO classification
Barts Health NHS Trust	medicines optimisation in CV pre-admission clinic	4-5 elements	2	43	Low: small group of hospital patients, limited information submitted
Sheffield Teaching Hospitals NHS Foundation Trust	Long-term conditions reviews: COPD management	4-5 elements	9	67	High: MO intervention as part of a wider team
Coeliac UK	Early Recognition of Coeliac Disease in Community pharmacies	4-5 elements	7	52	High: intervention with strong underlying evidence base
NHS Somerset CCG	Medication optimisation reviews in care homes	6-7 elements	9	78	High: intervention with strong evidence base impacts on a significant number of patients
Belfast Health and Social Care Trust	Lithium support service	4-5 elements	5	64	Low: relatively low number of patients involved BUT this is one of the few examples of Mental health focussed intervention
Belfast Health and Social Care Trust	Biologics waste project	4-5 elements	2	39	Low: as this primarily a cost focussed intervention for a relatively small group of patients, but there are potentially significant financial savings.
Belfast Health and Social Care Trust	Therapeutic review steering group	2-3 elements	5	43	Low: as this primarily a hospital focussed approach for a relatively small group of patients , but this project demonstrates good practice for Hospital based MO teams
Community Pharmacy West Yorkshire	EPIC project	6-7 elements	8	78	High: Community Pharmacy of wider based project focussing on COPD patients
Leeds Teaching Hospitals NHS Trust	Integrated Medicines oPTimisAtion on Care Transfer (IMPACT) project	4-5 elements	11	65	High: cross pathway MO for high risk patients

Submitting organisation	Project title	No. MO elements addressed	Score 1	Score 2	MO classification
Croydon CCG	Medicines reconciliation in high risk patients at point of discharge	2-3 elements	6	75	High: Cross pathway MO which prevented emergency admissions
Croydon CCG	Medication reviews in care homes	2-3 elements	5	73	High: intervention with strong evidence base impacts on a significant number of patients
Wigan Borough CCG	Peer review	4-5 elements	11	72	High: Intervention with a wide range of outcomes effecting large numbers of patients
Wigan Borough CCG	Dietician	4-5 elements	8	69	Low: Dietician working as part of MO Team but focussing on a small number of patients
Wigan Borough CCG	Stoma	4-5 elements	5	59	Low: Stoma nurse working as a member of the MO team on relatively few numbers of patients
Wigan Borough CCG	Care homes and high risk patients	4-5 elements	5	66	High: intervention with strong evidence base impacts on a significant number of patients
NHS Fylde and Wyre CCG	GRASP-AF	2-3 elements	7	71	High: intervention based on strong evidence base
Northumbria Healthcare NHS Trust	Medicines optimisation in care homes involving residents in decisions about medicines.	4-5 elements	8	75	High: one example of MO in care homes which has significant evidence base for cost effectiveness
Lancashire Teaching Hospitals	Use of a prescribing pharmacist to generate discharge prescriptions and improvements in communication to GPs at the point of discharge	4-5 elements	4	56	High: cross pathway transition project with wide ranging benefits economic modelling candidate
SWAHSN	Transition of care: pharmacy referral schemes	6-7 elements	5	74	High: one of a number of transition of care, pharmacy referral schemes submitted
East Lancashire Hospital NHS Trust	Refer-to-Pharmacy electronic referral	6-7 elements	5	61	High: Cross pathway MO intervention with plan to evaluate economic modelling candidate

Submitting organisation	Project title	No. MO elements addressed	Score 1	Score 2	MO classification
Imperial College Health Partners	Identification and management of people with AF	4-5 elements	11	71	High: strong evidence base , significant effect on a medium number of patients
London North West Healthcare NHS Trust	Prevention of medicines related admissions and readmissions	4-5 elements	3	60	High: scores low on grid , but is an example of cross pathway MO with published evaluation Potential Economic Modelling Candidate
Eastbourne Hailsham and Seaford CCG	Primary care pain management review for pregabalin treatment	4-5 elements	3	45	Low: MO intervention for small group of patients relating to a single medicine
NENC AHSN	Transfer of Care between Secondary care and Community Pharmacy	4-5 elements	9	70	High: Cross pathway MO intervention with plan to evaluate economic modelling candidate
Devon LPC and Sanofi	Improvement of advice for diabetes patients	4-5 elements	7	62	High: intervention with strong underlying evidence base
Cardiff University	Wales Discharge Medicine Review service	4-5 elements	7	74	High: intervention with published positive evaluation
Isle of Wight Trust	Pharmacy Rehabilitation Service	4-5 elements	7	67	High: although scores low on grid , this intervention is part of a wider commissioned service and has been formally evaluated
University of East Anglia	UEA Four Medicines or More	4-5 elements	9	80	High: intervention with published positive evaluation
Leeds West CCG	CHAMOIS	4-5 elements	11	75	High: intervention with strong evidence base impacts on a significant number of patients

4. Estimating the potential benefits of prioritised interventions

The projects (highlighted green in Table 3) with sufficient data to allow for crude economic extrapolation are detailed below in case studies containing economic analysis.

For further details on these interventions, the full submission of data provided can be found in Appendix 2.

4.1 Referral Pathway Secondary care to Community Pharmacists, including CQUIN

This project created a referral pathway between Croydon University hospital, Croydon CCG and local community pharmacists using a CQUIN for secondary care. High-risk patients were identified by hospital pharmacists and referred to CCG pharmacists at Croydon CCG. The CCG pharmacists addressed any clinical issues, made recommendations to GPs to optimise therapy, ensuring changes to medicines were implemented on the GP clinical system and medicines reconciled. Patients with adherence concerns or problems with inhalers were referred onward to their community pharmacist for a MUR or a domiciliary visit where changes to medication could be explained, old medication removed and patients assessed for adherence support or inhaler technique.

Project Costs:

The project had a CQUIN cost of £51,180, and an additional cost of £6,300 in domiciliary visits (£70 per visit). The total cost of the project was **£57,480**.

Project Savings:

Croydon CCG's evaluation of the project states that in the 12 month period Aug 2013 to July 2014, 216 patients were referred via this pathway resulting in:

- Reduction of 184 A&E attendances
- Reduction of 155 emergency admission attendances
- Reduction of 968 emergency admission bed days

Using an average A&E attendance cost of £150 and an average cost of emergency admission of £2,300 the total savings were **£384,100**. This results in a net saving of **£326,620**.

The ASTRO-PU (weighted population based on age and gender) for Croydon CCG as of January 2016 is 1,247,246. This means the project had a net saving per ASTRO-PU of **£0.262**. If we extrapolate this saving using England's ASTRO-PU value (200,744,651) then the potential annual savings achieved by expanding this project across England is **£52,569,596**.

4.2 Isle Of Wight Pharmacy Reablement service

The Pharmacy Rehabilitation Service (PRS) was part of a wider re-ablement service aimed at providing assistance to vulnerable people to give them the skills necessary to be able to live in their own home independently after having spent some time in hospital. Under the PRS, social services referred patients at high risk of re-admission to the hospital pharmacy. The primary

outcome was reduced emergency hospital readmissions, although other patient related measures of outcomes were reported.

Project Costs:

Over a 4-year period (2011-14), 208 patients received a community pharmacist review involving a total of 258 domiciliary visits. The total cost of these was £18,060 (£70 per visit), averaging **£4,515 per year**. No other costs were described in the survey.

Project savings:

The Isle of Wight's evaluation of the pharmacy Reablement service lists the following results:

- Reduction of 1.5 admissions per patient per year.
- 55% reduction in 30 day readmissions.
- Reduction of 11.6 hospital bed days per patient per year.
- 208 patients received a community pharmacy review over a 4-year period, averaging to 52 patients per year. The average number of reductions in admissions per year is 78 (1.5x52). Using the £2,300 average cost of emergency admission figure that was quoted in the Croydon project, this yields a total saving of **£179,400** per year. This results in a net saving of **£174,885**.

The ASTRO-PU for Isle of Wight CCG as of January 2016 is 614,608. This means the project had a net saving per ASTRO-PU of **£0.285**. Note that this figure is quite similar to Croydon CCG's project, which is very similar in principle. If we extrapolate this saving using England's ASTRO-PU value (200,744,651) then the potential annual savings achieved by expanding this project across England is **£57,121,333**.

4.3 Wales Discharge Medicines Review Service

The Discharge Medicines Review (DMR) service was developed to improve the management of medicines following the discharge of a patient from a care setting. The reviews were conducted by community pharmacists, and led to a reduction in hospital admissions, A&E attendances and drugs wastage.

Project costs

In their evaluation of the Discharge Medicines Review (DMR) Service, Wales estimated the cost to be **£68.50 per DMR conducted**.

Project Savings

Based on 252 DMR's reviewed, the average savings were calculated from the following areas:

- Reduction in A&E attendance yields average savings of £14.22 per DMR
- Reduction in hospital admissions yields average savings of £190.91 per DMR
- Reduction in drugs wastage yields average savings of £1.10 per DMR

The total average savings per DMR conducted is **£206.23 per DMR**, with a net saving of **£137.73 per DMR conducted**.

Between Oct 2011 and Dec 2013 (27 months), 14,649 DMR's were conducted in Wales, which had an average of 712 community pharmacies in this time period. This averages to 6,511 DRMs per 12 months, or **9.14 DRMs per year per community pharmacy**. If this figure is applied to England data (11,674 community pharmacies as of March 2015), we can estimate that England would deal with **106,749 DRMs in a year**, resulting in an estimated saving of **£14,702,585 per year**.

4.4. Care Homes

There were multiple submissions relating to care homes interventions (Northumbria Healthcare NHS trust, Leeds West CCG and Wigan Borough CCG). These projects involve using pharmacists to undertake medication reviews on care home residents, who are typically prescribed multiple medicines. Some examples of the interventions made include stopping medications, changing doses or starting new medications. By far, the most common intervention made was stopping medications, for a variety of reasons. The report from Northumbria's programme states the primary reason for this was that there was no current indication for the medication.

For the following calculations data provided by Northumbria Healthcare NHS trust were used, as they provided the most specific details on the cost and savings of the project, although analysis on the other two interventions shows the net saving per patient to be similar.

Project Costs

The total cost in delivering this service for 12 months was £32,670, which is primarily the cost of the pharmacist, but also from the time from other members of the multidisciplinary team involved in the service (GPs, care home nurses, psychiatry of old age service).

