Medicines Use Review Pilot Project

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Table of Contents

Section	Page
Foreword	i
Introduction	1
Aims and Objectives	3
Methods	4
Results	6
Discussion	14
Conclusion	19
Recommendations	20
References	22
Appendix 1	24
Appendix 2	26
Appendix 3	27
Appendix 4	32

Introduction

Medicines Use Review (MUR) carried out by pharmacists to identify and resolve medicines-related problems is a fundamental activity in the hospital setting where the accessibility of medicines records, shared clinical notes and capacity to arrange case conferences facilitates all aspects of the process. It has been implemented in Primary Care in many countries in several distinct forms in which the accessibility and means of presentation of records and the roles of the participants vary depending upon the organisational structures of the health service and the purpose of the MUR[1].

Regulations require community pharmacists to review prescriptions for administrative, legal and clinical problems[2]. Their computerised patient medication records not only record the patient's medicines but also other pertinent information which pharmacists note following discussions with patients about their medicines and their conditions. However, this opportunistic prescription review associated with dispensing may not reveal patient's concerns and problems particularly when the medicines have been used for some time and when the patient reports overall satisfaction with their treatment. A more structured and systematic approach, carried out independently of dispensing, known as Medicines Use Review aims to improve the patient's knowledge, understanding and use of their prescribed. The patient and pharmacist reconcile the list of medicines being taken and discuss each one in turn. It is not intended to be a full clinical review of the patient's conditions and test results, medicines use and outcomes, which is usually undertaken by a GP with access to a patient's clinical notes and monitoring data[3]. The elements of the MUR service operated in England and Wales are shown in Box 1 below.

Box 1: Description of the activities comprising the pharmacist MUR service in England and Wales[3]

- identifies patients' knowledge and understanding of how the medicines they are taking should be used
- discusses (and demonstrates if appropriate) how patients should use their medicines correctly and safely
- explains the condition for which each medicine is used (where they know) and provides relevant supportive information and/or signposting
- identifies any issues affecting the correct use of the medicines such as manual dexterity or other circumstances specific to the patient
- identifies safety or therapeutic issues resulting from the use of over-the-counter (OTC) medicines
- identifies side effects that may be resulting from medicines use
- identifies any medicines no longer used or required by the patient

An increase in life-expectancy coupled with an increased capability to use medicines to control symptoms and conditions in community dwelling patients has led to an increase in polypharmacy[4] (use of 5 or more medicines) in parallel with an increase in the prevalence of multimorbidity[5]. Both polypharmacy and multimorbidity increase the complexity of the task that patients, pharmacists and prescribers face as they try to align treatment with clinical guidelines, to reduce the burden of medicine-taking and to remain vigilant for signs of clinical deterioration and adverse drug events. Information, some evidence-based and some evidence-free, is almost universally, easily and continually accessible from a variety of media sources and influences the views and attitudes of all concerned with medicines use resulting in shifting opinions in individuals and in Society. The evolving clinical picture combined with an inherently unstable social context means that to optimise the medicines use process requires practitioners to engage in regular discussion and re-alignment of the goals of treatment with the patient's needs and capacity.

In every country the potential for medicines-related problems to cause harm to patients, to disrupt health service delivery and to add to health care costs is now understood to be both substantial but also largely preventable[6]. These problems are particularly acute in Primary Care

because medicines usage is the most common form of health care intervention and because responsibility for the medicines use process is divided between prescribers, patients and pharmacists. In Ireland this scenario is further complicated by the absence of any health service mechanism in Primary Care to promote, facilitate or require collaborative care with medicines between Primary Care Teams (PCTs) and community pharmacists.

Concern about the adverse effects of medicines led the Oireachtas Joint Committee on Health to recommend medication reviews by pharmacists in 2007[7]. Subsequently, in a new Dail the Committee examined developments in Primary Care and recommended that community pharmacists should provide medicine use reviews[8]. Within the HSE's Clinical Programmes some overarching themes were established in response to shared needs and to ensure consistency and standardisation of policies and methods and one of these was medicines management[9]. In the reform programme of the Department of Health and the HSE emphasis has been placed on maximising the effective use of existing resources and promoting co-operation and collaboration among health care providers[10]. A project to assess the potential of MURs to contribute to improved patient care and increased collaboration between community pharmacist and PCTs was undertaken with these proposals in mind.

Aims and Objectives

- To assess the feasibility of providing MURs based on collaboration between community pharmacists and PCTs in the existing Primary Care context
- To evaluate the documentation of MURs and the use of paper-based communication of the results to General Practitioners (GPs)
- To provide MURs to patients receiving several medicines as part of the treatment of chronic disease and to describe the issues and problems detected
- To assess the impact of MURs on existing practice activities in the community pharmacy and in the PCT
- To assess the tenor and degree of inter-professional collaboration between community pharmacists and GPs around MURs and the prospects for future engagement

Methods

Project management

The project design and the development of materials were devised by some PPCG members are the researchers while recruitment of PCTs and pharmacist was undertaken by the PPCG and the collation, analysis and interpretation of the data was completed by the researchers.

MUR

The MUR recording and data collection sheet was modified from that used in the UK for the NHS MUR scheme. The modifications were designed by the team to align it with the practices and procedures of Irish Primary Care and to facilitate the rapid recording of data.

The process consisted of several steps;

The patient was invited by the pharmacist to take part in the study; it was explained to them and their consent was obtained (Appendix 1). A time was agreed for the consultation. The form (Appendix 2) recorded the details of the patient's medication and the patient's report of the indication for the medicine and their degree of compliance, the nature of the issues discussed and the action considered appropriate by the pharmacist and patient. A copy of the MUR form was relayed to the GP. This initial review was intended to lead to a follow up at 6 months.

Pharmacist and GP participation

Pharmacists and GPs in Primary Care Teams with whom there was a good working relationship were selected for invitation by the Primary Care Group/Committee to participate in the study.

Pharmacists

Pharmacists with practices most likely to share patients with the selected PCTs were contacted through the Irish Pharmacy Union representative on the Primary Care group to gauge their interest in participating in a Medication Review Pilot. Subsequently, pharmacists from 56 practices attended training for the Medication Review process in April 2010 and afterwards 43 of these completed a practice medication review to check the process of patient assessment and document completion. Of those 43 pharmacists, 19 completed the first stage of the

Medication Review study up to September 2010 and 15 pharmacists completed the follow-up Medication Review between January and March 2011.

