

Could Irish Nursing Homes avoid sub-optimal prescribing by utilising the OPTI-SCRIPT intervention

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Declaration

I declare that the work described in this dissertation is, except where otherwise stated, entirely my own work, and has not been submitted as an exercise for a degree at this or any other university. I further declare that this research has been carried out in full compliance with the ethical research requirements of the School of Computer Science and Statistics.

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Sincerely,

Patrick D. Lehane

Abstract

Background

OPTI-SCRIPT is a multi-faceted intervention developed in response to a widespread call to address the high prevalence of Potentially Inappropriate Prescribing (PIP) that other studies had consistently reported across elderly patient groups. Many of these studies recommended the development of meaningful interventions to address PIP. OPTI-SCRIPT supports a medication review process. Three monthly medication reviews are mandated for nursing home patients in Ireland by the Health Information and Quality Authority (HIQA). The primary objective of this study is to learn if OPTI-SCRIPT could be utilised in the nursing home sector to address PIP.

Methodology

Online questionnaires were sent to pharmacists and nurses to establish their opinion on PIP, HIQA guidelines and processes of medication review. GPs completed a semi-structured interview questionnaire following on from a session of academic detailing and a hypothetical display of OPTI-SCRIPT. Low response was an issue, nonetheless some good outcomes were achieved.

Results

Much was learnt about how approaches to PIP differed across professions. Concern was generally high that PIP may be having an effect on the quality of life of patients. Notably, nurses who spend the most time with patients were the most concerned. Compliance with HIQA guidelines appears high. Opinion on the standard of medication review was high, yet studies that assess PIP in Irish nursing homes return unacceptably high levels of PIP. This disconnect was significant as similar examples of it exist in other studies. GPs would be keen to utilise a tool like OPTI-SCRIPT but it would have to save GP time or at worst not take up any more time. Incentivisation should be considered as this is fundamental to a state of the art review process in place in Australia (*Medscope Review Manager*). Some small suggestions were made to improve OPTI-SCRIPT but as is, it is better than anything else available in Ireland. The concept is well regarded. Future research should focus on development of a useable interface and how to implement the tool successfully.

Keywords

Inappropriate prescribing, nursing home, residential facilities, drug utilisation review, pharmacist, nurse, general practitioner

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Abbreviations

ADE	Adverse Drug Reaction
CDSS	Clinical Decision Support System
GP	General Practitioner
HIQA	Health Information and Quality Authority
HRB	Health Research Board
IMC	Irish Medical Council
IPU	Irish Pharmacy Union
MRC	Medical Research Council
OPTI-SCRIPT	OPTImizing PreSCRIBing for Older People in Primary Care, a clusTer randomized controlled trial
PCRS	Primary Care Reimbursement Service
PIL	Patient Information Leaflet
PIP	Potentially Inappropriate Prescribing
PSI	Pharmaceutical Society of Ireland
PPO	Potential Prescribing Omission
RCSI	Royal College of Surgeons Ireland
START	Screening Tool to Alert doctors to Right Treatment
STOPP	Screening Tool of Older Peoples Prescriptions

Chapter 1 Introduction

1.1 Introduction

The purpose of this study is to examine the prevalence of PIP in nursing homes and examine if a multi-faceted, technology-based intervention (called OPTI-SCRIPT, described in section 1.2) could be used to reduce sub-optimal prescribing or Potentially Inappropriate Prescribing (PIP) in nursing homes in Ireland. Potentially Inappropriate Prescribing (PIP) can be defined as the use or omission of medication(s) when the risk of doing so outweighs the potential benefits. It refers to any scenario where a patient may be better off on more, less or different medication(1). It can occur for a variety of reasons including misuse by the patient or mis-prescribing by prescribers(2). The word optimal is often used to describe a situation where a patient's drug regimen is appropriate for their healthcare needs. Sub-optimal is used to describe scenarios where prescribing could be improved by addressing PIP.

1.2 What is OPTI-SCRIPT?

OPTI-SCRIPT is a multi-faceted intervention designed to target a number of sub-optimal prescribing practices(3). It is an acronym standing for: OPTImising PreSCRIBing for Older People in Primary Care, a cluster randomised controlled trial. It was developed by the Health Research Board's Centre for Primary Care Research at the Royal College of Surgeons Ireland (RCSI) and is currently the subject of a national cluster randomised control trial. It was developed along the guidelines of the Medical Research Councils (MRC) framework for the design and evaluation of complex medical interventions(4). The MRC guidelines set out a clear means for subsequent research to progress based on the work previously done by others in the same field. The theory and modelling behind OPTI-SCRIPT has been clearly established, an exploratory trial was conducted and a randomised control trial has been completed with a publication currently in review(5). Preliminary, unpublished findings from the randomised controlled trial (RCT) show a statistically significant difference between control and trial groups in reducing PIP.

1.3 Nursing Homes

Nursing home or residential care home is an establishment for people who do not need to be in a hospital but cannot be cared for at home. The decision to live in a nursing home is nearly always taken by the patient themselves. The sector and individual homes are often divided along the lines of patient need. They cater predominantly but not necessarily to the elderly and many specialise in specific cohorts of patients. For example, a home may specialise in caring for elderly people with Alzheimer's disease, for stroke victims or for those who have become physically disabled. A crucial

difference between a hospital and a nursing home is that someone in a nursing home is living in their home; it is their primary residence and as much as possible they should experience the liberties and benefits of doing so(6). Nursing Homes provide a spectrum of services from those who live practically independently to those who require round the clock care.

1.4 Research Questions

The author of this study is a pharmacist who caters to the nursing home sector. It was felt that OPTI-SCRIPT had potential to provide a benefit to nursing home patients at the point of medication review. Medication review is a structured process where a patient's medication is reviewed in a systematic manner.

The Health Information and Quality Authority (HIQA) have published guidelines for medication review in nursing homes, which are subject to inspection by their inspectors. It suggests that medication should be reviewed every three months and more frequently if necessary. This was an ideal space for OPTI-SCRIPT to be utilised in the opinion of the researcher. To learn how to implement OPTI-SCRIPT it was important to establish to what degree, and how this review process occurs in Irish nursing homes currently.

As well as examining the existing review process, it is important to understand PIP from the clinician perspective. General Practitioners (GP) are fundamental in the nursing home prescribing process. Any intervention would need to be acceptable to GPs for it to be beneficial. It was important to establish GP opinion on OPTI-SCRIPT primarily, but to also gain the insights of nurses and pharmacists.

OPTI-SCRIPT was piloted in a primary care setting (i.e. GP Practices); it had not been piloted in nursing homes. One criterion for patient inclusion in the OPTI-SCRIPT pilot and RCT was that they had to be physically able to attend their GP surgery for an appointment. This is a different profile of patients in comparison to nursing home populations. It is important to know if any adjustments could be made to OPTI-SCRIPT to optimise it for a nursing home environment.

Secondly, much research identified the prevalence of PIP in a variety of scenarios, but little existed suggesting how to affect its prevalence, or how to alter prescribing patterns(2,7). As a result, it was decided that an insight into how PIP is dealt with on a day-to-day basis in Irish nursing homes was required.

To determine whether or not OPTI-SCRIPT could provide benefit, the following research questions were established. They were influenced by a preliminary literature review, staff at the Health

Research Boards Centre for Primary Care Research (HRB) involved in the development of OPTI-SCRIPT and the researcher's own experience in the sector.

The following four-research questions were subsequently established:

- i. How is PIP identified currently in Irish nursing homes?
- ii. To what extent are the HIQA criteria for medication review observed i.e. that medications are reviewed every three months?
- iii. Would GPs responsible for prescribing in Nursing Homes be willing to utilise the OPTISCRIP tool to identify PIP?
- iv. If so, how would the OPTISCRIP intervention have to be adapted to best suit Nursing Home prescribing?

1.5 Overview of the Dissertation

The introduction will familiarise readers with some of the terminology that will be used throughout the document. PIP, OPTI-SCRIPT and nursing homes are introduced. It identifies the context in which the study is set and it outlines research questions.

Chapter 2 is dedicated to the literature review. The literature review is split into three distinct parts. Section one elaborates on PIP and its prevalence in both primary care and nursing homes. Section two examines the literature that supports the OPTI-SCRIPT intervention. Section three will review state-of-the-art interventions that address PIP.

Chapter 3 is the methodology. The chosen methodology is introduced and its rationale is explained. How the initial methodology had to be adapted over the study period is explained. The final structure consists of questionnaires; academic detailing and interviews used in a mixed-method approach to supplement gaps in knowledge identified in the literature review.

Chapter 4 will outline the results from the methodology. It will outline the results from SurveyMonkey® questionnaires to nurses and pharmacists as well as the semi-structured interviews with GPs. It will organise and collate this data in a meaningful manner.

Chapter 5 is the discussion. It will discuss if the research questions have been answered and if so to what extent. It will review the results of the methodology, highlight what has been learnt and what has been overlooked from the literature review and the methodology.

Chapter 6 will conclude the study outlining the principal results and identifying areas for future research.

Chapter 2 Literature Review

2.1 Introduction

The purpose of the literature review is to identify the existing knowledge base in the field of PIP and how it is addressed currently in care settings. This will provide a context and a rationale for the methodology which will be discussed in Chapter 3.

This chapter has been divided into three sections. The first section is dedicated to literature on the topic of PIP and its prevalence in both primary care and in nursing homes.

The second section will proceed to cover the literature that reinforces the OPTI-SCRIPT intervention. The final section of the literature review will examine state-of-the art interventions that affect PIP.

2.2 Search methodologies

The OPTI-SCRIPT pilot study was heavily referenced for the preliminary literature review, both for its own content and its list of references(8). A more robust literature review was then performed. *PubMed*[®], *The Cochrane Library* and *Google Scholar*[®] were the primary search engines used. *PubMed*[®] is a US based online service that provides access to publications, abstracts and citations from an extensive list of medical, healthcare and life sciences journals(9). *The Cochrane Library* is a database of systematic reviews of research in human healthcare(10).

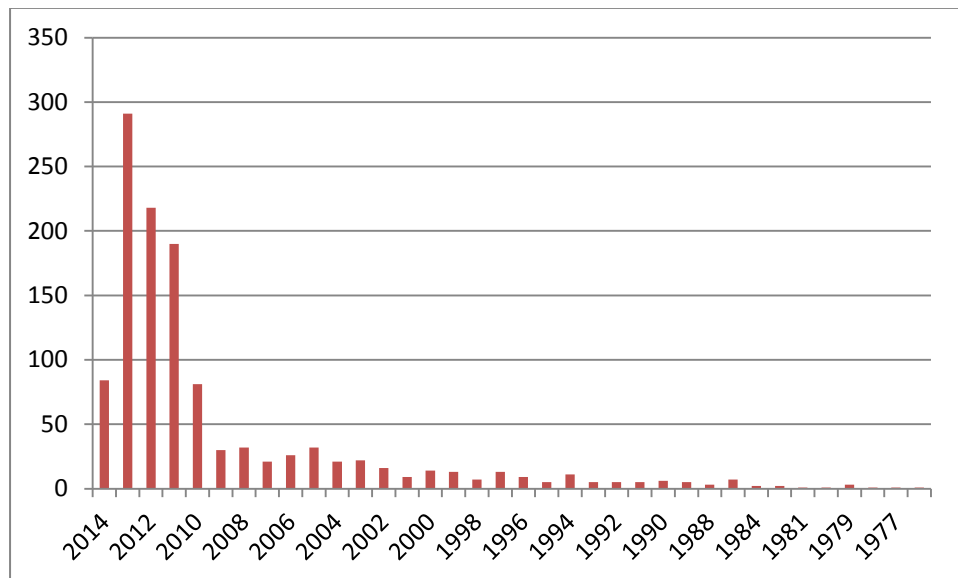
Search terms included but were not limited to the contents of Table 1; either individually or in combination. Medical Search Headings (MeSH) terms were utilised as much as possible to gain the best results from *Pubmed*[®]. MeSH terms are subject headings utilised by *Pubmed*[®]. Some additional terminology was utilised also. This tended to be local terms and terms most commonly used by the OPTI-SCRIPT study itself. This was to ensure that any subsequent research on OPTI-SCRIPT would not be overlooked.

Table 1 - Most common search phrases

MeSH terms	Non-MeSH terms
Inappropriate prescribing	Potentially inappropriate prescribing
Nursing homes	Potential prescribing omission
Residential facilities	PIP
Drug utilisation review	PPO
Pharmacists	Health Information Quality Authority
Nurses	HIQA
General practitioners	OPTI-SCRIPT
	STOPP
	START

It was noted that there has been a proliferation of research in the field of “inappropriate prescribing” in recent years as demonstrated in Table 2 - PubMed results per annum for "inappropriate prescribing".

Table 2 - PubMed results per annum for "inappropriate prescribing"



The preliminary literature review relied heavily on the OPTI-SCRIPT pilot study’s references as a starting point for the literature review(8). Many additional references were identified by snowballing from these initial reference points. The increased rate of publication in this area was noticeable when reviewing old searches weeks and months after the preliminary search.

2.3 Potentially Inappropriate Prescribing

Potentially Inappropriate Prescribing (PIP), is a common feature of healthcare systems globally (1)(7). Ireland is no exception. Research based on 2007 data from Irelands primary care reimbursement service (PCRS), (the body that reimburses pharmacists and GPs for services performed on behalf of the state) found that 36% of people aged 70-years of age or over were prescribed at least one PIP. This equated to a direct drug cost of €45 million(11). Impact of PIP on quality of life, emergency hospital admissions and adverse drug events has been displayed(12). It is widely accepted that elderly populations are more susceptible to the impact of PIP for a variety of clinical reasons(2). They have multiple co-morbidities requiring medication, they exhibit poly-pharmacy (being on three or more medications) which increases the likelihood of someone being on a PIP(13). Many exhibit declining cognitive and or physical ability to communicate complex medication issues(14). It is no surprise then that residents of aged care facilities are particularly susceptible to PIP within this already high risk cohort(1)(15). They represent the oldest and sickest of our elderly populations and many require round the clock care.

2.4 How is PIP identified?

Numerous tools have been designed that measure PIP in different settings. Typically they address PIP in older adults. They can be referred to as drug utilisation review tools (DURT) or explicit prescribing standards and have been developed over two decades. The MeSH term for drug utilisation review is defined as follows(16):

“Formal programs for assessing drug prescription against some standard. Drug utilization review may consider clinical appropriateness, cost effectiveness, and, in some cases, outcomes. Review is usually retrospective, but some analysis may be done before drugs are dispensed (as in computer systems which advise physicians when prescriptions are entered)”

Generally, they list high risk medication scenarios and suggest safer alternatives. Newer iterations of some DURT tools identify omissions of important medication also, suggesting medication that should be included in a drug regimen based on a patient's pre-existing conditions. Some drug-utilisation review tools include:

- Beers criteria(17–19)
- STOPP/START criteria(20)
- McLeod criteria (sometimes referred to as Canadian criteria)(21)
- Improving Prescribing in the Elderly Tool (IPET) (22)
- Assessing Care of the Vulnerable Elder (ACOVE)(23)
- Rx-Pad(24,25)

2.4.1 Beers criteria

Beers criteria was first published in 1991(17). It was initially published and subsequently maintained by the American Geriatric Society. An expert panel drawn from across the US agreed on the validity of 28 criteria describing PIP by general populations of the elderly as well as 35 criteria for elderly populations with 15 common diagnoses.

Notably, its first incarnation was designed to cater to nursing home residents(18). To date, it is the most widely used explicit criteria for the appropriateness of medications in the elderly. Subsequent iterations of the standard in 1997 & 2003 led to the scope being expanded to include PIP in all adults 65 and older. The standard has been widely used in epidemiological studies, drug reviews, healthcare provision and in education. The standards consistently cite the caveat that the criteria is no substitute for professional judgement. Similarly, it *“should not be the sole basis for formulary decisions, nor should they be used in any punitive manner”*(18).

2.4.2 STOPP/START criteria

STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment). This tool was first validated in 2008(26), STOPP is made up of 65 identifiers of PIP with a focus on preventing unnecessary duplication that can contribute to falls in elderly patients. START assesses the under-use of medication or Potential Prescribing Omissions (PPO) with 22 specific criteria across several widely seen conditions(27). The inclusion of the START criteria adds another paradigm to PIP/PPO by providing a means to account for medication that may have been overlooked in the prescribing process.

STOPP/START has been developed and validated in an Irish context and further validated on mainland Europe again. It is undoubtedly a more specific indicator of PIP in European populations than Beers criteria(28). A large number of the medication in Beers criteria are not routinely available in Ireland or anywhere in Europe(27). Importantly, STOPP/START criteria has been proven to have a higher correlation with avoidable Adverse Drug Events (ADE) in older people(29). STOPP is the single largest contributor to the OPTI-SCRIPT web-based algorithm. START criteria did not appear to be included in OPTI-SCRIPT. STOPP/START offers the greatest degree of specificity to the Irish and European setting and has surpassed Beers criteria as the explicit prescribing tool of choice in Ireland and elsewhere in Europe.

A 2013 review assesses the STOPP/START criteria from 13 different studies(7). It notes that STOPP/START appears to be more sensitive than the 2002 Beers criteria. Crucially, there was little evidence that the STOPP/START criteria helped optimise prescribing despite its usefulness at identifying prevalence and predictors of PIP. Only two-studies identify an association between identified PIP and potentially avoidable Adverse Drug Events (ADEs). It recommends further research in this area as well as other patient outcomes. It cites STOPP/START as a promising framework for identification of PIP in older adults.

2.4.3 Rx-Pad studies

Rx-PAD is a largely Scandinavian initiative that aims to amend prescribing behaviour through multi-faceted interventions based around academic detailing provided to the prescribers. Simultaneous interventions can include software, Computerised Decision Support, individual prescriber feedback and supply of educational material with or without Continuous Professional Development (CPD) credit. It has been found to be a successful means of augmenting prescriber behaviour(24,25). It underpins the OPTI-SCRIPT philosophy of a multi-faceted intervention and directly contributed to the inclusion of academic detailing as a fundamental part of the OPTI-SCRIPT intervention.

2.4.4 Other Drug Utilisation Review Tools (DURT)

The McLeod criteria were developed in Montreal, Canada during the mid-nineties. Their objective was to develop a list of inappropriate practices in prescribing for elderly people. A national panel of 32 experts from the fields of pharmacology, geriatrics, family medicine and pharmacy contributed to a list of criteria with an associated significance rating(21).

IPET was developed in the late 1990s in London, Ontario. The McLeod criteria was utilised as a starting point to identify PIP in a hospital population. The identified “inappropriate prescribing” was then used to reverse engineer the IPET tool. Its aim was to create a tool that was more specific for the acute hospital setting. It was shown to be a reliable means of identifying PIP in that context(22). Nonetheless, it has been shown to identify less PIP than Beers criteria(30).

ACOVE was developed by the RAND Corporation, a health policy think-tank based in the US in conjunction with the Pfizer Corporation. Their stated goals were to develop a set of evidence based indicators of quality care and to develop a tool to assess quality of care at the health system level(23). The most recent list identified 392 quality indicators across 26 topics. ACOVE criteria are a holistic set of data to determine care at a systemic, provider level. It incorporates a number of medical and diagnostic criteria for amongst others, pressure sores and visual impairment. Included in this, is a number of measures to address PIP(23).

Criteria	Year	Country of origin	Number of criteria	Target group	Method of development
McLeod	1997	Canada	38	General population ≥ 65	Delphi consensus method
IPET	2000	Canada	14	General population ≥ 70	Based on McLeod, validated in a geriatric unit
Beers	2003*	USA	68	General population ≥ 65	Delphi consensus method
Rx-PAD	2006	Norway	14	General population ≥ 70 years	Based on literature and Delphi consensus method
ACOVE	2007	USA	392	Community- dwelling ≥ 65 at greater risk of death/functional decline	Delphi consensus method
STOPP	2010	Ireland	65	General population ≥ 65	Delphi consensus method

Figure 1 - Summary of drug-utilisation review tools that contributed to OPTI-SCRIPT

Familiarity with the above tools and the principles behind them is important to understand the prevalence of PIP that is reviewed in subsequent chapters. In addition, the above six explicit prescribing criteria contributed directly to OPTI-SCRIPT’s development(8). This is discussed later in the literature review in Section 2.6.

2.5 Prevalence of PIP in Older Adults

Having identified a number of guidelines for identifying PIP, the next step is to identify studies that have examined the prevalence of PIP in primary care, and more specifically in the nursing home

sector. Many of the explicit tools mentioned in the previous section have been validated in both primary care and the nursing home sector. However, the number of studies on PIP that focus on nursing homes is limited.

2.5.1 Primary Care

Cahir et al review national prescriber variations by applying STOPP criteria(31). The background of the study establishes the impact PIP on patients by referring to the effect of PIP on Adverse Drug Events (ADE). For example side-effects; mortality (likelihood of death) and morbidity (likelihood of suffering a disease state)(32). The study examines PIP from a prescriber perspective and finds that 98% of GPs (n=1,938) assessed, exhibit a patient who is on at least one PIP according to criteria. It also notes that there is a perception difference from what GPs expect their figure to be and to what it really is.

A study by TILDA (The Irish Longitudinal Study on Ageing) examined a cohort of those aged 65 and over (n=3,454)(33). It reviewed the prevalence of PIP and Potential Prescribing Omissions (PPO) using a subset of the STOPP criteria and a full set of START criteria. The STOPP/START suite of interventions ensures not only that potentially inappropriate medication is reviewed but also that, appropriate medication is added if necessary based on a patients disease state(s). It provides a more balanced system of medication review compared to other DURTs.

Prevalence of PIP and PPO in the study was 14.6% and 30% respectively (PPO refers to medication a patient should probably be on based on the conditions they suffer from). The 30% PPO rate is significant. Utilising the START criteria it finds an extremely high rate of omitted medications in elderly populations. Traditional models such as Beers typically looked at PIP at the exclusion of PPO. STOPP and START when used together provide a value and a balance to prescribing analysis that other tools don't appear to. Clearly a 30% PPO rate is of concern, particularly if traditional tools have not been sensitive to it in the past. It finally advocates the use of screening tools to:

“reduce unnecessary medication, related adverse events, healthcare utilisation and cost”

McMahon et al studied the impact of inappropriate prescribing on elderly people (70 years of age and over) attending an Irish emergency department after a trip, slip or fall. They use the initial presentation to the emergency department as the index event (n=1,016). Retrospectively, medication for the 12-months pre and post event were reviewed and analysed using Beers and STOPP criteria. The patients are identified at the point of presentation to secondary care, which may have excluded this study from a primary care analysis. However the medication in question is clearly initiated in the primary care setting. STOPP identified 53.1% with at least one PIP prior to fall

incident, with no significant variance in the post-fall rate. Beers identified a PIP rate of 44% pre-fall, and again no significant difference post-fall. The study identifies a significant prevalence of PIP in older fallers and singles out a high prevalence of psychotropic medication. It recommends focused intervention studies in the area of psychotropic medication(34). These are medications that affect the brain and nervous system.

Another study by *Cahir et al* (12) looks at the association between PIP and health related outcomes in older community dwelling patients. Adverse drug events (ADE), health related quality of life (HRQOL) and Emergency Department (ED) visits are analysed. STOPP was again the tool of choice. It identified a prevalence of PIP at 42% (n=377). Strong relationships were identified between those with greater than or equal to two PIP and likelihood of an ADE, lower mean HRQOL and a two-fold increase in likelihood of attending ED in the same period. It advocates reducing PIP in primary care to reduce likelihood of ADEs, increase quality of life and reduce workload for ED.

2.5.2 Nursing Homes

The prevalence of PIP in Irish nursing homes has been found to be as high as 73%(35); studies exist that have measured the prevalence of PIP in nursing homes using Beers and STOPP criteria in particular. Eight-studies were included to examine PIP prevalence in nursing home environments (See Figure 2). Nursing home studies were far less prevalent than studies examining PIP in community dwelling populations. Only three-studies examining nursing home prescribing in Ireland were identified.

An all island study carried out by the Centre for Ageing Research and Development in Ireland (CARDI)(35) returned the following results. STOPP criteria returned 73% and 67% of residents on at least one PIP in the Republic and the North of Ireland respectively. Beers criteria returned 54% and 57% of residents on at least one PIP respectively.

A small Belgian study by *Elseviers et al* reviewed patients using Beers and ACOVE criteria. It returned a prevalence of 27% and 56% respectively. It identified a positive correlation between likelihood of PIP and the following: age, female gender, clinical nursing and care issues, number of prescriptions and the use of psychotropic drugs. The study recommends development of a combined assessment tool and the implementation of a computerized monitoring system of potentially inappropriate medications to improve the quality of prescribing(36).

A Chinese study based in Macau by *Lao et al* used STOPP criteria to identify 46.5% prevalence of PIP (n=168). It also looked separately at drug-drug interaction using compendia not encountered in this project. It recommended further recommendations for pharmacist led interventions(37).

A British study by *Shah et al* looked at quality of prescribing using Beers criteria. It looked at 10,387 patients from age-65 upwards. It compared the quality of prescribing to a community cohort (n= 403,259) and data from the US National Nursing Home Survey(38). Beers criteria identified 33% of nursing home patients receiving at least one PIP compared to 21.4% of the community. The British nursing home figure correlated with the figure identified in by the US survey. It concludes (39)

“the targeting and effectiveness of medication reviews in care homes needs to be improved”

A US study from 2005 by *Zuckerman et al*, looked at the prevalence of PIP before and after admission to a nursing home, and also compared prevalence among residents with and without dementia. Beers criteria was the DURT of choice. Prior to admission the mean monthly prevalence of PIP for residents with and without dementia was 20% and 23% respectively. After admission prevalence increased to 28% among residents without dementia and decreased to 19% among residents with dementia. After adjustment it was determined that patients with dementia were 27% less likely than residents without dementia to receive a PIP(40).

An Irish study by *O’Sullivan et al* examined prevalence of PIP using both STOPP and Beers criteria. It was published in *Drugs & Aging* in 2013. It looked at the prevalence of PIP in 15 publically funded long-term care facilities in the greater Cork region (n=732). At least one instance of PIP was experienced by approximately 70% of patients using STOPP criteria and 53.4% with Beers criteria. The sample size was relatively small compared to some of the population studies mentioned above and the median age was 85 years. This would contribute somewhat to the high PIP figures. It also attributes the high rate of specificity to the fact that STOPP criteria was developed in an Irish context so very little is being lost in translation(41).

Ryan et al(42) conducted a small trial (n=313) in the Munster region of Ireland in 2008 (Published in 2012). It focused on patients in residential care. PIP was identified in 59.8% of patients and PPO was identified in 42.2% of patients. It refers specifically to HIQA criteria for medication review and validates HIQAs decision to add focus to drugs that affect the Central Nervous System (CNS), as these were the most frequent group of drugs identified. Its primary recommendation was integration of the STOPP/START tool into every-day practice to improve prescribing in this group of patients.

A 2004 study, based in Ontario by *Lane et al*, compared community dwelling patients and residential care patients against their own prescribing standard(43). Unusually, it assigned medication to three categories based on Beers criteria. Effectively, traffic lighting their formulary. It identified that nursing home patients are less likely to be on “*always avoid*” and “*rarely indicated*” medications.