Project Savings

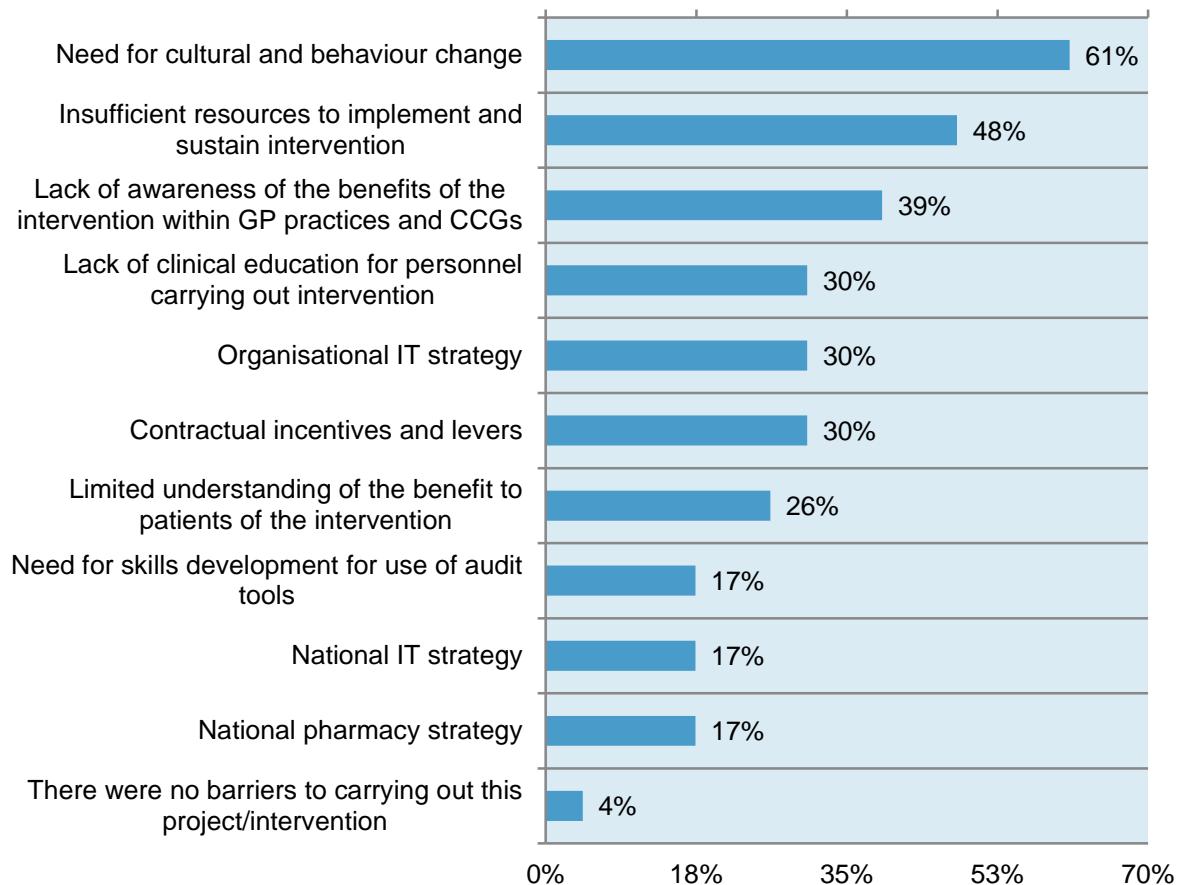
Over 12 months, 422 care home patients were reviewed from 20 care homes. Of these 20 homes, 12 were fully reviewed and 8 were partially reviewed. As a result of the interventions made, the totals savings were £77,703. This results in a net saving per care home patient reviewed of £106.71. Note that these savings are based on medications only, and any savings associated with reduced admissions have not been quantified.

The 2011 ONS census reports there were 291,000 residents over 65 in care homes in England and Wales, which was very similar to the 290,000 residents reported in the 2001 census. By applying this figure to the average saving per patient, the result is a potential annual saving of £31,053,562 if this project was expanded to the point that every care home patient over 65 in England and Wales were reviewed. Obviously, the goal of reviewing every care home patient is optimistic, and likely unrealistic, but it provides a ceiling to the potential savings that could be achieved.

5. Barriers to implementation

The respondents to the Call for Evidence Survey were also asked to describe barriers experienced during implementation of their intervention. A number of multiple choice categories were suggested, based on the Barriers to implementation identified during NHS England and ABPI Medicines Optimisation Roadshows. Their responses are shown in Chart 7 below.

Chart 7. Barriers in Developing and Implementing Projects



Change in culture: The largest perceived barrier was that of how to create cultural and behavioural change within the organisation (61%). Creating organisational change can be a tremendously difficult endeavour and the recent level of organisational “churn” may have been an inhibiting factor.

“Clearly this required some significant behavioural change by hospital and community pharmacists. Engagement via the AHSN with all stakeholders allowed us to change behaviours and implement a new way of working.”

(Academic Health Science Network)

Insufficient resources were identified in 48% projects as a barrier to the development and implementation of the projects. This may to an extent be due to projects having insufficient data to make a robust business case to senior management in health care organisations.

“There is currently no funding available to continue or extend the project.”

(Charity)

“Limit of 400 MURs for community pharmacy.”

(CCG)

Insufficient time: There was a lack of time to fully implement an intervention due to the parameters of their pilot study. Another project cited that due to the collaborative processes involved in their project, this slowed down the process of implementation.

"The design of the patient letter needed to be agreed with key stakeholders. Approvals were required e.g. Belfast Trust corporate communications, ABPI internal approval of all the drug companies involved. Funding of the leaflet by the Immunology Therapy group needed to be a transparent process."

(Health and Social Care Trust)

Workforce skill: A lack of suitably trained staff to deliver interventions (30%) or a lack of training surrounding the use of audit tools (17%) were flagged as barriers.

"Recruitment of prescribing pharmacists is challenging as there are not enough registered prescribing pharmacists out there (so have to put them through a 6 month course after recruitment). A national strategy is required to increase the number of prescribing pharmacists, particularly as medical staff numbers are challenged. Having demonstrated clear benefits of this model, there are now challenges re-allocating medical staff budgets to pharmacy budgets to support roll-out (better engagement due to the difficulty of filling vacant medical staff posts because of the locum cap recently introduced)."

(Teaching hospital)

"Where a patient presented to a pharmacy on a day the trained pharmacist was not available the service was not offered, some pharmacies would only have one lithium patient. Other enhanced services e.g. medicines use review (MUR) were seen as priority. Lack of direct contact with the patient - patient did not always present themselves to collect medication e.g. someone else collected on their behalf or it was delivered by a driver."

(Health and Social Care Trust)

IT Strategies at the organisational and national level were identified (305 and 16%, respectively) as barriers.

"The only true barrier that still troubles us is Information Governance, the application of which has been variable between organisations."

(Area Health Science Network)

Several respondents also felt that the **lack of incentives** (30%) associated with taking part in the project and **the limited awareness of the benefits of the intervention** among practices and CCGs (39%) and to patients (26%) were significant barriers in persuading GPs or pharmacies to participate in the projects.

"The GP LIST has been under review and so GPs [were] reluctant to sign up [for the project]."

"We had initially had interest from GPs but due to a variety of reasons they could not participate."

(CCG)

6. Discussion of the selected successful projects

The Medicines Optimisation projects/ subject areas with the highest impact that also had sufficient data to estimate cost impact/cost effectiveness were:

6.1. The use of Community Pharmacists to review patients either for medication reviews or for follow-up after patient discharge from hospital. (Croydon CQUINs, Isle of Wight, Wales DMR, Newark and Sherwood)

These whole-system approaches which improved communication between secondary and primary and community care across the whole patient pathway demonstrated significant reductions in hospital attendances and admissions. The key challenges which need to be addressed for wider implementation are establishing an effective mechanism for identifying all patients that may benefit and how to engage both secondary, primary and community health providers on a universal basis.

6.2. Care homes initiatives (Croydon, Northumbria, Wigan, Somerset, Leeds)

Care home initiatives reported significant numbers of patient safety interventions, reduced attendances and admissions to hospital and reduced use and cost of medicines per patient reviewed.

6.3. Four medicines or more initiative (University of East Anglia)

For those patients over 65 who take four medicines or more this initiative demonstrated a reduction in patient falls ,improvements in medicines adherence ,improvements in quality of life and average cost increase per patient of £219. The cost per QALY on 12 month basis was estimated as £11,885.

7. Conclusions and Recommendations

7.1. Strength of the evidence base

There is an emerging and increasingly robust evidence base demonstrating that where we address issues beyond medicines' cost and volume that there are significant benefits for both the NHS and patients alike.

Good examples include:

Pharmacists working with GPs and care homes to review medicines prescribed to people in care settings

- Northumberland - <http://www.health.org.uk/programmes/shine-2012/projects/multidisciplinary-review-medication-nursing-homes-clinico-ethical>
- Leeds West CCG
http://www.pharman.co.uk/imagelib/pdfs/Journal_articles_by_issue/JoMO_Sep_2015/CHA_MOIS.pdf

Utilising the technology solutions to identify patients at risk of medication errors or suboptimal care and carrying out a medicines optimisation intervention.

- The PINCER principles [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(11\)61817-5/abstract](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(11)61817-5/abstract)
- GRASP AF - <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4276003/>

Community based support for patients on discharge from hospital:

- Newcastle - <http://www.rpharms.com/support-pdfs/3649---rps---hospital-toolkit-brochure-web.pdf>
- Isle of Wight – Pharmacy Reablement Service <https://www.npa.co.uk/wp-content/uploads/2015/09/HEF-Preventing-Hospital-admissions.pdf>
- Croydon CCG - <Int. J. Pharm. Prac. Vol 23, suppl 2, Oct 2015, 74-75>
- Lancashire - http://www.nhsig.nhs.uk/media/2656406/lancashire_pharmacy_sg.pdf

These examples are increasingly showing demonstrable patient benefit, improved safety, value for money and or a reduction in avoidable admissions or readmissions and crucially are being replicated in a number of localities across England.

Such examples rated highly as part of this review process and therefore should be addressed by CCGs and Trusts who have yet to put such arranges in place locally.

7.2. Focus on improved patient outcomes

It is encouraging to see that the vast majority of examples submitted to this review showed improved patients outcomes. This supports the principles of Medicines Optimisation which aim to move from what has been an overly narrow focus on cost and prescribing towards a more strategic approach to help patients to get the most from their medicines. This in turn, is helping to deliver better value for the NHS and the public purse.

7.3. Safety of medicines

With medicines being the most frequent intervention in the NHS as a whole, it is vital those medicines are used as safely as possible and that risks and benefits are explained to patients. Many of the examples here reflect the principles of MO such as a reduction in potential harm and also aim to use a patient centred approach.

7.4. Best use of available resource

Pharmacists, and in particular community based pharmacists are the majority "deliverer" of the interventions. Again this reflects well on the care setting where medicines are mostly used by patients. Whilst it is right that Pharmacists lead MO, it is important that MO interventions become more multidisciplinary and embedded in routine healthcare for all disciplines to maximise the benefit to patients and the NHS.

In addition, healthcare organisations must ensure that the pharmacy teams they employ are freed up to undertake medicines optimisation work and are not simply used to monitor prescribing costs. The evidence base emerging in this report demonstrates that there are significant gains to be made if the NHS embraces MO. Robust business cases should be presented to senior managers and finance directors in healthcare organisations to highlight these financial gains and demonstrate

that resource should be directed towards these activities as well as simple cost reduction exercises. Ignoring the need for medicines optimisation will inevitably cost the NHS more in the long term.

7.5. Other projects in development or in progress

A number of promising examples were submitted which is due course may well provide significant evidence for the benefits of MO. Rather than simply publish this report and not capture these examples these examples will be recoded and a future evaluation will capture the study findings when they are available. Particular examples include

- the Dudley HARMs initiative, reducing the number of admissions due to medicines
- Two projects in in Sheffield involving the evaluation of medicines reconciliation at the point of admission, and a pharmacy team working within the Integrated Care Service
- An integrated hospital to community pharmacy referral system in Lancashire
- Community Pharmacy West Yorkshire, Sheffield Hospitals ,improving the management of COPD patients
- Sunderland City hospitals Improving care of diabetes patients.

Appendix 1: Call for evidence and data collection form



Prioritisation of Medicines Optimisation Interventions Project

Call for evidence

Keele Centre for Medicines for Optimisation (KCMO) has been engaged by NHS England to develop a framework to enable the NHS to determine how and where to invest its scarce Medicines Optimisation (MO) resources to deliver improved outcomes in line with the principles of Medicines Optimisation. As part of this process it is important to gather examples of current best practice related to Medicines Optimisation from around the NHS, with a view to wider communication and dissemination.

We are aware of a number of other similar "calls for medicines optimisation evidence" work and would advise colleagues that we are engaging with HoPMOP, the RPS Innovators Forum, Pharmacy Voice and PSNC and others. If you have recently shared your examples with HoPMOP and the RPS innovators forum, we will pick up your examples from there. However, you may wish to notify us via email at medman@keele.ac.uk that you would like to highlight your work for inclusion in this framework.

This work, on behalf of NHS England and in collaboration with AHSNs, will look at all elements of medicines use in all care settings so please make sure your great work is highlighted and included here.