PCTs and GPs

Primary Care Teams were contacted by the HSE team and a total of seventy-two listed General Practitioners were invited to take part. Of these, GPs in thirteen individual PCTs received MUR forms for some of their patients. Examination of the MUR documents established that thirty-six of these GPs were recorded as having one or more patients who participated in the study. In addition, four other GPs whose names were not on the original list were also indicated as having patients who participated – 40 in total.

Patient recruitment

Patients were recommended for an MUR by pharmacists, Primary Care Teams or after a consultation between the pharmacist and the Team. Patients discussed the process with the pharmacist and were given a consent form. An MUR was either conducted immediately upon completion of the consent form or an appointment was made for a later time. A copy of the MUR record form was sent to the GP after the completion of the review.

Participant's experience and opinions

Two complementary surveys were devised to assess the experiences and opinions of the participants of the MUR study and its implications for inter-disciplinary collaboration. The surveys were drawn up after review of the assessments and comments made in MUR studies in other (primarily UK) countries, the surveys used in a national study in the UK and by reflection on the issues and concerns of GPs and pharmacists in Ireland (Appendix 3 & 4). Their face and content validity were reviewed by discussion between the survey group and they were also checked by a GP and a pharmacist who were not taking part in the study but who had experience in conducting research in Primary Care in Ireland. The surveys were sent out at the in September 2011 and a reminder was sent in October and additional telephone contact was made in November. Some questions sought specific information and some opinions. Where

views and opinions were sought a statement was presented and respondents were asked to indicate their degree of agreement/disagreement with it, a scale of six adjectives was used as shown below;

Strongly Agree Agree Unsure Disagree Strongly Disagree

In the remaining questions, a range of options was provided and in some cases respondents indicated their preferences numerically and in addition some demographic/practice characteristic data was collected.

Data collection and analysis

Documents (MUR forms, patient consent forms) were retained by the pharmacist and anonymised copies sent to the researchers via the PPCG representatives. Similarly, surveys were sent to the participating pharmacists and GPs and returned to the representatives of the PPCG and anonymised before forwarding to the researchers. Data were extracted from the forms and surveys and collated in an Excel database. Descriptive statistics were calculated and presented as tables.

Results

MUR Process

Patients

In total 136 patients took part in an MUR with one of the study pharmacists. On average 7 patients were assessed per study pharmacy (range 2-16). Almost half (45.4%) were recommended for review by the pharmacist, 15.2% by the PCT, 19.7% were selected after consultation between the two groups with data not recorded in the remaining 19.7% of cases. Multiple reasons for patient selection were recorded in virtually all cases; assessment/confirmation of the need for polypharmacy, verification of dose and/or duration of particular medicines and compliance concerns accounted for over 90% of the reasons for patient selection.

General Medical Scheme patients (GMS) patients comprised over two thirds of the sample (69.9%) while 11.8% were classed as Drug Payment Scheme (DPS) patients and 7.3% were Long-Term Illness (LTI) patients while a medicines supply scheme was not recorded in 11.0%.

MUR consultation

Pharmacists reported, informally, that the MUR consultations took around 20-40 minutes to complete.

Medicines use

An average, 9 medications were recorded per patient with a total of 1239 medicines prescribed - indicating the extent to which polypharmacy was a driving force in the selection of patients.

In the course of the MUR pharmacists reported that in the majority of instances (1076; 86.9%), the patient knew either or both the indication and understood why they were taking their medicines. Drugs for cardiovascular diseases, non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics and drugs for respiratory conditions were the most frequently cited drug classes for further action with clarification of the dose/dose regimen, possible therapeutic duplication and side effects accounting for around 80% of the reasons listed with more than one reason in approximately half the cases – unclear recording made it impossible to be more detailed in the attribution of reasons (see also Action Plan below). The category NSAIDs and analgesics included paracetamol and combinations with codeine as well as tramadol and opioid preparations, preparations that are frequently prescribed 'as required'. Other therapeutic groups that needed attention in the MURs were drugs for mental health – primarily, antidepressants, sedatives and hypnotics, and drugs used to treat gastro-intestinal conditions, such as proton pump inhibitors and laxatives.

Compliance

Two thirds of patients (66%) reported "always" taking their medications as prescribed while 8% seldom took them as prescribed and only 2.3% stating that they "never" took their medications. These latter two categories together with a proportion of the remaining 23% comprised a large proportion of the compliance problems in the pharmacist's action plans (see below).

Medicines information

Pharmacists provided more information on the use of a medicine in 36.8% of cases in response to issues raised by patients – this included specific medicine/formulation counselling points and advice about use, benefits and managing side effects.

Side-effects

One tenth of patients (10.7%) reported experiencing side-effects from their prescribed medicines.

Action Plan

Pharmacists listed total of 260 “actions” on the MUR record, an average of 1.96 actions per plan. The largest single category of actions (123; 47.4%) were referral for the consideration of the GP and equivalent actions were for the patient (64; 24.8%) and for the pharmacist (63; 24.2%) respectively. In 10 cases the recommended action was not clearly recorded. Multiple actions were recommended in a number of cases but it was not always clear from the MUR form which medicines were referred to for single or multiple actions. Compliance problems, clarification of patient’s understanding of their medicines and the suitability of dose form were more frequently actions for the pharmacist and patient. Referral to the GP was most commonly made for clarification of the dose/dose regimen, possible therapeutic duplication and patient reported side effects (see MUR consultation above).

Follow up

Pharmacists were asked to follow up patients at 6 months and 15 of the inital group did so. Patients were asked by pharmacists to take part in the follow up and 90 of the patients (66%) were interviewed again and MURs recorded at times ranging from 6 to 9 months after the initial MUR. Pharmacist compliance with document completion was poor and after telephone contact it was estimated that all of those patients referred to their GP had been seen but in only around 50% of reports was it possible to verify that action had been taken but it wasn’t always possible to identify which medicine(s) or which of the reasons for the referral had been resolved. Consequently, for most of the actions originally listed pharmacists recorded that they had been fully or partially resolved without specifying an outcome for each action. The results of the surveys (see below) show that not all GPs contacted pharmacists about their MUR

recommendations, that not all of the recommendations were considered appropriate for implementation by GPs and that not all pharmacists contacted GPs when they became aware of unimplemented recommendations.