This is the opposite of what has been reported in previous studies which surprised the authors as well. The research queried if the higher standard could be attributed to clinical pharmacy services which are mandated in the nursing home setting in Ontario. It would align with some of the positive results from pharmacist interventions elsewhere(44,45).

There is a lack of literature on prescribing in Irish nursing homes, what standards are adhered to and how prescribing quality is assessed. This research project hopes to fill that void by learning the opinions of health care professionals on the topic of nursing home prescribing.

Key 1- * denotes Irish research

Key 2 - Highlighted rows denote nursing home research

Key 3 - # represents CARDI data divided according to jurisdiction

Title	ShortDetails	Year	Author(s)	Beers	STOPP	STA
*A prevalence study of potentially inappropriate prescribing in Irish long-term care residents.	Drugs Aging. 2013	2012	O'Sullivan DP	53.5	70	
*Potentially inappropriate prescribing in older residents in Irish nursing homes.	Age Ageing. 2013	2012	Ryan C		59.8	42.2
Prevalence of potentially inappropriate prescribing in an acutely ill population of older patients admitted to six European hospitals.	Eur J Clin Pharmacol. 2011	2011	Gallagher P	30.4	51.3	59.4
Potentially inappropriate prescribing in institutionalised older patients in Spain: the STOPP-START criteria compared with the Beers criteria.	Pharm Pract (Granada)	2012	Ubeda A	25	48	44
Potentially inappropriate prescribing and drug-drug interactions among elderly Chinese nursing home residents in Macao.	Int J Clin Pharm	2013	Lao CK		46.5	
*Inappropriate prescribing in older fallers presenting to an Irish emergency department.	Age Ageing. 2014	2013	McMahon CG		44	
*Potentially inappropriate prescribing and adverse health outcomes in community dwelling older patients.	Br J Clin Pharmacol. 2014	2013	Cahir C		42	
*Potentially inappropriate prescribing and cost outcomes for older people: a national population study.	Br J Clin Pharmacol. 2010	2010	Cahir C		36	
*Prescriber variation in potentially inappropriate prescribing in older populations in Ireland.	BMC Fam Pract. 2014	2014	Cahir C		35	
*Potentially inappropriate prescribing and cost outcomes for older people: a cross-sectional study using the Northern Ireland Enhanced Prescribing Database.	Eur J Clin Pharmacol. 2012	2012	Bradley MC		34	
STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment). Consensus validation.	Int J Clin Pharmacol Ther. 2008	2008	Gallagher P		32.8	29.6
[Potentially inappropriate prescribing in patients over 65 years-old in a primary care health centre.]	Aten Primaria	2014	Parodi LÃ³pez		32.8	
*Prevention of potentially inappropriate prescribing for elderly patients: a randomized controlled trial using STOPP/START criteria.	Clin Pharmacol Ther. 2011	2011	Gallagher PF		23	35.4
*Potentially inappropriate prescribing in an Irish elderly population in primary care.	Br J Clin Pharmacol. 2009	2009	Ryan C	18.3	21.4	22.7

*Prevalence of potentially inappropriate prescribing and prescribing omissions in older Irish adults: findings from The Irish Longitudinal Study on Ageing study (TILDA).	Eur J Clin Pharmacol. 2014	2014	Galvin R		14.6	
*Addressing potentially inappropriate prescribing in older patients: development and pilot study of an intervention in primary care (the OPTI-SCRIPT study).	BMC Health Serv Res. 2013	2013	Clyne B			
*Application of the STOPP/START criteria: a systematic review of the prevalence of potentially inappropriate prescribing in older adults, and evidence of clinical, humanistic and economic impact.	J Clin Pharm Ther. 2013	2013	Hill-Taylor B			
*Effectiveness of medicines review with web-based pharmaceutical treatment algorithms in reducing potentially inappropriate prescribing in older people in primary care: a cluster randomized trial (OPTI-SCRIPT study protocol).	Trials. 2013	2013	Clyne B			
*Inappropriate prescribing: criteria, detection and prevention. Review	Drugs Aging. 2012	2012	O'Connor MN			
Inappropriate prescribing in the elderly.	J Clin Pharm Ther. 2007	2007	Gallagher P			
Quality of prescribing in Belgian nursing homes: an electronic assessment of the medication chart.	Int J Qual Health Care	2014	Elseviers MM	27		
Quality of prescribing in care homes and the community in England and Wales.	Br J Gen Pract	2012	Shah SM	33		
Potentially inappropriate prescribing of primarily renally cleared medications for older veterans affairs nursing home patients.	J Am Med Dir Assoc	2011	Hanlon JT			
Medication misadventures in the elderly: a year in review.	Am J Geriatr Pharmacother	2010	Marcum ZA			
Potentially inappropriate prescribing before and after nursing home admission among patients with and without dementia.	Am J Geriatr Pharmacother	2005	Zuckerman IH	20		
Potentially inappropriate prescribing in Ontario community-dwelling older adults and nursing home residents.	J Am Geriatr Soc	2004	Lane CJ			
Prescribing potentially inappropriate psychotropic medications to the ambulatory elderly.	Arch Intern Med	2000	Mort JR			
##*CARDI - An evaluation of inappropriate prescribing in older residents in long term stay facilities using STOPP Beers' criteria - Republic	CARDI	2011	Byrne, S,	54	73	
##*CARDI - An evaluation of inappropriate prescribing in older residents in long term stay facilities using STOPP Beers' criteria - North	CARDI	2011	Byrne, S	57	67	

Figure 2 Prevalence of PIP identified from literature review

2.6 Demographic Context

People aged 65 years and over accounted for 11% of Ireland's population in 2011 (n= 535,393)(46). This is expected to rise to 15.4% (n=792,100) by 2021. This is in line with WHO information on the increasing elderly populations in Western societies, which predicts increasingly elderly populations up as far as 2050(47).

Age Group	2006	2011	2016	2021
	%	%	%	%
0-4 years	7.1	7.2	6.6	5.9
5-14 years	13.3	13.1	13.3	13.0
15-49 years	53.1	51.7	49.8	48.0
50-64 years	15.4	16.1	16.8	17.8
65-74 years	6.2	6.7	7.7	8.5
75-84 years	3.7	3.8	4.1	4.8
85+ years	1.1	1.4	1.7	2.1
Total	100.0	100.0	100.0	100.0

Figure 3 - Current and Projected Distribution of Population Across Age in Ireland (48)

Inevitably, this means increasing numbers being admitted to residential care facilities as well as utilising other health resources. A 2012 analysis of future demand for long-term care by the Centre for Ageing Research and Development in Ireland (CARDI) predicts that the annual increase in residential care and formal home care will be 2,833 and 565 in the Republic of Ireland and Northern Ireland respectively(49).

Increasing elderly populations, a higher proportion of people dealing with chronic illnesses, less healthcare professionals per capita and more prescription items being dispensed increase the chances of PIP occurring. The direct drug and the subsequent economic cost of PIP make it imperative that the issue is addressed in a better way than is being done currently.

2.7 HIQA Regulation

Nursing homes in the Republic of Ireland are regulated by the Health Information and Quality Authority (HIQA) which was established in 2007. Its remit is the following (50):

“independent authority responsible for driving quality, safety and accountability in residential services for children, older people and people with disabilities in Ireland. They are responsible for driving improvements in the quality and safety of healthcare on behalf of patients We develop standards, monitor compliance with standards and carry out investigations where there are reasonable grounds to do so”

HIQA has a huge brief from healthcare technology assessments to information standards. It published “*National Quality Standards for Residential Care Settings for Older People in Ireland*” to improve the quality of life of residents and to promote best practice in these settings. This document sets out the standards for nursing home care in Ireland including the criteria for medication management. It reflects the quality standards based on legislation, research findings and best practice. They were developed in partnership with service users, service providers, healthcare professionals and older peoples representative groups(51).

HIQA regulates Irish care facilities and has set specific criteria for medication management in the nursing home in its 2009 publication *National Quality Standards for Residential Care Settings for Older People in Ireland*(51). It outlines rigorous standards which must be complied with to operate as a residential care facility in the Republic of Ireland. Resident’s rights, protection and quality of life are addressed. The homes facilities, staffing, management and environment must comply with a high standard. Thirty-two specific standards are outlined to represent the above. Section 3 of the document outlines the expectations of resident’s health and social care needs. This has seven sub-sections as follows:

- Standard 10 Assessment*
- Standard 11 The resident’s care plan*
- Standard 12 Health Promotion*
- Standard 13 Healthcare*
- Standard 14 Medication management*
- Standard 15 Medication monitoring and review*
- Standard 16 End of Life care*

Standards 14 & 15 are the most relevant to this study although some crossover does exist between all standards.

“Medication Management: Each resident is protected by the residential care setting’s policies and procedures for medication management and, where appropriate, is responsible for his/her own medication”(52)

“Medication Monitoring and Review: Each resident benefits from his/her medication to increase the quality or duration of his/her life. He/she does not suffer unnecessarily from illness caused by the excessive, inappropriate or inadequate consumption of medicines”(52)

Standard 15 specifically outlines the following:

Each resident on long-term medication is reviewed by his/her medical practitioner at least on a three-monthly basis, in conjunction with nursing staff and the pharmacist. Special consideration is given to the use of:

- *Antipsychotic medication*
- *Sleeping tablets and other sedating medication*
- *Anticonvulsant medication*
- *Medication for the management of depression*
- *Analgesic medications (pain management)*
- *Medication for the management of constipation*
- *Anti-platelet and anticoagulant medication (prevention of stroke)*
- *Influenza and pneumococcal vaccines*
- *Non-steroidal anti-inflammatory drugs*
- *Different medications and their potential interactions*

To answer the research question literature was sought on compliance and or opinion on the above standards. This immediately restricted searching to Irish settings. The HIQA publications record was reviewed for publications. A 2012 report on the findings from inspection reports from a 15-month period outlined the following(53):

*“there will be an additional emphasis on driving continuous improvement in **areas such as regular medication review and management**, intake of fluids, avoiding the use of restraints, best practice in care planning and extending the range of activities on offer at each centre”*

This emphasis was somewhat actioned with the publication of: *Principles of good practice in medication reconciliation* in May 2014. An exhaustive search of *PubMed*® and *Google Scholar*® returned no acceptable literature. Again, it appears there is little research on medication management in Irish nursing homes. This is reinforced by *Ryan et al* who observed the following(42):

“There is currently a lack of studies regarding the prevalence of PIP and PPOs in older Irish nursing home residents, despite recent efforts by the Health Information and Quality Authority ... to introduce medication review standards for patients in this setting”

2.8 Literature supporting OPTI-SCRIPT

The high prevalence of PIP is of huge concern in both primary care and in nursing homes. OPTI-SCRIPT was developed in a direct response to this; in particular the following studies (11, 20,27,29,45). It hoped to pilot and further develop a meaningful intervention that would reduce the prevalence of PIP. It performed an extensive review of available literature of empirical and theoretical evidence on PIP and interventions that affect it. Once various intervention components were identified a consensus based methodology with healthcare professionals was undertaken. They identified PIP criteria and alternative treatment options before using patient case studies to test their criteria specificity. A focus group determined GP feedback. The intervention was then piloted amongst a cohort of GPs. The finalised intervention prior to randomised control trial had three facets as follows(8):

1. Academic detailing by a pharmacist with the relevant GP/prescriber
2. Medicines Review with web-based treatment algorithms
3. Patient information leaflets tailored to provide specific information for each PIP (See Appendix I- Benzodiazepine Patient Information Leaflet)

2.8.1 OPTI-SCRIPT Development

The OPTI-SCRIPT pilot study is entitled(8):

Addressing potentially inappropriate prescribing in older patients: development and pilot study of an intervention in primary care (the OPTI-SCRIPT study).

From the literature review two approaches to addressing PIP were identified. The first was academic detailing(54), the second was performing a medicines review(15,55,56). Pharmacists were identified as the best profession to perform the academic detailing required and to facilitate the medicines review(57–59). See Figure 4.

In the next stage the various PIP criteria identified from the literature review were refined from 122 to 39. This was achieved by removing unavailable medication and finally by a consensus methodology with a panel of experts. This then provided a basis for the development of the algorithms and the creation of their website. After consultation with a GP focus group a third facet, patient information leaflet (PILs) were included to encourage and support patients whose medication is undergoing change(60)(61).

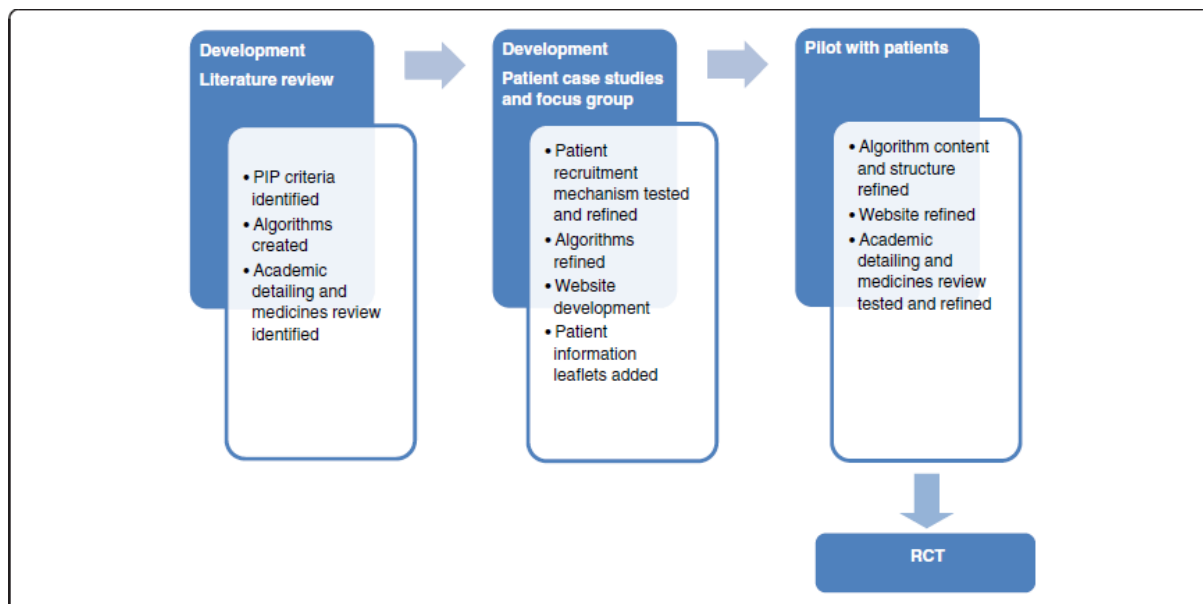


Figure 4 - Flowchart of intervention development adapted from MRC framework(8)

2.8.2 Academic Detailing

“Academic detailing supports improved clinical decision making by fostering one-on-one interaction between physicians and health professionals trained to communicate the latest evidence-based clinical data. Academic detailing’s goal is to provide an accurate, up-to-date synthesis of relevant clinical information in a balanced and engaging format”(62)

Academic detailing is peer-to-peer education process. Typically a fellow GP or other health-care professional partake in a face-to-face session with clear educational objectives. Graphics and literary materials are typically used also and when it occurs iteratively metrics can be utilised to give feedback. It has been used effectively in Nordic countries to reduce target antibiotic over-prescribing(24,25). This has been shown to be a more successful way of achieving success in complex interventions.

The OPTI-SCRIPT pilot used a research pharmacist to educate the GPs about PIP; they focused on the effects and prevalence of PIP in primary care and familiarised the GPs with the two other facets listed above. In the pilot a 30 minute session was adopted. In practice it is likely that this would occur on a cyclical basis. This would allow ongoing feedback aided by individual prescriber data. This happens currently with Irish GPs who receive feedback on their hypnotic prescribing in a national attempt to reduce their use(63). OPTI-SCRIPT drew from the high impact Rx-PAD studies from Scandinavia which saw a significant reduction in antibiotic prescribing as a result of peer-to-peer academic detailing(24,25).

2.8.3 Medicines Review with the Aid of Web-Based Algorithms

The literature that contributed to the 34 OPTI-SCRIPT criteria came from existing Drug-Use-Review Tools (DURT) outlined in Section 2.4(11,26,29,41,64,65). Many of these DURT were developed for, or validated in a nursing home setting. Anecdotally at least this suggests OPTI-SCRIPT could be a success in this environment. The primary initiatives were as follows.

- Beers criteria
- STOPP criteria
- McLeod criteria
- Improving Prescribing in the Elderly Tool (IPET)
- Assessing Care of the Vulnerable Elder (ACOVE)
- Prescription Peer Academic Detailing (Rx-PAD)

OPTI-SCRIPT and the 34 criteria is the product of amalgamating the above DURTs; then refining them to those most pertinent to primary care in Ireland. It is hoped this initiative will provide a greater degree of specificity as a tool to identify PIP in Ireland(8).

In the randomised control trial and pilot study, a pharmacist identified PIP in each GPs patients using the criteria developed in the modelling stage of the pilot study. GPs in the intervention group were then presented with an anonymised list of their patients and their PIP in a web-based format, and were suggested a number of pharmacological and non-pharmacological interventions to address this PIP. For the control group, the GPs were alerted to PIP in their patients but were not offered the web-based tool. The decisions that they chose for each patient and their reasons for these decisions were then recorded in a database. As mentioned earlier in the study, preliminary, unpublished findings from the randomised controlled trial show a statistically significant difference between control and trial groups in reducing PIP. (See Figure 5 & Figure 6).

A number of patients with PIP were identified and recruited from your practice to take part in this study

You are being asked to:

Conduct a medicines review with each of these patients using the material provided here. The patient list and the PIP(s) of concern are provided.

For each PIP, the material is structured as followed:

Section A: The individual PIP with reason for concern.

Section B: Alternative pharmacological and non-pharmacological treatment options (with patient information leaflets).

Section C: Background information (where relevant).

NB: Please fill in an outcome form at the end of each review. The process is not complete until the outcome form is completed.

Figure 5 - Introduction Window to OPTI-SCRIPT

Patient ID: 15	Patient ID: 18	Patient ID: 23
Proton Pump Inhibitors (PPIs) Done Full Therapeutic Dose > 8 weeks	Long Acting Benzodiazepines Done long acting, long term (>1 month)	Long Acting Benzodiazepines Done long acting, long term (>1 month)
PIP Outcome Form Done Please fill this in for each PIP!	PIP Outcome Form Done Please fill this in for each PIP!	PIP Outcome Form Done Please fill this in for each PIP!
Non-steroidal anti-inflammatory drugs (NSAIDs) Done Warfarin, SSRI, ACE inhibitor, Diuretic, Congestive Heart Failure, Peptic Ulcer Disease, Long-term use for mild osteoarthritis		Non-steroidal anti-inflammatory drugs (NSAIDs) Done Warfarin, SSRI, ACE inhibitor, Diuretic, Congestive Heart Failure, Peptic Ulcer Disease, Long-term use for mild osteoarthritis
PIP Outcome Form Done Please fill this in for each PIP!		PIP Outcome Form Done Please fill this in for each PIP!

Figure 6 - GP perspective showing patients identified as having been prescribed PIP

2.8.4 Patient Information Leaflets

Patient information leaflets were developed by the OPTI-SCRIPT team to aid discussing medication changes with patients. This was during the intervention refinement stage where GPs fed back that a concise patient information leaflet could supplement patient consultations. Each of the 34 PIP criteria has a dedicated PIL (See Appendix I- Benzodiazepine Patient Information Leaflet). Efforts were taken to write the leaflets in as plain and simple language as possible to outline the nature of the drug(s), why it might be changed and what the alternative treatment options might be. The referenced literature supporting it from the pilot study is limited to one study(60), but the benefits of user-friendly patient information leaflets are well-documented(61).

Patient information leaflets are supplied with all medication in Ireland and in most jurisdictions. However, they are not user-friendly and tend to be treated as a regulatory requirement as opposed to a patient education opportunity. GP feedback clearly stated a difficulty in converting patients from medication they had been on for a long time. Bespoke patient information leaflets for each drug category addressed by OPTI-SCRIPT have been developed.

2.9 State of the Art

State-of-the Art will inform the reader about other initiatives in the same space as OPTI-SCRIPT. OPTI-SCRIPT is an interventional study. It seeks to reduce PIP by utilising a multi-faceted approach. It is influenced by literature on behaviour change theory as well as general literature in the field of PIP. Establishing what is or what is likely to become state of the art is important. This will provide context for any future development of OPTI-SCRIPT and provide awareness of competition and best practice in the field. In this chapter we will look at IT initiatives aimed at improving the process of medication review.

2.9.1 Medscope Review Mentor (MRM)®

In Australia, pharmacists are reimbursed for performing medication review at the request of a GP(66). Residential Medication Management Review (RMMR) is specifically supported. Accredited pharmacists are responsible for providing the service. A 2013 *Australasian Medical Journal* article compared a medication review process performed by pharmacists with and without the aid of the above software, *Medscope Review Mentor* (MRM). It identified significantly more Drug Related Problems (DRP) than pharmacists alone(67,68). For the purposes of this study PIP and DRP can be considered to be inter-changeable. In practice DRP has a broader definition encompassing more than drug choice or omission as follows(69):

“A Drug-Related Problem is an event or circumstance involving drug therapy that actually or potentially interferes with desired health outcomes”

MRM is described as knowledge based system or an intelligent decision support system. It was developed in response to the Australian government’s decision to reimburse medication review and in response to a poor rate and standard of medication review that had been observed(70). Software existed that facilitated data storage and reporting facilities, but not a decision support module. A lack of effective decision support interventions in the field was noted. As a result, MRM built on the success of a pathology reporting software that had displayed an excellent classification accuracy rate of 99%, i.e. 99% of the decisions made by the system were accurate. It utilised a ripple-down rules approach to building its knowledge based system. When a DRP is identified by a user it either conforms to an existing rule or initiates a process where a new rule is created. This allows the system to learn from its users. Results validated this approach. Experts typically missed 36%-43% of DRPs when reviewing implicitly on their own; when they utilised MRM only 4-8% of DRPs were overlooked.

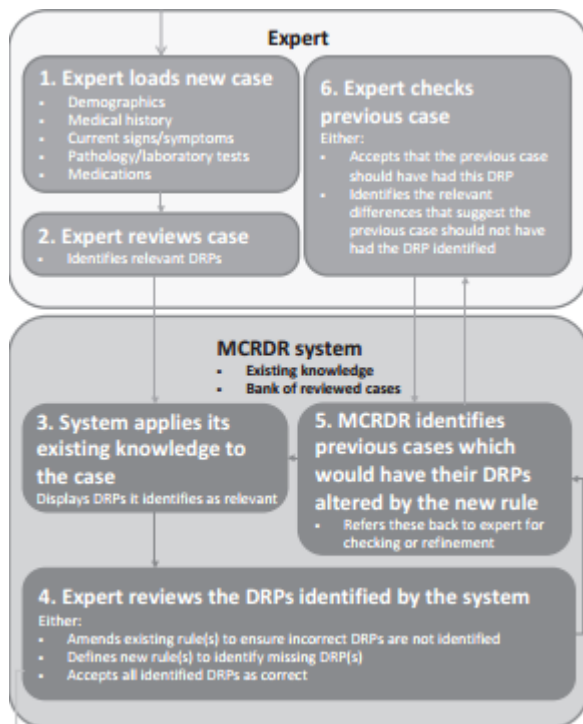


Figure 7 - How the ripple-down rules system works(70)

The study concludes:

“complex, multifaceted and multidisciplinary problems can be identified automatically using an artificial intelligence-based software system”

2.9.2 STOPP (Screening Tool of Older Person's Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment)

STOPP/START (See 2.4 How is PIP identified?) has been well trialled internationally and its criteria have been used extensively in Europe, Asia and North America since its development. It has predominantly been used as a drug-utilisation review tool to calculate the prevalence of PIP in nursing homes and primary and secondary care. Of all the initiatives described in Section 2.4 it is the only one that this study feels could be classified as state of the art. Its potential is well validated, although presently its effect on outcomes such as morbidity and mortality is unknown. Its developers Doctors O' Mahony, Byrne and Ryan in association with University College Cork (UCC) have a licence agreement for the electronic development of the STOPP/START tool with Clinical Support Information Systems (CSIS) Castletroy, Limerick(42)(71). It is uncertain how this development will progress, but the following excerpts from their publications suggest a certain direction.

“In our view, what is needed is a reliable, fast automated software system for checking older people’s prescriptions to ensure that important instances of potential inappropriate prescribing are detected and signalled immediately to the prescriber. A systematic check of drug interaction, drug disease interactions, drug indication, drug contraindications, the risk of ADEs through a predictive risk score and potentially inappropriate prescribing criteria with instant feedback to the prescriber could improve prescribing quality thereby reducing the incidence of ADEs in older people”(2)

“What is required is a workable, systemic, evidence-based, easily applicable list of prescribing indicators that would capture most commonly used, but potentially inappropriate medications, common drug-drug interactions and drug-disease interactions as well as medications that are clinically indicated... A drug utilisation review tool should not replace clinical judgement but should provide guidance as to appropriateness of therapy in common clinical situation. Drug utilization review tools should be designed on the basis of a country’s national drug formulary and should be evidence based “ (1)

The focus appears to be on augmenting prescriber behaviour at the point of drug-choice. Pharmacist review is mentioned, yet there is little mention of utilisation of a structured medication review process by GPs or other professions. Crucially, an inter-rater reliability test between pharmacists of different background displayed that the drug-utilisation review tool could be applied effectively and consistently by pharmacists from both hospital and community backgrounds(72).

STOPP/START has a high specificity for identifying PIP, amongst other drug-utilisation review tools it is the most highly regarded in an Irish/European context. It has been applied reliably by both pharmacists and GPs and contributed heavily to the development of OPTI-SCRIPT. It is undoubtedly state of the art for identifying PIP, and has massive potential to form the basis of an interventional application.

2.10 Is OPTI-SCRIPT state of the art?

In an Irish context, OPTI-SCRIPT is the first multi-faceted intervention designed to reduce the prevalence of PIP. It drew on drug-utilisation review tools and behaviour change theory to develop the OPTI-SCRIPT intervention and both the pilot study and preliminary results from a randomised control trial display positive clinical results. It is a state of the art concept without being a fully developed product. Similar to STOPP/START it displays huge potential in an academic setting. Whether or not it becomes a viable option for healthcare professionals to use routinely will depend on the detailed results of its randomised control trial and presumably its development into a fully-

fledged clinical decision support system. Presumably it will facilitate medication review either as a standalone application or integrated into existing healthcare programs e.g. GP practice software and pharmacy medication records.

Chapter 3 Research Design/Methodology

3.1 Introduction

This chapter describes the methodologies employed in this study. It outlines the rationale for selecting those methodologies, and how they were designed to complement the rest of the project, based on the evidence detailed in the literature review. The evolution of the methodology is discussed in detail. To re-iterate the research questions are as follows:

- i. How is PIP identified currently in Irish nursing homes?
- ii. To what extent are the HIQA criteria for medication review observed i.e. that medications are reviewed every three months
- iii. Would GPs responsible for Nursing Homes be willing to utilise the OPTISCRIPPT tool to identify PIP?
- iv. If so, how would the OPTISCRIPPT intervention have to be adapted to best suit Nursing Home prescribing

3.2 Methodology

Figure 8 displays how the methodology was developed for this study. The primary researcher attended the HRB to discuss potential MSc projects. The pilot study by *Clyne et al* was introduced and the OPTI-SCRIPT web-based algorithms displayed. It was immediately felt that this tool could be meaningfully employed by pharmacists to perform medication use review to a high clinical standard.