If your work is yet to deliver outcome data, you may still wish to highlight the work here as we will try to link up similar pieces of work so your data so far may still be helpful and secondly there is an opportunity to create a Medicines Optimisation evidence pipeline whereby you can update your outcomes as your projects reach that stage.

If you have an example of a medicines optimisation project/intervention to contribute, please could you fill in the form below, completing as many sections as are relevant. If you have supporting information/documentation that you would be willing to share please attach to an email to medman@keele.ac.uk (with your Contact Name and organisation clearly stated) or post to:

Keele Centre for Medicines Optimisation
Pharmacy School
Keele University
Keele
Staffordshire
ST5 5BG

The deadline for the return of examples is 11th January.

*1. Please supply contact details (in case we need further clarification)

Contact name:

Name of organisation:

Email Address:

*2. To which of the following topics does your Medicines Optimisation project or intervention relate?

(choose all that apply)

- Audit and feedback
- Academic detailing
- Clinician decision support/aids
- Counselling or behavioural modification
- Medicines-related patient safety incidents
- Uptake of innovative new treatments
- Medication review
- Medicines reconciliation
- Medicines-related communication systems during transition from one care setting to another
- Medicines-related models of organisational and cross-sector working
- Medicines waste reduction initiative
- Patient adherence support: adherence aids, reminders, dose simplification
- Patient decision aids for consultations involving medicines
- Professional and patient education
- Self-management plans
- System and process improvements across the local health economy

Other (please specify):

3. Please describe the key elements of your project or intervention: (please limit your response to 200 words):

4. What is the status of your project/intervention?

- Started
- Completed
- In development

IF YOUR PROJECT IS COMPLETE, PLEASE ANSWER QUESTIONS 5-16

IF YOUR PROJECT IS IN DEVELOPMENT, PLEASE ANSWER QUESTIONS 17-25

Call for Evidence: ongoing/completed projects

5. Please state the start date of your project/intervention (DD/MM/YYYY):
6. Please include names of partners involved in delivering the medicines optimisation projector intervention (if relevant):
7. Which principle(s) of medicines optimisation does the project or intervention address?
 - Ensuring that medicines use is as safe as possible
 - Promoting an evidence-based choice of medicines
 - Enhances/improves understanding of the patient experience
 - Assists/promotes the aim to make medicines optimisation part of routine practice
 - Improving patient outcomes
 - Aligned measurement and monitoring of medicines optimisation
 - Using a patient-centred approach

Please describe how your intervention impacts on this principle and supply as much detail as you can:

8. What is the target patient group or population for your intervention?
9. What benefits/outcomes were achieved? Please select all the options that apply.
 - Patient empowerment/shared decision making
 - Improved communication at interface and cross-sector working
 - Improved adherence
 - Improved self care
 - Appropriate choice of medicines
 - Adoption of NICE/innovation/national guidelines
 - Waste management
 - Reduction in potential patient harm
 - Reduction in early re-admissions
 - Improved prescribing and consultation skills
 - Improved use of workforce skills
 - Reduced number of safety incidents
 - Admissions avoided
 - Reduced length of stay
 - Cost savings
 - Improved patient experience

Please supply as much detail as you can:

10. How were the benefits/outcomes quantified? Please state units of measurement and what was the size of the effect?

11. Did the medicines optimisation project or intervention involve:

- Education of professionals
- Education of patients
- Education of the Public
- Use of specific software tools (If so, please state name of tool(s) used)
- Other (please specify):

12. Who carried out the medicines optimisation intervention:

- Hospital based pharmacists
- Community Based Pharmacists
- Practice Based Pharmacists
- General Medical Practitioner
- Hospital Doctor
- Other (please specify):

13. Were you able to calculate the cost of the intervention? Please supply:

- One-off/set up costs:
- Annual cost:
- the basis of the calculation of costs:

14. Which barriers did you experience in developing and delivering this medicines optimisation project or intervention? Please selection all the options that apply.

- Limited understanding of the benefit to patients of the intervention
- Insufficient resources to implement and sustain intervention
- Need for cultural and behaviour change
- Lack of clinical education for personnel carrying out intervention
- Need for skills development for use of audit tools
- Organisational IT strategy
- National IT strategy
- National pharmacy strategy
- Contractual incentives and levers
- Lack of awareness of the benefits of the intervention within GP practices and CCGs
- There were no barriers to carrying out this project/intervention

Further comments/details:

15. How were any barriers you described overcome?

16. Please supply any additional details you wish to include or describe that are not covered in the previous questions. Please supply a reference if the project has been published.

17. Please state the planned start date of your project/intervention (DD/MM/YYYY):

18. Please include names of partners involved in the planning or delivery of the medicines optimisation project or intervention (if relevant):

19. What is the target patient group or population for your intervention?

20. Which principle(s) of medicines optimisation does the project or intervention address?

- Ensuring that medicines use is as safe as possible
- Promoting an evidence-based choice of medicines
- Enhances/improves understanding of the patient experience
- Assists/promotes the aim to make medicines optimisation part of routine practice
- Improving patient outcomes
- Aligned measurement and monitoring of medicines optimisation
- Using a patient-centred approach

Please describe how your intervention impacts on this principle and supply as much detail as you can:

21. What outcomes does your project or intervention plan to measure? Please select all the options that apply.

- Patient empowerment/shared decision making
- Improved communication at interface and cross-sector working
- Improved adherence
- Improved self-care
- Appropriate choice of medicines
- Adoption of NICE/innovation/national guidelines
- Waste management
- Reduction in potential patient harm
- Reduction in early re-admissions
- Improved prescribing and consultation skills
- Improved use of workforce skills
- Reduced number of safety incidents
- Admissions avoided
- Reduced length of stay
- Cost savings
- Improved patient experience

Please supply as much detail as you can:

22. How are you intending to quantify the benefits/outcomes?

23. What are your anticipated costs of the intervention?

Please supply:

- One-off/set up costs:
- Annual cost:
- the basis of the calculation of costs:

24. What do you anticipate the challenges are in delivering or completing your intervention?

25. Please supply any additional details you wish to include or describe that are not covered in the previous questions. Please supply a reference if details of the project have been published.

Many thanks for completing this form.

If you have copies of supporting documentation e.g. business case, monitoring reports and evaluations that you would be willing to share, please email them to medman@keele.ac.uk with your

Contact Name and organisation clearly stated.

Alternatively, if you wish to send paper copies, please post to:

Keele Centre for Medicines Optimisation

Pharmacy School

Keele University

Keele

Staffordshire

ST5 5BG

The deadline for the return of examples is 11th January.

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Name of project: medicines optimisation in CV pre-admission clinic

Submitting organisation: Barts Health NHS Trust

Contact for information: Sotiris Antoniou

Description of the intervention:

No further description

Name of project: Lithium support service

Submitting organisation: Belfast Health and Social Care Trust

Contact for information: Hilary Rea

Description of the intervention:

"The six month project trialled the provision of a lithium support service by community pharmacists (CPs). A specialist secondary care mental health pharmacist (MHP) provided comprehensive training, to enrolled community pharmacists, which included information on bipolar illness; case studies; and training on delivery of the service. Mentoring was provided throughout the project by the MHP. The service was offered each time a new prescription was presented and repeated up to a maximum of five times. The patient's knowledge in four areas was targeted by the CPs. 1. Adherence - checking understanding of how & when to take their lithium; and encouraging them to carry their alert card from the 'NPSA purple book'. 2. Adverse reactions - checking understanding of side effects and toxicity; of the risks of dehydration, sickness & diarrhoea; and understanding what to do when suffering any symptoms. Patients with more severe side effects or toxicity referred to their GP. 3. Interactions and precautions- offering advice on newly prescribed medications & and which over the counter medicines that should be avoided. 4. Monitoring- establishing the patient is having lithium levels monitored every 3 months and thyroid and renal function every 6 months.

MO principles addressed

The National Patient Safety Agency (NPSA) issued a patient safety alert (2009) that suggested lithium therapy is an error-prone process. It highlighted the issues that some patients taking lithium have been harmed because they have not had their dosage adjusted based on recommended regular blood tests; and if patients are not informed of the known side effects or symptoms of toxicity, they cannot manage their lithium therapy safely. Both NPSA and NICE guidance Bipolar disorder (CG185) state it must be ensured that the person is given information about their treatment. The project addressed the principle of ensuring medicines use is as safe as possible by providing information to patients, thereby improving their understanding of their medication and improving patient outcomes.

Benefits/outcomes measured

1. Following training, carried out by the specialist mental health pharmacist, community pharmacists reported the training had improved their knowledge about lithium therapy and the issues involved.
2. Community pharmacists reported the training increased their confidence in providing advice about mental health and discussing issues with other healthcare professionals.
3. Access to Choice and Medication website www.choiceandmedication.org/hscni was commissioned by the Health and Social Care Board as a means of support to community

pharmacists. Continuing access for healthcare professionals, patients, carers etc. is ongoing and recurrent funding is being sought.

4. Availability of support by the specialist mental health pharmacist, throughout the project, has developed relationships between secondary and primary care.
5. The service helped breakdown perceived barriers, by patients, to accessing pharmacy support and so improved the patient experience. It highlighted to patients that pharmacists are available to answer when they have a query or difficulty with their medicines.
6. Raised patient awareness in the area of adverse reactions and toxicity thereby potentially reducing admissions caused by avoidable adverse reactions.
7. Raised patient awareness about the importance of regular blood monitoring thereby reducing both short and long term risks.
8. Raised patient awareness of drug interactions thereby potentially reducing admissions caused by avoidable adverse reactions.
9. The pilot has produced robust information to inform commissioning.

Outcomes were measured in percentages. 47 patients i.e. 43% of estimated lithium patients in participating pharmacies were enrolled. 72% of patients received at least one follow up in the six month period. In total 38 interventions were made by the community pharmacists. 1. Toxicity & ADR - 23% reported adverse effects e.g. thirst, skin problems, dry mouth, tremor, weight gain, tiredness. 9% (1 patient) referred to GP as appeared to be suffering signs of toxicity. Monitoring - awareness raised about the importance of blood monitoring, including reason and timing of tests. 6% had not attended for routine lithium blood monitoring within the recommended monitoring time frame of 3 months (one patient had not attended for 7 months and another 5 months). Adherence - 38% did not have a lithium record book (NPSA 'purple book') or alert card. Drug interactions - 6% were referred to GPs due to drug interaction with ibuprofen.

Barriers to overcome

Time limitation of the pilot therefore a proportion of patients only received one consultation. Not all lithium patients wanted to enroll in the project due to a number of reasons e.g. time involved, patients did not feel comfortable talking about their medication, patient normally went to another pharmacy. Where a patient presented to a pharmacy on a day the trained pharmacist was not available the service was not offered, some pharmacies would only have one lithium patient. Other enhanced services e.g. medicines use review (MUR) were seen as priority. Lack of direct contact with the patient - patient did not always present themselves to collect medication e.g. someone else collected on their behalf or it was delivered by a driver. Paper based system rather than electronic."

Comprehensive training was provided at times suitable for community pharmacists e.g. before or after shop opening times; availability of specialist mental health pharmacist as mentor, support, providing advice when necessary; payment agreed to provide the service.

Name of project: Biologics waste project

Submitting organisation: Belfast Health and Social Care Trust

Contact for information: Jane Whiteman

Description of the intervention:

"Musgrave Park Hospital is a regional specialist centre for rheumatology in Northern Ireland. Over 1300 patients are on subcutaneous biologic treatment for inflammatory disease. Musgrave Park hospital pharmacy department dispenses all biologic drugs for outpatients. These drugs are delivered by a homecare agency to patients' homes. If these drugs have been stored in a patient's home and are no longer needed by the patient, the drugs cannot be recycled and have to be destroyed. The use of biologic drugs has a large financial impact on the National Health Service. A previous audit had identified a number of reasons for biologic waste. One major reason for waste was that patients accepted delivery of drug when temporarily off drug or when not doing well on drug. It was felt that patients could help prevent unnecessary drug wastage if engaged to do so and that a more efficient service could be provided if patients were aware of their responsibility to use these expensive therapies correctly.