Experience and opinions of the study – Pharmacists

All participating pharmacies (19) were contacted again with a questionnaire and fifteen were returned for analysis. Fourteen of these pharmacies had completed both the initial and follow up MUR and comprised the usable respondents; four pharmacies were two-handed practices, and 19 pharmacists took part in both stages of the MUR. The characteristics of the 14 pharmacists who responded to the survey are shown in table 1. Pharmacists completed 70-95% of the items in the questionnaire. The sample was equally balanced between independent and chain ownership and the period of experience ranged over tenfold from 3 to 34 years.

Table 1: Characteristics of the survey respondents in the pharmacy sample

Characteristic		Number
Gender		
	Male	7
	Female	12
Location		
	Rural	8
	Urban	7
Years in Practice		
	0-5	3
	6-10	6
	11-15	1
	21-25	3
	26 plus	1
Ownership		
	Independent	8
	Chain	7

Patient care

All respondents believed that patients had an improved understanding of their medications and all but two considered that patients were more inclined to take their medications as prescribed. All but one pharmacist stated that the MUR provided an opportunity to advise patients on non-medicine related issues such as diet and lifestyle.

Just over two thirds (10/14) considered there was an improved relationship with the patients while one 4/14 thought there was no change. Four out of five who answered the question about resistance among patients to the project considered that there was none while the remaining one was undecided.

Inter-professional relationship

All but one respondent reported that the GPs were fully or partially aware of the pharmacist's role in MUR. Half of pharmacists considered that their interventions were implemented, but only half of those surveyed answered the question. Only five pharmacists apparently attempted contacting the GP if any of their recommendations were not implemented, four did not do so because they accepted the GP's judgement and three more did not do so because other commitments prevented them from doing so. Two thirds (10) believed that the working relationship with the PCT had improved and that there was more communication but one third (5) were unsure if there was any change in the relationship and the communication. No-one reported any deterioration in the working relationship with the PCT and most (11/14) felt that there was no GP resistance to the programme with remainder not making any response.

When describing the barriers to a good working relationship, poor communication was regarded as by far the most important and lack of GP time was only half as significant. Pharmacists were less willing to commit to ascribing a reason for the poor communication with almost half not responding to the item, while the remainder selected in order of importance; lack of commitment by the GP, difficulty in contacting the PCT and unhelpful administrative staff in the PCT as the three factors.

MUR process

Four pharmacists indicated that a joint PCT meeting about the project had been held; six reported that none was held and the remainder did not reply. All pharmacists recorded multiple medicines as the main reason why patients were selected for inclusion, with just over half (8) also choosing long-term illness and patient age as the second and third criteria in order of preference. The impact of the project on the practice was assessed in a group of questions; just over one third (5/14) of pharmacists did not think that the number of medicines prescribed or dispensed was reduced but the rest did not take a view on this. The same proportion also believed that the study was time consuming, yet when asked about the time taken 10/14 described it as just right. Only nine pharmacists answered these items; one felt that the project was difficult to complete because of staffing issues none that it had any impact on the other services offered by the pharmacy and five that it had some impact costs. All but one felt that the process highlighted a positive role of pharmacists and they also would have liked the MUR project to continue.

Experience and opinions of the Study – GPs

The characteristics of the participating GPs are shown in Table 2. GPs completed 70-90% of the items in the questionnaire. One quarter of GPs (10) whose patients received an MUR returned the survey but two completed a minority of the items and there were eight usable responses from seven PCTs. In the sample that took part the PCTs were multi-handed and most had more than one GP involved. To what extent the replies to the survey represented individual GP's views or the collective view of the PCT was not discernible from the replies.

Table 2: Characteristics of the survey respondents in the GP sample

Characteristic		Number
Gender		
	Male	5
	Female	3
Location		
	Urban	5
	Rural	3
Role in Practice		
	Proprietor	7
	Employee	1
Years in Practice		
	11-15	2
	16-20	1
	21-25	5
Medical Card patients as %		
	20 – 30%	2
	31 – 40%	2
	41 – 50%	0
	51 – 60%	3
	61 – 70%	0
	20 – 30%	1

Patient Care

All respondents (8) believed that as a consequence of the MUR process patients had improved understanding of their medications and that it would help patients manage their medicines while Two thirds believed that patients were more inclined to take their medications as prescribed. Similarly, two thirds believed that patients concerns were highlighted and resolved quicker and 5 believed that the ranges of interventions suggested were significant and implemented. All agreed that the MUR process is an extra safe-guard in preventing medication errors and all respondents felt that patients will participate in the MUR process in the future.

Inter-professional relationship

No GP reported deterioration in the working relationship with the pharmacist and none considered 'distrust between professionals' to be of importance. All 7 GPs respondents stated there was good communication between the PCT and the pharmacist in the project and all described the communication skills and the clinical skills of the pharmacists as good or very good. In agreement with that finding, most GPs reported that there was some benefit from learning of patients other medicines and that there were no conflicting statements made by pharmacists or GPs to patients. Three GPs reported contacting the pharmacist about not implementing their suggestions, one did not but the other half of participants did not reply.

MUR Process

GPs were almost unanimous on their reasons for taking part in the MUR project; all of them wanted to check patient compliance and to improve patient outcomes; while almost all (7/8) hoped to reduce polypharmacy, to increase patient involve in medicines management, to ensure the safety of patients and to reduce waste. GPs also took part to contribute to the development of the PCT (7/8) and but just under half did so because of a personal interest in MUR (4/8) and none did so to increase the competitiveness of their practice compared to others (7/8).

Two thirds of GPs participated in the pilot after discussion with their community pharmacist and yet in only half of cases (4/7) was a joint PCT meeting arranged and just over half (5) of GPs said they had little input into patient selection. However, all GPs who responded (7/8), rejected the notion that patients had received conflicting information from the two health care professionals during the MUR project. Two thirds considered the existing communication channels adequate for inter-professional collaboration while a half felt the lack of IT had an impact in the project but one third did not agree with the statement.