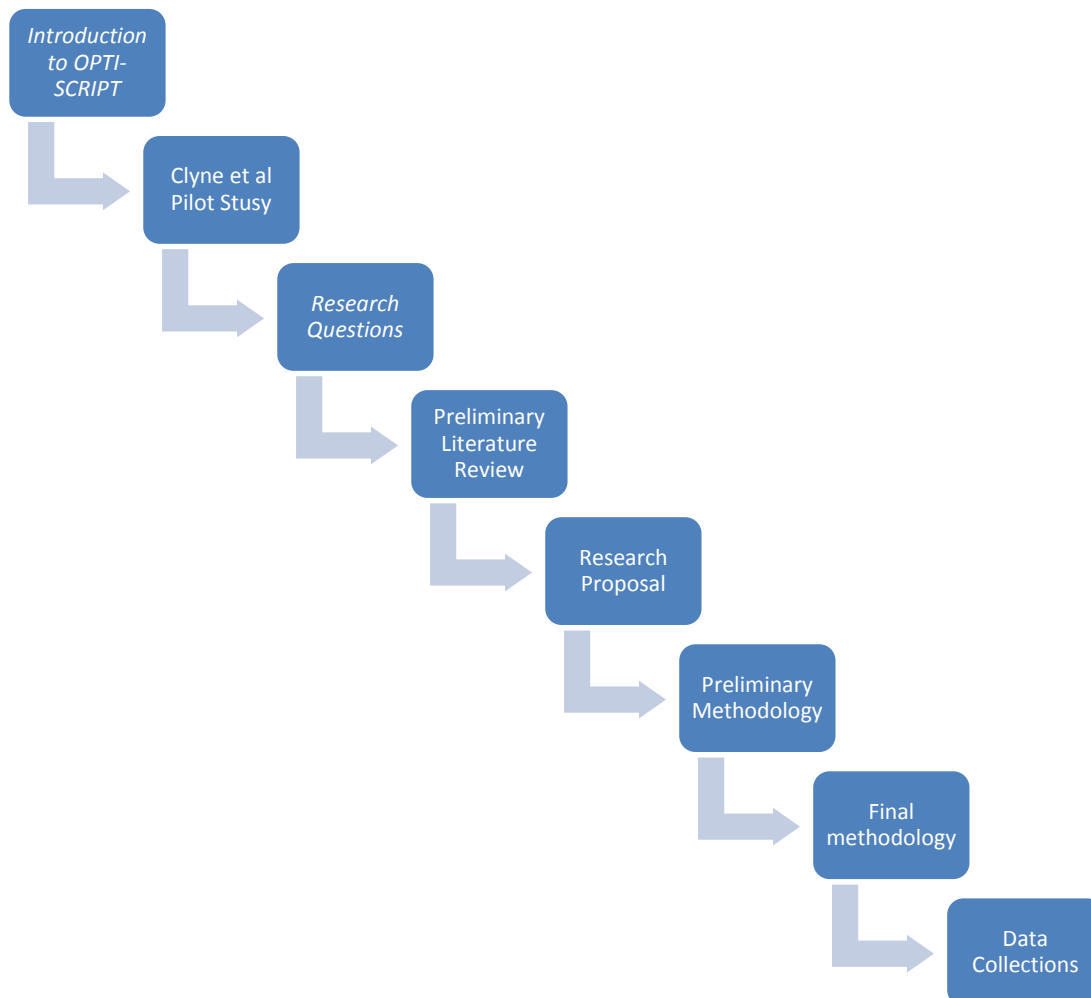


Figure 8 - Evolution of the methodology

Clyne et al had piloted OPTI-SCRIPT in a primary care setting but as HIQA guidelines compel 3-monthly medication reviews it was decided to examine the potential for using OPTI-SCRIPT in a nursing home setting to help fulfil this HIQA guideline. The primary researcher had experience of dealing with nursing homes and felt it would be a valuable approach to take. This was validated by members of the OPTI-SCRIPT development team.

3.2.1 Preliminary methodology

A preliminary literature review, heavily influenced by *Clyne et al's* pilot paper was also performed. At this point the four-research questions were identified, as discussed in Section 1.4. These contributed to the research proposal where the preliminary methodology was outlined as follows:

- Questionnaire to nursing homes to determine:
 - How potentially inappropriate prescribing is identified currently?
 - To what extent is HIQA criteria for medication review observed?
- Display the potential of the OPTI-SCRIPT intervention with anonymised patient case studies
- Form a focus group to determine:
 - Would GPs with responsibility for Nursing Homes be willing to utilise the OPTISCRIP tool to identify PIP?
- Questionnaires will be returned to School of Computer Science and Statistics, Trinity College Dublin before inputting into SDSS statistical analysis software.
- Focus group dialogue will be recorded digitally and transcribed before being analysed for consensus and insight

Changes to the above methodology occurred for a variety of reasons. Familiarity with HIQA guidelines grew during the literature review. As HIQA guidelines specifically state that nurse, pharmacist and GP should work in conjunction during the medication review process, it was decided to target each profession specifically to provide the most accurate results, this meant an additional SurveyMonkey® questionnaire to pharmacists.

Analysing OPTI-SCRIPT using real patients was considered but was deemed unnecessary for the scope of this study. The implications of using real patient data seemed unnecessary, especially when ethical approval was considered. The purpose was to examine attitudes to PIP and OPTISCRIP in those working in or contracted to nursing homes, not to examine its clinical effectiveness, which is being established in a RCT. Ultimately, hypothetical patient records would fulfil all the necessary criteria for displaying the tool.

It was initially hoped that a working model of OPTI-SCRIPT could be used in conjunction with hypothetical or anonymised patient records. This would have involved a pharmacist identifying PIP from anonymised patient records and inputting it into a database for a GP to review. This would have been identical to the methodology in the pilot study and could have provided a valid point of comparison. However, for the scale of this study the hypothetical display was more than adequate. Hypothetical PIPs were displayed on the GP interface of OPTI-SCRIPT where the information and

options available to GPs could be clearly displayed during academic detailing (See Figure 9 & Figure 10). It proved more than adequate as a proof of concept and potential and answers the research questions.

OPTISCRIP

Online Resource



Patient ID: 15 Proton Pump Inhibitors (PPIs) Done Full Therapeutic Dose > 8 weeks PIP Outcome Form Done Please fill this in for each PIP! Non-steroidal anti-inflammatory drugs (NSAIDs) Done Warfarin, SSRI, ACE inhibitor, Diuretic, Congestive Heart Failure, Peptic Ulcer Disease, Long-term use for mild osteoarthritis PIP Outcome Form Done Please fill this in for each PIP!	Patient ID: 18 Long Acting Benzodiazepines Done long acting, long term (>1 month) PIP Outcome Form Done Please fill this in for each PIP!	Patient ID: 23 Long Acting Benzodiazepines Done long acting, long term (>1 month) PIP Outcome Form Done Please fill this in for each PIP! Non-steroidal anti-inflammatory drugs (NSAIDs) Done Warfarin, SSRI, ACE inhibitor, Diuretic, Congestive Heart Failure, Peptic Ulcer Disease, Long-term use for mild osteoarthritis PIP Outcome Form Done Please fill this in for each PIP!
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Figure 9 - GP OPTI-SCRIPT interface displaying PIP

OPTISCRIP

Online Resource

Instructions

Please fill in the outcome form, indicating what changes, if any, were made in relation to this PIP by selecting the appropriate action. Please write all medication names in full and provide the specific dose where available.

- ▶ Medication Regime Left Unaltered
- ▶ Switch to Alternative
- ▶ Reduce Dose
- ▶ Stop PIP
- ▶ Add New Drug

Drug: Long Acting Benzodiazepines

Patient ID: 18

Date: Tuesday 17th of June 2014 10:19 PM

Figure 10- Options available to GP after PIP has been identified

It was initially thought that a focus group could be formed of GPs; again this would mirror the pilot study providing a valid point of comparison. This proved difficult to arrange as multiple GP participants had to be identified then attend the focus group with the primary researcher. On reflection, it was decided that individual GP interviews should occur on a semi-structured basis. This was simply easier to arrange.

It was initially planned to arrange postal questionnaires to pharmacists and nurses. On balance it was decided that a SurveyMonkey® questionnaire would be the best use of time and resources available. Certainly any subsequent studies will have to look at alternative means of identifying candidates

3.2.2 Final Methodology

Pharmacists and nurses were asked to fill out profession specific SurveyMonkey® questionnaires. They were tailored to each profession but were almost identical apart from some initial demographic questions and subsequent text. GPs were invited to participate in a short session of academic detailing and a hypothetical display of OPTI-SCRIPT followed by a semi-structured questionnaire; the more rigorous approach with GPs was to reflect their pivotal role in nursing home prescribing. All three professions were included to provide the most representative response on the nursing home sector in Ireland, which relies on all three professions working together; specifically in the context of medication review. It is hoped that approaching three professions will create a synergy in the results as well as providing the most valid opinion on medication review processes happening currently. The breakdown of the methodology is as follows:

An anonymised questionnaire to nurses working in nursing homes in Ireland using SurveyMonkey® to determine:

- i. How PIP is currently identified in Irish NH
- ii. To what extent are the HIQA criteria for medication review observed
- iii. To what standard are the HIQA criteria for medication review achieved

An anonymised questionnaire to pharmacists who provide pharmacy services, contracted or otherwise, to nursing homes in Ireland using SurveyMonkey® to determine:

- i. How PIP is currently identified in Irish NH
- ii. To what extent are the HIQA criteria for medication review observed
- iii. To what standard are the HIQA criteria for medication review achieved

A practical display of the OPTI-SCRIPT intervention to GPs (n≈5), using hypothetical patient records based on typical levels of PIP displayed in the initial OPTI-SCRIPT studies, followed by a semi-structured interview to determine GP interest in the programme:

- i. Participants were provided with thirty-minutes of academic detailing as outlined in the OPTI-SCRIPT pilot study (either individually or as part of a presentation to a number of GPs). Its aim is to educate GPs about the concept of PIP, focusing on the prevalence of PIP in primary

care and nursing homes and to familiarise them with the principles of identifying PIP. The process was supported by providing pre-reading for participants on the above. This led to better engagement on the above topics during the academic detailing.

- ii. Display of the GP interface with hypothetical examples of identified PIP and a representation of the options that would be available to the GP (See Figure 9 & Figure 10)
- iii. GP semi-structured interview

3.3 Selection of Nurses

The target participants were Nurses registered in Ireland with *An Bord Altranais*, the regulatory body for Nurses in Ireland; who in their usual role work in, or provide services to the Irish nursing home sector. As such, the sole exclusion criteria was, nurses not working in the nursing home sector in Ireland.

Identifying nurses in nursing homes was a challenge. Nursing homes tend to have large numbers of staff; health-care assistants, household staff and management staff amongst others. It was important that only registered nurses complete the questionnaire as per inclusion criteria. Postal questionnaires were ruled out early on due to the workload it would entail, a SurveyMonkey® questionnaire was ultimately chosen as a means of reaching the largest number of potential participants.

Both HIQA and Nursing Homes Ireland (NHI), a national representative body for private nursing homes, were approached for assistance in distribution of the questionnaire. A casual phone-call to a HIQA employee made it clear that it was unlikely that HIQA would divulge an index of “Person in charge” and their respective homes. This would have been an ideal database to access nurses in nursing homes; as a result it was pursued no further.

In any case, NHI practice development office, offered to distribute the link to the nurse questionnaire in their periodical. This was a welcome offer and was gratefully accepted. NHI is the representative organisation for private and voluntary nursing homes sector, they can account for 75% of long-term care beds in Ireland. The remainder of the sector are largely occupied by the state funded homes and hospitals.

Once the final questionnaire was drafted, the SurveyMonkey® link was forwarded to NHI practice development office. It was subsequently included in a practice development bulletin that was forwarded to its members in due course (See Appendix III -

E-mail from NHI Practice development to its members).

Upon opening the link, the information sheet and consent form will inform the recipient that the questionnaire is designed for registered nurses in Ireland who conform to the studies inclusion criteria only (See Appendix V - Nurse Information Sheet & Consent Form).

3.4 Selection of Pharmacists

Pharmacists targeted for the survey had to be registered with the Pharmaceutical Society of Ireland (PSI), the regulatory body for pharmacists in the Republic of Ireland. In addition they had to in their normal work, provide services, contracted or otherwise to the nursing home sector in Ireland. It was decided to include hospital pharmacists and pharmacists employed by government agencies because dependent on their work scenario they may or may not have exposure to nursing home patients and practices. Exclusion criteria included pharmacists with no exposure to nursing home practice and those pharmacists who were involved in the initial OPTI-SCRIPT pilot study.

It was hoped to target pharmacists through the PSI by forwarding a questionnaire to superintendent pharmacists in Ireland or that a link to the questionnaire could be included in a PSI bulletin which is published periodically. Preliminary indications had been that this would be possible. This turned out to not be the case and despite much effort and, attempts at a compromise the answer remained no from the PSI (See Appendix VI - E-mail from the PSI).

As an alternative the largest representative body for pharmacists in Ireland, the Irish Pharmacy Union (IPU) was approached for assistance. Again the response was ultimately the same. They decline to distribute any such research as it is felt their membership would not appreciate unsolicited e-mail on a regular basis. (See Appendix VII - E-mail from the IPU).

As no national body remained it was decided to contact superintendent pharmacists of pharmacies known to be involved with providing services to nursing homes. Superintendent pharmacists occupy a legal position of responsibility in pharmacy groups. They tend to be responsible for a number of pharmacies either owned by a larger corporate body or an individual. They would be the most accessible person and their contact details are easily accessible through normal means. However, it would not be complete, as it would likely overlook many of the smaller independent pharmacies providing services around Ireland.

An e-mail list of superintendent pharmacists was collated, using personal knowledge, golden pages and the internet. They were subsequently e-mailed an invitation to complete the questionnaire themselves (if appropriate) and to most importantly distribute it to the other pharmacists in their

organisation, who provided pharmacy services to nursing homes (See Appendix VIII - E-mail to Superintendent Pharmacists).

3.5 Selection of General Practitioners

GPs had to be registered with the Irish Medical Council, the regulatory body for doctors in the Republic of Ireland. As with the other professions participants had to routinely as part of their regular work provide services to the nursing home sector or individual nursing home patients. GPs who did not provide services to nursing homes and those who were involved in the OPTI-SCRIPT pilot study were excluded from the methodology.

GPs were to be identified from the HRB network of medical contacts. This was done on behalf of the researcher, with contact details forwarded on to him. Importantly no GP involved in pilot project could be involved in this study as per the inclusion and exclusion criteria.

3.6 Ethics & Ethical Approval

In accordance with the School of Computer Science and Statistics (SCSS) research protocols, ethical approval was sought as is always required when studies utilise human participants. All questionnaires had to be submitted for approval. Each questionnaire had to be provided with an information sheet and an informed consent form. In the case of the SurveyMonkey® questionnaires, participants had to acknowledge reading and understanding this information before clicking to agree to continue with the questionnaire. In the case of the GP semi-structured questionnaire, the format for the interview was submitted for approval, along with an information sheet and informed consent form which had to be signed before the interview took place.

Some deliberation occurred over the structure of the SurveyMonkey® questionnaire. The initial pages with the informed consent and information sheet had to be compulsory as did the initial question where participants consented to taking part in the study. Thereafter no questions in the body of the questionnaire could be compulsory as participants should not be compelled to answer any question.

Issues arose where the research ethics department insisted nurses had to seek the approval of management to participate in the questionnaire. This was subsequently included in the informed consent form, despite objection.

3.7 Data Protection

Questionnaire(s) have been developed to determine the opinion of health care professionals and not to illicit specific information on the scenario that they work in or on specific patient information.

The nature of questions, the information statement and consent form all address this risk head on. Nonetheless a risk exists. Any illicit information obtained will be sent directly to the relevant authorities, any non-illicit patient or practitioner specific information will be anonymised upon receipt.

Nurse and Pharmacist SurveyMonkey® questionnaire data will be exported to Microsoft Excel® on the primary researcher's personal computer for analysis and subsequently deleted from SurveyMonkey®. All data will be stored in compliance with TCD SCSS policy on data storage and retention.

The GP semi-structured interview will be recorded on a digital recording device and the audio files stored on the primary researchers personal computer. Those partaking will have to agree to the recording taking place prior to the event and will be informed that the recording can be stopped at any stage during the interview. Subsequently, recordings can be destroyed on request by contacting the primary researcher whose contact information will be on the information sheet provided to those partaking

3.8 Limitations

The methodology for accessing pharmacists was not as successful as hoped. The selection of superintendent pharmacists based on the researchers own knowledge and experiences, albeit supplemented by Google® and telephone directory searches, leaves the methodology wide-open to the introduction of bias of selection and bias of geography at least. This was the most disappointing aspect of the methodology. Any further research that encounters the same challenges in accessing pharmacists as this study would do well to re-consider their methodology. It is not clear how access to pharmacists for an online or postal questionnaire could be arranged. It becomes even more difficult if a certain cross-section of pharmacists needs to be accessed. A different methodology may be the most appropriate approach.

The researcher is grateful to the support provided by NHI practice development office, but the exposure provided by this method is questionable. NHI admitted their own surveys receive a very poor response rate. It is unclear how many nurses will have the opportunity to access the questionnaire ultimately. As NHI only represents private nursing homes in Ireland, no access will be gained to nurses in government funded facilities. Ultimately the responses will be open to criticism for not accessing this large cross-section of nurses. HIQA will have a complete index of nursing homes and associated person in charge listed, who are obliged to comply with the Health Act 2007; the very people responsible for processes of medication review being implemented. This would have

represented a much greater access to potential participants. In any case, liaising with HIQA in some manner on this study could only have been beneficial.

It was proposed that a small number of GPs would be interviewed due to time constraints (n=5). This leaves the study open to the possibility of low response bias. Also as GPs will be identified by HRB a selection bias will be introduced.

3.9 Conclusion

The final methodology will access the opinions of pharmacists, nurses and GPs to gain their opinions on medication review, HIQA regulation and OPTI-SCRIPT. The methodology has recognised flaws and the response rate was expected to be low. However it is hoped that the effort in gaining the opinions of the three professions will provide a synergy and or a unique insight in this study.

Chapter 4 Results

Table 3 provides an overview of the questioning extended to each profession. Nurse and pharmacist questioning is very similar whilst GP questioning is more extensive.

Table 3 - Questionnaire Structure

Profession	Pharmacist	Nurse	GP
Respondent information	Description of Role	Description of role	-
	Number of residents	Number of residents	Number of residents
Potentially Inappropriate prescribing	-	-	How prevalent do you think PIP is
	Level of concern that PIP may be affecting patient quality of life	Level of concern that PIP may be affecting patient quality of life	Does PIP impact on the quality of life of your patients
	How is PIP addressed	How is PIP addressed	How is PIP addressed
	-	-	What benefits/drawbacks do you see from an intervention like OPTI-SCRIPT?
HIQA recommendations	How clear do you find this recommendation	How clear do you find this recommendation	How clear do you find this recommendation
	Would you change anything about it	Would you change anything about it	Would you change anything about it
	Is this complied with in the homes where you provide a service?	Is this complied with in the homes where you provide a service?	Is this complied with in the homes where you provide a service?
Medicines Review use	What is your opinion on the standard of MUR	What is your opinion on the standard of MUR	What is your opinion on the standard of MUR
	Is there a MDT approach to medicines review	Is there a MDT approach to medicines review	Is there a MDT approach to medicines review
	What is your opinion on the standard of MUR	What is your opinion on the standard of MUR	What is your opinion on the standard of MUR
	-	-	Is there anything you would change about OPTI-SCRIPT for the NH setting
	-	-	Could you see OPTI-SCRIPT facilitating remote patient review
	-	-	Do you think OPTI-SCRIPT would affect standards of prescribing?
	-	-	

4.1 Respondent Information

Pharmacists and nurses identified their roles within their work environments. This was designed to provide a context to subsequent answers. It was also a suitable first question to ease participants into the questionnaire.

Table 4 - Breakdown of pharmacist roles

Superintendent pharmacist	2
Supervising pharmacist	4
Employee pharmacist	7
Locum/Relief pharmacist	0
Pharmacist employed by a regulatory or government agency	0
Hospital pharmacist	0
Other (please specify)	0
<i>answered question</i>	13
<i>skipped question</i>	3

Table 5 - Breakdown of Nursing Roles

Director of Nursing	7
RGN (Registered General Nurse)	1
RMN (Registered Mental Nurse)	0
Registered Nurse Intellectual Disability (RNID)	0
<i>answered question</i>	8
<i>skipped question</i>	0

The breakdown of pharmacists is displayed in Pharmacists and nurses identified their roles within their work environments. This was designed to provide a context to subsequent answers. It was also a suitable first question to ease participants into the questionnaire.

Table 4 - Breakdown of pharmacists Pharmacists and nurses identified their roles within their work environments. This was designed to provide a context to subsequent answers. It was also a suitable first question to ease participants into the questionnaire.

Table 4A low response is apparent and is the most significant outcome. The number of superintendent pharmacists responding was lower than expected as they were contacted not only to distribute it to their colleagues but also to complete it themselves. The majority of pharmacists responding were employee pharmacists which correlates well with the sector in the opinion of the researcher.

Nurses were almost exclusively directors of nursing; this position is normally the person in charge as per HIQA guidelines. This suggests that directors of nursing reviewed NHI bulletins and responded accordingly but didn't necessarily pass it on to their colleagues to do. Alternatively it could mean that smaller nursing homes responded with fewer staff including nurses available to take part.

Four GPs took part in the academic detailing and semi-structured questionnaire. All fulfilled the inclusion criteria. It is worth noting that all four were female. This may or may not be pertinent and the numbers in this study are too small to draw any significance. However if a higher proportion of female GPs tend to nursing home patients, or of female GPs are more likely to utilise a tool like OPTI-SCRIPT it might be worth remembering at this early stage.

4.2 No of nursing home patients catered to

Table 6 - No. of Patients catered to by pharmacists

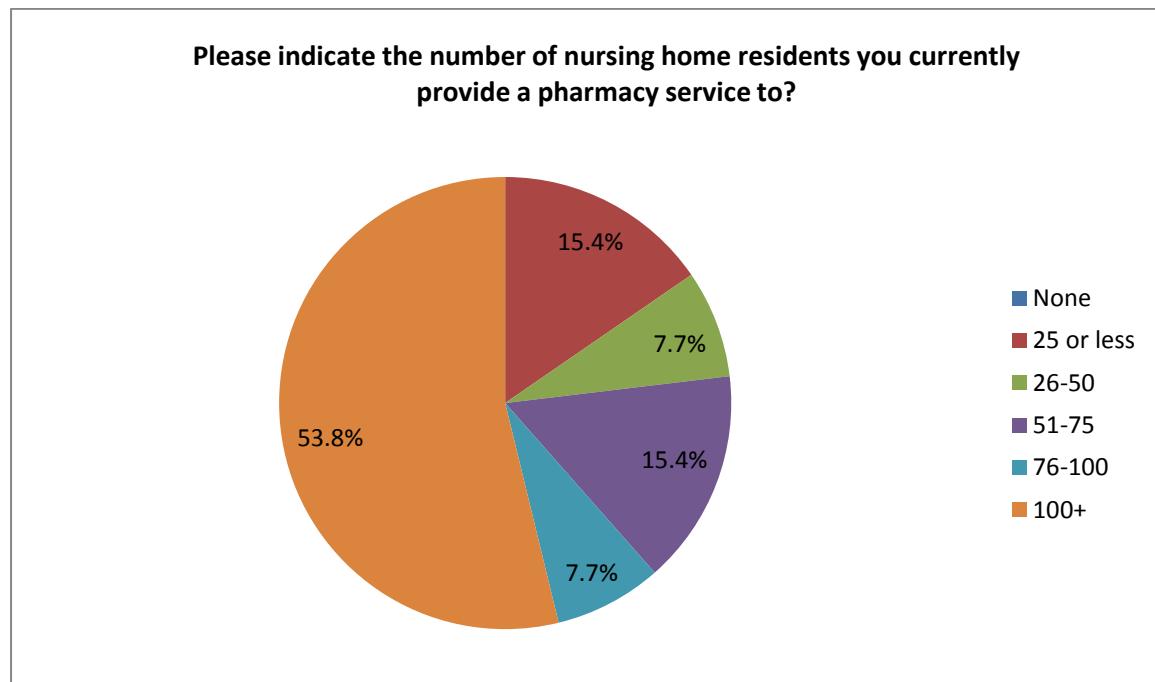


Table 7 - No of patients catered to by nurses

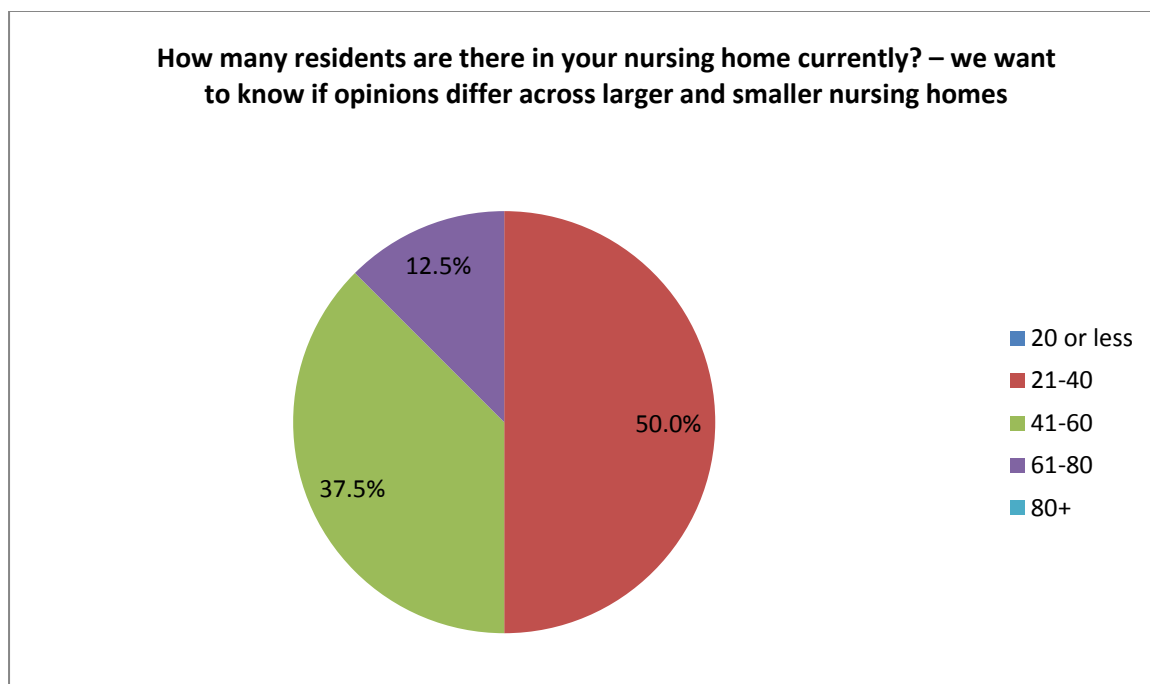
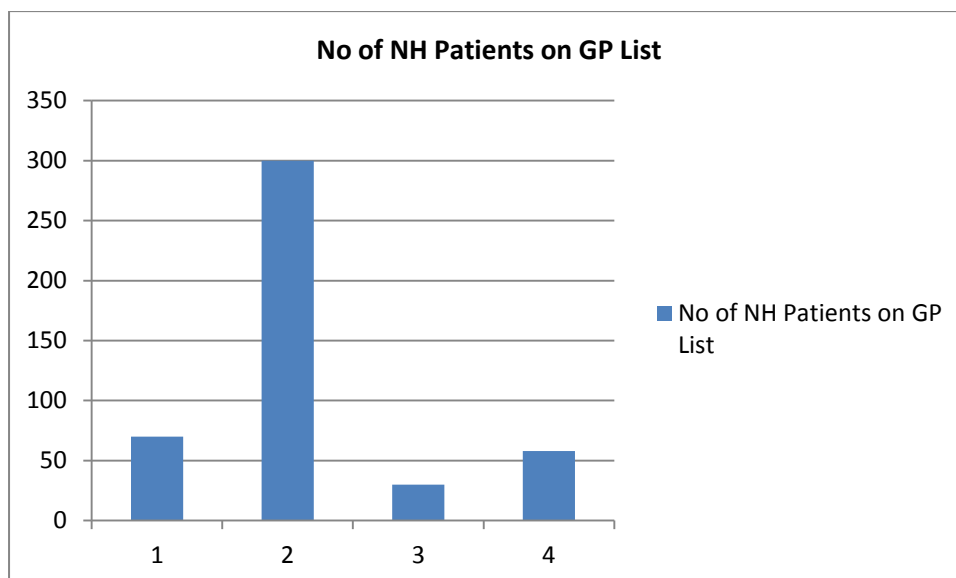