MO principles addressed:

The biologics waste project, which was recently highly commended at the national PrescQipp awards, was a collaborative approach by the trust and the pharmaceutical industry to engage patients to reduce waste of high cost biologic medicines. If waste is reduced more patients can benefit from biologic drugs in the future. If patients are aware of the high cost of these drugs and of ways to prevent waste, it follows that they are encouraged to manage their biologic medicines responsibly. Collaborative working such as this is encouraged by current government strategies and by the principles of Medicines Optimization.

Benefits/outcomes measured

During the data collection period April 2013 to March 2014 (data collection 1) the details of all subcutaneous biologic drugs returned to pharmacy was recorded. Drugs could be recycled if the cold chain had been maintained and drug had not been accepted into patients' homes. Also the number of 'faulty' devices returned to pharmacy was recorded. During this period, the author and ABPI Immunology Group collaborated on a biologic waste information letter for patients. The letter sought to engage patients as equal partners in reducing waste. The letter highlights to patients the high cost of biologic drugs, gives advice on when to refuse delivery, how to prevent biologic drug waste and when to contact the homecare delivery service. MPH pharmacy began to distribute the letter in March 2014."

Barriers to overcome

The design of the patient letter needed to be agreed with key stakeholders. Approvals were required e.g. Belfast Trust corporate communications, ABPI internal approval of all the drug companies involved.

Funding of the leaflet by the Immunology Therapy group needed to be a transparent process. This was resolved by ABPI supported funding.

Name of project: Therapeutic review steering group

Submitting organisation: Belfast Health and Social Care Trust

Contact for information: Paula Crawford

Description of the intervention:

"Belfast Trust established a Therapeutic Review steering group to put formal systems in place to ensure optimum prescribing of cost-effective treatments. The group included a range of specialists including a new post of Lead Therapeutic Review pharmacist, chair of Drug and Therapeutics

Committee and Medical Director. The group focussed on diseases with a high incidence in Northern Ireland, including multiple sclerosis, inflammatory bowel disease and the increasing numbers of patients being treated with biologic drugs and disease-modifying therapies. A series of audits were conducted to assess use against NICE guidelines, identified barriers to change and agreed action plans with clinicians to build on results from the audits.

MO principle addressed:

The intervention assessed prescribing of high cost drugs against NICE standards by reviewing existing prescribing and producing an action plan for change. Deviation from NICE guidance was highlighted to individual clinicians in one-one meetings as well as a group presentation to feedback results anonymously.

Benefits/outcomes measured:

Biologics in Inflammatory bowel disease (IBD): Potential savings of £55,000 identified for 13 cases of adult severe active Crohn's if adalimumab had been used instead of infliximab and patients able to self-administer adalimumab at home as opposed to attending day ward for infliximab infusion. A screening form was developed for use of biologics in IBD to improve patient information, development of patient information around the IBD service and risks/benefits of biological treatment including ensuring patients are fully informed that a treatment plan will include a trial withdrawal of biologic at 12 months after initiation if clinically appropriate. Use of the most cost-effective biologic agent was encouraged in line with NICE. Biologic drug use in Rheumatoid Arthritis (RA): Biologic prescribing in RA was assessed against NICE guidance. The audit highlighted a culture of switching between biologic drugs which deviated from NICE guidance. The audit highlighted a number of patients on biologic drugs who were 'lost to follow up'. The generation of a repeat RA biologic prescription is now linked at attendance at review clinic to prevent repeat prescriptions being issued to patients who have not been reassessed. NICE costing tools highlighted 25 cases where the most cost-effective agent had not been used 1st line. 61 cases involving prescribing of biologics in psoriasis were audited and showed that rigid systems were in place for manager-entry of biologics as Psoriasis Area Severity Index (PASI) and Dermatology Life Quality Index (DLQI) scores were measured routinely in line with NICE guidance. 98% patients had at least 2 follow-up consultant reviews within 9 months of starting biologic therapy. 96% psoriasis patients being treated with biologics had evidence of a 75% reduction of baseline PASI or 50% reduction on PASI and 5 point reduction on DLQI since the beginning of treatment. One third of patients had both psoriasis and psoriatic arthritis (n=20) and a lack of documentation around collaboration between dermatology and rheumatology clinicians for these patients e.g. regarding choice of biologic agent was highlighted by the therapeutic review. Therapeutic review audit of prescribing of Disease-Modifying Therapies (DMTs) in 43 cases of multiple sclerosis identified the need for consistent documentation of how patients meet starting criteria for DMTs including baseline walking distance. The need to define starting criteria and review patients on DMT treatment in line with Association of British Neurologists (ABN) guidelines was highlighted. Waste associated with prescribing of high cost DMTs was identified due to patients not collecting their prescription, 26% cases audited had developed clinical relapses post starting treatment and needed review, 35% MS patients on DMTs had a gap of > 6 months between consultant review. Waste associated with uncollected DMT prescriptions in multiple sclerosis was identified, 242 prescriptions were uncollected by 155 patients. 52% of this uncollected prescription stock had expired, 43 patients had multiple scripts uncollected. A review of the system for supply of MS DMT drugs was undertaken to reduce waste.

IBD biologics: Re-audit following introduction of a 'managed-entry' checklist' demonstrated improvements: increase in use of most cost-effective agent from 67% to 95%. Trial withdrawal off

biologic after 12 months treatment was introduced were clinically appropriate in line with NICE guidance. Documentation of clinical symptoms improved and significant improvement in written patient information provided and introduction of IBD telephone & email advice line. Multiple Sclerosis (MS) managed-entry form for DMTs in Multiple sclerosis introduced to outpatient clinic and action plan to reduce waste. Staff were appointed to manage and prevent the significant waste associated with multiple sclerosis DMT prescriptions."

Barriers experienced were a need for cultural and behaviour change and Insufficient resources to implement and sustain intervention. The need for cultural and behaviour change was addressed by lead pharmacist therapeutic review held one-one meetings with clinicians to identify areas of deviation from NICE guidance, audit results were presented to the specialty(clinicians, nurses and service managers). Therapeutic review steering group chaired by the medical director met regularly to reflect on progress.

Additional information:

1. NICE shared-learning awards 2014 'Therapeutic Review: a NICE way to improve evidence-based prescribing'
(highly commended).
 2. Crawford, P. 'Establishing Trust-wide Therapeutic Review to optimise the use of high cost drugs. Pharmacy Management 2013: Vol 29 Issue 3. 3-10.
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Name of project: Research into medicines recycling and returns and transdermal patch application and disposal

Submitting organisation: Bradford University School of Management

Contact for information: Dr Liz Breen

Description of the intervention:

No further description

Name of project: Causes of medicines waste report

Submitting organisation: Bristol CCG

Contact for information: Jon Hayhurst/Jenny Gibb

Description of the intervention:

Report making a set of recommendations to reduce medicines waste:

1. Raise awareness of the problem of medicines waste
2. Support GP practices with optimising their prescription management
3. Reduce prescribing to reduce waste
4. Support self-management and social prescribing
5. Improve the management of prescription requests in community pharmacies
6. Improve communication between GP practices and community pharmacies
7. Provide more information for better concordance
8. Promote optimal medicines management in care homes
9. Implement a pharmacy technician-led Medicines Support Service

10. Transfer the prescribing of continence appliances
 11. Transfer the prescribing of stoma appliances
 12. Reduce prescribing and dispensing errors
 13. Improve the safekeeping of medicines in secondary care
 14. Provide guidance, training and support to healthcare workers
 15. Ensure medicines waste remains high priority
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Name of project: Early Recognition of Coeliac Disease in Community pharmacies

Submitting organisation: Coeliac UK

Contact for information: Ruth Passmore

Description of the intervention:

Coeliac disease (CD) affects 1 in 100 people living in the UK but only 24% of those living with the condition are diagnosed. If undiagnosed and untreated, the risk of long term complications including osteoporosis, ulcerative jejunitis and intestinal malignancy increases. In order to improve the diagnosis rates for CD, the proof of concept project “Early recognition of CD in community pharmacies” was conducted. 15 pharmacies took part in the project where customers presenting with a prescription, or purchasing over the counter products for IBS and/or anaemias were offered a point of care test (POCT) for CD. Customers who were eligible to take part were given information about the project and those who agreed were offered a POCT. SimtomaX® test kits which use a finger prick blood test to look for the antibodies produced in people with CD were used in this project. Customers were also asked to complete a short questionnaire about their symptoms. Pharmacists discussed the test results with the customer and provided an information sheet about the test and their results. Where appropriate, pharmacists advised customers to discuss the results with their GP to initiate discussion for further testing for CD.

MO principles addressed

This project first addresses the use of evidence based choice of medicines. The National Institute of Clinical Health and Care Excellence (NICE) guidelines ‘Coeliac disease: recognition, assessment and management’ [NG20] recommend that serological testing for coeliac disease is offered to people with unexplained iron, vitamin B12 or folate deficiency and irritable bowel syndrome. If coeliac disease remains undiagnosed, unnecessary medications to treat anaemia and IBS may be prescribed. The complete medical treatment for coeliac disease is the gluten-free diet and in most cases, prescription medications are not required as part of the medical treatment for coeliac disease.

Promoting serological screening for coeliac disease before prescribing treatments for IBS or anaemia could therefore reduce the unnecessary prescribing of these medications. Feedback provided by pharmacists who took part in this project showed that pharmacists felt that offering the service to patients led to an improvement in the patient experience. The impact is demonstrated in the quotes below from pharmacists who took part in the project: “I think it really enhances your relationship, you know, the more services we do and we can offer, it really raises the profile with pharmacy and it improves our relationship with the customer and they feel like they're being looked after and it's something else we can offer them and help them with.” “If they see that we're not just another high street pharmacy, but we're actually trying to do things for them and help them and go above and beyond with the extra services that we're doing.”

Then that's all positive really. A lot of them did not know that community pharmacy could do services like that, so when we did do it they were like 'oh wow, that's amazing, I can't believe I can just come into the pharmacy and do it, rather than having to wait months and months and months for a referral.'

Untreated and undiagnosed coeliac disease is associated with an increased risk of long term complications, including osteoporosis, ulcerative jejunitis, intestinal malignancy, functional hyposplenism, vitamin D deficiency and iron deficiency. In addition to long term complications, in the short term undiagnosed coeliac disease is associated with a range of symptoms including frequent bouts of diarrhoea, nausea and vomiting, stomach pain and cramping, lots of gas and bloating, fatigue, regular mouth ulcers, constipation and dermatitis herpetiformis, the skin manifestation of coeliac disease. Once diagnosed, the gluten-free diet can be initiated and in the majority of cases this leads to an improvement in symptoms and strict adherence to the gluten-free diet reduces the risk of long term complications. Obtaining a diagnosis of coeliac disease therefore improves patient outcomes in both the short and long term.

The target patient group for this intervention is adults over the age of 16 who are receiving prescription medications or purchasing over the counter treatments for anaemia (iron, folate or vitamin B12) or irritable bowel syndrome. The pilot could be extended to include other high risk populations as identified NICE [NG20] such as patients with type 1 diabetes, autoimmune thyroid disease, prolonged fatigue or severe or persistent mouth ulcers.