Impact on the Practice

The effect of the MUR process on the practice was not considered significant for several indicators; none of the respondents believed that the MUR process had improved the patient's

relationship with the PCT; the average estimated time for completion of a Medication Usage Review per patient was 20 minutes and all respondents stated that the MUR process was a worthwhile use of their time and resources and half did not consider it time consuming. Just over half of GPs were unsure if there was an improvement in their workload and most (7) believed that the project did allow the PCT to allocate time to more complex patients but that MUR did not affect the provision of other services by the PCT.

Future potential of MUR and pharmacist's contribution

All GPs considered that the MUR is an area where pharmacists can have a positive role and all but one considered the collaborative approach to MUR would improve patient adherence. All GPs considered that pharmacists were adequately trained and had confidence in their clinical skills to conduct MURs. All respondents believed that pharmacists should be a source of information for GPs on patient compliance, on non-prescription medicine use, on the potential abuse or misuse of medicines and 7/8 believed that pharmacists could be a resource for GPs on drug interactions. Half of the sample disagreed that pharmacists should be a source of information for GPs on the selection on medicines.

Discussion

The feasibility of collaborative MUR in Primary Care has been confirmed by this project; its uptake and completion occurred independently of the region, practice context, extent of practitioner experience and the form of practice ownership. The intention, to facilitate the *ad hoc*, opportunistic collaborative care around medicines that has always been a feature of the day-to-day medicines use process in Ireland but which is not routinely captured by any current indicators of health service activity was achieved. The documentation of the reviews provides some indication of the types of problems that were addressed and the surveys showed that both GPs and pharmacists prioritised the same range of patient care issues. Significantly, neither group reported any friction over the process or the interventions - in contrast, both groups reported that communication and relationships were improved or remained unchanged

as a result of the project. This suggests that there is no major obstacle to GP-pharmacist collaboration and neither group seemed concerned that conducting MURs meant that some other service had to be forgone. Moreover all of these findings imply that much could be done with the existing framework. All of the potential participants, patients, GPs and pharmacists perceive a need and are willing to engage in a discussion about appropriate medicine use. Furthermore, there was clearly an appetite for the continuation of the MUR process.

PCTs and pharmacists took part on a voluntary basis, without any systematic project management or inducement to participate or complete the process. Similarly, the project did not establish strict inclusion and exclusion criteria for patients nor was the procedure for initiating and developing communication and collaboration pre-determined and compulsory. This was to allow each set of relationships to evolve according to local preferences. The drawback of such informal arrangements is that there was some attrition among the pharmacists partly because of the extended time-frame and possibly because the training was generic in its focus and many pharmacists feel they need training that is tailored closely to what they believe to be the likely responses of patients and GPs to the MUR process[11-12]. Training is important to both the smooth running of a service and also to the confidence of those who are to deliver it and should set the context for all participants[11-12]. Among the PCTs no information was collected about the intentions and the degree of the participation of their individual GPs because the sampling unit was the PCT not the GP. Likewise the number of MURs completed by each pharmacy was recorded, there was some imprecision around how many patients each participating GP reviewed as opposed to each PCT and some GPs took part who had not been contacted initially. A recent national survey of pharmacist reported that 80% would like to see MURs introduced[13].

The selection of patients for an MUR was most frequently initiated by pharmacists; according to the MUR documentation 15% were selected by the PCT and almost 20% jointly by the PCT and pharmacist. Although GPs and pharmacists had some discussion about the project, there were few formal PCT-pharmacist meetings and GPs felt they had little involvement in

patient selection. It is difficult to interpret these findings; they may represent the inevitable outcome of a process that was loosely defined or they may indicate reluctance or a lack of opportunity on the part of pharmacists to engage the GPs on this issue. Clearly it would have been preferable to have had more meetings between pharmacists and PCTs and more involvement of GPs in patient selection. Nevertheless the referral of patients and the interventions recommended by pharmacists were not regarded by GPs as trivial and were attended to and notably, none of the GPs formed the view that there was any discordant communication between themselves and pharmacists and the patients. The majority of community pharmacists (60%) view their individual relationships with GPs positively but only around 5% have any regular contact with local multi-disciplinary groups[13]. Without a survey of the patient participants there can be no appreciation of their feelings about the process except that both pharmacists and GPs formed the view that patients readily accepted the MUR process.

The documentation of the MURs was based upon the materials used in the UK and was reasonably successful with almost all participants expressing some degree of satisfaction with the information recorded and its presentation. However pharmacists are often poor documenters and would need training and encouragement to improve. From the perspective of the project however, recording was incomplete for research purposes and compliance with the two surveys was disappointing but not unexpected. Nevertheless the paper-based communication of the issues raised by the MURs was suitable for the clinical process and was easily handled by the providers involved without the need for additional support. As noted above, the process did not create confusion or contradictory messages as seen from the practitioner's perspective. Encouragingly, a substantial proportion of patients returned for the follow up MUR, suggesting that they were comfortable with the process and that it was not too burdensome for them, although it is likely that patients who were well known to the pharmacists and therefore more likely to participate were selected by them at the outset.

The types of issues raised during the MURs were not unexpected; changes associated with intensification of therapy about which patient's anxieties have not been fully expressed and discussed; patient's concerns about how much and how long to take analgesic preparations frequently those labelled 'as required'; drugs started in hospital that are continued for an indefinite period or which duplicate a drug from the same therapeutic class prescribed in Primary Care; drugs for symptomatic conditions that may be, but have not been stepped down or discontinued; product formulations that pose difficulties for patients, such as large oral solid dose forms, preparations that require considerable manual control and dexterity to administer (such as eye preparations) and those requiring additional instructions to administer and terminate (such as transdermal preparations). Many of the problems that were addressed were individually minor and were resolved in the patient-pharmacist consultation but they needed to be tackled because they could interact with other aspects of the patient's care to create a more serious problem and they create a degree of uncertainty and confusion that becomes important when an acute situation arises. These findings are consistent with other studies; in a 2002 study of pharmacist initiated MUR of 64 patients with cardiovascular disease in the North Eastern Health Board the three most common interventions made were dealing with compliance issues, medicines education or reinforcement and referral to the GP[14]. In addition, when patients move from one care setting to another the health service is usually dependent on the patients for an up-to-date record of their medicines information. The return of the patient from hospital to Primary Care is known to be a high risk transition with discontinuation of drugs being associated with a high probability of unplanned re-admission[15]. In this project, pharmacists clarified and reassured patients about the changes in their medicines that had occurred in hospital and reconciled the new hospital medicines with those previously prescribed, but GP involvement was required to explicate some shared care arrangements. In general pharmacists dealt with most unintentional non-compliance but usually took a joint approach (via pharmacist advice/reassurance and GP referral) to intentional non-compliance.