Table 8 - No of patients catered to by GPs



Different scales were used for pharmacists and nurses as it was anticipated that pharmacists would provide pharmacy services to more patients than nurses respectively. More than half of pharmacists catered to nursing home populations of over 100 patients. This probably reflects the large catchment, superintendent and supervising pharmacist would be reflecting on. Also the number of

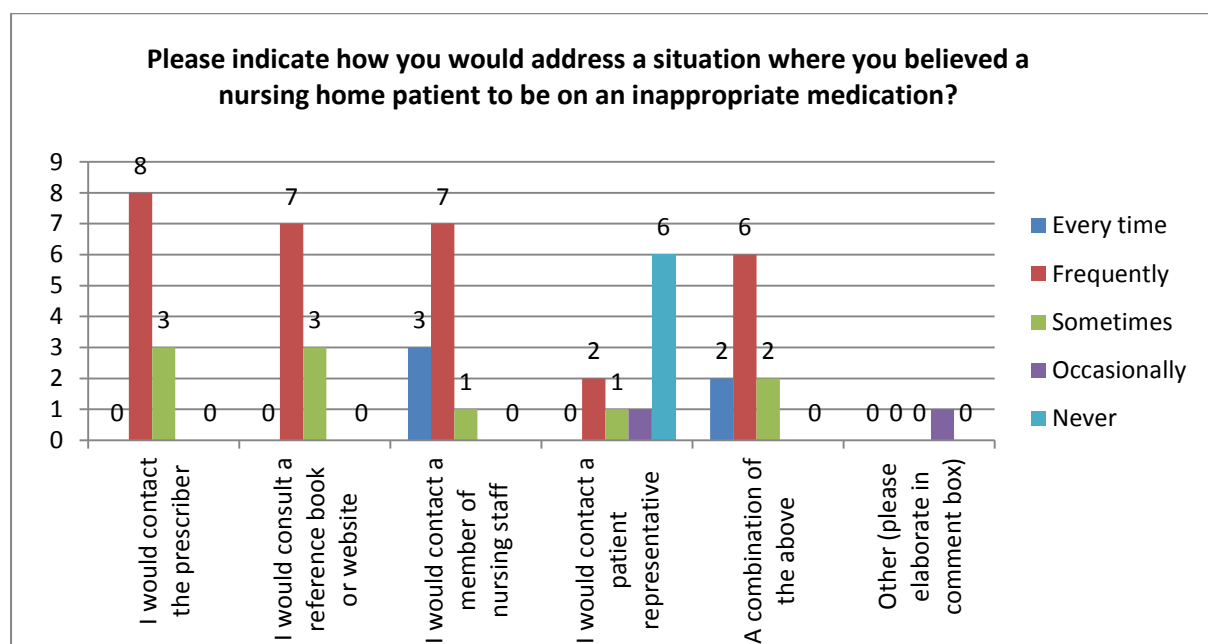
dedicated nursing home pharmacies ensure some pharmacists will be catering to large numbers of patients across multiple homes.

The majority of nurse respondents worked in moderate size homes catering to 21-60 patients. No respondents worked in homes with more than 80 patients. This response validates a small home response rate. Admittedly, big nursing homes are not common and many larger facilities tend to be state run which as discussed were not targeted in the NHI mailing list.

GPs were asked to identify the number of patients they catered to approximately. The numbers typically referred to the one home a GP provided a service to. However one GP did cater to multiple homes, including one particularly large one, hence a scenario where a GP was catering to almost 300 nursing home patients, see Table 8.

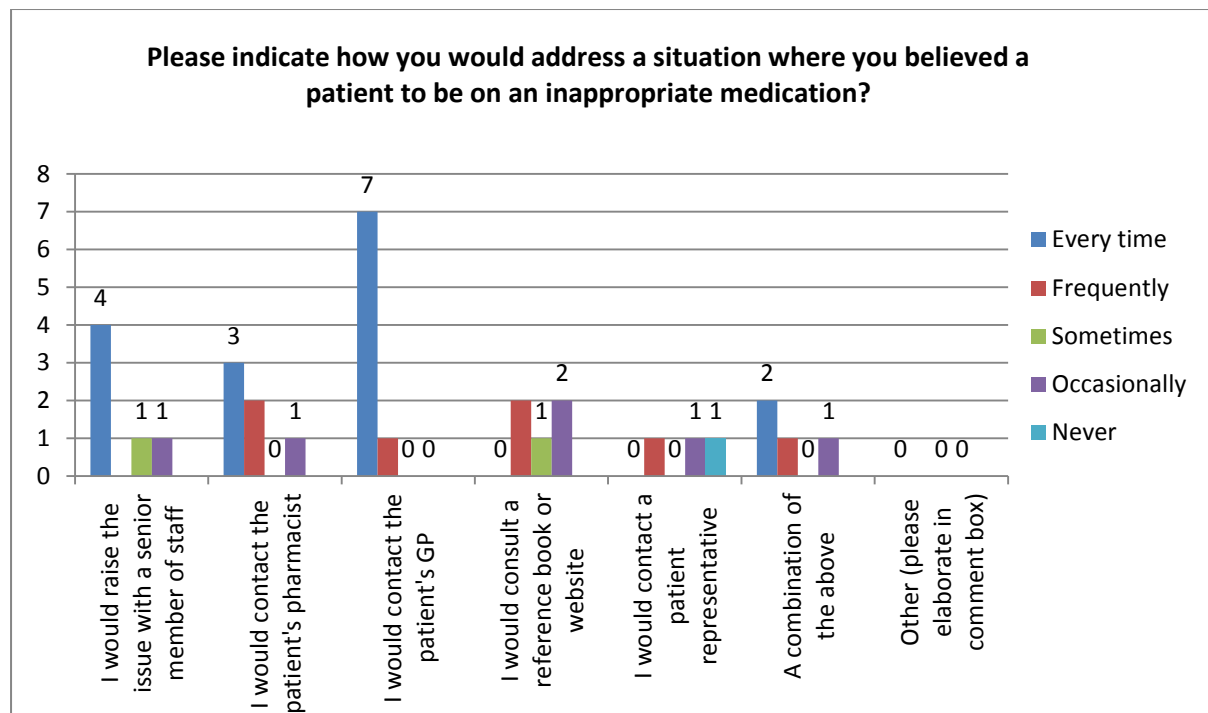
4.3 How PIP is addressed

Table 9 - How pharmacists respond to PIP



Pharmacists frequently refer to reference sources, the prescriber and nursing staff when addressing PIP; they often use multiple means of addressing PIP. There is a low frequency of contacting patient representatives i.e. a family member or carer. Nearly all respondents indicated they would contact nurses frequently regarding PIP. One respondent indicated they would use other means but no elaboration was provided.

Table 10 - How nurses respond to PIP



The GP is indicated as the primary person nurses would address regarding PIP, but liaising with other members of staff and the pharmacist also feature highly. Whereas pharmacists seem to use multiple methods to address PIP, nurses seem more likely to address an issue with one method, as indicated by the low response to using a combination of methods. Similarly there is a lower tendency to use reference sources when compared to pharmacists. Similar to pharmacists, there is a low tendency to approach patient representative for a solution.

When GPs were asked how they dealt with PIP in their day-to-day practice, the semi-structured interview allowed the concept of PIP and how to deal with it to be examined in much more depth. GP#1 admitted that no formal review process is in place and that they rely heavily on the respective pharmacy and pharmacist and them highlighting issues. The three-monthly issuing of prescriptions is highlighted as an opportune time for review. At this point the prescriber is cognisant of medication but no explicit standard is applied. In addition when the pharmacist review process was queried it was described as an irregular opportune relationship. Again no evidence of an explicit review was mentioned.

“The best opportunity would be on the three month prescriptions. When we are repeating prescriptions, ideally we would review medications. A lot of this depends on the relationship we have with the pharmacy and whether they highlight issues”

“No we don’t have a formal review process, I suppose it’s opportunistic really, it’s the volume and time pressure I suppose it’s not really done”

GP #2 mentions attending clinical updates as a very effective way of dealing with PIP, as it highlights potential PIPs to here from a presumably reputable source. GP #2 goes on to say:

“with the new HIQA requirements the pharmacists are now contacting us on review of the mediations to highlight PIP...It seems to be in the last year only we are getting every three months a list of patients that they have reviewed so that’s happening now on a regular basis...it takes time but it’s valuable and it does highlight when we are very busy so it’s good to have someone trawling through”

GP #3 described the most thorough process of medication review as follows:

“We would do a three monthly review of all of our patients, we’ve designed a tool that we’ve used for that and a large part of it is medication review. The PPIs are a big thing because it’s easy to get people prescribed and they’re put on a treatment dose and then you review the medications and realise that they’re still on it. That’s what we would do and the MURs are done by the pharmacy, so they would list the medications as things we might need to be aware of, sometimes as GPs you might not be as aware of interactions between medications, and then the pharmacist would make a suggestion and then we would have to sign off on that; whether we had done anything different we would document that on the chart”

The “tool” described is a holistic review checklist of which medication management is a part, designed by and operated by the surgery. It is largely paper based. When pressed about liaising with the pharmacy MUR process the following was learnt

“It sometimes works and sometimes doesn’t work, it’s sometimes hard to sync it up but it would be optimal if you could sync it up”

GP #4 identified that review always occurred after discharge from hospital:

“We have patients that transfer to hospital occasionally, so I would do a medications use review when they return from acute admission: look at what they were on before, what’s been initiated, if there are any interactions”

GP responses to this question are starkly different to their pharmacist and nurse colleagues; their scenario of questioning was far different following pre-reading and a session of academic detailing. The brevity that the SurveyMonkey® questionnaires had to exhibit made it difficult to examine in

much detail. Pharmacist and nurse involvement in medication review is covered later in the questionnaire.

4.4 Level of concern about PIP

GPs were asked if PIP may be impacting on the quality of life of their patients. Answers were universally positive from GPs. Each of the four respondents responded as follows.

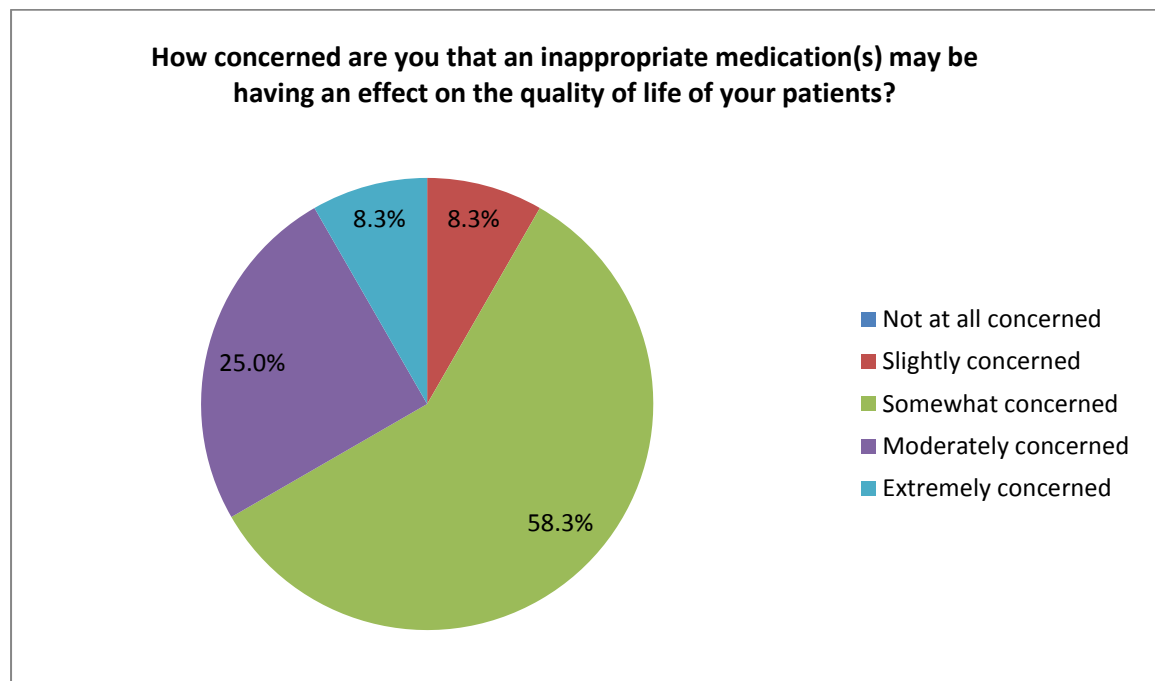
“Possibly, yes. Probably, it’s more than likely”

“That is a possibility, yes”

“Yes, I suppose they’re patients with co-morbidity, who polypharmacy defines as more than five medications. It would be pretty unusual that you’d have a nursing home resident on less than five, so I guess in terms of their overall general health, their mental health, I think its lots of different ways: their memory, cognition, and balance”

“Absolutely, you know if you have a tight system in place it’s going to curb that but it’s not if you don’t have a system: side-effect interactions, yes”

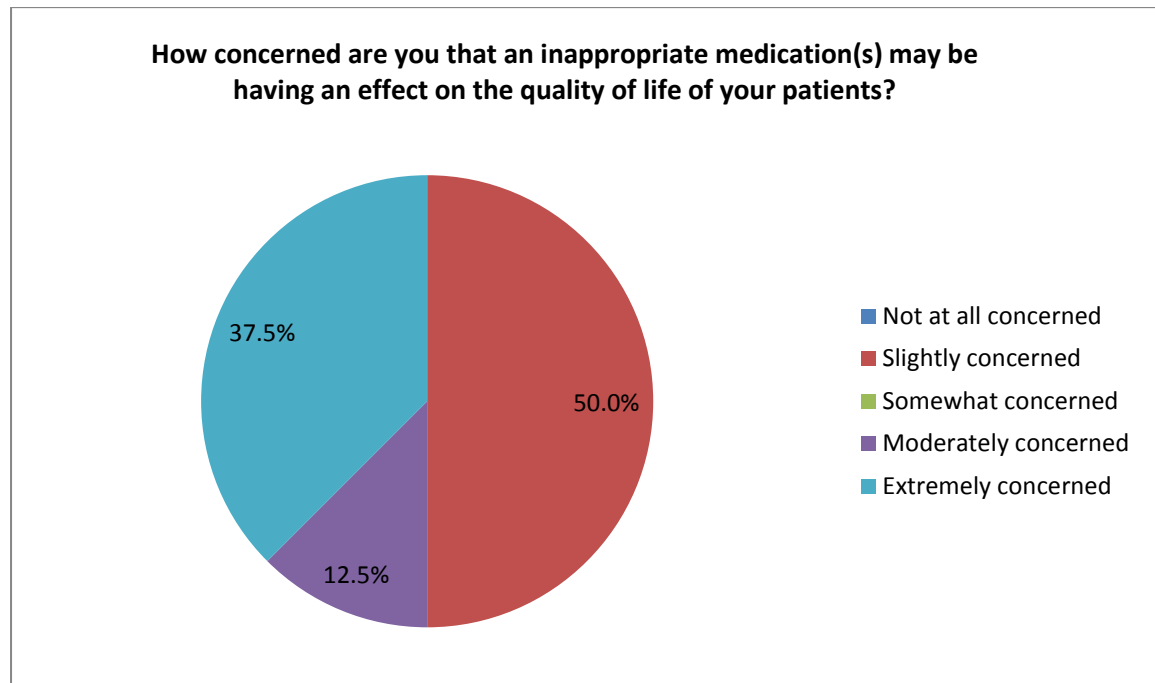
Table 11 – How concerned pharmacists are about PIP?



Responses ranged from slightly concerned to extremely concerned on a 5-point Likert scale. Predominantly, responses were in the range of somewhat concerned and moderately concerned.

One respondent who provided supplementary information revealed they performed a regular medication review and that they were largely satisfied with the medication regimes of their patients.

Table 12 - How concerned nurses are about PIP?

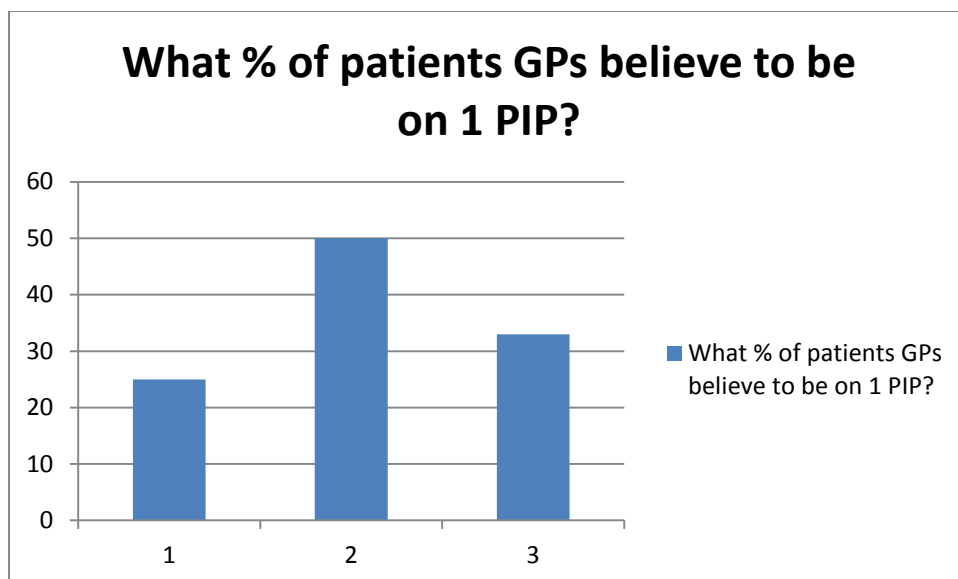


Responses were more polarised than pharmacist and GPs. Most worryingly, 37.5% of respondents were extremely concerned about the impact of PIP on their patient’s quality of life. Nurses spend the most time of all the professions with their patients; they are far more likely to see the impact of PIP than anyone else.

Across all professions concern is predominantly high that PIP may be impacting on the quality of nursing home patients. Worryingly nurses who spend the most time with patients are the most concerned about this. Pharmacists who have a role in affecting prescription choice are the least concerned.

4.5 How prevalent is PIP?

GPs were asked how prevalent they felt PIP was based on the academic detailing they received. They were asked to estimate what proportion of their nursing home patients they felt were on one PIP.



One participant declined to offer a proportion but did offer the following:

“I don’t know what the stats would be but I think with polypharmacy unless there’s a set system in place to review it regularly, it is going to happen, but I wouldn’t know what percentage”

GPs estimated that PIP by the criteria displayed to them would be returned back from 25-50%.

4.6 Benefits or drawbacks from an intervention like OPTI-SCRIPT

GPs exclusively were asked if they could identify any drawbacks or benefits to OPTI-SCRIPT after it had been displayed to them.

“Absolutely. If it was all listed in nursing homes specifically, definitely. It’s just the time pressure really. It would have to be easy, not logging into something else separate. It has to be very much linked in with the programme [GP Practice Software] definitely”

“I can see that it would take time, I think in certain particular groups of drugs it’s particularly relevant, obviously the use of NSAIDs with the elderly, the use of PPIs is another area, we are all probably more aware than we were years ago of the over-use of benzodiazepines, but when I looked through the information that was supplied prior to this interview, the use of alternatives in terms of certain therapies, those aren’t realistic options is what I’m saying. In areas where there are realistic options, yes. In other areas I think one has to get pragmatic [in specific reference to the recommendation of cognitive behavioural therapy]”

“I would see benefits of it in terms of it’s been very clear that there are very clear alternatives, pharmacological and non-pharmacological, the drawback that I would see is that certainly the nursing home I look after, with those residents, everything is paper based, so it’s potentially time consuming when you’re under a lot of time pressure”

“No I think it’s a good thing it’s well structured, there’s a protocol, so that seems to be an improvement on the system I have in place” ...DO YOU ACCEPT THAT STEP-WISE APPROACH YOU DONT FEEL YOU’RE BEING DICTATED?[INTERVIEWER]...No I think it’s good to have guidelines and a system in place, it’s a failsafe”

The responses were universally positive from GPs towards the researcher who displayed the project. Nearly all participants, mentioned time pressures and the necessity for any intervention to have the ability to save time, at worst be time-neutral. Integration into existing GP software and how to facilitate OPTI-SCRIPT in scenarios where records were largely paper based was raised. One respondent was adamant that non-pharmacological interventions had to be realistic and attainable. This may be one area where OPTI-SCRIPT could be amended for nursing homes.

4.7 How clear are the HIQA guidelines & is there anything you would change?

Standard 15 from HIQA on medication management was displayed to all participants. It was part of the section in the SurveyMonkey® questionnaire and was displayed to GP participants in a laminated sheet. Participants were then asked a series of questions as outlined in Table 3.

“Each resident on long-term medication is reviewed by his/her medical practitioner at least on a three-monthly basis, in conjunction with nursing staff and the pharmacist”

GP#1 questioned what specifically in conjunction with nursing staff and pharmacist meant and immediately felt that a 3-monthly review was too frequent. When asked if the guidelines lacked detail, she responded affirmatively. She questioned the logistics of such a review process if all three professions had to find the time to sit down together and review every medication for a large residential facility. She also admitted a lack of familiarity with HIQA guidelines, and referred to HIQA criteria being communicated to her via nursing home staff. The effect of this was she had no completed picture of the HIQA requirements. Other GPs seemed to be familiar with the HIQA requirements. The general theme was that on first glance the criteria appears clear, but it’s open to a lot of interpretation. A lot of dialogue questioned whether a more rigorous approach would in fact

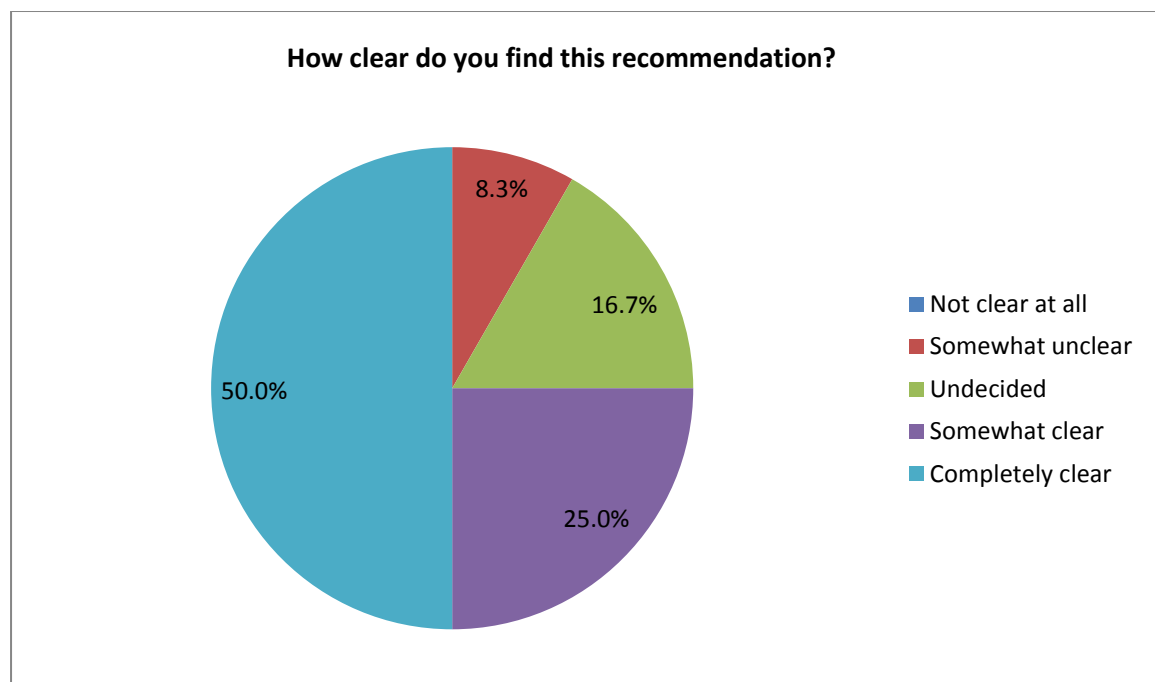
be of benefit, many of the participants questioned the justification of a 3-monthly review as too onerous, that 6-months would be adequate.