Benefits/outcomes measured

As indicated above, serological screening for coeliac disease for patients with IBS or anaemia is in line with NICE guideline NG20, coeliac disease: recognition, assessment and management. Ensuring that people with coeliac disease receive a prompt diagnosis is essential in order to reduce the long term complications associated with undiagnosed coeliac disease and reduce potential patient harm. Unfortunately, at present, many people do not receive a prompt diagnosis of coeliac disease, on average it takes 13 years from initial symptoms to diagnosis. The results of this pilot show that early detection in community pharmacy could help to improve rates of diagnosis of coeliac disease as 9% of those tested had a positive result compared to 1% of the general population. The Five Year Forward View highlights the importance of making more appropriate use of community pharmacies to help patients get the right care. Providing this service fits well within pharmacists a skill set and helps to identify patients purchasing over the counter treatments who may not have visited their GP. The patient experience is improved as patients who agreed to have the test were able to either rule out coeliac disease as the cause of their symptoms, or further investigate the possibility that coeliac disease may be the cause of their symptoms. The community pharmacy setting is more convenient for patients as no appointment was necessary and the whole consultation, including receiving the test results took around 20 minutes to complete.

Over a period of 20 weeks, n=551 point of care tests were carried out in 15 pharmacies. Of those tested, n=52 had a positive point of care test result which is 9.4% of the total number of tests conducted. As the prevalence of coeliac disease is known to be 1%, the results show that this targeted approach to case finding is effective in coeliac disease. These patients who received a positive test result were referred to their GP for further testing as serological testing alone does not provide a diagnosis of coeliac disease.

The specific software tool used was Pharmoutcomes from Pinnacle Health Partnership LLP which was used to record the outcomes of the project.

Barriers:

The project was funded by the charity Coeliac UK and Tillotts Pharma kindly provided the SimtomaX® test kits free of charge. There is currently no funding available to continue or extend the project.

Name of project: EPIC

Submitting organisation: Community Pharmacy West Yorkshire

Contact for information: Robbie Turner

Description of the intervention:

Project in development.

The EPIC project aims to improve patient's ability to manage their own Chronic Obstructive Pulmonary Disease (COPD) through greater understanding of COPD and its treatment, increase the use of self-care management plans, and ensure that they are able to use their COPD treatment effectively and correctly. The EPIC project will target high risk COPD patients at 14 practices in Pudsey, Armley and Bramley within the Leeds West CCG over a period of 4 months. These GP practices have been chosen as they reside within a geographical area where COPD patients have high rates of hospital admissions and accident & emergency attendances. Based on QOF data for 2013/14 there are approximately 2,600 COPD patients within these practices. This service is the community pharmacy element of the EPIC project and is commissioned by NHS Leeds West CCG to promote adherence to respiratory medication and self-care for patients with COPD. Eligible patients will receive 2 consultations 8 weeks apart with a suitably trained pharmacist / pharmacy technician. The consultations will include smoking status and cessation advice, assessment and teaching of inhaler technique, explanation of medicines, monitoring of COPD, lifestyle advice and self-care advice and education (including exacerbations).

MO principles addressed:

Effect on COPD Health Status: Improvement in medicines optimisation, inhaler technique and appropriate prescribing and self-care will improve COPD health status as measured by the COPD Assessment Test (CAT score) and mMRC dyspnoea score. Data will be extracted from electronic medical records provided by NHS informatics.

Improvement in prescribing: Improvement in medicines optimisation, inhaler technique and appropriate prescribing and self-care will result in cost-savings achieved through a reduction in inappropriate prescribing of ICS/LABA inhalers, and increased use of more cost-effective inhaled therapy. This will be measured by the volume and overall cost of prescribing within ICS/LABA and LAMA classes of drug therapy. It has been estimated that the new Leeds 'preferred' drug formulary and treatment algorithm could achieve cost savings of up to £1.26million per year (assuming all patients are switched to the new formulary, and achieve 100% adherence to treatment, compared to real-life adherence, which is estimated at ~8.4 inhalers per year). The majority of this saving in primary care across Leeds could be achieved within Leeds West CCG (projected up to £1.1 million per year).

Outcomes measured:

1. Effect on COPD exacerbations: Improvement in medicines optimisation, inhaler technique and appropriate prescribing and self-care is expected to reduce the number of COPD exacerbations.

This will be measured by number of rescue corticosteroid courses documented in electronic medical records and prescribing data.

2. Effect on Urgent Care Services: Improvement in medicines optimisation, inhaler technique and appropriate prescribing and self-care will reduce A&E attendances, emergency hospital admissions, and readmissions within 30 days. Data will be provided by NHS informatics.

3. Effect on COPD Health Status: Improvement in medicines optimisation, inhaler technique and appropriate prescribing and self-care will improve COPD health status as measured by the COPD Assessment Test (CAT score) and mMRC dyspnoea score. Data will be extracted from electronic medical records provided by NHS informatics.

4. Improvement in prescribing: Improvement in medicines optimisation, inhaler technique and appropriate prescribing and self-care will result in cost-savings achieved through a reduction in inappropriate prescribing of ICS/LABA inhalers, and increased use of more cost-effective inhaled therapy. This will be measured by the volume and overall cost of prescribing within ICS/LABA and LAMA classes of drug therapy.

It has been estimated that the new Leeds 'preferred' drug formulary and treatment algorithm could achieve cost savings of up to £1.26million per year (assuming all patients are switched to the new formulary, and achieve 100% adherence to treatment, compared to real-life adherence, which is estimated at ~8.4 inhalers per year). The majority of this saving in primary care across Leeds could be achieved within Leeds West CCG (projected up to £1.1 million per year).

Anticipated Benefits:

Patients: Improved management of COPD, through the appropriate prescribing of medication within guidelines and the use of inhaler devices that are easier to use. This will result in:

- Improvements in health status (measured using the COPD Assessment Test (CAT))
- Improvements in exercise tolerance (measured using mMRC dyspnoea scale)
- A reduction in COPD exacerbations (measured by the number of corticosteroid courses).
- A reduction in hospital admissions and emergency department visits with COPD exacerbations.
- Increased number of documented inhaler technique assessments of improvements in inhaler technique

Prescribing: A clear formulary may allow prescribers to choose the appropriate class of drug for each patient based on symptoms, health status, exacerbation risk and lung function. This will be measured by reviewing prescribing data:

- Volume of ICS/LABA prescriptions
- Volume of LAMA prescriptions
- Volume of short-acting beta-2 agonist prescriptions.

Based on current prescribing data for the three Leeds CCGs, it is anticipated that a cost saving of up to £1.2 million per year may be achieved compared to current COPD expenditure (equating to approximately £520,000 per year within Leeds West CCG).

Name of project: Medicines reconciliation in high risk patients at point of discharge

Submitting organisation: Croydon CCG

Contact for information: Victoria Williams

Description of the intervention:

Project in progress.

A referral pathway was created between Croydon University Hospital, Croydon CCG and local community pharmacies using a CQUIN for secondary care. High risk patients were identified by hospital pharmacists and referred to CCG pharmacists at Croydon CCG. The CCG pharmacists addressed any clinical issues, made recommendations to GPs to optimise therapy, ensuring changes to medicines were implemented on the GP clinical system and medicines reconciled. Patients with adherence concerns or problems with inhalers were referred onward to their community pharmacist for a MUR or a domiciliary visit (a service supported by the Better Care Fund) where changes to medication could be explained, old medication removed and patients assessed for adherence support or inhaler technique.

MO principles addressed:

It is reported that between 5 and 17% of admissions for older people are related to medicines. Between 30 and 70% of patients have either an error or an unintentional change to their medicines when their care is transferred. This project aims to reduce medicine related admissions and readmissions by ensuring that transfer of care is improved for high risk patients. This project includes monitoring of patient outcomes following the intervention to assess the impact of the intervention.

Benefits/outcomes measured:

To investigate impact on A&E attendances and emergency admissions, longitudinal analysis of SUS data (Secondary Users Service data obtained from Trusts) for the patients referred via this pathway was completed, comparing activity for the six months before and after the discharge referral. From August 2013 – July 2014, data for 216 patients referred via this pathway was analysed. Results showed a reduction of 184 A&E attendances, 155 emergency admission episodes and 968 emergency admission bed days. Cost avoidance due to emergency admissions= £356,500 (average cost of emergency admission: £2,300).

Barriers to overcome included Contractual incentives and levers, and a limit of 400 MURs for community pharmacy. This was addressed by a revision of the service specification for the domiciliary medicine review contract to ensure pharmacies would still complete the reviews when the 400 limit had been reached.

Additional information:

Project reported in: Int. J. Pharm. Prac. Vol 23, suppl 2, Oct 2015, 74-75

Name of project: Health coaching training

Submitting organisation: Croydon CCG

Contact for information: Barbara Jesson

Description of the intervention:

Project in progress

We have commissioned health coaching training (using HESL funds) for pharmacists and practice nurses- 9 of whom have achieved a certificate in health coaching. Next step is for 4 of these to continue to the train the trainer programme so that we can 'grow our own' and make it sustainable.

MO principles addressed: Discussions about medicines are focused on what the person wants to know and empowers them to make their own decisions with the support of the healthcare professional.

Barriers to overcome: We had initially had interest from GPs but due to a variety of reasons they could not participate.

We intend to use the train the trainer programme to use the supervised training to start the process for others and we will include GPs in the invitation.

Name of project: Medication reviews in care homes

Submitting organisation: Croydon CCG

Contact for information: Barbara Jesson

Description of the intervention:

Clinical pharmacists attend MDT medication reviews in care homes as part of the GP Local Incentive scheme and will also participate in best interest meetings re covert administration and safeguarding panels.

Principles of medicines optimisation addressed:

Each resident is reviewed as an individual, targeting medicines that can cause potential harm through side effects etc. We consider risk: benefit profiles for all medicines under review in relation to that particular person. By doing it on a MDT basis we also ensure joint learning and encourage change in practice for GPs and care home staff as well as improving our understanding.

Benefits/outcomes measured:

We initially used an adapted RiO scoring to measure the estimated likelihood of avoiding a hospital admission. We also collected the drug savings. In 14-15 drug cost savings were £20,133 and an estimated £11,200 in avoided hospital admission costs.

Barriers to overcome included lack of awareness of the benefits of the intervention within GP practices and CCGs, need for cultural and behaviour change, limited understanding of the benefit to patients of the intervention. The GP List has been under review and so GPs were reluctant to sign up- this meant reduced activity in the last financial year.

We have found that any GPs who have been part of the MDT review now request our support. So the relationships that have developed and the professional respect have been key.

Name of project: Improvement of advice for diabetes patients

Submitting organisation: Devon LPC and Sanofi

Description of the intervention:

The pharmacist led diabetes support service was completed in twelve healthy living pharmacies (HLP) in Plymouth over an 8 week period as part of the Devon LPC HLP evaluation. The pharmacists received mandatory training on supporting compliance in diabetes and a comprehensive knowledge update for the disease area.

Name of project: Dudley HARMs project

Submitting organisation: Dudley CCG

Contact for information: Clair Huckerby

Description of the intervention:

The project aims to implement systems to reduce admissions related to medicines. Two arms to project- prospective and retrospective arms of study, driven by Root Cause Analysis of potential HARMS in key areas. Please refer to slides on description of project attached and info on proposed interventions, this work is not yet published, we are working on publishing shortly

Name of project: Refer-to-Pharmacy electronic referral

Submitting organisation: East Lancashire Hospital NHS Trust

Contact for information: Alistair Gray

Description of the intervention:

Refer-to-Pharmacy electronic referral from hospital to community pharmacy for a post-discharge new medicine service or medicines use review. Also used to share discharge information for care home residents or blister pack users; and for a home visit with our domiciliary medicines support team

We refer patients into nationally commissioned, evidence based medicines adherence programmes. We also inform community pharmacists of changes to patients who use care homes &/or blister packs (MDS) so they don't accidentally continue ceased medicines or miss new ones. Shortly we will tell community pharmacies on admission that these patients are in hospital so they don't dispense for these patients during their hospital stay.

The patient group targetted is anyone who is admitted to hospital in East Lancashire and is eligible for a NMS or MUR, or uses MDS or is a care home resident, or who is housebound and needs support with their medicines post-discharge.