The medicines which were associated with concerns in the MURs have often been cited before; for example, in a study of problems associated with prescriptions for adults and

children in 2008 the most frequently associated therapeutic classes were cardiovascular drugs, asthma and COPD drugs, anti-infectives and analgesics and drugs for musculo-skeletal conditions and gout[16]. Morbidity from cardiovascular diseases is more prevalent than any other group of conditions and drugs for cardiovascular drugs often need to be used in combination and dosing regimens may be subject to change, particularly after outpatient review or hospital admission. Reconciliation of these changes is crucial if patient adherence is not be compromised. Similarly the use of inhaled preparations for asthma and COPD pose their own challenges; physical co-ordination, knowledge of the use of a spacer device, concerns about corticosteroid use and understanding about dose escalation in an acute situation. All of these can be difficult to address in Primary Care if the patient has been habituated to relating their concerns to a specialist clinic. As with cardiovascular drugs, lack of adherence to or sub-optimal use of these medicines leads to frequent emergency re-admission and this has been shown to be costly in Ireland[17]. Concerns about addiction are frequently encountered in patients taking analgesics and the range of recommended dose changes required in different circumstances provided for by 'take as required' direction needs careful explanation to ensure adequate provision of analgesia without incurring avoidable risk. Long term use of non-steroidal anti-inflammatory drugs increases the risk of gastro-intestinal erosion and bleeding and it is not uncommon to find patients receiving prescriptions for two NSAIDs. These risks can be reduced in different ways; patients with osteoarthritis of moderate severity may not be need NSAIDs daily and those that do can be given protection with co-prescription of a proton pump inhibitor. NSAIDs remain a frequent cause of unplanned admission of elderly patients, usually for gastro-intestinal haemorrhage. Proton pump inhibitors (PPI) on the other hand are highly effective in reducing gastro-intestinal symptoms and in some conditions can be stepped down and ultimately discontinued according to clinical guidelines. Patients receiving two NSAIDs and long duration of PPI use independently of NSAID use have both been described in an analysis of potentially inappropriate prescribing in medical card patients[18].

Given the work that was carried out by GPs and pharmacists some impact on the running of their practices was to be expected. However, the results do not suggest that it was

sufficient to act as a deterrent to undertaking MURs. Equally expected, given the modest number and complexity of the problems identified and tackled, there was little impact on prescribing practices. If the MUR process had been more extensive and had included pharmacist-GP follow up meetings to review the patients and the issues that had been tackled, then perhaps discussions about practices and working arrangements would have begun.

The preponderance of medical card patients among those selected for an MUR reflects the high prevalence of multimorbidity and polypharmacy in this group but it also highlights the extent of unmet need that arises because of the limited amount of practice time that PCTs can devote to apparently 'stable' patients and because of the accrual of minor unresolved problems over time. The problems detected in the patients included in this project show that the complexity of medicines use is so great that the combined efforts of prescribers, pharmacists and patients working together are required to identify and resolve the problems. It is notable that GPs and pharmacists were both equally keen to include patients with multimorbidity and polypharmacy in the project. Research in this country has shown that these criteria pose a series of therapeutic management dilemmmas that frustrate GPs and pharmacists equally and which they feel hampered in addressing[19]. The potential for a consensual approach to the MUR process and to using MURs as a tool to detect, identify and resolve medication-related problems in Primary Care is substantial. If MUR were introduced, regular, constructive inter-professional pateient care could become a significant driver of improved medicines use and thus of patient care in this country.

Conclusions

The form of collaborative MUR trialled in this project could be developed and implemented across Primary Care in Ireland. Experience in other countries has shown that the most important element for successful delivery is the quality and extent of collaboration between pharmacists and GPs[1,12,20-21]. The quality of the relationship that develops will depend on common goals, clear procedures and regular interaction. In particular the quality of the MUR documentation provided by pharmacists to GPs would have to be consistently high and the

communication from GPs to pharmacists after their review of referred patients would have to be of a similar standard. These elements need to be supported by the health service via a pragmatic framework and by the public acknowledgment of the importance of collaboration[22]. This will create the conditions in which the health care professionals can work together and develop trust and confidence in each other[21]. When professionals collaborate in this area they identify and resolve more medicines-related problems.

However, patient involvement on a wider scale than in the present project will also require this public acknowledgment and promotion of MUR. Medicines use in Primary Care is the result of collaboration between patients, prescribers and pharmacists in which patients are the final decision-makers and the person who experiences the outcomes. Positive or at least co-operative relationships between the three facilitate appropriate communication and interaction. Patients want to work with those who provide their health care and if this care is supposed to be shared or collaborative care between two providers they will disconcerted if they perceive that either or both of them are uncommitted to that type of care process. Many of the interventions that follow from MUR can only be fully implemented with patient engagement. Furthermore, patient confidence in the health service depends upon its capacity to co-ordinate and support the professionals who work with it, so that they can deliver the promised service. If successful collaboration can be achieved on a large scale it will generate a momentum as confidence in collaborative working develops trust and positive experiences.

Recommendations

1. MUR should be developed and implemented on a wider scale.
2. It should be developed and promoted by all of the stakeholders as a Primary Care service delivered by the collaborative efforts of pharmacists and GPs.
3. It should remain as a practice-based service supported by the HSE.
4. It should be targeted at groups of patients in need and prioritised in areas of greatest need as shown by health indicator data.

5. Facilitating the development of the collaborative relationship should be the main focus of the preparatory work and should continue as ongoing support once the service is established.
6. Further development of the MUR documentation and materials to facilitate communication will be required and will form the basis of any subsequent IT support.
7. Documentation to explain and recruit patients for MUR will be required.
8. Patient feedback should be sought and utilised for service development.
9. Deliberate tailoring of MUR training and the participation of the HSE in the training and ongoing support through profession-specific CPD will all be required to make this service successful.
10. The service must include a quality framework based on measureable indicators with regular assessment and feedback of performance to providers and stakeholders to ensure continuous improvement.