“I do find it clear, I find though inevitably there is difficulties with it...When the initial requirements from HIQA came out they wanted us to sign off on every drug for every patient every few months and the logistics of were just inappropriate, we can’t do it we didn’t have the manpower or the time to do it so I think that’s why we should have a system in place where it doesn’t just fall into the GP’s lap to do it”

“I think it’s clear that that’s what recommended, in my practice it’s done in conjunction with nursing staff...Its vague in the sense that it leaves it open to someone just charting [signing] medication reviews,...like would increased clarity in this do anything to benefit the patient? I think that’s always the thing with HIQA guidelines that sometimes they don’t necessarily change or improve the quality of life of the patient but it kind of leaves more form filling and box ticking for the medical professional”

“Give or take I think its goal is clear. Does that mean all three people sitting down together or each person doing separate reviews and come together I suppose as long as the same goal is reached...I mean if the nurse is in the home that's fine but it’s hard to get the GP and the pharmacist together”

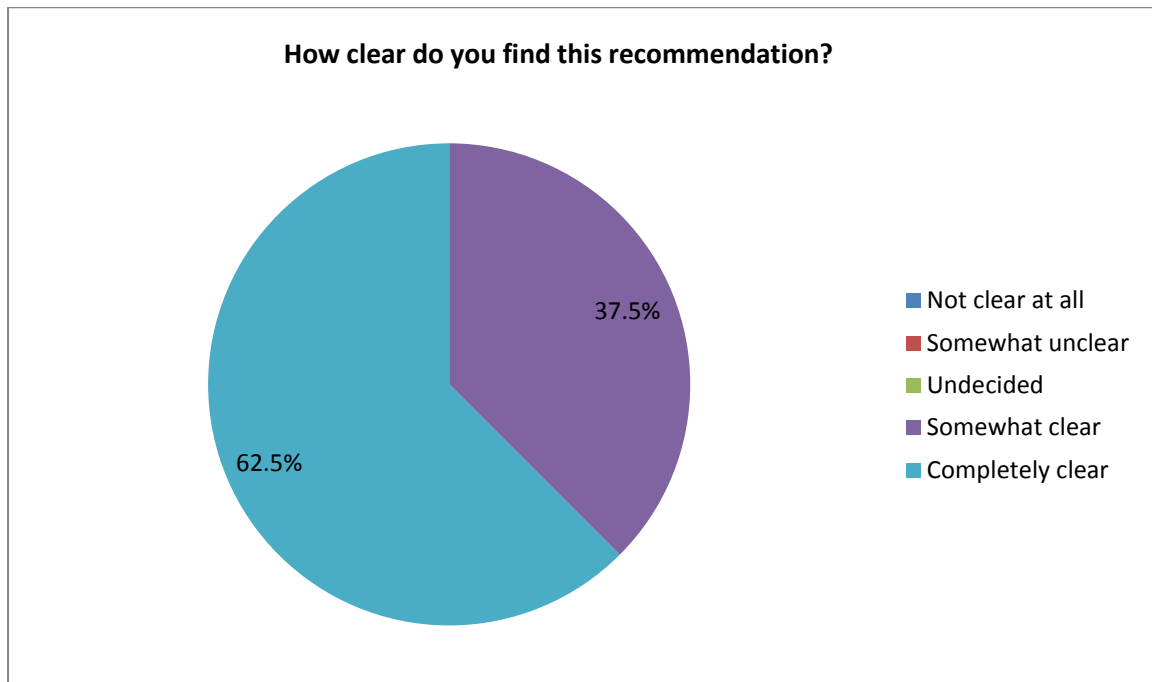
Table 13 - Pharmacist response to HIQA guideline



The majority of pharmacist found the recommendation clear. A number suggested changes to the guideline. One pharmacist suggested changing nothing. Other responses suggested it was too vague and required more detail. Another pharmacist suggested

“make it mandatory and document the review”

Table 14 - Nurse response to HIQA guideline



All nurse participants found the guideline clear, however a number made suggestions as to how they would change the guideline.

“This has become a paper exercise really, the reviewing of medications is a very worthwhile exercise but it takes time, its benefits are not fully appreciated”

One nurse suggested GPs should have specialist training in prescribing for older people. This echoed a suggestion by one of the GPs that a care of the elderly specialist should routinely review nursing home patients to help avoid hospital admissions.

Overall, it appears the guideline is clear, but uncertainty exists over what is expected in a medication review and what exactly in conjunction means in this context. Many respondents exhibited that they would not change the guideline, and many who did not offer any extra comment may have felt the same way. It raises the question if a more robust guideline was implemented could it be adhered to and would it be welcome.

4.8 Is the recommendation complied with?

Participants were asked to what degree they felt the HIQA guideline had been complied with. All professions were extended this question, with GPs having the opportunity to answer in a lot more depth.

Table 15 - Nurse opinion on HIQA compliance

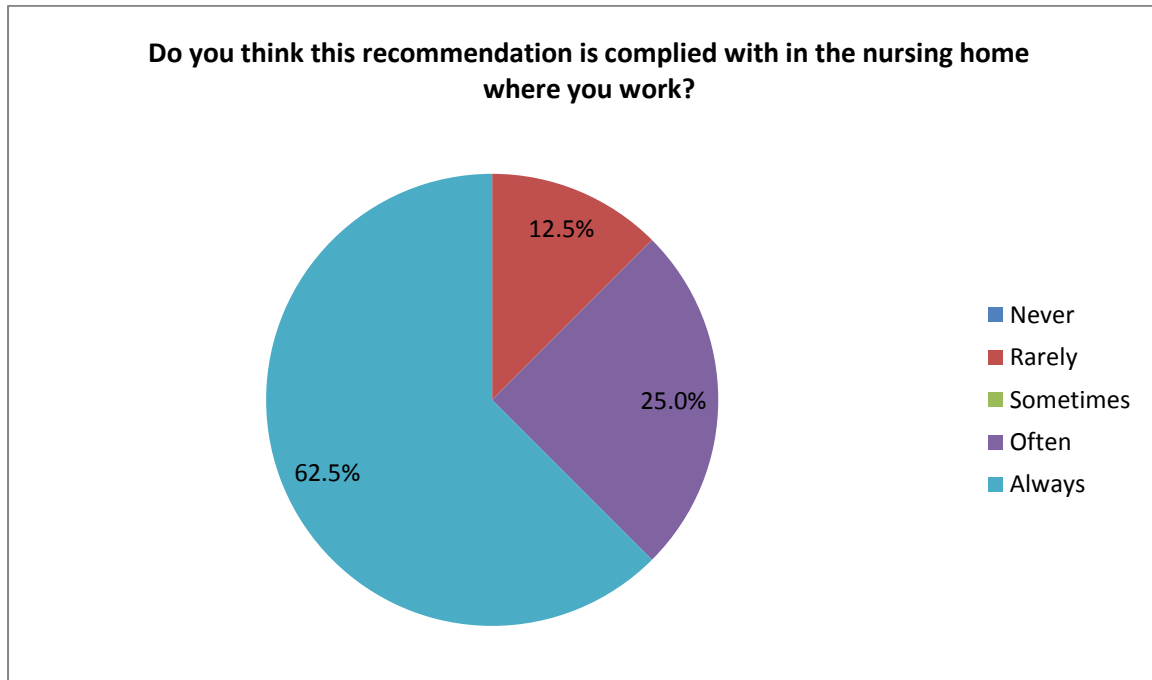
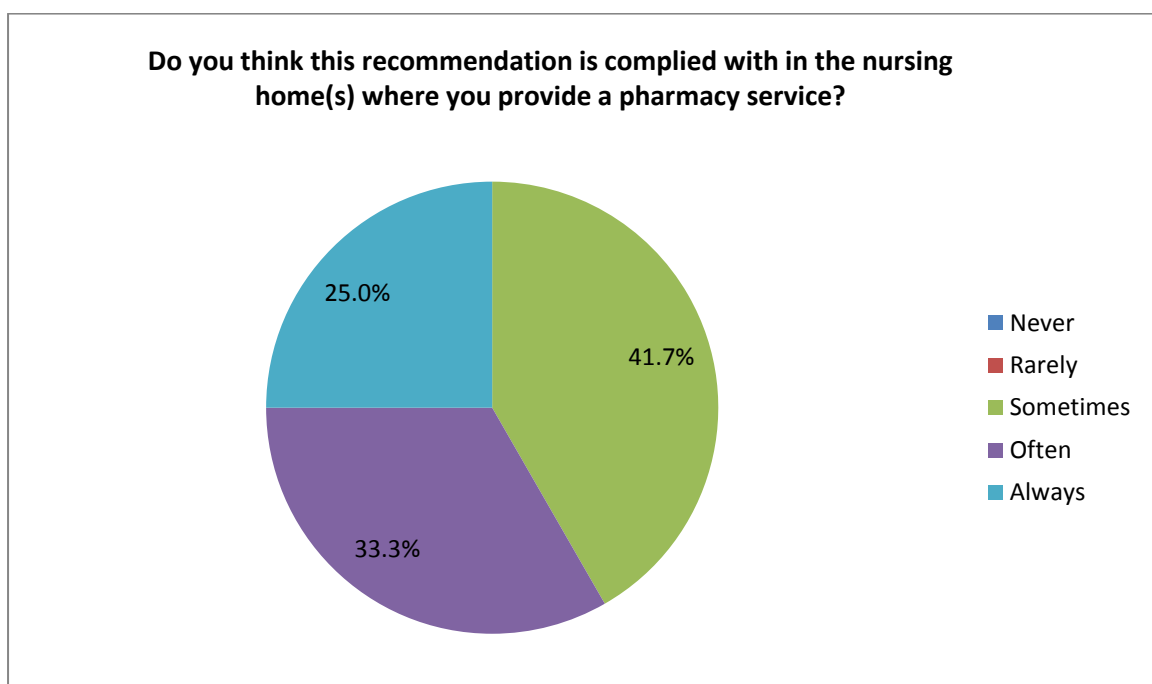


Table 16 - Pharmacist opinion on HIQA compliance



The vast majority of nurses report that the HIQA guideline is nearly always complied with, pharmacists do not agree in the same proportion but still largely seem aware of the guideline and the process it encourages. Some of the comments were very enlightening from both professions.

“I'm sure it's complied with but the standard is open to scrutiny”

“In my experience, since HIQA have commenced inspections, nursing homes are trying very hard to comply with their recommendations”

“Pharmacist & doctor review independently - contact each other if something significant is discovered or with recommendations”

“Some homes undertake this but not the majority”

GPs replies confirmed that a review process is in place in most environment; they're subsequent comments provided an insight into how reviews happen at the moment.

“I don't think it is to be honest, I think you just get into a routine of printing off three monthly prescriptions, without really looking into every single medication or why they've been put on it so there's definitely room for improvement there”

“it's only coming to the fore in the last year that I see that the highlighted issues have been put in front of me, before that we would have been doing review of medications ourselves on a case by case basis but it wouldn't have been in a structured way”

“Yes it is three monthly, now we don't sit down with the pharmacist, but I would be handed 30 MURs and I would go through it with the nurse and would implement or not implement.... Fundamentally we've got a system but the OPTI-SCRIPT would be better”

In conclusion, it appears that the HIQA guideline for medication management is largely adhered to but in a variety of different ways. Level of communication between healthcare professionals is different in every scenario. A common theme is the nurse being a common point of contact for the GP and the pharmacist, but the GP and the pharmacist struggle to meet due to time constraints. Increasingly, pharmacists provide the review documentation for review by the GP.

4.9 Multi-disciplinary approach

All participants were asked to what extent healthcare professionals worked together in the process of medication review. GP interviewees responded as follows:

“No not really. The pharmacists contact us occasionally and have been doing so a little bit more.... I think a multi-disciplinary approach would be more ideal.”

“When you’re talking about the clinical issues the contact has been in the form of this review the pharmacist has been doing, it has been given to me, and it has facilitated me to review the medications and make changes where I feel they are appropriate. So it is useful definitely”

Further development of this point led to an acceptance that the area of medication review has developed well in the recent past, and that there is good potential for further improvement in this area. A community care of the elderly specialist was highlighted as an initiative that this GP would be more than happy to support. One of the reasons is that patient families can become insecure if a GP changes or discontinues medication

“you would have the back-up of having a consultant-led service so that families get insecure if the GP comes in and says well half those medications aren’t needed it’s a little bit different if the consultant says they’ve done a full review of the patient. So it is back-up for us”

GPs in the pilot study recognised this issue also, hence the inclusion of patient information leaflets in the initial model. The impact of PILs may be less effective in a nursing home setting, particularly in those who are senile with carers, family or otherwise. Could better access to community care of the elderly specialists be part of the answer?

“Not so much and it is something that we have looked at trying to see if we could sort of standardise our three month review but I suppose the difficulty is that the pharmacists are making their visits and it’s a large amount of people to do. So often MUR may have been: gone through with the nurse, gone through a cardex with the pharmacist and then left for us to look at then when we’re seeing the patients the next time...SO I SUPPOSE THAT’S IN A WAY THE MULTI-DISCIPLINARY COURSE BECAUSE YOU’VE GOT THE NURSE IN COMMON LINK[INTERVIEWER]...Yes”

In this scenario the professions were linking well via the nurses who are consistently on the nursing home premises in a de-facto remote multi-disciplinary approach. However interaction between GP & pharmacist appeared to be lacking.

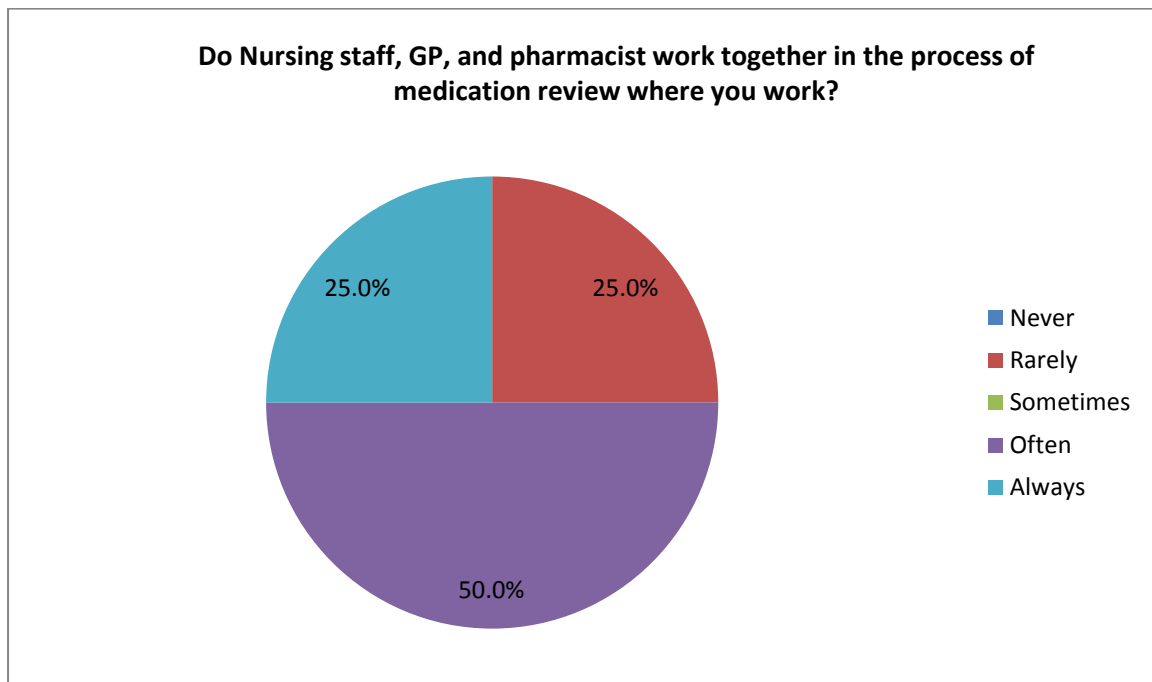
“No I think the system we have in place works well”

Despite the above response in this example, the nursing home did seem to have a good system of multi-disciplinary collaboration. Pharmacist reviews were transferred to the GP on a regular basis who decided to continue or stop medication in conjunction with nursing staff.

Table 17 - Pharmacist opinion on MDT review



Table 18 - Nurse opinion on MDT review



25% of both pharmacists and nurses feel that MDT review does not happen where they work or provide services. Again, as in the previous question nurses relate a higher level of compliance with the HIQA guidelines and that MDT review occurs, pharmacists are somewhat more sceptical that this occurs.

“Nursing staff do but the GP's rarely come to pre-scheduled medication review meetings”

Across all three professions a trend appears of MDT review not occurring in 25% of cases. However an uncertainty exists of what construes a MDT process; essentially is it a MDT review if all three professions aren't in the room together. It is unlikely that this could be facilitated in any scenario in any sector so good communication and systems that facilitate it are key.

4.10 Standard of MUR

GPs were asked specifically for their opinions on the standard of MUR that occurs. A clear distinction was made to learn what the standard of MUR is, as opposed to whether or not it occurs.

“It's pretty good, but I think we're lacking sort of guidelines as well as a nursing home group in general”

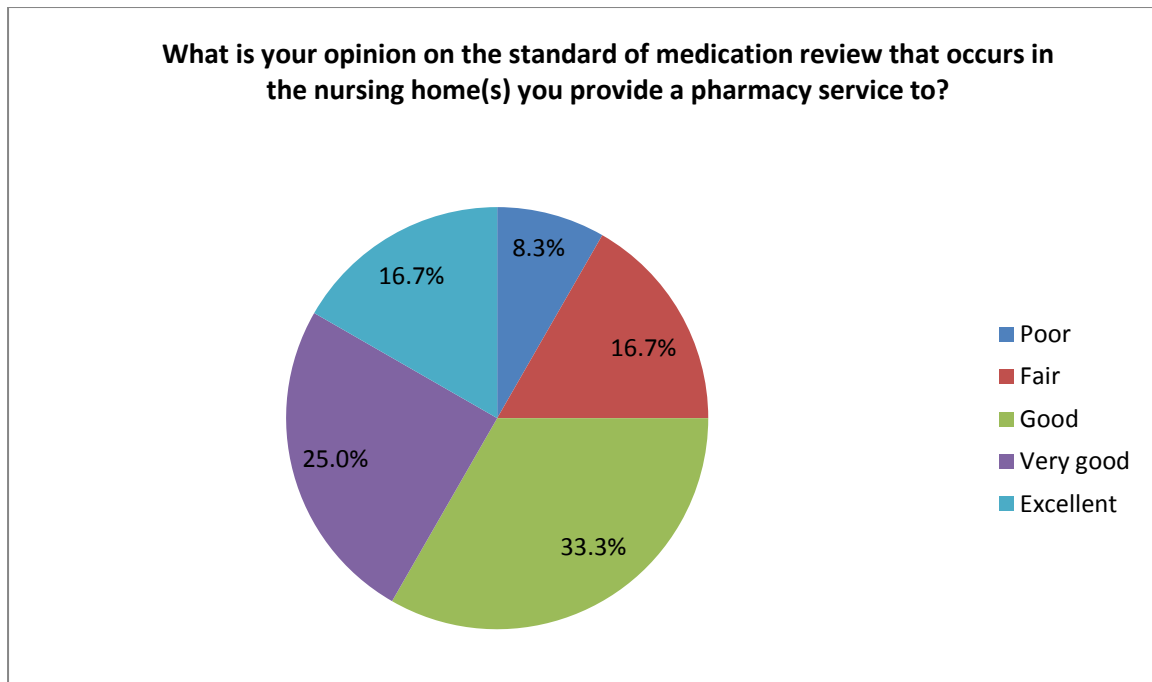
GP#2 had referred to pharmacist MURs being sent to her on a regular basis for review, the above response referred directly to this:

“I think it's probably 75-25 if you want me to put it that way. 75% of them are very reasonable things to be raised and highlighted issues that should be there and 25% of them I've looked at and thought “no, someone should know better than to ask this question about this patient””

“ I do think that the MURs done by the pharmacist, I find, are very helpful because sometimes you might not necessarily be aware of interactions. You know if you're hand writing prescribing things, if its new medication you'll always check it, but you may not have as you do with the computer system here, where it'll flag up, so sometimes I think that's certainly very helpful”

“Some of the suggestions the pharmacists would make wouldn't make sense because they didn't have the clinical background information on the patient, and having known that ahead they probably wouldn't have made those suggestions”

Table 19 - Pharmacist opinion on the standard of MUR

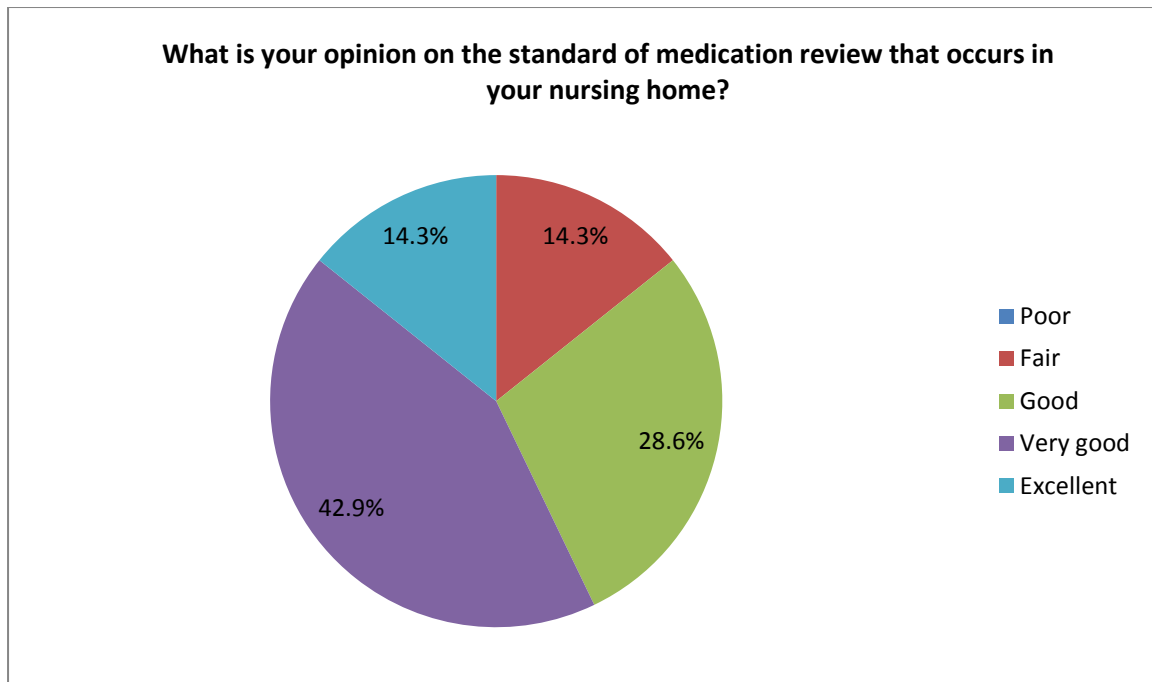


One quarter of pharmacists believe the standard of MUR is poor to fair. The remaining three-quarters rate the standard of MUR as good to excellent. The opinions are polarised and this is backed up by the comments provided by participants:

“Few changes are made, more a form filling exercise”

“I review all the patients every 3 months and issue a report on my findings to their GP's”

Table 20 - Nurse opinion on the standard of MUR



Nurses and pharmacist opinion largely correlate on this issue, with the vast majority finding a good to excellent standard of medication review. The same can be said for GP opinion.

4.11 What could be changed about OPTI-SCRIPT for the nursing home setting?

GPs were asked the above question following a display of OPTI-SCRIPT using hypothetical patient records. Responses were short and the general feedback was positive on the intervention. Admittedly the display was a brief proof of concept but altogether it was well received. The following suggestions were noted:

- i. Prioritising medications in order of the most commonly prescribed drugs in nursing homes as opposed to a community cohort
- ii. Pharmacological and non-pharmacological alternatives had to be implementable in a real-world setting. Particular criticism was targeted at cognitive behaviour therapy
- iii. Integration with nursing home software. This was not considered before the interview highlighted it. Dedicated nursing home software for the record of prescription and administration of medication is widely used. It could prove an optimal place to implement a CDSS

“The NH itself is EpiCare I think is the software programme so from my point of view it’s easier to do nursing home work while I’m in the nursing home rather than

coming back here and trying to fit it in between practice and patients. We'll be moving to their EpiCare software system then, it makes sense to do it there"

4.12 Could you see OPTI-SCRIPT facilitating remote patient review?

"Absolutely, if it was interlinked with the programme [GP practice software], definitely. It's just the workload though and there's not enough initiative there to do it..., if there was more initiative led by the HSE that would prove to be cost effective on their part"

"Yes, because that's what in essence is kind of happening and it's a very recent development, I do, I see that working, that somebody is looking through the medications and saying: "possibly this is inappropriate, or maybe it's not", you know, just highlighting it"

"Yes, certainly it could"

Dialogue led to whether or not OPT-SCRIPT could provide a time-saving benefit, GP#3 referred to how much nursing home care had evolved over the last number of years but admitted uncertainty if a time efficiency could be found, and worry that it might introduce even more work:

"As to whether or not it would save time I'm not too sure. Maybe in the early stage, like a lot of these things, it might create more work and then as people get more familiar with it, it would get quite seamless"

"I think the only barrier would be if the OPTI-SCRIPT is time-consuming to use, it's quick enough to go through the manual sheets at the moment but I presume if you are familiar with the system it'd be quick enough, because workload would be a concern, but if it's efficient to use... SO WE'D HAVE TO PROVE IT WOULD BE TIME SAVING?...Yes, that's a big barrier: time"

4.13 Could OPTI-SCRIPT improve the standard of MUR

GPs were asked if they thought OPTI-SCRIPT or similar prescribing standard could improve the standard of MUR. GPs valued the economy of options available in OPTI-SCRIPT and that brief responses were encouraged in the displayed version," vague" was the term used by the GP to describe the positives of a non-rigid flexible interface:

"I think so, even if I said I'm not sure I would change anything about this, it is vague and it does leave it open to "medication reviewed" and "no changes to medication" whereas if

you've something that is very rigid in the sense if something done/something not done –
[interjection] *YOU'D END UP IGNORING IT* [rhetorical] *“Yes”*

“Oh yeah definitely it will improve standards of prescribing, it's a great concept”

“Oh positively yes, I think it would raise the standard of prescribing”

“I think it would help, it's just a question of do you say every three months or every six months, and it's just a question of when those sheets end up in front of me that its going to take time to review those patients and therefore it's a question of funding and time.”

The remainder of the dialogue focussed on the challenges of incentivisation and time. This is not directly related to the project but is crucial in the wider context of uptake.

Chapter 5 Discussion

5.1 Introduction

This chapter will discuss whether or not Irish nursing homes could avoid sub-optimal prescribing by utilising the OPTI-SCRIPT intervention. The methodology sought to determine this by gathering opinion from healthcare professionals active in the nursing home sector. Admittedly, we cannot say definitively how effective OPTI-SCRIPT is or could be; it is beyond the scale of this study. Nonetheless, valuable insight can be gained from the opinions of nurses, pharmacists and GPs who undertook the study. It will provide useful information in advance of future research that could include a pilot and RCT in the nursing home sector.

Research questions were designed to address gaps identified in the literature review. Each research question will be addressed systematically in the discussion.

5.2 How is PIP identified in Irish Nursing Homes?

It was decided to address the above research question by seeking the opinions of nurses, pharmacists and GPs on their experiences of PIP in Irish nursing homes. Only three studies were identified in the literature review that addressed the topic of PIP in Irish nursing homes (See Figure 2 Prevalence of PIP identified from literature review). They identified PIP prevalence (number of patients on at least one PIP) in Irish nursing homes at rates of 73%, 70% and 59.8% respectively (35,41,42). As they reveal a prevalence of PIP at a point in time and not before or after an intervention they do not tell us how PIP is addressed. Potentially, the knowledge that a high PIP rate exists may alter prescriber behaviour thereafter, if fed back to prescribers in a reflective process, but this was not covered in the scope of the above two-studies.

No evidence could be found of drug-utilisation review tools being used as a means to address PIP on a day-to-day basis. These tools were only referred to in studies observing the prevalence of PIP. No specific information on how PIP is identified and dealt with in Irish nursing homes on a day-to-day basis was found in the review. No evidence was uncovered where a prevalence rate was utilised, back into improving prescribing standards; either systematically by altering procedure or otherwise e.g. by influencing training programs for prescribers.