We are just starting the journey and are gathering a lot of data already. We have Manchester University performing a service evaluation and it looks likely other universities will come on board as there is a lot of research potential

There are number of resources available at www.elht.nhs.uk/refer. Also an explanatory paper has just been published: Refer-To-Pharmacy: Pharmacy for the Next Generation Now! A Short Communication for Pharmacy - Pharmacy 2015, 3, 364-371; doi:10.3390/pharmacy3040364

Name of project: Optimisation of pregabalin prescribing

Submitting organisation: Eastbourne Hailsham and Seaford CCG

Contact for information: Kirstie Ingram

Description of the intervention:

Data collection of pregabalin prescribing in primary care (involving 50% of patient population) identified high proportion of prescribing initiated in primary care. Many patients had not tried any alternative treatments and review was inadequate. Collaboration with local pain management specialists to develop education to increase awareness of national guidelines for neuropathic pain and increase confidence in undertaking pain management review. Development and implementation of primary care pain management review for patients prescribed pregabalin to assess efficacy and side effects. Funding to support review was provided through the annual Prescribing Support Scheme. Use of IT to develop protocols for withdrawal regimens. Community pharmacy training/involvement to ensure patients were supported through withdrawal where appropriate.

Benefits/outcomes:

Formulary, clinical guidelines reflect the recommendations in the NICE guideline for neuropathic guideline - savings have been achieved by patients withdrawing from treatment where the benefit gained from treatment did not outweigh the harm caused from side effects, cycle of robust review now implemented in General Practice.

Benefits were quantified as reduction in volume of pregabalin prescribed (CCG reducing, national use increasing), estimated annualised cost savings based on number of patients withdrawn from treatment Pregabalin ADQ/ASTRO PU Jan-March 2015 Apr-June 2015 July-Sept 15/16.

Estimated savings £400K/annum.

Barriers to change (selection from pre-defined categories):

Need for cultural and behaviour change and lack of clinical education for personnel carrying out. Overcome by continued engagement and repeating key messages with stakeholders at every opportunity, using GP champions to sell the message.

Name of project: Identification and management of people with AF

Submitting organisation: Imperial College Health Partners

Contact for information: Shirlene Oh

Description of the intervention:

Project in progress.

To prevent AF-related stroke and associated mortality through increased identification and management of people with AF by implementing the evidence base as set out in NICE guidelines. The scope of the project can be expressed through three objectives: to increase the proportion of people with known AF and at high risk of stroke who are receiving anticoagulation therapy; to improve the quality of anticoagulation; to increase the detection of undiagnosed AF.

Barriers to overcome during development:

- Insufficient resources to implement and sustain intervention
- Need for cultural and behaviour change
- Lack of clinical education for personnel carrying out intervention
- Need for skills development for use of audit tools
- Contractual incentives and levers
- Lack of awareness of the benefits of the intervention within GP practices and CCGs

Using a PAN-London approach to try and overcome barriers.

Name of project: Improved Medicines reconciliation

Submitting organisation: Imperial College Health Partners

Contact for information: Yinka Makinde

Description of the intervention:

Project in development

We are improving the way information passed between stakeholders to ensure that there is an accurate medication history for the patient, delivering an outcome of improved patient safety.

The expected patient population is yet to be agreed, but likely to be patients with co-morbidities.

Name of project: Pharmacy Rehabilitation Service

Submitting organisation: Isle of Wight Trust

Description of the intervention:

The Pharmacy rehabilitation Service(PRS) was part of a wider re-ablement service aimed at providing assistance to vulnerable people to give them the skills necessary to be able to live in their own home independently after having spent some time in hospital. Under the PRS, social services referred patients at high risk of re-admission to the hospital pharmacy. Primary outcome: Reduced emergency hospital readmissions , other patient related measures of outcomes were reported.

Name of project: Use of a prescribing pharmacist to generate discharge prescriptions and improvements in communication to GPs at the point of discharge

Submitting organisation: Lancashire Teaching Hospitals

Contact for information: Gareth Price

Description of the intervention:

The prescribing pharmacists generate the discharge prescriptions - releasing medical staff time to focus on other clinical duties. LTH data illustrates the prescribing pharmacists give a 98% reduction in prescribing errors (from 24% errors with medic prescribing to less than 1% error rate with pharmacist), >100% improvement in accuracy of information relating to medicines transferred to GPs (from 46% to 99%), and >5h reduction in the time to discharge. Direct cost savings will be realised through reduced locum medical staff requirements.

Principles of MO addressed:

reduced prescribing error rate, and improved communication to GPs about medicines at the point of discharge improves the safe use of medicines, and hence improves patient outcomes. More timely supply of medicines at discharge enhances the patient experience.

The target patient group during the pilot project were patients discharged from the acute medical ward. The plan is to roll-out this model to all patients being discharged from the hospital.

Benefits/outcomes:

Prescribing error rate reduced from 24% (items prescribed) to 0.7%. Proportion of patients with accurate information about medicines started, stopped or changed captured in the discharge letter increased from 46% to 99%. Total time from patient being told they can be discharged to them actually leaving the trust fell from 8.5h to just over 3h.

Barriers to overcome:

Recruitment of prescribing pharmacists is challenging as there are not enough registered prescribing pharmacists out there (so have to put them through a 6 month course after recruitment).

A national strategy is required to increase the number of prescribing pharmacists, particularly as medical staff numbers is challenged. Having demonstrated clear benefits of this model, there are now challenges re-allocating medical staff budgets to pharmacy budgets to support roll-out (better engagement due to the difficulty of filling vacant medical staff posts because of the locum cap recently introduced).

Related publication:

Draft publication supplied to the Medicines Optimisation journal.

Name of project: Improved communication regarding medicines for high-risk older people on discharge and sign posting to healthcare professionals in primary care

Submitting organisation: Leeds Teaching Hospitals NHS Trust

Contact for information: Heather Smith

Description of the intervention:

Medicines-related communication systems during transition from one care setting to another. The project involved improved communication regarding medicines for high-risk older people on discharge and sign posting to healthcare professionals in primary care.

Additional information:

For details please see the best practice shared learning example on the NICE website at <https://www.nice.org.uk/sharedlearning/integrated-medicines-optimisation-on-care-transfer-impact-projects>

Name of project: Prevention of medicines related admissions and readmissions

Submitting organisation: London North West Healthcare NHS Trust

Contact for information: Nina Barnett

Description of the intervention:

Integrated medicines management services (IMMS) are one method of reducing preventable medicines related admission and readmission and were initiated at NPH site in 2008. A parallel cohort study was undertaken comparing a matched cohort at NPH site (active, Hospital A) with patients at CMH site (control, Hospital B). Data for 744 patients at Hospital A were identified between October 2008- October 2014, using the evidence based PREVENT© tool, as at risk preventable medicines related readmission (PMRR). Patients were managed by IMMS with medication reconciliation, review, consultation and follow up as required. Following consultation with a statistician, data was collected at the control site Hospital B from February-October 2014 for

92 patients identified as at risk of PMMR who were managed with traditional pharmacy service. 30 day re-admission data were obtained from the trust for both Hospital A and B for the periods studied. All medicine related hospital re-admissions from both hospitals were peer-reviewed by a Consultant Geriatrician not involved in the service and blinded to the cause of re-admission and hospital site. The difference between preventable medicines related re-admission rates at the two sites was statistically significant $P<0.002$, Fisher's exact test, risk ratio = 16.2 (95% confidence intervals 3.0, 87.1)

This study shows that provision of patient support through IMMS at hospital A site statistically significantly reduced the rate of preventable medicines related re-admission ($p=0.002$). The data relating to the cost of the provision of the service and the benefit to the health care economy showed that there would be a return of over £3 per £1 invested. The pharmacist providing IMMS identified and managed a large number of issues that can contribute to preventable medicines related admissions and re-admissions. Activities included work to annotate discharge notifications to GPs to highlight medication changes and recommendations, identifying medication safety risks prior to admission and documenting a management plan to facilitate safe transfer of care. The IMMS pharmacists provided interventions with patients, using a coaching approach to support medicines adherence, which follows NICE adherence guidance recommendations. The team worked with the medical and nursing team to discuss the appropriateness of medication and optimising therapy, with other ward pharmacists on the referral of patients and with the social care team to discuss how medicines can be incorporated into the patient's package of care. Within the primary care sector, the team communicated with the GP surgery, around medicines support aids initiated in hospital.

This is an innovative patient-centred service which optimises safe and effective use of medicine demonstrating a cost effective, high quality, sustainable clinical service to help patients get the most out of their medicines safely. The service demonstrates improvements in interdisciplinary and cross sector working as well as optimisation of skill mix and provides a realistic prospect of rollout which will continue to reduce costs for our trust and across the health economy. Our data, together with data from other published works suggest that the trust can save at least £3 for every £1 spent on the service and a recent paper (Scott et al 2015) quotes £5.8 per £1 spend when opportunity costs are included. This review identifies other benefits of the work including education, GP satisfaction, reduction in errors and number of interventions (5.5 per patient). The service provides a core model which can be modified for different sites and staff can be easily trained to deliver the service using standard operating procedures for the service, use existing training packages (which can be provided online) and presentations as well as cascade training. The trust can improve patient safety, quality of care and save money through rollout of this service.

Name of project: Transfer of Care between Secondary care and Community Pharmacy

Submitting organisation: North East and North Cumbria AHSN

Contact for information: Neil Watson

Description of the intervention:

Transfer of Care between Secondary care and Community Pharmacy. Clinical Handover. System to send eReferrals from secondary care to community pharmacy now available across NENC AHSN. Embedded into practice in Newcastle, expanding in other hospitals.

The target patient group is all patient identified in secondary care who would benefit from a clinical handover to their community pharmacist.

Benefits/outcomes measured

To date the benefits/outcome have been about process, outcome benefits can either be extrapolated (increased number of NMS....impact on adherence) or will be derived from the detailed evaluation in due course.

Simple evaluation in terms of activity measures completed. Detailed outcomes based evaluation underway with Durham University.

Barriers to overcome

There were no overwhelming barriers although clearly this required some significant behavioural change by hospital and community pharmacists. Engagement via the AHSN with all stakeholders allowed us to change behaviours and implement a new way of working. The only true barrier that still troubles us is Information Governance, the application of which has been variable between organisations.

Name of project:

Submitting organisation: Newark & Sherwood CCG

Contact for information: Gerald Ellis

Description of the intervention:

Project in progress.

Using Independent prescribers in 6 general practices (in Derbyshire & Nottinghamshire) to support delivery of primary care. This was carried out via face to face and telephone medication reviews plus long term condition management and Urgent Care. Some work in Nursing homes and housebound patients as well.

Benefits/outcomes were quantified using regular stakeholder events, monthly reports from pilot site and independent evaluation from University Of Nottingham School of Pharmacy.

Barriers to overcome included lack of awareness of the benefits of the intervention within GP practices and CCGs, and limited understanding of the benefit to patients of the intervention. These were addressed using regular communications and engagement.

Name of project: Better Care Pharmacists

Submitting organisation: NHS Brighton and Hove CCG

Contact for information: Katy Jackson

Description of the intervention:

Project in progress

Better Care pharmacists working at cluster level, seeing patients referred by the Integrated Primary Care team as well as proactive care patients identified by using risk stratification tool Solace.

Target patient population: frail, elderly, complex medication issues, frequent fliers to hospital.

Name of project: GRASP-AF

Submitting organisation: NHS Fylde and Wyre CCG

Contact for information: Julie Lonsdale

Description of the intervention:

We have been using the GRASP AF data and running reports in practices. Calling patients in who are not on an anticoagulant when they are at high risk of stroke. Starting and anticoagulant as discussed with the GP and the patient. We have also been stopping aspirin for stroke prevention. We organised an evening training event for stroke prevention in AF.

Outcomes measured: percentage of patients at high risk of a stroke who are taking an anticoagulant as per GRASP-AF.

Barriers were overcome using guidelines developed by the Lancashire Medicines Management Group.