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INFORMED CONSENT FORM

PROJECT TITLE: HSE/IPU Medicines Use Review Pilot Study

PRINCIPAL INVESTIGATOR: Dr. Martin Henman, School of Pharmacy, Trinity College, Dublin 2.

CONTACT DETAILS OF PRINCIPAL INVESTIGATOR: mhenman@tcd.ie

DECLARATION:
I have been provided with information about this study and understand the purpose. I have had the opportunity to ask questions, by email, phone or in person as preferred, and all my questions have been answered to my satisfaction. I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.

I consent to the use of anonymised data for inclusion in publications following this study, for use in future studies and/or in the further development of Educational Programmes.

I understand that I may withdraw from the study at any time and that this will not affect the care I receive in any way. I have received a copy of this agreement.

PARTICIPANT'S NAME: ……
PSI PHARMACIST REGISTRATION NUMBER :
CONTACT DETAILS:
EMAIL ADDRESS: ……..……

ADDRESS (place of practice or other as preferred): ……
……

PARTICIPANT'S SIGNATURE: …… **Date:……**

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

INVESTIGATOR'S SIGNATURE:…… Date:……

Medicine Usage Review Pilot

Sheet of

CONFIDENTIAL

Patient:	**GP:**	**For Office Use**
☐ For information only – no action required ☐ Follow your actions agreed below ☐ Please discuss with your GP This is your copy of the form. You may wish to show it to other health care professionals.	☐ For information only – no action required ☐ Please consider the recommendations proposed below	
	Community Drug Scheme ☐ GMS ☐ DPS ☐ LTI ☐ Other	**MUR Identifier** (pharmacy pilot no + first 3 digits of community drug scheme no.)

Patient details				**GP details**	
Title:	*First Name:*	*Surname:*		*GP Name:*	
Sex	*Tel:*	*Date of Birth:*		*Practice Address:*	
Address:				*GP Referral Made:* ☐ Yes ☐ No	
Review identified or requested by: Pharmacist ☐ PCT (GP / PHN) ☐ Both: and agreed by all parties				*Date Usage Review Performed:*	*Date for Review:*

Action plan

Drug(s)	Issue	Recommendation	For consideration by:	
			☐ Patient ☐ Pharmacist ☐ GP ☐ Other:	
			☐ Patient ☐ Pharmacist ☐ GP ☐ Other:	
			☐ Patient ☐ Pharmacist ☐ GP ☐ Other:	
			☐ Patient ☐ Pharmacist ☐ GP ☐ Other:	

Pharmacy details

Pharmacist Name (BLOCK CAPITALS):	*Pharmacist PSI registration no.:*	*Pharmacy GMS number:*	*Tel:*	Pharmacy Stamp	
Pharmacist Signature					

Overview page This review is based on information available to the Pharmacist held on the pharmacy Patient Medication Record system and from information provided by the patient

Medicine Usage Review Pilot

Sheet of

CONFIDENTIAL

Title:	First Name:	Surname:	MUR Identifier:	Date of Birth:	Date of Review:

	Current Medicines (including over the counter & complementary therapies)	What does the patient report these medications are for?	Does the patient use the medicine as prescribed	Compliance: Always	Compliance: Frequent	Compliance: Seldom	Compliance: Never	Does the patient know why they are using the medicine?	More information provided by pharmacist on use of medicine – provide details	Is the formulation appropriate ?	Are side effects reported by the patient?	General comments relating to advice, side effects and other issues	For Office Use
1	Name/Dosage form/strength: Dose:		☐ Yes If no, specify:					Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
2	Name/Dosage form/strength: Dose:		☐ Yes If no, specify:					Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
3	Name/Dosage form/strength: Dose:		☐ Yes If no, specify:					Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
4	Name/Dosage form/strength: Dose:		☐ Yes If no, specify:					Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
5	Name/Dosage form/strength: Dose:		☐ Yes If no, specify:					Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		
6	Name/Dosage form/strength: Dose:		☐ Yes If no, specify:					Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐	Yes ☐ No ☐		

Consultation record This review is based on information available to the Pharmacist held on the pharmacy Patient Medication Record system and from information provided by the patient

Questionnaire for General Practitioners

1 PIN Number _____

2 Why did you take part in this Medicines Use Review Pilot

Please tick (√), the most appropriate answer(s).

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
a	For the benefit of my patients					
b	Personal interest in this area					
c	To provide a service not provided by competitors					
d	After discussion with the Community Pharmacist					
e	To contribute to the development of Primary Care Teams (PCT)					
f	To reduce polypharmacy					
g	To increase patient involvement in their medicine management					
h	To reduce waste					
i	To check compliance of patients					
j	To ensure safety of patients					
k	To improve health outcomes					
l	Other. Please specify _____					

3 How would you describe your involvement in the selection of patients for this pilot?

Please tick (√), the most appropriate answer.

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
a	I had little input into the selection of patients					
b	I had adequate input into the selection of patients					
c	I had significant input into the selection of patients					

4 What benefits did you gain from completing this pilot?

Please tick (√), the most appropriate answer(s).

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
a	There was improved communication with the Pharmacist					
b	There was improved working relationship with the Pharmacist					
c	Increased knowledge of patients' other medicines					
d	Improved relationship with patients					
e	Improvement in work load					
f	Improvement in prescribing practices					
g	Other. Please specify _____					

5 What benefits did your patients gain from completing this pilot?

Please tick (√), the most appropriate answer(s)

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
a	Improvement in their understanding of medications					
b	Patients were more inclined to take medicines as prescribed					
c	Increased satisfaction in their standard of care					
d	Concerns of patients were highlighted and resolved quicker					
e	Patients had an improved relationship with PCT					
	Other. Please specify _____					

6 What impact did the MUR have on the practice?

Please tick (√), the most appropriate answer(s).

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
a	There was patient resistance to the study					
b	There was pharmacist resistance to the study					
c	The study was time consuming					
d	The study required additional staff time					
e	The study affected other services provided by the Practice					
f	The study allowed more time to be allocated to complex patients					
g	Other. Please specify _____					

7 What impact did the MUR study have on time?
Please tick (√), the most appropriate answer.

a There was no impact on time
b There was some impact on time
c There was an impact on time
d There was a significant impact on time

If you answered (b)- (d) how would you describe this impact?