To learn if OPTI-SCRIPT could be used to address sub-optimal prescribing it seemed important to know how PIP is dealt with. It would determine if OPTI-SCRIPT was the correct approach amongst healthcare professionals and if so would help direct its development along those lines. This gap in

the literature determined the research question above and the subsequent methodology to ask health-care professionals how they dealt with PIP as it arose on a day to day basis. The term PIP was introduced to participants as it is an academic term and not in healthcare professional lexicon generally. Nonetheless, once the definition was provided no difficulty was observed on the part of participants. GP participants were asked to estimate how prevalent they thought PIP was. Answers were in the range of 25-50%, which is markedly lower than the literature quoted at the beginning of this section. This has been seen before in a study in prescriber variation by *Cahir et al.* In it prescribers underestimated the rate of PIP that they prescribed(31).

When participants were asked if PIP impacted on their patient's quality of life the responses were affirmative across all professions. Most significantly, nurses who spend the most time with patients were the most concerned. As all participant groups said that PIP had an impact, the next step was to examine how PIP was addressed by each professional group.

Pharmacists often used a combination of means to address PIP. This included contacting the prescriber or nursing staff or consulting a valid reference source. Nurses indicate they would be more likely to use a single means to address PIP; contacting the GP being the most likely, but also another member of staff or the pharmacist. Both professions were unlikely to contact a patient representative (i.e. a family member).

Review processes, systematic or otherwise were the predominant way of addressing PIP. A variety of review processes existed across all professions with the majority of GPs revealing some medication review processes. Most were implicit (relying on individual knowledge and judgement) and often opportunistic typically occurring at the point of change in prescriptions. Either, when prescriptions had run out or shortly after a hospital discharge. This was described as an opportune time to address PIP by some GPs.

Other GPs had systematic review procedures in place often in conjunction with pharmacy staff. The area seems to be undergoing a transition, as a number of GPs mentioned that nursing home prescribing quality had come to the fore more recently. Some of this had been initiated by the pharmacist providing medication review sheets to the GPs. The benefit of pharmacists and pharmacies performing regular medication reviews came across positively. GPs found pharmacist input helpful in identifying PIP.

Healthcare professionals are concerned about PIP and the effect it may be having on their patient's quality of life. Many address it by undertaking medication review processes. However, no consistent pattern emerged in how it was dealt with. Many participants highlighted an increased focus on

nursing home prescribing quality in recent times. Some of this appeared to be from pharmacists initiating the review process by providing medication review sheets for GPs to review. Interestingly this was the situation that existed in Australia that led to the development of MRM (See Section 2.9 State of the Art).

5.3 Are HIQA guidelines on medication review being observed?

The literature review could find no specific evidence on compliance with HIQA guidelines on medication review. Informal conversations with HIQA employees validated this to some extent. The methodology set out to gain the opinion of nurses, pharmacists and GPs working in the NH sector on the aforementioned HIQA guidelines.

The following excerpt from HIQA guidelines on medication management was displayed to participants of all three professions:

“Each resident on long-term medication is reviewed by his/her medical practitioner at least on a three-monthly basis, in conjunction with nursing staff and the pharmacist”

They were subsequently asked if it was complied with in their realm of practice. All three professions identified that the medication review process was complied with 75% of the time. Small response rate aside, this correlation is notable. Largely it appears that HIQA guidelines on medication management are complied with in some manner. This may be despite a lack of knowledge of the guidelines by some participants. A lot of variety exists. The compliance process can be GP, pharmacist or nurse led, which explains how some participants may not be fully au fait with the guidelines. It can be facilitated in a multi-disciplinary team meeting or in a scenario where nobody meets at all. Commonly the nurse is a common link between the pharmacist and the GP. GP dialogue and text responses from the other professions suggest the nursing home sector is eager to comply with HIQA guidelines. Awareness of them has increased in recent times, and GPs in particular have noticed an increase in their involvement in medication review.

The majority of nurse and pharmacist cohorts responding found the guideline very clear or somewhat clear. When asked if they would change anything about the guideline, many responded that they wouldn't change anything about the guideline. Concerns about the interpretation of the guideline were balanced by concerns about over-regulation of the sector. GPs were asked what they would like to clarify about the guidelines. Yet clarification would probably mean more regulation. It is unlikely that increased regulation would provide a benefit at this stage, as the sector is only coming to terms with the increased regulation brought about by the creation of HIQA.

GPs expressed concerns at the frequency of review that was recommended in the guideline. A number of GPs expressed a lack of familiarity with the guidelines, reinforcing the fact that the process is nurse led in one instance at least (See 4.8 Is the recommendation complied with?). This is not surprising as it is nursing staff that are held accountable to the HIQA standard, and it is the director of nursing who is primarily responsible that it occurs. In practice, the provider of pharmacy services is often contracted to carry out medication reviews as per HIQA guidelines.

One pharmacist responded:

"It's clear but open to a lot of interpretation, what does in conjunction mean? And there's no mention of what a review should consist of"

The GP semi-structured interview allowed much more exploration of those points

"Its vague in the sense that it leaves it open to someone just charting [signing] medication reviews...."

"Give or take I think its goal is clear. Does that mean all three people sitting down together or each person doing separate reviews and come together I suppose as long as the same goal is reached...I mean if the nurse is in the home that's fine but it's hard to get the GP and the pharmacist together"

At the same time, the overall benefit of such a regulation was questioned in particular by GPs who were unhappy with initiatives/guidelines that increased their workload where they spent more time complying with guidelines than providing patient care.

It would appear that the guideline is largely complied with and that the process of compliance has increased since the guidelines implementation in 2009. Optimistically, it would appear that compliance with the guideline is increasing and professionals are generally engaging with the process despite some reservations. It is likely that nursing staff, particularly directors of nursing undertake responsibility for this task and the service is contracted out to pharmacies as part of the overall service they provide. Some participants expressed a lack of familiarity with the guidelines; this may in part be due to the fact that they are not responsible for it in their respective work role. Typically, one GP, nurse or pharmacist may be responsible for the review process.

5.3.1 Standard of Medication Review

Across all professions positive views were predominantly returned on the standard of medication review that occurs in nursing homes. One GP who was reasonably happy with the standard of review in her practice, admitted that guidance was lacking as well as any recognisable body for GPs and other professional who cater to the nursing home industry. Review processes initiated by pharmacists were well received albeit with some reservations. Two separate GPs questioned the validity of suggestions being made by pharmacists. One GP participant identified that up to 25% of review recommendations made no sense to her. This would have been an interesting dynamic to examine with another methodology i.e. a focus group with both professions. A pharmacist participant described it as a form filling exercise.

When participants were asked their opinion on whether or not a multi-disciplinary approach was taken to medication review, many responded negatively including 25% of nurses and pharmacists. GPs were likely to reply negatively but go on to explain a situation that could be described as multi-disciplinary. It appears that GP interpretation of the guideline was that in conjunction means face to face contact with other healthcare professionals. A number of GPs described a de-facto remote multi-disciplinary review process. Pharmacists reviewed patients and produced documentation that would be deposited in the nursing home to be signed by the GP on rounds. Pharmacist and GP may not meet but an effective medication review process takes place.

Opinion on medication review appears high from professionals and despite interpretation it appears multi-disciplinary review happens regularly also, be it in a formal meeting or in a de-facto manner as described above. Crucially, professionals are happy with the standard of review occurring yet rates of PIP returned in the studies on prevalence of PIP in nursing homes are still unacceptably high.

5.4 Would GPs be willing to utilise OPTI-SCRIPT to address PIP?

This particular research question was only applicable to GPs. This question specifically referred to GP opinion on the OPTI-SCRIPT intervention. Responses to the previous research questions i.e. opinion on HIQA regulation, should not affect opinion of OPTI-SCRIPT.

Responses to the initiative were universally positive. The proof of concept that was displayed to GPs was well regarded, and the clinical material was valued for its concise nature and its clever distillation of guidelines. Encouragingly, GPs were involved at every stage of OPTI-SCRIPT development and are among its authorship.

GPs were asked if OPTI-SCRIPT would affect standards of prescribing. All participants responded that it would affect standards positively. The lack of rigidity was seen as a positive by one participant as a system that demanded certain responses would end up being ignored. Answers for this question tended to be brief, participants only had exposure to a proof of concept, but the academic detailing and the OPTI-SCRIPT display were also received positively.

GPs were also asked if OPTI-SCRIPT could facilitate remote patient review. Some GPs were happiest to do nursing home work in the nursing home whilst others mentioned that in effect remote review happens currently as pharmacists liaise with nurses who liaise with GPs.

Two issues rose consistently. Specifically time and reimbursement; if OPTI-SCRIPT on implementation could save practitioners time, while increasing prescribing quality then it would be of huge value. It was clear from GP dialogue that recent changes to the re-imburement structure for nursing home patients, was having an impact. It raised the issue whether or not the practice of medication review should or could be incentivised (See 2.9.1 Medscope Review Mentor (MRM)[®]). Incentivisation falls outside the brief of this study yet it may be a fundamental point to OPTI-SCRIPTs success. Certainly in the MRM intervention, reimbursement is a fundamental part of the software itself facilitating a means to claim reimbursement from government bodies for completed medication reviews(67,68,70). There may be an economic case to argue for its implementation. Strong evidence exists that if PIP was addressed nationally it could provide a saving, whilst increasing prescribing quality and hopefully healthcare outcomes.

5.5 How Would OPTI-SCRIPT have to be adapted to best suit Nursing Home prescribing?

This can be looked at two ways. Fundamentally, the proof of concept displayed to GPs was well received and is ready to be implemented in a wider context, or at least piloted in a nursing home population. This isn't necessarily surprising when the literature that influenced OPTI-SCRIPT's web-based algorithm is taken into consideration. Much of it was developed with nursing home residents in mind. The clinical material underpinning the web-based algorithm and the patient information leaflets is of an extremely high standard and highly applicable to the widest cohort of patients including those in nursing homes. As commented by one GP participant:

“poor prescribing is poor prescribing in anyone”

That said there is no frame of context, and no precedent for health-care professionals to judge drug-utilisation-review-tools by, as no participant expressed a familiarity with such a tool. This would

make it difficult for anyone to suggest what could be adapted. Currently OPTI-SCRIPT is state-of-the-art. Future iterations may benefit from user feedback but as it stands OPTI-SCRIPT is unique and stands to deliver huge benefits.

Suggestions included prioritising the alert of medications along the lines of national PIP frequency so that the biggest impact could be achieved right away. There was criticism for the practicality of some of the non-pharmacological interventions, particularly cognitive behavioural therapy as the services are unavailable. If unrealistic options are included, then the willingness to use OPTI-SCRIPT could be impacted negatively

Integration into nursing home software and GP practice software was mentioned. Development of OPTI-SCRIPT as a module that could be added onto pharmacist or GP software has been covered in this study. One aspect that wasn't considered beforehand was the use of nursing home software. Many applications are available on the marketplace to monitor patient compliance with their medication regimes. They are often referred to as Medication Administration Records (MAR), they often include functionality for other nursing documentation as well including nursing notes.

5.6 Economic benefits to addressing PIP

Three Irish studies have examined the economic implications of PIP (26,35,73). The estimated costs ranged from €188 to €318 per patient per year. These figures aren't comparable as many factors including pricing, adherence, jurisdiction and age profile affect cost. However as Ireland spends €3,781 per capita on healthcare(74), even a small reduction in PIP could result in a big economic saving for patients and healthcare providers.

5.7 Research findings

The literature review uncovered a large body of work in Ireland and elsewhere identifying the prevalence of PIP both in primary care and nursing homes. In general a higher rate of PIP was observed in nursing homes. Despite the well documented prevalence, there appears to be little effort or innovation to target or affect the high prevalence of PIP in Irish nursing homes.

It was recognised that PIP was effectively being identified in academic studies but the identification of PIP on a day-to-day real life setting was less clear. The most effective way of identifying PIP is to perform a medication review on a regular basis. HIQA recommends that this occurs at least every three months and more frequently in ill patients. On examination healthcare professionals agreed that these reviews were occurring most of the time. When asked about the quality of medication review and subsequent medication regimes most healthcare professionals agreed they were

occurring from a good to excellent standard. However, PIP prevalence is consistently returned at a high rate. There is evidently a disconnect between what is actually being achieved and what is actually being delivered. This has been seen before in a study by *Cahir et al*(31).

This disconnect could be for a number of reasons. Are drug utilisation review tools too specific, returning unreasonably high rates of PIP. In the case of STOPP/START probably not a 2011 study by *Gallagher et al* found that 91% of STOPP and 97% of START recommendations were subsequently agreed to by the prescriber(75). Could drug utilisation review tools not be fit for purpose in the very old; i.e. should they or any subsequent drug utilisation review tool be adapted or be adaptable for the very old and or those with poorer outcomes or a shorter life expectancy. Could the disconnect be a healthcare professional issue, are staff adequately trained to identify PIP or are resources available that allow professionals to perform reviews to the standard expected. These are all areas for future research.

The benefit of drug-utilisation-review tools as a means to identify the prevalence of PIP was established. Whether or not it can address the problem of PIP on an ongoing basis remains unproven. Many of the studies reviewing PIP prevalence identify that intervention studies need to take place to identify means and develop concepts that address PIP and reduce its prevalence. Many identify development of a CDSS as the obvious solution. An example of a state of the art intervention is commercially available in Australia(67,70). STOPP/START is currently in the hands of a healthcare IT company, presumably to develop an interventional software. OPTI-SCRIPT clearly has the potential to become a state of the art intervention as it responds to a currently unaddressed problem in Irish healthcare. Developing OPTI-SCRIPT into either a standalone or integrated CDSS would be a welcome development for healthcare professionals in Irish nursing homes.

5.8 Limitations of Study

For the purpose of the methodology, gaining access to healthcare professionals working in or contracted to the nursing home sector proved difficult. There is no register of healthcare professionals that work in or provide services to nursing homes. As such it proved difficult to attain a meaningful response rate with the methodology employed. A low response rate was subsequently observed.

The primary researcher is a pharmacist by profession and this topic was chosen based on the researcher's observations and experience. There is potential for bias in this regard. This may have directed the topic; however every effort has made throughout the study to maintain objectivity.

GPs were identified as pivotal in nursing home prescribing and as a result, a semi-structured interview methodology was employed. This may overstate the GP perspective, particularly in the context of medication review where all professions should be on an equal footing. Results from GPs provided a much more in-depth analysis from their perspective; other professionals were limited within the constraints of an online questionnaire.

HIQA regulate and inspect residential care facilities in Ireland and it is regrettable that a means could not be constructed to have some HIQA input into the study. For one they maintain a register of nursing homes, inspection records, number of residents and associated “person-in-charge” (person who is legally responsible for the operation of the nursing home and its compliance with HIQA criteria). This probably represents the best means to build a future methodology around.

Any future research or analysis of the nursing home sector should give serious consideration to methods of recruitment of professionals and the methodologies employed. It is felt with some regret that a cross professional focus group or a case study of individual nursing home scenarios could have proven to be a more suitable approach.

Chapter 6 Conclusions & Future Work

This study identified four research questions to learn more about PIP in nursing homes in Ireland. Each one contributed to learning if the OPTI-SRIPT intervention could be utilised to reduce the prevalence of PIP and avoid sub-optimal prescribing in Irish nursing homes. A literature review identified gaps in knowledge and a survey methodology was adopted to address the research questions.

This chapter will draw final conclusions based on the research questions and outline any notable findings from the study. It will suggest areas for future research and suggest what steps OPTI-SRIPT should take to impact prescribing standards for the better.

6.1 What was learnt

The literature review identified a lack of research into prescribing in Ireland's nursing homes. When research did occur it appeared to be higher than comparable studies in primary care. Drug-utilisation-review tools are the standard means of identifying prevalence of PIP at any point in time in a population. They exhibit varying degrees of specificity and some are more applicable to specific populations. They are not effective at intervening where prescribing standards are poor, yet many have the potential to do so. Much of the literature recommended development of interventional tools to improve prevalence of PIP. OPTI-SRIPT is an interventional tool.

6.2 What was done

Much was learnt about how individual participants address PIP in their day-to-day work. Approaches differed across professions yet most were concerned that PIP may be having an effect on the quality of life of their patients. Notably, nurses who spend the most time with patients were the most concerned.

It was recognised that PIP is largely identified by the use of regular medication review as suggested in HIQA guidelines. The use of medication review is recommended as an effective way to decrease PIP and avoid sub-optimal prescribing in the literature review, particularly if undertaken with or by a pharmacist. Participant opinion of their medication review process was high, yet studies that assess PIP in Irish nursing homes return unacceptably high levels of PIP. This disconnect was significant as similar examples of this in other studies was noted.

GPs would be keen to utilise a tool like OPTI-SRIPT but it would have to save GP time or at worst not take up any more time. Incentivisation should be considered as this is fundamental to a state of

the art review process in place in Australia (MRM). Some small suggestions were made to improve OPTI-SCRIPT but as is, it is better than anything else available.

6.3 Recommendations for future research

Medication review is a strong means of enforcing a higher standard of prescribing, it is hoped that OPTI-SCRIPT with its multi-faceted approach could provide an even higher standard. Utilising OPTI-SCRIPT at regular intervals as recommended by HIQA could hugely affect the prevalence of PIP and contribute to better standards of care amongst nursing home residents. There is good evidence that OPTI-SCRIPT could be effective, the next step is to complete design of a meaningful interface so that medication review can happen remotely in a timely manner, increasing standards of care and saving practitioner time.

The implication of HIQA compelling regular medication reviews make the nursing home sector a potentially fruitful area for the OPTI-SCRIPT intervention. Initiatives that augment prescribing standards are few and far between, potentially if OPTI-SCRIPT could provide a better standard of care in a nursing home environment it could provide the impetus for OPTI-SCRIPT to be utilised in primary care and elsewhere. OPTI-SCRIPT appears to be amongst the first to do so in Ireland and has returned benefits of clinical significance in preliminary results from a national randomised control trial.

6.4 Conclusion

In conclusion, based on the literature review and the methodology, Irish nursing homes could avoid sub-optimal prescribing by utilising the OPTI-SCRIPT intervention. OPTI-SCRIPT breaks new territory. It builds on the potential of the drug-utilisation-review-tools discussed earlier in this study by creating an intervention that can be incorporated into the daily workload of nurses, pharmacists and GPs. More development of the intervention is required; a clear appetite exists for it to be incorporated into healthcare software programs as a Clinical Decision Support System but development along the lines of MRM as a standalone application should also be considered.

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Appendix I - Benzodiazepine Patient Information Leaflet

- Take some light exercise early in the evening. Generally try to keep yourself fit.
- Wind down during the course of the evening. Do not do anything that is mentally demanding within 90 minutes of bedtime.
- Do not sleep or doze in the armchair. Keep your sleep for bedtime.
- Do not drink too much tea or coffee and only have a light snack for supper. Do not drink alcohol to aid your sleep-it usually upsets sleep.
- Make sure your bed and bedroom are comfortable – not too cold and not too warm.

At bedtime:

- Go to bed when you are “sleepy tired” and not before
- Do not read or watch TV in bed. Keep these activities for another room.
- Set the alarm for the same time every day, seven days a week, at least until your sleep pattern settles down.
- Put the light out when you get into bed.
- Let yourself relax and tell yourself that “sleep will come when it is ready”. Enjoy relaxing even if you don’t fall asleep at first.
- Do not try to fall asleep. Sleep is not something that you can switch on deliberately

Cognitive Behavioural Therapy (CBT)

Your doctor may refer you for CBT or recommend CBT material for you to look at in your own time. CBT is a form of ‘talking therapy’ and is based on the idea that how we think (cognition), how we act (behaviour), how we feel (emotion) and what is happening in our bodies (physiology) all interact together. Specifically, our thoughts strongly influence our feelings and our behaviour; therefore unhelpful, negative and unrealistic thoughts can be a major source of distress and insomnia. The aim of CBT is to help you change the way you think, feel and behave.

For further information about this study, please contact:

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Information about your medicines:

Benzodiazepines in people with Insomnia

This information has been provided by the HRB Centre for Primary Care Research, Royal College of Surgeons in Ireland (RCSI) as part of the OPTI-SCRIPT study - Optimizing Prescribing for Older People in Primary Care: a cluster randomized

What are benzodiazepines?

Benzodiazepines are psychoactive medicines meaning they affect people’s mind or mood. They are used to treat anxiety, panic, agitation and sleeping problems which are common in many people. They work by decreasing the ‘excitability’ of many brain cells. This has a calming effect on some functions of the brain.

Benzodiazepines often work well in the short-term (2-4 weeks), but doctors have become concerned about this kind of medication when it is taken over a long time.

What are the side effects of benzodiazepines?

- Sleepiness the next day
- Problems thinking/confusion
- Dizziness and increased risk of falls
- Slower reaction time (may increase the risk of having a car accident)
- Long-term use can result in:

Tolerance – the body can get used to these tablets so that they no longer work properly or a higher dose is needed for it to work. In time, the higher dose does not work, and you need an even higher dose, and so on.

Dependence/addiction - There is a good chance that you will become dependent on a benzodiazepine if you take it for more than 4 weeks, meaning you need to take the medicine to feel ‘normal’.

What are the alternatives your doctor may offer to treat insomnia?

Your GP may recommend benzodiazepine withdrawal or other treatments for insomnia. Some may be medications and some may not involve medications.

Benzodiazepine withdrawal

In the case of dependence, if you have been taking a benzodiazepine for over four weeks and want to come off it, it is best to discuss this with a doctor. Some people can stop taking benzodiazepines with little difficulty. However, many people develop withdrawal symptoms if they suddenly stop taking a benzodiazepine. Withdrawal symptoms can occur including:

- Psychological symptoms - such as anxiety, panic attacks, feeling as if you are outside your body
- Physical symptoms such as sweating, being unable to sleep, headache, tremor, feeling sick, palpitations, muscle spasms, and being oversensitive to light, sound and touch.

- In some cases the withdrawal symptoms seem like the original anxiety symptoms.

To keep withdrawal effects to a minimum, it is often best to reduce the dose of the medicine gradually over a number of weeks or months before finally stopping it. Your doctor will advise on dosages, time scale, etc.

Other medicines

Z-drugs

Z-drugs are a group of non-benzodiazepine medicines with similar effects to benzodiazepine, examples include zolpidem or zopiclone. These medicines are not a long term solution to sleeping problems and should generally only be given in short courses.

Alternatives to medicines

Good Sleep Guide

Often our day and evening routines, and our beliefs about sleep determine how well we sleep.

During the evening:

- Put the day to rest. Think it through. Tie up “loose ends” in your mind and plan ahead. A notebook may help.

Appendix II GP Semi-Structured Questionnaire

This document displays the root questions to the semi-structured interviews with GPs that will occur after their immersed display with OPTI-SCRIPT using hypothetical patient records

GP #1. APPROXIMATELY HOW MANY NURSING HOME PATIENTS DO YOU PROVIDE GP SERVICES TO AT THE MOMENT?

GP #2. HERE IS A DEFINITION OF PIP – DO YOU NEED ANY CLARIFICATION ON THIS CONCEPT

Potentially Inappropriate Prescribing (PIP) can be defined as the use or omission of medication(s) when the risk of doing so outweighs the potential benefits. It refers to any scenario where a patient will be potentially better off on more, less or different medication

GP #3. VARIOUS RESEARCH HAS IDENTIFIED PIP AS A PROBLEM IN NURSING HOMES THROUGHOUT IRELAND. HOW PREVALENT DO YOU THINK PIP IS IN IRISH NURSING HOMES CURRENTLY?

GP #4. DO YOU THINK THAT PIP MAY BE IMPACTING ON THE QUALITY OF LIFE OF YOUR PATIENTS?

GP #5. HOW DO YOU DEAL WITH PIP IN YOUR DAY-TO-DAY PRACTICE?

GP #6. DO YOU SEE ANY BENEFITS OR DRAWBACKS FROM AN INTERVENTION LIKE OPTI-SCRIPT?

GP #7. HERE IS AN EXCERPT FROM HIQA GUIDELINES ON MEDICATION MANAGEMENT

HIQA recommends the following regime for regular medication review

“Each resident on long-term medication is reviewed by his/her medical practitioner at least on a three-monthly basis, in conjunction with nursing staff and the pharmacist”

- GP #8. HOW CLEAR DO YOU FIND THIS RECOMMENDATION?
- a. What would you change about the guideline (if applicable)?
- GP #9. WHAT IS YOUR OPINION ON THE STANDARD OF MUR THAT OCCURS?
- GP #10. DO YOU THINK THIS RECOMMENDATION IS COMPLIED WITH IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES?
- GP #11. IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES DO YOU WORK WITH PHARMACISTS AND NURSING STAFF IN A MULTI-DISCIPLINARY APPROACH TO MUR?
- GP #12. WHAT WOULD YOU CHANGE ABOUT OPTI-SCRIPT FOR A NH SETTING?
- GP #13. COULD YOU SEE OS FACILITATING REMOTE PATIENT REVIEW?
- GP #14. DO YOU THINK OPTI-SCRIPT WOULD AFFECT STANDARDS OF PRESCRIBING?

Appendix IV E-mail from NHI Practice development to its members

Study re potentially inappropriate prescribing & medicines use in Irish nursing homes

APR 14

Members are asked to input to a Royal College of Surgeons Ireland / Trinity College Dublin student study on potentially inappropriate prescribing and medicines use review in Irish nursing homes. The information will help determine if OPTI-SCRIPT can help increase prescribing standards in nursing homes.

The Centre for Primary Care Research at the RCSI has developed and piloted a multi-faceted intervention to address PIP in primary care called the OPTI-SCRIPT intervention. It involves:

1. Academic detailing by a pharmacist with the relevant prescriber
2. Medicines Review with web-based treatment algorithms
3. Patient information leaflets tailored to provide specific information for each PIP

[You can complete the survey here.](#)

The study includes a brief questionnaire to be completed for nurses working in the Irish nursing home sector. The information will help determine if OPTI-SCRIPT can help increase prescribing standards in nursing homes. [Further information in respect of OPTI-SCRIPT can be found here.](#) The Research Ethics Committee of the School of Computer Science and Statistics at Trinity College Dublin has approved the study.

The survey is anonymous and confidential. Individual results will be aggregated anonymously and research reported on aggregate results.

Michael McGlynn

Michael McGlynn
NHI Communications & Research Officer

Appendix V Nurse Information Sheet & Consent Form

Potentially Inappropriate Prescribing and Medicines Use Review in Irish Nursing Homes

INFORMATION SHEET & CONSENT FORM FOR ONLINE QUESTIONNAIRE

THIS QUESTIONNAIRE IS INTENDED FOR NURSES WORKING IN THE IRISH NURSING HOME SECTOR

BACKGROUND

Potentially inappropriate Prescribing (PIP) has been identified as a problem in nursing homes in Ireland. The Centre for Primary Care Research at the RCSI has developed and piloted a multi-faceted intervention to address PIP in primary care called the OPTI-SCRIPT intervention. It involves:

1. Academic detailing by a pharmacist with the relevant prescriber
2. Medicines Review with web-based treatment algorithms
3. Patient information leaflets tailored to provide specific information for each PIP

The aim of this dissertation is to examine how PIP is currently being dealt with in nursing homes to find out if an intervention like OPTI-SCRIPT would be acceptable to nursing home directors and prescribers.

WHAT HAPPENS AFTER I HAVE AGREED TO COMPLETE A QUESTIONNAIRE?

After reading the information sheet and survey consent form you can choose whether to commence the questionnaire or not. You can feel free to withdraw from the questionnaire at any point or omit any questions you like. The questionnaire is completely voluntary

DECLARATIONS OF CONFLICTS OF INTEREST

No conflicts of interest have been identified for this study. The primary researcher is a pharmacist pursuing a post-graduate MSc in Health Informatics.