Name of project: medication optimisation reviews by primary care pharmacists in care homes

Submitting organisation: NHS Somerset CCG

Contact for information: Ana Alves

Description of the intervention:

I am currently leading on two local projects in relation to medication optimisation reviews by primary care pharmacists in care homes. The first consists of commissioning this NHS Somerset CCG service on behalf of GP practices. The service involves collecting quantitative data on interventions undertaken and the potential impact on of these on patient safety where applicable. The second project is closely linked to the main service, albeit focused on 'Deprescribing of medicines in care homes', and forms part of a Masters project in Pharmacy Clinical Practice (Community & Primary Care) with the School of Pharmacy and Pharmaceutical Sciences at Cardiff University.

Patients living in care homes are often some of the most frail, vulnerable in society and they frequently have complex medical needs. There is well recognised body of national research (i.e. NICE guidance, Cochrane reviews, CHUMS study, etc.) when it comes to addressing polypharmacy and promoting safe, evidence-based and cost-effective prescribing for this group of patients. The purpose of the project is to provide medication optimisation reviews, undertaken by highly skilled prescribing support pharmacists working in GP practices, for as many patients as possible. The budget allocated to this service is the main limitation to expanding the scheme followed by workforce capacity and training needs. Nevertheless, the pilot scheme in 2014-15 and the current data for 2015-16 show considerable clinical and financial potential.

Benefits/outcomes measured

All prescribing support pharmacists submit patient anonymised reports following each care home visit to the CCG Medicines Management team. Clinical interventions authorised by the GP (s) and agreed with the care homes are coded in each report and the data and the information is added to an in-house excel datasheet. Information available includes: a) Number of care homes visited b) Number of patients reviewed c) Types of interventions d) Safety related interventions.

In 2014-15 deprescribing accounted for a quarter of all interventions and 57% of the potential annual drug savings; 2817 drug interventions for 1180 patients residing across 64 care homes in Somerset (27% of total); £106,762 potential annual drug savings; 72 significant patient safety interventions (Oct-14 to March-15). So far in 2015-16 (April to November 2015), deprescribing accounted for 30% of all interventions and 60% of the potential annual drug savings; 1358 drug

interventions for 460 patients residing across 21 care homes; £53,336 potential annual drug savings; 232 patient safety interventions.

It is estimated that the pharmacist care home reviews are currently providing a 4 to 5 times return on investment; this is without factoring in the improved patient outcomes and reduced NHS and social care activity from this scheme. It is estimated that in the long term the service would deliver at least two to three times return on investment.

Name of project: Self-assessment tool for MO and pharmacy services in NHS trusts

Submitting organisation: NHS Trust Development Authority

Contact for information: Richard Seal

Description of the intervention:

Self-assessment tool for MO and pharmacy services in NHS trusts.

Targetted at NHS Trust, this tool enables benchmarking and quality improvement in MO and hospital pharmacy services.

Outcomes measured were the prioritisation of trusts for direct intervention and support.

Barriers: None, but the most significant issue was getting trusts to return the completed framework in a timely manner.

Name of project: Medicines optimisation in care homes involving residents in decisions about medicines.

Submitting organisation: Northumbria Healthcare NHS Trust

Contact for information: Wasim Baqir

Description of the intervention:

Medicines optimisation in care homes involving residents in decisions about medicines.

Principles of MO addressed:

This project (now service) improved quality, reduced risk and reduced healthcare costs. We developed a review process that involved patients as part of a MDT (pharmacists, care home nurses, GPs, psychiatry).

<http://qir.bmjjournals.org/content/3/1/u203261.w2538.abstract>

Benefits/ Outcomes measured: were interventions made, medicines stopped and patient/staff experience. Retrospective work also showed reduction in admissions (yet to be published)

Initially the project cost £75,000. The service in place costs in the region of £70,000 (1.3 WTE pharmacists at 8a and 1 WTE pharmacy tech band 5)

We used a quality improvement approach - The Model for Improvement including rapid PDSA cycles

The project details can be found here or feel free to email me for more information - wasim.baqir@nhs.net

<http://www.health.org.uk/programmes/shine-2012/projects/multidisciplinary-review-medication-nursing-homes-clinico-ethical> <http://www.health.org.uk/pills>

Name of project: Various

Submitting organisation: North West Coast AHSN

Contact for information: Patricia Roberts

Description of the intervention:

Innovation in Medicines Optimisation is the strategic aim of NWC AHSN. There are balanced portfolios of projects that align to the principles of Medicines Optimisation as defined by the RPS

Name of project: Long-term conditions reviews: COPD management

Submitting organisation: Sheffield Teaching Hospitals NHS Foundation Trust

Contact for information: Sarah Alton

Description of the intervention:

Project in development.

There is a pharmacy team working within the Integrated Care Service (Community nurses and therapy staff). The aim of this project is to assess the role of the pharmacy team in the management of patients with long term conditions and ultimately to see how this compares with the current model of nurse led LTC reviews. Patients with COPD in one community nursing team were identified. The pharmacy team visited each patient to review medication and inhaler technique and carry out a symptom assessment score which was then recorded in the patient's records. A follow up visit was carried out after 3 months to repeat the inhaler technique review and a further follow up (either by phone or visit) carried out in 6 months to reassess symptoms using the CAT assessment tool. Medication was reviewed using the GOLD criteria and any recommendations regarding medication communicated to GP or respiratory specialist nurse as appropriate. The teams are recording their interventions. Evaluation will include a comparison of symptom scores and admissions pre and post intervention

Name of project: Services offered by the organisation

Submitting organisation: Specialist Pharmacy Services and NHS London Procurement Partnership

Contact for information: Tim Root

Description of the intervention:

It's not one project but these are the key themes of our work: Audit and feedback, Clinician decision support/aids, Uptake of innovative new treatments, Medicines-related communication systems during transition from one care setting to another, Medicines-related models of organisational and cross-sector working, Medicines waste reduction initiative, Patient adherence support: adherence aids, reminders, dose simplification, Patient decision aids for consultations involving medicines, Professional and patient education, System and process improvements across the local health economy

Name of project: Audit of medicines reconciliation using EMIS

Submitting organisation: Surrey Downs CCG

Contact for information: Helen Marlow

Description of the intervention:

Audit and re-audit of medicines reconciliation process in primary care using Health Improvement Scotland care bundle and introduction of EMIS template. No further detail supplied.

Name of project: Design of a patient information leaflet

Submitting organisation: Sussex Partnership NHs Foundation trust

Contact for information: Ray Lyon

Description of the intervention:

Designed two patient information leaflets on how to swallow tablets and capsules. One for adults and older adolescents and another for parents and guardians of young children.

No further details supplied.

Name of project: Transition of care, pharmacy referral schemes using PharmOutcomes

Submitting organisation: South West AHSN

Contact for information: Helen Belben

Description of the intervention:

Project in progress.

Target patient group: those discharged from hospital

Name of project: Medicines reconciliation at the point of admission

Submitting organisation: University of Bradford/Sheffield Teaching Hospital Trust

Contact for information: Sarah Khan

Description of the intervention:

Project in progress.

This PhD study will look at how the timing and efficiency of medicines reconciliation at the point of admission helps to improve a patient's quality of care and overall patient safety. The aim of the study is to map current pathways and practice at Sheffield Teaching Hospitals (STH) and identify best practice, supporting this with findings from a systematically designed literature review, which will then lead on to the design and testing of evidence based intervention. It is envisaged that this will improve medicines reconciliation as well as help achieve national targets set by NICE and the National Patient Safety Division (NHS England).

Name of project: UEA Four Medicines or More

Submitting organisation: University of East Anglia

Description of the intervention:

Patients were invited to participate in the service by the community pharmacy team. The pharmacist held regular consultations with the patient and discussed risk of falls, pain management, adherence and general health. They also reviewed the patient's medication using STOPP/START criteria. Data were analysed for the first 6 months of participation in the service.

Outcome Six hundred and twenty patients were recruited with 441 (71.1%) completing the 6-month study period. Pharmacists made 142 recommendations to prescribers in 110 patients largely centred on potentially inappropriate prescribing of NSAIDs, PPIs or duplication of therapy. At follow-up, there was a significant decrease in the total number of falls (mean -0.116 (-0.217–-0.014)) experienced and a significant increase in medicine adherence (mean difference in Morisky Measure of Adherence Scale-8: 0.513 (0.337–0.689)) and quality of life. Cost per quality-adjusted life year estimates ranged from £11 885 to £32 466 depending on the assumptions made.

Name of project: ePIFFany clinician decision support

Submitting organisation: University of Leicester

Contact for information: Rakesh Patel

Description of the intervention:

The ePIFFany educational intervention comprised four components delivered by a 'frontline' team of multiprofessionals:

1. Face-to-face teaching and feedback following Clinical Simulations provided by clinical skills facilitators, patients and clinicians
2. Technology-enhanced learning using clinical cases delivered through Computer-based instruction (traditionally referred to as eLearning) written by pharmacists and clinicians
3. Clinical decision support tools (such as UpToDate, Lexicomp and BNF on Formulary Complete) accessible on desktop or mobile devices such as tablets and smartphones facilitated by information librarians
4. Face-to-face teaching and feedback from a Clinical Pharmacist about prescribing performance or complex prescribing tasks ePIFFany provides education that is personalised to the needs of individual participants, whereas most postgraduate training is based on a 'one-size fits all' model. The educational methods complement each other rather than taking place in isolation, so information about the learner 'feeds-forwards' and educators can provide a more tailored experience next time. Using simulations to identify the learning needs of clinicians at the start of job placements is novel. Similarly, using the digital recordings for facilitating workplace-based assessments is efficient. Providing simulations at the end of rotations is also educationally sound, since individuals leave the job realising learning is lifelong.

Benefits/outcomes measured

An evaluation undertaken by UoL's School of Management found that ePIFFany resulted in a significant increase in the prescribing competence, performance and safety behaviours of junior doctors who received the intervention.

Data on prescribing performance in the workplace was used to demonstrate a change in safe behaviours of the junior doctors.

Barriers to overcome:

Effective stakeholder engagement and communication were key elements to overcome barriers. It is important to establish a network of key individuals who are able to work with you and provide the necessary support when organisation barriers do arrive. It was also equally important to have 'buy-in' from senior members of the Trust, to ensure that resources were made available for the success and the sustainability of the project.