_____

8 Could you estimate the time taken to complete the MUR per patient?

Include the time taken to identify the patient, the preparation for and duration of the MUR and post MUR work.
_____ minutes per patient

9
After completing the pilot how would you describe the working relationship between the PCT and the Pharmacist?
Please tick (√), the most appropriate answer.

a I felt there was an improved working relationship with the Pharmacist
b I felt there was no change in the working relationship with the Pharmacist
c I felt there was a deterioration in my relationship with the Pharmacist

10 If there were barriers to a good working relationship, how would you rate these barriers.
Please rate the importance of your choice; where one is the most important i.e. 1,2,3 etc.

a Negative Pharmacist reaction
b Poor communication between the Pharmacist and PCT
c Lack of time
d Lack of formal interprofessional communication channels
e Distrust between professions
f Other. Please specify _____

11
After completing the pilot, how would you describe the communication between the PCT and the Pharmacist?
Please tick (√), the most appropriate answer.

a I would describe the communication as poor
b I would describe the communication as adequate
c I would describe the communication as good

12 How would you describe the communication skills of the Pharmacists?
Please tick (√), the most appropriate answer.

a Very poor communication skills
b Poor communication skills
c Adequate communication skills
d Good communication skills
e Very Good communication skills

13 If there were barriers to communication, how would you rate these barriers?
Please rate the importance of your choice; where one is the most important i.e. 1,2,3 etc.

a Lack of commitment of the Pharmacist.
b Lack of time
c Poor organisation
d Distrust between professions
e Other. Please specify _____

14 If you completed the MUR study, did you carry out a joint PCT meeting
Please tick(√), the most appropriate answer

a Yes, a joint meeting was carried out
b No, a joint meeting was not carried out
c A joint meeting was organised, but was not completed

If you answered (a), was the meeting carried out

	Yes	No
a Via telephone		
b In person		
c A combination of (a) and (b)		

d Other (fax, e-mail etc)_____

If you answered (b) or (c), why was a meeting not carried out?

_____

15 How would you describe the range of interventions that were suggested by the pharmacist?
Please tick (√), the most appropriate answer.

a The interventions were insignificant and not implemented
b The interventions were minor issues but were implemented
c The interventions were welcomed but not implemented
d The interventions were significant and implemented

16 If you did not implement an intervention did you contact pharmacy to communicate this?
Please tick (√), the most appropriate answer.

a Yes, I contacted Pharmacy
b No, I did not contact Pharmacy

If you answered (b) why did this occur?

a I did not have time to contact Pharmacy due to other commitments
b I did not feel comfortable contacting Pharmacy
c I felt it was unnecessary to contact Pharmacy
d I felt it would be wasting Pharmacist time

17 How would you describe the Clinical skills and Knowledge of the Pharmacists?
Please tick (√), the most appropriate answer.

a Very Poor
b Poor
c Adequate
d Good
e Very good

18 Did you find the document sent to you by the Pharmacist user friendly?
Please tick (√), the most appropriate answer.

a Yes
b No

19 Do you feel that your patients received conflicting information from the different sources -You and the Pharmacist?
Please tick (√), the most appropriate answer.

a Yes
b No

20 Do you feel that patients will participate in the MUR process?
Please tick (√), the most appropriate answer.

a	Yes	
b	No	

21 Do you believe that Pharmacists should be a source of advice/information for GPs in areas such as
Please tick (√), the most appropriate answer(s).

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
a	Adverse Drug Reactions					
b	Cost-effectiveness					
c	Selection of medicines					
d	Selection of medicines formulations					
e	Reduction in wastage					
f	Patient compliance					
g	Non-prescription medicine use					
h	Patient misuse or potential abuse of medicines					
i	Interactions					
j	Other. Please specify_____					

22 As a result of your participation in the pilot do you
Please tick (√), the most appropriate answer(s).

		Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
a	Have confidence in the level of clinical knowledge of Community Pharmacists to provide an MUR service					
b	Consider Community Pharmacists adequately trained					
c	Consider the channels of communication are adequate to enable interprofessional co-operation					
d	Feel it will help patients manage their medicines					
e	Feel that patients will be comfortable with the MUR process					
f	Feel that it is an area where Community Pharmacy can have a positive impact					
g	Feel that a collaborative approach to MUR leads to improved adherence					
h	Consider the MUR process as an extra safeguard to prevent medication errors					
i	Feel that a lack of IT impacted on the pilot					

23 Do you feel that the MUR study was a worthwhile use of your time and resources?
Please tick(√), the most appropriate answer

a	Yes, I feel the study was worthwhile	
b	No, I do not feel the study was worthwhile	

24 Would you like to continue providing MURs?
Please tick(√), the most appropriate answer

a	Yes, I would	
b	No, I would not	

25 What in your opinion would help to improve the provision of this service?

_____

_____

_____

26 What is your gender?
Please tick (√), the most appropriate answer.

a Male
b Female

27 What is your location?
Please tick (√), the most appropriate answer.

a Rural
b Urban

28 What is your role in the practice?
Please tick (√), the most appropriate answer.

a Employee
b Proprietor

29 How many years are you qualified?
Please tick (√), the most appropriate answer.

a 0-5 years
b 6-10 years
c 11-15 years
d 16-20 years
e 21-25 years
f 26 years plus

30 What percentage of the patients in your practice are GMS patients?
Please tick (√), the most appropriate answer.

a Less than 20%
b 20-30%
c 31-40 %
d 41-50%
e 51-60%
f 61-70%
g 71-80%
h Greater than 80%

Medicines Use Review (MUR) Pilot
Questionnaire for Pharmacists

1 Pharmacy Pilot/GMS Number _____

2 If you did complete the MUR study what benefits did you gain from the study?

	Please tick(√), the most appropriate answer	Strongly Agree	Agree	Unsure	Strongly Disagree	Disagree
a	I felt there was more communication with PCT					
b	I felt there was an improved working relationship with the PCT					
c	I felt that I had a better relationship with my patients					
d	I felt that the positive role of pharmacy was high-lighted by the pilot					
e	I felt more confident in my ability to carry out an MUR					
f	Other. Please specify: _____					