HOW LONG IS THE QUESTIONNAIRE LIKELY TO TAKE?

The questionnaire should take no longer than 5-minutes of your time.

WHAT IF I HAVE ANY QUESTIONS ON THE QUESTIONNAIRE OR THE TOPICS DISCUSSED?

Any participant can feel free to contact Patrick Lehane at lehanepa@tcd.ie with any questions

TITLE OF RESEARCH PROJECT

Could Irish Nursing Homes avoid sub-optimal prescribing by utilising the OPTI-SCRIPT intervention?

PROCEDURES OF THIS STUDY

The study includes a brief questionnaire to nurses working in the Irish nursing home sector. Nursing Homes Ireland has kindly included a link to the questionnaire in their monthly bulletin. The questionnaire seeks to learn about potentially inappropriate prescribing and medicine use review in the nursing home sector. This information will help us determine if OPTI-SCRIPT can help increase prescribing standards in nursing homes. More information on OPTI-SCRIPT can be found here <http://www.hrbcentreprimarycare.ie/?q=Optiscript>

The survey is anonymous and confidential. Individual results will be aggregated anonymously and research reported on aggregate results.

The Research Ethics Committee of the School of Computer Science and Statistics at Trinity College Dublin has approved this study.

DECLARATION

By completing and returning this survey you are agreeing to the following:

- I am 18 years or older and am competent to provide consent
- I am working as a nurse in Ireland
- I understand that I have been invited to participate in an internet based survey
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity
- I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights
- I understand that I may refuse to answer any question and that I may withdraw at any time
- I understand that my participation is fully anonymous and that no personal details about me will be recorded
- I understand that if I make illicit activities known, these will be reported to appropriate authorities
- I am authorised by management/director of nursing to undertake this questionnaire
- I have read and I understand this consent form. I understand the description of the research that has been provided to me. I have opportunity to ask questions via email

PLEASE DO NOT NAME THIRD PARTIES IN ANY OPEN TEXT FIELD OF THE QUESTIONNAIRE. ANY SUCH REPLIES WILL BE ANONYMISED

Thank you for reading this far, the questionnaire will begin on the next page

Next

Powered by **SurveyMonkey**
Check out our [sample surveys](#) and create your own now!

Appendix VI E-mail from the PSI

Dear Patrick,

Further to my phone call and voice message I left with you earlier, I hope you have gained a better understanding as to the conditions associated with the use of pharmacy addresses and contact details by the PSI. Communication in relation to CPD possibilities or updates in relation to the Pharmacy Institute are circulated by the PSI. Details of pharmacists personal CPD or research commitments are not. I understand that you say that you have received emails in the past from researchers, but I would strongly believe that their access to your email address was not provided by the PSI.

I regret that I cannot be of further assistance, but should you have any further queries, please do not hesitate to contact me,

Regards,

Cora O'Connell MPSI
Senior Pharmacist
Pharmaceutical Society of Ireland
PSI House
Fenian Street
Dublin 2
Tel: 00353 1 2184000
Fax: 00353 1 283 7678

Appendix VII E-mail from the IPU

Patrick

We get many requests from students to circulate surveys on their behalf. Consequently, we have taken the decision not to circulate any as it would be difficult to choose who to support and who not to support. Our members would not thank us for sending them 4 or 5 surveys to complete each week or month. Indeed, we often struggle to get members to complete our internal surveys.

Sorry we can't be of help.

Regards, Pamela

Pamela Logan MPSI

Director of Pharmacy Services

IRISH PHARMACY UNION

Butterfield House, Butterfield Ave.

Rathfarnham, Dublin 14.

Telephone [+353 1 493 6401](tel:+35314936401) • Facsimile [+353 1 493 6407](tel:+35314936407)

E mail pamela.logan@ipu.ie

Internet: www.ipu.ie

Appendix VIII E-mail to Superintendent Pharmacists

Dear Pharmacist,

My name is Patrick Lehane MPSI. I am undertaking an MSc project entitled "Could Irish Nursing Homes avoid sub-optimal prescribing by utilising the OPTI-SCRIPT intervention?" The project is in part fulfilment of an MSc in Health Informatics at TCD, and is being supervised by the Health Research Boards Centre for Primary Care Research at RCSI.

As part of the study questionnaires will be sent to a variety of health care professionals including pharmacists.

If you are a pharmacist who provides services to the nursing home sector, contracted or otherwise, I would be eager to benefit from your experience. I have compiled the following questionnaire which is designed to take no more than 5-minutes of your time. All responses are completely anonymous.

<https://www.surveymonkey.com/s/NursingHomePharmacist>

If you have any questions on the topics contained in this e-mail or the attached questionnaire, please don't hesitate to contact me.

Yours sincerely,

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**Appendix IX TCD School of Computer Science & Statistics
Research Ethics Application**

**School of Computer Science &
Statistics**

**Research Ethics
Application**



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The following documents are required with each application:

1.	<input type="checkbox"/> SCSS Ethical Application Form	
2.	<input type="checkbox"/> Participant's Information Sheet must include the following: a) Declarations from Part A of the application form;	
3.	<input type="checkbox"/> Participant's Consent Form must include the following: a) Declarations from Part A of the application form;	

4.	<input type="checkbox"/> Research Project Proposal must include the following: a) You must inform the Ethics Committee who your intended participants are i.e. are they your work colleagues, class mates etc. b) How will you recruit the participants i.e. how do you intend asking people to	
5.	<input type="checkbox"/> Intended questionnaire/survey/interview protocol/screen shots/representative materials (as appropriate)	
6.	<input type="checkbox"/> URL to intended on-line survey (as appropriate)	

Notes on Conflict of Interest

1. If your intended participants are work colleagues, you must declare a potential conflict of interest: you are taking advantage of your existing relationships in order to make progress in your research. It is best to acknowledge this in your invitation to participants.
2. If your research is also intended to direct commercial or other exploitation, this must be

declared. For example, *“Please be advised that this research is being conducted by an employee of the company that supplies the product or service which form an object of study within the research.”*

Notes for questionnaires and interviews

1. If your questionnaire is **paper based**, you must have the following **opt-out** clause on the top of

each page of the questionnaire: *“Each question is optional. Feel free to omit a response to any question; however the researcher would be grateful if all questions are responded to.”*
2. If you questionnaire is **on-line**, the first page of your questionnaire must repeat the content of the information sheet. This must be followed by the consent form. If the participant does not

agree to the consent, they must automatically be exited from the questionnaire.
3. Each question must be **optional**.
4. The participant must have the option to **‘not submit, exit without**

submitting' at the final submission point on your questionnaire.

5. If you have open-ended questions on your questionnaire you must warn the participant against naming **third parties**: *"Please do not name third parties in any open text field of the*

questionnaire. Any such replies will be anonymised."

6. You must inform your participants regarding **illicit activity**: *"In the extremely unlikely event*

that illicit activity is reported I will be obliged to report it to appropriate authorities."

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UNIVERSITY OF DUBLIN, TRINITY COLLEGE

Faculty of Engineering, Mathematics and Science

School of Computer Science and Statistics

RESEARCH ETHICS PROTOCOL

When is Ethical Approval Needed?

Ethical approval is required before any studies involving human participants can commence. This requirement applies to studies to be undertaken by staff, postgraduate and undergraduate students. In the case of collaborative projects involving researchers from outside the School, ethical approval obtained from an external research ethics body may suffice – evidence of same must be submitted to the SCSS Research Ethics Committee prior to the commencement of the study (see procedures below). In the absence of such external approval, approval must be obtained as per this document. Additional ethical approval may be required if the project involves or is funded by an external body, for example, studies under FP7 automatically require such approval.

For the purpose of this document a “study” may be understood to involve a potentially staged series of different experiments to be conducted over a period of time. If substantive changes are made to a study following receipt of ethical approval, this will constitute a new study for which further ethical approval must be obtained.

Procedur

e

Completed application forms together with supporting documentation should be submitted electronically to research-ethics@scss.tcd.ie. To submit, if the proposal is from an undergraduate or postgraduate students, the **completed** application package must be presented to the academic supervisor who will sign after verifying completeness. These signed originals may be scanned and emailed. Please use TCD e-mail addresses only. When your application has been reviewed and approved by the Ethics committee hardcopies of the application form with original signatures should be submitted to the School of Computer Science & Statistics, Room F37, O’Reilly Institute, Trinity College, Dublin 2.

The Committee will consider each application and normally provide a response within two weeks but not more than one month later. Applications that are considered not to have significant ethical implications may be evaluated by the Committee Chair without reference to the full Committee. Applications will otherwise be considered at a meeting of the SCSS Research Ethics Committee. When approval has been obtained from an external research ethics committee, and School approval is not required, a copy of the external ethical approval must be submitted to the School’s Research Unit, prior to commencement of study, for noting by the SCSS Research Ethics Committee.

Please note that in signing the approval form one is making a commitment to review the provisions of the Data Protection Act, like legislation and College Policy on Good Research Practice. Please ensure that your study conforms to the standards of anonymity preservation and data retention set in those documents. Those provisions suggest a default proscription against making digital or photographic recordings of participants. A study which requires such records must include in the research ethics approval application a justification and documentation of the methods by which the statutory provisions and research practise guidelines will be met.

Note: These procedures may be amended from time-to-time following recommendation by the SCSS Research Ethics

Committee and with the approval of the SCSS Research Committee.

Before seeking ethical approval researchers should:

- identify actual and potential ethical issues that might arise;
- reflect on how these will be addressed; and
- formulate procedures to deal with all such issues.

During the research project researchers should:

- implement the ethical procedures;
- obtain continuous feedback from participants about ethical issues;
- periodically review the ethical strategy in the light of feedback received; and
- if required, update their ethical procedures;
- retain copies of consent forms signed by the participants.

Composition of the SCSS Research Ethics Committee

The Committee will consist of a Chairperson/Convenor appointed by the Director of Research and two other experts – a member of the School's academic staff and external advisors. The internal and external members will be selected from a panel approved by the Director of Research from time to time. Members will be selected on a case by case basis by the Chairperson subject to their availability. Researchers will be precluded from the Committee considering ethical approval for their study.

School of Computer Science and Statistics

Research Ethical Application Form

Part A

Project Title: Could Irish Nursing Homes avoid sub-optimal prescribing by utilising the OPTI-SCRIPT intervention

Name of Lead Researcher (student in case of project work): Patrick D. Lehane

Name of Supervisor: Dr Lucy Hederman [hederman@scss.tcd.ie] & Dr Ronan McDonnell [rmcdonnell@rcsi.ie]

TCD E-mail: lehanepa@tcd.ie

Contact Tel No.: 087-9706750

Course Name and Code (if applicable): MSc in Health Informatic

Estimated start date of survey/research: 28/02/2013

I confirm that I will (where relevant):

- Familiarize myself with the Data Protection Act and the College Good Research Practice guidelines http://www.tcd.ie/info_compliance/dp/legislation.php;
- Tell participants that any recordings, e.g. audio/video/photographs, will not be identifiable unless prior written permission has been given. I will obtain permission for specific reuse (in papers, talks, etc.)
- Provide participants with an information sheet (or web-page for web-based experiments) that describes the main procedures (a copy of the information sheet must be included with this application)
- Obtain informed consent for participation (a copy of the informed consent form must be included with this application)
- Should the research be observational, ask participants for their consent to be observed
- Tell participants that their participation is voluntary
- Tell participants that they may withdraw at any time and for any reason without penalty
- Give participants the option of omitting questions they do not wish to answer if a questionnaire is used
- Tell participants that their data will be treated with full confidentiality and that, if published, it will not be identified as theirs
- On request, debrief participants at the end of their participation (i.e. give them a brief explanation of the study)

- Verify that participants are 18 years or older and competent to supply consent.
- If the study involves participants viewing video displays then I will verify that they understand that if they or anyone in their family has a history of epilepsy then the participant is proceeding at their own risk
- Declare any potential conflict of interest to participants.
- Inform participants that in the extremely unlikely event that illicit activity is reported to me during the study I will be obliged to report it to appropriate authorities.
- Act in accordance with the information provided (i.e. if I tell participants I will not do something, then I will not do it).

Signed:

Date:

.....

Lead Researcher/student in case of project work

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<i>Please answer the following questions. a</i>		<i>Yes/No</i>
Has this research application or any application of a similar nature connected to this research project been refused ethical approval by another review committee of the College (or at the institutions of any collaborators)?		No
Will your project involve photographing participants or electronic audio or video		Yes
Will your project deliberately involve misleading participants in any way?		No
Is there a risk of participants experiencing either physical or psychological distress or discomfort? If yes, give details on a separate sheet and state what you will tell them to do if they should experience any such problems (e.g. who they can contact for help).		No
Does your study involve any of the following?	Children (under 18 years of age)	No
	People with intellectual or communication difficulties	No
	Patients	No
School of Computer Science and Statistics		

Research Ethical Application Form

Details of the Research Project Proposal must be submitted as a separate document to include the following information:

1. Title of project
2. Purpose of project including academic rationale
3. Brief description of methods and measurements to be used
4. Participants - recruitment methods, number, age, gender, exclusion/inclusion criteria, including statistical justification for numbers of participants
5. Debriefing arrangements
6. A clear concise statement of the ethical considerations raised by the project and how you intend to deal with them
7. Cite any relevant legislation relevant to the project with the method of compliance e.g. Data Protection Act etc.

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I confirm that the materials I have submitted provided a complete and accurate account of the research I propose to conduct in this context, including my assessment of the ethical ramifications.

Signed:

Date:

.....

Lead Researcher/student in case of project work

There is an obligation on the lead researcher to bring to the attention of the SCSS Research Ethics Committee any issues with ethical implications not clearly covered above.

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If external ethical approval has been received, please complete below.

External ethical approval has been received and no further ethical approval is required from the School's Research Ethical

Committee. I have attached a copy of the external ethical approval for the School's Research Unit.

Signed:

Date:

.....
Lead Researcher/student in case of project work

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If the research is proposed by an undergraduate or postgraduate student, please have the below section completed.

I confirm, as an academic supervisor of this proposed research that the documents at hand are complete



(i.e. each item on the submission checklist is accounted for) and are in a form that is adequate for review by the SCSS Research Ethics Committee

Signed:

Date:

.....13/2/2014.....

Supervisor

Completed application forms together with supporting documentation should be submitted electronically to research-ethics@scss.tcd.ie Please use TCD e-mail addresses only. When your application has been reviewed and approved by the Ethics committee hardcopies with original signatures should be submitted to the School of Computer Science & Statistics, Room F37, O'Reilly Institute, Trinity College, Dublin 2.

Appendix X Transcript of GP interviews

Interview: Dr. #1 09/06/14.

HOW MANY NURSING HOME PATIENTS DO YOU PROVIDE GP SERVICES TO AT THE MOMENT?

“In and around 58”

VARIOUS RESEARCH HAS IDENTIFIED PIP AS A PROBLEM IN NURSING HOMES THROUGHOUT IRELAND. HOW PREVALENT DO YOU THINK PIP IS IN IRISH NURSING HOMES CURRENTLY?

“A PERCENTAGE OF PEOPLE THAT MAY BE ON ONE INAPPROPRIATE MEDICATION

“Probably one third”

WHAT ARE THE MOST HIGH PROFILE MEDICATIONS SUSCEPTIBLE TO PIP?

“PPIs, Benzos, Sleepers, Aspirin, Steroids, and Bisphosphinates would be another one”

DO YOU THINK THAT PIP MAY BE IMPACTING ON THE QUALITY OF LIFE OF YOUR PATIENTS?

“Possibly, yes. Probably, it’s more than likely”

HOW DO YOU DEAL WITH PIP IN YOUR DAY-TO-DAY PRACTICE?

“The best opportunity would be on the three month prescriptions. When we are repeating prescriptions, ideally we would review medications. A lot of this depends on the relationship we have with the pharmacy and whether they highlight issues”

DO YOU HAVE A FORMAL REGULAR REVIEW PROCESS?

“No we don’t have a formal review process, I suppose it’s opportunistic really, it’s the volume and time pressure I suppose it’s not really done”

WOULD THE PHARMACY PROVIDE YOU WITH A MEDICATION REVIEW AT AN INTERVAL ON OCCASIONS?

“No they wouldn’t, but recently they have highlighted areas where we could make a change”

WERE THESE SUGGESTIONS ABOUT OVERALL POLICY CHANGES OR ON AN INDIVIDUAL BASIS?

“On an individual basis, yes. For example saying “this person has been prescribed 40mg of Prozac would you consider reducing it to 20mg?” and that’s helpful.”

DO YOU SEE ANY BENEFITS OR DRAWBACKS FROM AN INTERVENTION LIKE OPTI-SCRIPT?

BOTH THE PRESCRIBED CRITERIA THAT I DISPLAYED AND THE ALGORITHM, EVENTHOUGH IT MAY NOT BE HE MOST ELEGANT WAY, IF SOCRATES COULD BE LINKED UP TO A MEDICATION REVIEW TAB WOULD THAT BE BENEFICIAL?

“Absolutely. If it was all listed in nursing homes specifically, definitely. It’s just the time pressure really. It would have to be easy, not logging into something else separate. It has to be very much linked in with the programme definitely”

HOW CLEAR DO YOU FIND THIS RECOMMENDATION?

“You’re assuming that that’s done on a three monthly basis anyway with your prescriptions, but “in conjunction with the nursing staff and pharmacist” that’s certainly not done at the moment. Whether three monthly is a bit too frequently I don’t know”

WELL WHAT DO YOU THINK?

“Well, “in conjunction with nursing staff and the pharmacist” does that mean sitting down with them and going through *every single* medication [laughs] for 54-58 residents? It’s a big requirement”

SO IF I WAS TO GIVE YOU 5 OPTIONS: COMPLETELY CLEAR; CLEAR; IN THE MIDDLE; UNCLEAR; NOT CLEAR AT ALL, WHAT WOULD YOU CHOOSE?

“In the middle”

DO YOU THINK IT LACKS DETAIL?

“Yeah I think so”

YES,WHAT DOES “IN CONJUNCTION” MEAN? (Rhetorical)

“Yes, we’ve had these issues with nursing homes where HIQA have these guidelines that we’re not supplied with. It’s very hard to find these guidelines anywhere, even from the nursing staff, and some of them are just plucked out of thin air”

WHAT WOULD YOU CHANGE ABOUT THE GUIDELINES?

“I think where the doctor is reviewing the medication, that they review it in their own time and that it doesn’t involve more paperwork and resigning card X’s every three months on every single individual item to prove that you’ve reviewed the medication. If that’s what they require then it is for that reason that I think three months is too frequent, whereas private patients are reviewed on a six month basis”

YOU OBVIOUSLY THINK THREE MONTHS IS TOO FREQUENT DO YOU THINK TWICE A YEAR IS ADEQUATE?

“Yes”

DO YOU THINK THIS RECOMMENDATION IS COMPLIED WITH IN THE NURSINGHOMES WHERE YOU PROVIDE GP SERVICES?

“I don’t think it is to be honest, I think you just get into a routine of printing off three monthly prescriptions, without really looking into every single medication or why they’ve been put on it so there’s definitely room for improvement there, I think the pharmacist is a good resource there to be liaising with”

QUITE OFTEN A REVIEW CAN BE A BUREUACRATIC EXERCISE, SIGNING A BOX, JUST SHOWING THAT A REVIEW HAS BEEN DONE. THE CRITERIA CAN BE DESCRIBED AS VAGUE BY SOME PEOPLE. WHAT IS YOUR OPINION ON THE STANDARD OF “MEDICINES USE REVIEW” THAT OCCURS, WHEN IT DOES OCCUR?

“It’s pretty good, but I think we’re lacking sort of guidelines as well as a nursing home group in general i.e. GPs who look after single patients. It would be helpful to have a set of guidelines for medical prescribing and review of evidence, so that you can have hard evidence, for example are statins indicated in over-85-year-olds. Just having that kind of concrete evidence based review of prescribing. I know the ICGP are trying to set up some sort of nursing home guidelines or a group...”

A GROUP WOULD BE GOOD. IN MY RESEARCH, ACTUALLY IDENTIFYING AND GETTING IN TOUCH WITH PEOPLE WHO WORK WITH THE NURSING HOME SECTOR HAS BEEN QUITE DIFFICULT

IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES DO YOU WORK WITH PHARMACISTS AND NURSING STAFF IN A MULTI-DISCIPLINARY APPROACH TO MUR?

“No not really. The pharmacists contact us occasionally and have been doing so a little bit more”

DOES THE PHARMACIST VISIT THE HOME? THAT IS A HIQA REGULATED HOME I PRESUME

“Yes it is. I don’t know if they visit the home but they would be liaising with them and us as well, I suppose it depends on the relationship you build up with the pharmacists and how long they’ve been there as well. I know they’ve been through a few pharmacists over the years, I know they’ve been with this one for a year, maybe two years, they know us and we know them”

IS IT A LOCAL OPERATOR?

“No and that’s an issue as well.”

IS IT ONE OF THE BIG NURSING HOME SPECIALISTS?

“Possibly yes, from the pharmacist’s end there is vested interest, just from getting the prescriptions and PRN medications, they obviously don’t want to be losing money on it either. I think a multi-disciplinary approach would be more ideal.”

WHAT WOULD YOU CHANGE ABOUT OPTI-SCRIPT FOR A NH SETTING

“Getting the most commonly prescribed medications and seeing if there’s room for discontinuing or reducing doses”

COULD YOU SEE OS FACILITATING REMOTE PATIENT REVIEW

“Absolutely, if it was interlinked with the programme, definitely. It’s just the workload though and there’s not enough initiative there to do it, I mean there’s been 50% cuts in the care of nursing home patients for general practice and that’s a huge issue given the amount of work that’s involved in managing nursing home patients. We’re there Monday Wednesday Friday mornings for an hour and it could be another hour a day just doing prescriptions.”

YOU COULD BE THERE ALL DAY EVERYDAY, THERE’S NO END TO THE WORK.

“Yes, if there was more initiative led by the HS that would prove to be cost effective on their part, it’s a bit like the drugs-repayment scheme that worked well but it’s not there anymore. You were given the initiative to prescribe the lower cost medication, and then you were given money in return to reinvest into the practice”

I SUPPOSE WHAT YOU'RE HINTING AT IS INCENTIVISATION, IT /S THE REAL WORLD I SUPPOSE,
MONEY DOES TALK

DO YOU THINK OS WILL AFFECT STANDARDS OF PRESCRIBING?

“Oh yeah definitely it will improve standards of prescribing, it’s a great concept”

Interview: Dr. #2 09/06/14.

HOW MANY NURSING HOME PATIENTS DO YOU PROVIDE GP SERVICES TO AT THE MOMENT?

“In-patients, there’s about 55 and then flatlets around there’re about 10-15 it depends on the time”

VARIOUS RESEARCH HAS IDENTIFIED PIP AS A PROBLEM IN NURSING HOMES THROUGHOUT IRELAND. HOW PREVALENT DO YOU THINK PIP IS IN IRISH NURSING HOMES CURRENTLY?

“I would estimate that there would have to be a percentage but I don’t know exact figures”

A PERCENTAGE OF PEOPLE THAT MAY BE ON ONE INAPPROPRIATE MEDICATION

“I would hazard a guess at 25%”

DO YOU THINK THAT PIP MAY BE IMPACTING ON THE QUALITY OF LIFE OF YOUR PATIENTS?

“That is a possibility, yes.

HOW DO YOU DEAL WITH PIP IN YOUR DAY-TO-DAY PRACTICE? IT’S SOMETHING THAT OCCURS IN EVERY NURSING HOME ENVIRONMENT; DO YOU HAVE A POLICY IN PLACE TO DEAL WITH IT?

“There are various things. Both myself and my partner have attended various clinical updates in relation to patients in clinical nursing homes, and these medication issues have been highlighted to us so we would be aware to a certain extent of the potential for inappropriate prescribing. That’s one aspect, the other aspect is, with the new HIQA requirements the pharmacists are now contacting us on review of the mediations to highlight PIP”

WHEN YOU SAY THE PHARMACISTS ARE CONTACTING YOU, ARE THEY DOING SO ON A REGULAR BASIS WITH A REGULAR REVIEW, OR ARE THEY CONTACTING YOU INTERMITTENTLY AS ISSUES ARISE?

“It seems to be in the last year only we are getting every three months a list of patients that they have reviewed so that’s happening now on a regular basis”

DO YOU FIND THAT USEFUL?

“I do, it takes time but it’s valuable and it does highlight when we are very busy so it’s good to have someone trawling through”

DO YOU SEE ANY BENEFITS OR DRAWBACKS FROM AN INTERVENTION LIKE OPTI-SCRIPT?

“I can see that it would take time, I think in certain particular groups of drugs it’s particularly relevant, obviously the use of ensets with the elderly, the use of PPIs is another area, we are all probably more aware than we were years ago of the over-use of benzodiazepines, but when I looked through the information that was supplied prior to this interview, the use of alternatives in terms of certain therapies, those aren’t realistic options is what imp saying. In areas where there are realistic options, yes. In other areas I think one has to get pragmatic”

THIS IS AN EXCERPT FROM HIQA GUIDELINES, WHILST NOT COVERING THE BREADTH OF THE GUIDELINES BUT IT DOES PROVIDE A DECENT SUMMARY, **HOW CLEAR DO YOU FIND THIS RECOMMENDATION?**

“I do find it clear, I find though inevitably there is difficulties with it. Because it’s so helpful to have the pharmacists doing the review to highlight the areas. When the initial requirements from HIQA came out they wanted us to sign off on every drug for every patient every few months and the logistics of were just inappropriate, we can’t do it we didn’t have the manpower or the time to do it so I think that’s why we should have a system in place where it doesn’t just fall into the GP’s lap to do it”

WHAT WOULD YOU CHANGE ABOUT THE GUIDELINES? NOW CHANGING GUIDELINES CAN BE CONTENTIOUS BECAUSE YOU CAN HAVE LIGHT TOUCH REGULATION, YOU CAN HAVE VERY REGIMENTED REGULATION, SO WHAT WOULD YOU CHANGE ABOUT IT?

“I think I would highlight that if you’re going to have a regulation like this – and again it may have to be in agreement with the pharmacist who may tell you that they don’t have the time – in an ideal world, every three months, but even if there was a six month recommendation that one would do a full review of the medication and again in conduction with the pharmacist who would have trawled through so that we could discuss the highlighted issues

DO YOU THINK THIS RECOMMENDATION IS COMPLIED WITH IN THE NURSINGHOMES WHERE YOU PROVIDE GP SERVICES

“it’s only coming to the fore in the last year that I see that the highlighted issues have been put in front of me, before that we would have been doing review of medications ourselves on a case by case basis but it wouldn’t have been in a structured way”

WHAT IS YOUR OPINION ON THE STANDARD OF THE MEDICINES USE REVIEW, YOU’VE TALKED ABOUT THE MEDICINES USE REVIEW THAT YOU RECEIVED FROM THE PHARMACY SO WHAT IS YOUR

OPINION OF THE STANDARD OF THOSE AND WHEN I TALK ABOUT “THE STANDARD” I MEAN THEIR QUALITY RATHER THAN THE FACT THAT THEY’RE DONE OR NOT

“I think it’s probably 75-25 if you want me to put it that way. 75% of them are very reasonable things to be raised and highlighted issues that should be there and 25% of them I’ve looked at and thought “no, someone should know better than to ask this question about this patient.””

IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES DO YOU WORK WITH PHARMACISTS AND NURSING STAFF IN A MULTI-DISCIPLINARY APPROACH TO MUR? YOU’VE MENTIONED THAT YOU’VE RECEIVED REVIEWS AND IN THE LAST YEAR INTEGRATION WITH OTHER PROFESSIONALS HAS INCREASED IN DEALING WITH NURSING HOMES. IS THERE MULTI-DISCIPLINARY TEAM MEETINGS? WOULD THAT BE SOMETHING YOU VALUE? DO YOU SEE THERE’S ROAD FOR IT TO PROGRESS OR ROOM FOR IT TO GROW INTO SOMETHING ELSE?

“There are contacts; I wouldn’t say multi-disciplinary team meetings because that suggests we all sit down in a room. We have had meetings with pharmacists. What happens in more recent times is that our nurse practitioners are in contact with the pharmacy that provides services here because there are often problems in terms of demanding for the repeat prescriptions and they’ve already been *done* and collection of the scripts, so there are definite problems. It’s not always straight forward so there definite contact all the time about those issues”

SO WITH THAT CONTACT – YOU ARE TALKING ABOUT PRESCRIPTIONS – SO A LOT OF PRESCRIPTION PROBLEMS COME DOWN TO A CLERICAL ISSUE AS OPPOSED TO A CLINICAL ISSUE

“When you’re talking about the clinical issues the contact has been in the form of this review the pharmacist has been doing, it has been given to me, and it has facilitated me to review the medications and make changes where I feel they are appropriate. So it is useful definitely.”

THE WAY YOU’RE DESCRIBING IT IT’S BETTER THAN IT WAS BEFORE AND IT MIGHT BE ON A TRAJECTORY FOR IMPROVEMENTS

“Yes. There’s *definitely* even bigger room for improvement that I see in this area. I’ve been agitating for a good while to have a specialist in medicine for the elderly who would come to the nursing home and do a review of the patients and medications and I reckon there are huge amounts of savings and more appropriate prescribing could be done in that guise where you have a qualified physician who’s are of speciality is the elderly. The GP has a certain amount of specialisation in that

area but not enough and are also under too much pressure, there's only one geriatrician I know of who does that service, and that where I think we really need to be moving forward"

SO WHAT YOU THINK IS THERE'S A GAP THERE OF KNOWLEDGE?

"It mightn't even be knowledge for most GPs what it is time. There are a huge amount of problems with time, managing the services all over the community and this is one sub-section of your practice"

WHAT IM GETTING AT IS HOSPITAL ADMISSIONS, THAT IF THAT PERSON COMES TO THE NURSING HOME WHICH IS A QUASI-HOSPITAL ATMOSPHERE THEN THERES HUGE POTENTIAL FOR PREVENTING HOSPITAL ADMISSION

"There's huge potential and when somebody has reached the stage where they need nursing home care, they've frequently had multiple hospital admissions and they're frequently on a long list of medications some of which lose their relevance once they enter into the nursing home situation and it's not appropriate to have them. So it mightn't be totally from a safety point of view in terms of PIP, there can be other reasons why the medication needs review and where it may not be needed"

I SUPPOSE YOU'RE DIGRESSING A LITTLE BIT BUT, WHEN YOU HAVE A NURSING HOME PATIENT THAT HAS TO BE ADMITTED TO HOSPITAL, A CERTAIN PROPORTION OF THOSE ADMISSIONS, THEY MUST BE REGRETTABLE THAT YOU'RE HAVING TO SEND THAT PERSON TO HOSPITAL FOR THAT REASON, WHEN, AS YOU SAY, SOMEONE LIKE [the geriatrician] COULD OFFSET A LOT OF THAT

" absolutely, I really feel that if we had somebody that was dedicated to that role, and they obviously could travel around to all the different nursing homes in a given area, they could provide consult and advice and I reckon you would be able to cut quite a number of these medications and you would have the back-up of having a consultant-led service so that families get insecure if the GP comes in and says well half those medications aren't needed it's a little bit different if the consultant says they've done a full review of the patient. So it is back-up for us, yes."

WHAT WOULD YOU CHANGE ABOUT OPTI-SCRIPT FOR A NH SETTING

"As you say it was a brief display and it was just my impression from having looked through the information given that I probably would focus on areas that I felt were realistic alternatives to the medication prescribed where you talk about those "alternatives", so maybe more limitations?"

SO YOU FEEL COGNITIVE BEHAVIOURAL THERAPY IS A BIT OF A COP-OUT?

“Well it is a bit really if we’re being truthful.”

COULD YOU SEE OS FACILITATING REMOTE PATIENT REVIEW? SO OBVIOUSLY IN A PERFECT WORLD, YOU’D HAVE MULTI-DISCIPLINARY TEAM MEETINGS EVERYONE WOULD GET TOGETHER AROUND ALL THE PATIENT INFORMATION BUT THAT’S NOT PRAGMATIC. SO IF HYPOTHETICALLY WHAT YOU SAY TODAY WAS A PHARMACIST WHO HAD REVIEWED YOUR PATIENTS AND SENT YOU A WORK FLOW TO REVIEW, DO YOU THINK THAT WOULD BE OF BENEFIT?

“Yes, because that’s what in essence is kind of happening and it’s a very recent development, I do, I see that working, that somebody is looking through the medications and saying: “possibly this is inappropriate, or maybe it’s not”, you know, just highlighting it”

SO DO YOU THINK USING OS, OR ANOTHER SET OF EXPLICIT STANDARDS, WOULD AFFECT STANDARDS OF PRESCRIBING?

“I think it would help, it’s just a question of do you say every three months or every six months, and it’s just a question of when those sheets end up in front of me that its going to take time to review those patients and therefore it’s a question of funding and time.”

WE TOUCHED ON INCENTIVISATION WITH YOUR COLLEAGUE. THAT WAS QUITE AN INTERESTING CHAT; DO YOU THINK THAT IS SOMETHING THAT HAS TO HAPPEN?

“Without a shadow of a doubt. I mean you’re probably aware that our fees for nursing home patients have been cut by 50% in the last couple of years, and that’s a huge drop. It’s really very difficult to provide service, we go into that nursing home three times a week, and we do a round in the mornings. “

ON THE RECORD, BECAUSE I’M NOT TOO FAMILIAR WITH THE GP REIMBURSEMENT SYSTEM, DO YOU GET PAID ANYMORE FOR A NURSING HOME PATIENT AS OPPOSED TO A REGULAR PATIENT?

“You do but it was significantly higher it was if the order, and again imp quoting very rough figures, of around 500 euro per year per patient and that was cut in half.”

THAT’S NOT A LOT REALLY FOR THE WORK THAT GOES IN

“Actually I may have to correct myself it was closer to 1000 euro and now it’s 500. Either way it’s not a huge amount of money for the number of contact we have with the patients in the nursing home. I definitely think we could be incentivised to provide better standards of care given time and money and services available and support from consultant colleagues.”

Interview Dr #3

HOW MANY NURSING HOME PATIENTS DO YOU PROVIDE GP SERVICES TO AT THE MOMENT?

Potentially Inappropriate Prescribing (PIP) can be defined as the use or omission of medication(s) when the risk of doing so outweighs the potential benefits. It refers to any scenario where a patient will be potentially better off on more, less or different medication

“Over 300, one large centre and some off site centres”

VARIOUS RESEARCH HAS IDENTIFIED PIP AS A PROBLEM IN NURSING HOMES THROUGHOUT IRELAND. HOW PREVALENT DO YOU THINK PIP IS IN IRISH NURSING HOMES CURRENTLY

“I’d say very prevalent. I’d say 50%”

DO YOU THINK THAT PIP MAY BE IMPACTING ON THE QUALITY OF LIFE OF YOUR PATIENTS?

“Yes, I suppose they’re patients with co-morbidity, who polypharmacies defined as more than five medications. It would be pretty unusual that you’d have a nursing home resident on less than five, so I guess in terms of their overall general health, their mental health, I think it’s lots of different ways: their memory, cognition, and balance”

WHAT CLASSES OF MEDICATION CONCERN YOU THE MOST?

“Benzos, PINs, medications for bladder and hypertensives those type of things. And I suppose diabetic medication, older populations they can be quite prone to hyperglycaemic events and hypertension has been over-treated where their postero-hypertension falls”

HOW DO YOU DEAL WITH PIP IN YOUR DAY-TO-DAY PRACTICE?

“We would do a three monthly review of all of our patients, we’ve designed a tool that we’ve used for that and a large part of it is medication review. The PPIs are a big thing because it’s easy to get people prescribed and they’re put on a treatment dose and then you review the medications and realise that they’re still on it. That’s what we would do and the MURs are done by the pharmacy, so they would list the medications as things we might need to be aware of, sometimes as GPs you might not be as aware of interactions between medications, and then the pharmacist would make a

suggestion and then we would have to sign off on that; whether we had done anything different we would document that on the chart”

SO YOU’RE SAYING YOU DO A GENERAL REVIEW EVERY THREE MONTHS?

“We do a general review every three months but the medications review is part of that”

DO YOU INCORPORATE THE PHARMACIST’S MUR INTO THAT?

“It sometimes works and sometimes doesn’t work, it’s sometimes hard to sync it up but it would be optimal if you could sync it up”

WOULD YOU SAY THEYRE HAPPENING REMOTELY ALMOST? YOU KNOW, THEY’RE HAPPENING SEPARATELY TO YOU?

“Yes, most of the time”

DO YOU SEE ANY BENEFITS OR DRAWBACKS FROM AN INTERVENTION LIKE OPTI-SCRIPT?

“I would see benefits of it in terms of it’s been very clear that there are very clear alternatives, pharmacological and non-pharmacological, the drawback that I would see is that certainly the nursing home I look after, with those residents, everything is paper based, so it’s potentially time consuming when you’re under a lot of time pressure. That would be the pros and cons”

HIQA recommends the following regime for regular medication review: “Each resident on long-term medication is reviewed by his/her medical practitioner at least on a three-monthly basis, in conjunction with nursing staff and the pharmacist”

HOW CLEAR DO YOU FIND THIS RECOMMENDATION?

“I think it’s clear that that’s what recommended, in my practice it’s done in conjunction with nursing staff. Often those MURs do tend to happen separately. Its vague in the sense that it leaves it open to someone just charting medication reviews”

DO YOU THINK YOURSELF OR NURSING HOME PATIENTS WOULD BENEFIT FROM MORE RIGOUROUS ELABORATION ON THAT? BECAUSE IT DOESNT GO INTO MUCH MORE DEPTH THAN THAT. IF THERE WAS MORE CRITERIA LAYED DOWN IN TERMS OF MEDICATION, NOT NECESSARILY HOW OFTEN IT SHOULD BE DONE, MORE *WHAT* SHOULD BE DONE. NOBODY LIKES MORE REGULATION I SUPPOSE.

“Yes, I suppose that’s the difficulty. I think it probably leaves it open a bit maybe. What we do is we would visit one of the large nursing homes every day and it’s done between myself and one of the other GPs here, so the patients would be seen very regularly, so you might be reviewing medication randomly if something happens. I think it’s difficult to know in terms of how much more regulation-like would increased clarity in this do anything to benefit the patient? I think that’s always the thing with HIQA guidelines that sometimes they don’t necessarily change or improve the quality of life of the patient but it kind of leaves more form filling and box ticking for the medical professional”

What would you change about the guideline (if applicable)?

“Well every patient in a nursing home is on long term medication anyway, I mean I’m not sure if there is a huge amount I would change about it”

DO YOU THINK THIS RECOMMENDATION IS COMPLIED WITH IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES

“Yes”

WHAT IS YOUR OPINION ON THE STANDARD OF THE MEDICINES USE REVIEW, NOT NECESSARILY HOW OFTEN IT’S BEING DONE BUT THE STANDARD IT ACHIEVES WHEN IT IS DONE?

“I think it can be very useful. With those medications that I mentioned, I think you may have optimised the medication that somebody is on three months previously so there’s not a huge amount that you would necessarily be changing in the next three months so I think the standard that we provide is good, whether or not it needs to be done on a three monthly basis is always questionable. I do think that the MURs done by the pharmacist, I find, are very helpful because sometimes you might not necessarily be aware of interactions. You know if you’re hand writing prescribing things, if its new medication you’ll always check it, but you may not have as you do with the computer system here, where it’ll flag up, so sometimes I think that’s certainly very helpful”

IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES DO YOU WORK WITH PHARMACISTS AND NURSING STAFF IN A MULTI-DISCIPLINARY APPROACH TO MUR?

“Not so much and it is something that we have looked at trying to see if we could sort of standardise our three month review but I suppose the difficulty is that the pharmacists are making their visits and it’s a large amount of people to do. So often MUR may have been: gone through with the nurse, gone through a cardex with the pharmacist and then left for us to look at then when we’re seeing the patients the next time”

SO I SUPPOSE THAT’S IN A WAY THE MULTI-DISCIPLINARY COURSE BECAUSE YOU’VE GOT THE NURSE IN COMMON LINK

“Yes”

WHAT WOULD YOU CHANGE ABOUT OPTI-SCRIPT FOR A NH SETTING?

“No, not on what I’ve seen so far because the index of medications you’ve given is the most commonly prescribed and that people are on more long term as well, especially when you’re dealing with patients with cognitive impairment and those type of problems”

COULD YOU SEE OS FACILITATING REMOTE PATIENT REVIEW, AND A BETTER STANDARD OF MDT MEDICINES USE REVIEW? BECAUSE YOU’D ALL BE WORKING OFF THE SAME SOFTWARE.

“Yes, certainly it could”

COULD YOU SEE IT HAVING A TIME BENEFIT? I KNOW I’M LEADING HERE A BIT SO FEEL FREE TO ANSWER AS YOU WISH

“It’s difficult. I think what has probably changed, well not so much for me, but for the GPs looking after nursing homes in the past it was a lot of fire-fighting type care where –

-WHERE YOU WERE DEALING WITH ONE PROBLEM AT A TIME?

“Yes, and where maybe it was done before surgery or at lunchtime, whereas because things are much more scheduled in terms of visits, (nurses know when the doctor is coming and it’s all very organised) it’s difficult because you’re often coming from nursing homes straight into a practice based afternoon or morning surgery, so I think it’s good in the sense of everybody working with the same tool as such. As to whether or not it would save time I’m not too sure. Maybe in the early
120

stage, like a lot of these things, it might create more work and then as people get more familiar with it, it would get quite seamless”

I’D SAY THE REAL TEST IS IF YOU OFFERED TO TAKE IT AWAY FOR A PERIOD OF TIME, WOULD PEOPLE SAY: “OH NO LEAVE IT,”

“Yes”

DO YOU THINK USING OS WOULD AFFECT THE STANDARD OF PRESCRIBING?

“I think so, even if I said I’m not sure I would change anything about this, it is vague and it does leave it open to “medication reviewed” and “no changes to medication” whereas if you’ve something that is very rigid in the sense if something done/something not done –

YOU’D END UP IGNORING IT

“Yes.”

Dr#4

HOW MANY NURSING HOME PATIENTS DO YOU PROVIDE GP SERVICES TO AT THE MOMENT?

“Approximately 30 patients in one nursing home, I would see them on a weekly basis”

Potentially Inappropriate Prescribing (PIP) can be defined as the use or omission of medication(s) when the risk of doing so outweighs the potential benefits. It refers to any scenario where a patient will be potentially better off on more, less or different medication

VARIOUS RESEARCH HAS IDENTIFIED PIP AS A PROBLEM IN NURSING HOMES THROUGHOUT IRELAND. HOW PREVALENT DO YOU THINK PIP IS IN IRISH NURSING HOMES CURRENTLY?

“well I would my own nursing home best, and as I think Fiona mentioned, think some pharmacy looks after her nursing as does my one, so we have a set system in place where there is a three monthly MUR run by the pharmacist and that’s in conjunction with the GP – “

-WE ARE GOING TO GET ONTO THE REVIEW THING SHORTLY BUT JUST IN YOUR OWN EXPERIENCE HOW PREVELENT DO YOU THINK IT IS? YOU CAN PUT A FIGURE ON IT OR JUST SPEAK FREELY, HOW MANY PATIENTS DO YOU THINK ARE ON ONE INAPPROPRIATE MEDICATION?

“I wouldn’t know as a percentage. From what you’re saying there’s obviously no structure in place nationally for regular reviews”

DO YOU THINK IT’S A PROBLEM

“Well it must be if you’re doing this project here, I don’t know what the stats would be but I think with polypharmacy unless there’s a set system in place to review it regularly, it is going to happen, but I wouldn’t know what percentage”

DO YOU THINK THAT PIP MAY BE IMPACTING ON THE QUALITY OF LIFE OF YOUR PATIENTS? WHEN I SAY QUALITY OF LIFE THAT CAN MEAN HOSPITAL ADMISSIONS ETC

“Absolutely, you know if you have a tight system in place it’s going to curb that but it’s not if you don’t have a system: side-effect interactions, yes”

HOW DO YOU DEAL WITH PIP IN YOUR DAY-TO-DAY PRACTICE? WE WILL TALK ABOUT THE MURs THAT YOU'VE MENTIONED NEXT

"We have patients that transfer to hospital occasionally, so I would do a medications use review when they return from acute admission: look at what they were on before, what's been initiated, if there are any interactions. So that's something like you'd see in GP like with discharge summaries from hospitals, often it's not clear on discharge summaries from hospitals what medication has been stopped"

OK THAT SEEMS TO BE A BIG PROBLEM

"Yes, it's huge. "

SO YOU THINK COMMUNICATION WITH HOSPITALS IS –

"Yes, it goes back to seeing an elderly patient this morning who himself was not familiar with the medication and then I'm not clear because I have a poor discharge summary as to what the patient is taking"

JUST FOR THE RECORD DO YOU GET TYPED DISCHARGE SUMMARIES?

"From our local hospitals they would be typed but from one of hours they are written."

WHAT SORT OF TIME FRAME DO THEY ARRIVE IN?

"The time frame is fine but the quality of it is poor"

DO YOU SEE ANY BENEFITS OR DRAWBACKS FROM AN INTERVENTION LIKE OPTI-SCRIPT?

"No I think it's a good thing it's well structured, there's a protocol, so that seems to be an improvement on the system I have in place"

DO YOU ACCEPT THAT STEP-WISE APPROACH YOU DONT FEEL YOU'RE BEING DICTATED?

"No I think it's good to have guidelines and a system in place, it's a failsafe"

I FEEL IT'S A GOOD CONDENSING OF GUIDELINES

“Yes I agree”

HIQA recommends the following regime for regular medication review

“Each resident on long-term medication is reviewed by his/her medical practitioner at least on a three-monthly basis, in conjunction with nursing staff and the pharmacist”

HOW CLEAR DO YOU FIND THIS RECOMMENDATION?

“Give or take I think its goal is clear. Does that mean all three people sitting down together or each person doing separate reviews and come together I suppose as long as the same goal is reached”

What would you change about the guideline (if applicable)?

“I think in an ideal situation I think everybody would sit down together I think that very hard to implement”

IT’S DIFFICULT TO GET EVERY ONE TOGETHER IN ONE PLACE AT ONE TIME

“I mean if the nurse is in the home that's fine but it's hard to get the GP and the pharmacist together”

AND THERE WOULD BE NO LIMIT ON TIME YOU CAN SPEND REVIEWING A PATIENT YOU COULD REVIEW ONE INFINITESIMALLY

“The first review is always the longest and you have admission, so subsequent reviews are actually pretty quick and you're not going to have much adjustment in three months”

DO YOU THINK THIS RECOMMENDATION IS COMPLIED WITH IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES?

“Yes it is three monthly, now we don't sit down with the pharmacist, but I would be handed 30 MURs and I would go through it with the nurse and would implement or not implement”

SO WE ARE TALKING ABOUT THE REVIEWS, HOW DO YOU FEEL ABOUT THEIR STANDARD WHEN THEY HAPPEN?

“I think the Opti-Script is an improvement on the system that we would have in place at the moment which is hand-written review, it’d be a bit simpler”

SO YOU’VE GOT A ROBUST PROCESS THAT YOU GO THROUGH HERE EVEN IF ITS A PAPER BASED PROCESS THAT YOU GO THROUGH TO REVIEW PATIENTS IS THAT WHAT YOU ARE SAYING?

“So per patient there would be one A4 sheet with a list of the drugs and then the pharmacy recommendations about interactions, or should it be stopped, or querying why the patient is on this and if I had a bit more information then, I would explain why they are on it over why it should be stopped and the outcome. Fundamentally we’ve got a system but the OS would be better”

IN THE NURSING HOMES WHERE YOU PROVIDE GP SERVICES DO YOU WORK WITH PHARMACISTS AND NURSING STAFF IN A MULTI-DISCIPLINARY APPROACH TO MUR? WOULD YOU SEE A BENEFIT FROM MORE INTEGRATION?

“No I think the system we have in place works well”

WHAT WOULD YOU CHANGE ABOUT OPTI-SCRIPT FOR A NH SETTING? DO YOU THINK FROM YOUR NH EXPERIENCE THERE ARE CONTENTIOUS OR PERTINENT THINGS THAT SHOULD BE INCORPORATED INTO PRESCRIBING CRITERIA FOR A NH SETTING?

“Some of the suggestions the pharmacists would make wouldn’t make sense because they didn’t have the clinical background information on the patient, and having known that ahead they probably wouldn’t have made those suggestions, so I don’t know should the GP then be reviewing pre-pharmacy – “

SPEAKING FROM MY OWN EXPERIENCE I THINK THAT’S OK, THAT’S YOUR BENEFIT AND YOUR PEROGATIVE AS SOMEONE WITH THE CLINICAL INSIGHT. PHARMACISTS LOOK AT IT FROM A VERY MEDICATION-FOCUSED PERSPECTIVE AND THAT’S THE BENEFIT THEY PROVIDE

COULD YOU SEE OS FACILITATING REMOTE PATIENT REVIEW, IF SOMETHING WEB-BASED, SECURE ENOUGH TO HOLD PATIENT INFORMATION, WHERE GP AND PHARMACISTS COULD BE WORKING OFF THE SAME DATA SET, DO YOU THINK THAT WOULD BE BENEFICIAL?

“They have a software system in place in the NH so going forward we will be uploading medical notes on their software so this system could sit on top of that. The NH itself is EpiCare I think is the software programme so from my point of view it’s easier to do nursing home work while I’m in the nursing home rather than coming back here and trying to fit it in between practice and patients. We’ll be moving to their EpiCare software system then, it makes sense to do it there.”

I SUPPOSE THE BENEFIT WOULD BE IF THAT WAS IMPLEMENTED ON OS THEN YOU’D HAVE A PHARACIST IDENTIFYING THE PIPs BY THE OS CRITERIA THAT WOULD BE UPLOADED THEN YOU COULD PULL IT DOWN, REVIEW IT, PUT IN YOUR REASONS FOR CHANGING IT OR NOT CHANGING IT THEN YOU WOULD NEVER HAVE TO MEET

“I think the only barrier would be if the OS is time-consuming to use, it’s quick enough to go through the manual sheets at the moment but I presume if you are familiar with the system it’d be quick enough, because workload would be a concern, but if it’s efficient to use- “

SO WE’D HAVE TO PROVE IT WOULD BE TIME SAVING?

“Yes, that’s a big barrier: time.”

IF THOSE STANDARDS WE LOOKED AT WERE IMPLEMENTED, DO YOU THINK USING OS WOULD AFFECT THE STANDARD OF PRESCRIBING POSITIVELY OR NEGATIVELY?

“Oh positively yes, I think it would raise the standard of prescribing.”

Appendix XI Pharmacist Information Sheet & Consent Form

Potentially Inappropriate Prescribing and Medicines Use Review in Irish Nursing Homes

INFORMATION SHEET & CONSENT FORM FOR ONLINE QUESTIONNAIRE

THIS QUESTIONNAIRE IS INTENDED FOR PHARMACISTS WHO PROVIDE SERVICES CONTRACTED OR OTHERWISE TO NURSING HOMES IN IRELAND

BACKGROUND

Potentially inappropriate Prescribing (PIP) has been identified as a problem in nursing homes in Ireland. The Centre for Primary Care Research at the RCSI has developed and piloted a multi-faceted intervention to address PIP in primary care called the OPTI-SCRIPT intervention. It involves:

1. Academic detailing by a pharmacist with the relevant prescriber
2. Medicines Review with web-based treatment algorithms
3. Patient information leaflets tailored to provide specific information for each PIP

The aim of this dissertation is to examine how PIP is currently being dealt with in nursing homes to find out if an intervention like OPTI-SCRIPT would be acceptable to nursing home directors and prescribers.

WHAT HAPPENS AFTER I HAVE AGREED TO COMPLETE A QUESTIONNAIRE?

After reading the information sheet and survey consent form you can choose whether to commence the questionnaire or not. You can feel free to withdraw from the questionnaire at any point or omit any questions you like. The questionnaire is completely voluntary.

DECLARATIONS OF CONFLICTS OF INTEREST

No conflicts of interest have been identified for this study. The primary researcher is a pharmacist pursuing a post-graduate MSc in Health Informatics.

HOW LONG IS THE QUESTIONNAIRE LIKELY TO TAKE?

The questionnaire should take no longer than 5-minutes of your time.

WHAT IF I HAVE ANY QUESTIONS ON THE QUESTIONNAIRE OR THE TOPICS DISCUSSED?

Any participant can feel free to contact Patrick Lehane at lehanepa@tcd.ie with any questions

TITLE OF RESEARCH PROJECT

Could Irish Nursing Homes avoid sub-optimal prescribing by utilising the OPTI-SCRIPT intervention?

PROCEDURES OF THIS STUDY

The study includes a brief questionnaire to pharmacists working with or in the Irish nursing home sector. Pharmaceutical Society of Ireland has kindly provided the e-mails of superintendent pharmacists. The questionnaire seeks to learn about potentially inappropriate prescribing and medicine use review in the nursing home sector. This information will help determine if OPTI-SCRIPT can help increase prescribing standards in nursing homes. More information on OPTI-SCRIPT can be found here <http://www.hrbcentreprimarycare.ie/?q=Optiscript>

The survey is anonymous and confidential. Individual results will be aggregated anonymously and research reported on aggregate results.

The Research Ethics Committee of the School of Computer Science and Statistics at Trinity College Dublin has approved this study.

DECLARATION

By completing and returning this survey you are agreeing to the following:

- I am 18 years or older and am competent to provide consent
- I am working as a pharmacist in Ireland
- I understand that I have been invited to participate in an internet based survey
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity
- I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights
- I understand that I may refuse to answer any question and that I may withdraw at any time
- I understand that my participation is fully anonymous and that no personal details about me will be recorded
- I understand that if I make illicit activities known, these will be reported to appropriate authorities
- I have read and I understand this consent form. I understand the description of the research that has been provided to me. I have opportunity to ask questions via email

PLEASE DO NOT NAME THIRD PARTIES IN ANY OPEN TEXT FIELD OF THE QUESTIONNAIRE. ANY SUCH REPLIES WILL BE ANONYMISED

Thank you for reading this far, the questionnaire will begin on the next page

Next

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