Name of project: Wales Discharge Medicine Review service

Submitting organisation: Wales Discharge Medicine Review service

Description of the intervention:

The Discharge Medicines Review (DMR) service was introduced on 1 November 2011 and operates only in Wales. It was developed to improve the management of medicines following the discharge of a patient from a care setting. The service consists of a two part intervention: Part One - Patient Identification and Medicines Reconciliation, Part Two – Support for Adhering to Medication

Outcomes Contribute to a reduction in risk of medication errors and adverse drug events by increasing the availability of accurate information about a patient's medicines;

- Improve communication between healthcare professionals and others involved in the transfer of patient care, and patients and their carers;
 - Increase patient involvement in their own care by helping them to develop a better understanding of their medicines;
 - Reduce the volume of medicines that are wasted when unnecessary or duplicated prescriptions are dispensed;
 - Contribute to avoiding medicines-related admission to hospital or care homes which can occur when un-reconciled medicines lead to prescribing or medicines administration errors;
 - Better use the skills of pharmacists, recognising the contribution that they can make in optimising medicines use.
-

Name of project: LPS contract

Submitting organisation: Weldricks Pharmacy

Contact for information: Babir Malik

Description of the intervention:

The aims of the LPS contract are:

- 1] Not dispensing unwanted items to reduce waste
 - 2] Recommend cheaper and/or more clinically appropriate alternatives to prescribers
 - 3] Recommend dose and quantity optimisations on repeat prescriptions where appropriate
 - 4] Ensure these decisions are patient-centered and involve the patient in the process
-

Name of project: Case study: peer review

Submitting organisation: Wigan Borough CCG

Contact for information: Anna Swift

Description of the intervention:

Peer review

See <https://www.nice.org.uk/sharedlearning/medicines-optimisation-peer-review-programme-engaging-gp-practices-to-deliver-medicines-optimisation-and-implement-nice-guidance>

Name of project: Case study: dietician review

Submitting organisation: Wigan Borough CCG

Contact for information: Anna Swift

Description of the intervention:

Dietician review: report supplied

Name of project: Case study: stoma review

Submitting organisation: Wigan Borough CCG

Contact for information: Anna Swift

Description of the intervention:

Stoma review: report supplied

Name of project: Case study: care home and high-risk patients review

Submitting organisation: Wigan Borough CCG

Contact for information: Anna Swift

Description of the intervention:

Care home and high-risk patients review: report supplied

Appendix 3: Table of evidence submissions and case studies considered

Submitting organisation	Project title/description	Other supporting evidence, references	<u>Evidence strength</u>	Consistency of evidence	Outcome measured	Size of effect	Patients impacted /100,000 popn.	Cost effectiveness	No. elements MO addressed	Score 1	Score 2	MO Classification
Barts Health NHS Trust	medicines optimisation in CV pre-admission clinic	None and the results of a Google search were inconclusive	weak	1 report	Process measure	low	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	2	43	LOW: small group of hospital patients, limited information submitted
Sheffield Teaching Hospitals NHS Foundation Trust	Long-term conditions reviews: COPD management	Google search	strong	> 5 reports	Disease-oriented clinical outcome	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	9	67	HIGH: MO intervention as part of a wider team
Coeliac UK	Early Recognition of Coeliac Disease in Community pharmacies	<u>Practice Innovation network project:</u> http://www.napc.co.uk/early-detection-of-coeliac-disease-using-pharmacy	strong	> 5 reports	SMORE: surrogate marker of reliable evidence	medium	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	7	52	HIGH: intervention with strong underlying evidence base
nHS Somerset CCG	Medication optimisation reviews in care homes	None supplied	medium	> 5 reports	Process measure (admissions avoided)	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	6-7 elements	9	78	HIGH: intervention with strong evidence base impacts on a significant number of patients

Belfast Health and Social Care Trust	Lithium support service		medium	> 5 reports	Process measure	medium	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	5	64	LOW: relatively low number of patients involved BUT this is one of the few examples of Mental health focussed intervention
Belfast Health and Social Care Trust	Biologics waste project		weak	1 report	Process measure	Low	Low <1,000/100,000	Same outcome/reduced costs	4-5 elements	2	39	LOW: as this primarily a cost focussed intervention for a relatively small group of patients , but there are potentially significant financial savings
Belfast Health and Social Care Trust	Therapeutic review steering group	Article supplied: Pharmacy Management Volume 29 Issue 3	medium	> 5 reports	Process measure	Low	Low <1,000/100,000	Same outcome/reduced costs	2-3 elements	5	39	LOW: as this primarily a hospital focussed approach for a relatively small group of patients , but this project demonstrates good practice for Hospital based MO teams
Community Pharmacy West Yorkshire	EPIC project	Webpage : http://www.cpwy.org/pharmacy-contracts-services/local-services-enhanced-respiratory-epic.shtml	medium	> 5 reports	SMORE: surrogate marker of reliable evidence	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	6-7 elements	8	78	HIGH Community Pharmacy of wider based project focussing on COPD patients

Leeds Teaching Hospitals NHS Trust	Integrated Medicines oPtimisAtion on Care Transfer (IMPACT) project	https://www.nice.org.uk/share/dlearning/integrated-medicines-optimisation-on-care-transfer-impact-project	Strong	> 5 reports	Patient-oriented outcome	medium	Medium 1000 - 4000 /100000	Increased cost/improved outcomes	4-5 elements	11	65	HIGH: cross pathway MO for high risk patients
Croydon CCG	Medicines reconciliation in high risk patients at point of discharge	Google search	medium	> 5 reports	Process measure (reduced admissions or readmissions)	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	2-3 elements	6	75	HIGH: Cross pathway MO which prevented emergency admissions
Croydon CCG	Medication reviews in care homes	Google search	weak	> 5 reports	Process measure (reduced admissions)	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	2-3 elements	5	73	HIGH: intervention with strong evidence base impacts on a significant number of patients
Wigan Borough CCG	Peer review	https://www.nice.org.uk/share/dlearning/medicines-optimisation-peer-review-programme-engaging-gp-practices-to-deliver-medicines-optimisation-and-implement-nice-guidance	Strong	> 5 reports	Patient-oriented outcome (people live longer or better)	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	11	72	HIGH: Intervention with a wide range of outcomes effecting large numbers of patients

Wigan Borough CCG	Dietician	Dietician report supplied	medium	> 5 reports	SMORE: surrogate marker of reliable evidence	medium	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	8	69	LOW: Dietician working as part of MO Team but focussing on a small number of patients
Wigan Borough CCG	Stoma	Stoma review report supplied	medium	> 5 reports	Process measure	medium	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	5	59	LOW: Stoma nurse working as a member of the MO team on relatively few numbers of patients
Wigan Borough CCG	Care homes and high risk patients	Care homes report supplied	medium	> 5 reports	Process measure	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	5	66	HIGH: intervention with strong evidence base impacts on a significant number of patients
NHS Fylde and Wyre CCG	GRASP-AF	https://www.nice.org.uk/share/dlearning/medicines-optimisation-stroke-prevention-in-atrial-fibrillation-in-practice	Strong	> 5 reports	Disease-oriented clinical outcome	medium	Low <1,000/100,000	Improved outcomes/reduced costs	2-3 elements	7	71	HIGH: intervention based on strong evidence base
Northumbria Healthcare NHS Trust	Medicines optimisation in care homes involving residents in decisions about medicines.	http://qir.bmjm.com/content/3/1/u203261.w2538.full.pdf	medium	> 5 reports	Process measure	medium	Medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	8	75	HIGH: one example of MO in care homes which has significant evidence base for cost effectiveness

Lancashire Teaching Hospitals	Use of a prescribing pharmacist to generate discharge prescriptions and improvements in communication to GPs at the point of discharge	http://www.nhsig.nhs.uk/media/2656406/lancashire_pharmacy_sg.pdf	weak	1 report	Process measure	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	4	56	HIGH: cross pathway transition project with wide ranging benefits
SWAHSN	Transition of care: pharmacy referral schemes		weak	1 report	Process measure (admissions or readmissions avoided)	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	6-7 elements	5	74	HIGH: one of a number of transition of care, pharmacy referral schemes submitted
East Lancashire Hospital NHS Trust	Refer-to-Pharmacy electronic referral	http://www.mdp.com/2226-4787/3/4/364	weak	1 report	Process measure	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	6-7 elements	5	61	HIGH: Cross pathway MO intervention with plan to evaluate
Imperial College Health Partners	Identification and management of people with AF	http://imperialcollegehealthpartners.com/wp-content/uploads/2016/01/Meds-Op-Impact.pdf	strong	> 5 reports	Patient-oriented outcome (people live longer or better)	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	11	71	HIGH: strong evidence base , significant effect on a medium number of patients

London North West Healthcare NHS Trust	Prevention of medicines related admissions and readmissions	http://www.pharmaceutical-journal.com/learning/learning-article/medicines-related-admissions-you-can-identify-patients-to-stop-that-happening/11073473.article	medium	1 report	Process measure (admissions or readmissions avoided)	low	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	3	60	HIGH: scores low on grid, but is an example of cross pathway MO with published evaluation
Eastbourne Hailsham and Seaford CCG	Primary care pain management review for pregabalin treatment		medium	1 report	Process measure	low	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	3	45	LOW: MO intervention for small group of patients relating to a single medicine
NENC AHSN	Transfer of Care between Secondary care and Community Pharmacy		weak	>5 reports	patient oriented	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	9	70	HIGH: Cross pathway MO intervention with plan to evaluate

Devon LPC and Sanofi	Improvement of advice for diabetes patients	Case studies for RPM review pdf and http://devonlpc.org/wp-content/uploads/sites/20/2013/07/DLPC-Pharmacist-Diabetes-Support-Service-Rpt-Final.pdf	medium	> 5 reports	Process measure	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	7	62	HIGH: intervention with strong underlying evidence base
Cardiff University	Wales Discharge Medicine Review service	DMR evaluation final report.pdf	medium	> 5 reports	Process measure	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	7	74	HIGH: intervention with published positive evaluation
Isle of Wight Trust	Pharmacy Rehabilitation Service	https://www.npa.co.uk/wp-content/uploads/2015/09/HEF-Preventing-Hospital-admissions.pdf	medium	1 report	Process measure (admissions or readmissions avoidance)	medium	Low <1,000/100,000	Improved outcomes/reduced costs	4-5 elements	7	67	HIGH: although scores low on grid , this intervention is part of a wider commissioned service and has been formally evaluated
University of East Anglia	UEA Four Medicines or More	http://onlinelibrary.wiley.com/doi/10.1111/ijpp.12196/abstract	medium	> 5 reports	Patient oriented (people live longer or better)	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	9	80	HIGH: intervention with published positive evaluation

Newark & Sherwood CCG	Cross-pathway medication review	http://www.pcdc.org.uk/admin/resources/4-nhs-e-clinical-pharmacists.pdf	weak	> 5 reports	patient oriented (people live longer or better)	medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	7	64	HIGH: Cross pathway MO intervention with plan to evaluate
Leeds West CCG	CHAMOIS		medium	> 5 reports	Process measure (admissions avoidance)	Medium	medium 1000 - 4000 /100000	Improved outcomes/reduced costs	4-5 elements	11	75	HIGH: intervention with strong evidence base impacts on a significant number of patients

Appendix 4: Case studies and survey evidence submissions considered ‘Not in scope’

- Patient pathways for prevention of chronic constipation (Leicestershire) NMO
- Implementing NICE CG72 ADHD (Hertfordshire) NMO
- Care of patients with hypoglycaemic episodes by ambulance service (South East Coast) NMO
- Identification and referral of FH patients (London, South West, South and Midlands) NMO
- One Heart ACS programme (Derby, Hertfordshire) NMO
- Quality and outcomes for COPD patients (Hastings, Ipswich) NMO
- Consensus pathway for patients with bi-polar disorder (Staffordshire and Shropshire) NMO
- Training to improve adherence in EIS (Sussex Partnership NHS trust and industry partners) NMO
- Community based assessment of liver disease severity (Birmingham) NMO
- Increasing Uptake of HIV testing (London) NMO
- Development of osteoporosis service (Dartford) NMO
- Design of heart failure service(Buckinghamshire) NMO
- Mapping of diabetic services (Sheffield) NMO
- Diabetes change makers (West Midlands) NPC
- EPIFFany – Effective prescribing insight for the future (Leicester) NPC
- Health Coaching Training for pharmacists (Croydon) NPC
- NHS trust self assessment (England) NPC
- Medicines reconciliation at the point of admission (University of Bradford/Sheffield Teaching Hospital Trust) NOD
- HARMs project (Dudley CCG) NOD
- Causes of Medicines Waste report (Bristol CCG)
- LPS Contract (Weldricks Pharmacy)
- Research into medicines recycling and returns and transdermal patch application and disposal (Bradford University School of Management) NOD
- Diabetes MURs (City Hospitals Sunderland NHS Foundation Trust/Lilly) NOD
- Audit of Medicines Reconciliation using EMIS (Surrey Downs CCG) NPC
- Design of a patient information leaflet (Sussex Partnership NHS Foundation trust) NOD

Key to exclusion criteria:

- No medicines element (NME)**
- Drug specific (e.g. switches) (DS)**
- Not patient centered (NPC)**
- Not Medicines Optimisation (NMO)**
- Not safe (NS)**
- Not effective (NE)**
- No outcomes data (NOD)**