_____

3 If you did complete the MUR study; what did you feel were the benefits to the patients?

	Please tick(√), the most appropriate answer	Strongly Agree	Agree	Unsure	Strongly Disagree	Disagree
a	There was improved understanding of their medications					
b	Their number of prescribed / dispensed medicines was reduced					
c	Patients were more inclined to take their medicines as prescribed					
d	Patients benefited from a multidisciplinary approach to their care					
e	Patients had an improved relationship with the pharmacy staff					
f	Other. Please specify_____					

_____

4 What were the primary reasons for selecting patients for inclusion in the MUR study?
Please rate the importance of your choices; where 1 is the most important i.e. 1,2,3, etc.

a	Recent hospital discharge	
b	Long term illness	
c	Multiple medicines	
d	Patient Age	
e	Recommended by PCT	
f	Other. Please specify	

5 If you did complete the study; what difficulties did you encounter?

	Please tick(√), the most appropriate answer	Strongly Agree	Agree	Unsure	Strongly Disagree	Disagree
a	I felt that there was GP resistance to the programme					
b	I felt that there was patient resistance to the programme					
c	I felt that suggestions to changes in therapy were not implemented					
d	I felt that the study was time consuming					
e	I felt the study was difficult due to staffing issues					
f	I felt the study affected other services provided by the pharmacy					
g	Other. Please specify_____					

_____

6 If you did complete the MUR, what impact did it have on time within the pharmacy?
Please tick(√), the r

a	There was no impact on time	
b	There was some impact on time	
c	There was an impact on time	
d	There was significant impact on time	
	If you answered (b) - (d) how would you describe the impact on time?	

_____

_____

7 Do you feel that the time taken to complete an MUR was long enough?

Please tick(√), the most appropriate answer	Too Long	Just right	Not Long Enough

8 If you completed the MUR study, did it impact on your costs?
Please tick(√), the r

a	There was no impact on costs	
b	There was some impact on costs	

c There was an impact on costs
d There was significant impact on costs
If you answered (b) - (d) how would you describe the impact on costs?

_____

_____

9 If you completed the study, how would you describe the change in relationship between you and the PCT?
Please tick(√), the most appro

a I felt there was an improved working relationship with the PCT
b I felt there was no change in the working relationship with the PCT
c I felt there was a deterioration in my relationship with the PCT

10 If there were barriers to a good working relationship how would you rate them?
Please rate the importance of your choices; where 1 is the most important i.e. 1,2,3 etc

a Negative GP reaction
b Lack of pharmacist time
c Lack of GP time
d Poor communication between groups
e Other. Please specify_____

_____

11 If you completed the study how would you describe the change in communication between you and the PCT?
Please tick(√), the most appro

a I would describe the communication as improved
b There was no change in communication
c There was a deterioration in communication

12 If the communication was poor, why do you think this occurred?
Please rate the importance of your choices; where 1 is the most important i.e. 1,2,3 etc

a There was a lack of commitment by the GP
b There was a lack of commitment by the Pharmacist
c There was difficulty in contacting the PCT
d Other. Please specify_____

_____

13 How would you describe the relationship between you and the patients since completing the MUR?
Please tick(√), the most appro

a I have an improved relationship with the patients
b I have a weaker relationship with the patients
c There has been no change in my relationship with the patients
Please explain your answer_____

_____

14 How would you describe the communication between you and the patients since completing the MUR?
Please tick(√), the most appro

a I feel there has been an improvement in communication
b I feel there has been a deterioration in communication
c I feel there has been no change in communication
Please explain your answer_____

_____

15 If you completed the MUR study, did you carry out a joint PCT meeting?
Please tick(√), the most appro

a Yes, a joint meeting was carried out
b No, a joint meeting was not carried out
c A joint meeting was organised, but was not completed

If you answered (a), was the meeting carried out	Yes	No
a Via telephone		
b In person		
c A combination of (a) and (b)		
d Other (fax, e-mail etc)_____		

If you answered (b) or (c), why was a meeting not carried out?

_____

_____

16 If you completed the MUR study, do you feel that your interventions were implemented?
Please tick(√), the n

a	Always	
b	Sometimes	
c	Rarely	
d	Never	

17 If you feel that your interventions were not implemented, did you contact the GP to discuss this further?
Please tick(√), the most appro

a	Yes, I contacted the GP to discuss the issues further	
b	No, I did not contact the GP to discuss the issue further	
c	I attempted to contact the GP but he/she was unavailable	

	If you answered (b) or (c), was this because	Yes	No
a	I accepted the original judgement of the GP		
b	I felt it would be inappropriate to contact the GP on the same issue		
c	I felt uncomfortable contacting the GP again		
d	I felt I would be wasting surgery time contacting the GP		
e	I did not have the time to contact the GP due to other commitments		
f	Other. Please specify_____		

_____

18 Did the MUR provide an opportunity to advise on non-medicine related topics i.e. nutrition, lifestyle etc.?
Please tick (√), the most appropriate answer.

a	Yes	
b	No	

19 If you carried out a second MUR, did the same issues highlighted in the first MUR arise again?
Please tick (√), the most appropriate answer.

a	Frequently	
b	Sometimes	
c	Rarely	
d	Never	

20 How would you describe the awareness of the role of pharmacists in MUR by General Practitioners?
Please tick (√), the most appropriate answer.

a	There is full awareness of Pharmacist's role	
b	There is some awareness of Pharmacist's role	
c	There is little awareness of Pharmacist's role	
d	There is no awareness of Pharmacist's role.	

21 Would you like to continue providing MURs?
Please tick(√), the r

a	Yes, I would	
b	No, I would not	

22 What is your gender?
Please tick(√), the most appropriate answer

a	Male	
b	Female	

23 What is your location?
Please tick(√), the most appropriate answer

a	Urban	
b	Rural	

24 What is your role in the practice?
Please tick(√), the most appropriate answer

a	Employee	
b	Proprietor	

25 Do you have an additional pharmacist or qualified assistant in your practice?

Please tick(√), the most appropriate answer(s)

a	Additional Pharmacist	
b	Qualified Assistant	

26 Is your pharmacy

Please tick(√), the r

a	Independent	
b	Part of a group	

27 How many years are you qualified?

Please tick(√), the most appropriate answer

a	0-5 years	
b	6-10 years	
c	11-15 years	
d	16-20 years	
e	21-25 years	
f	26 years plus	

Thank you for your time in completing this questionnaire. All information provided will remain confidential.