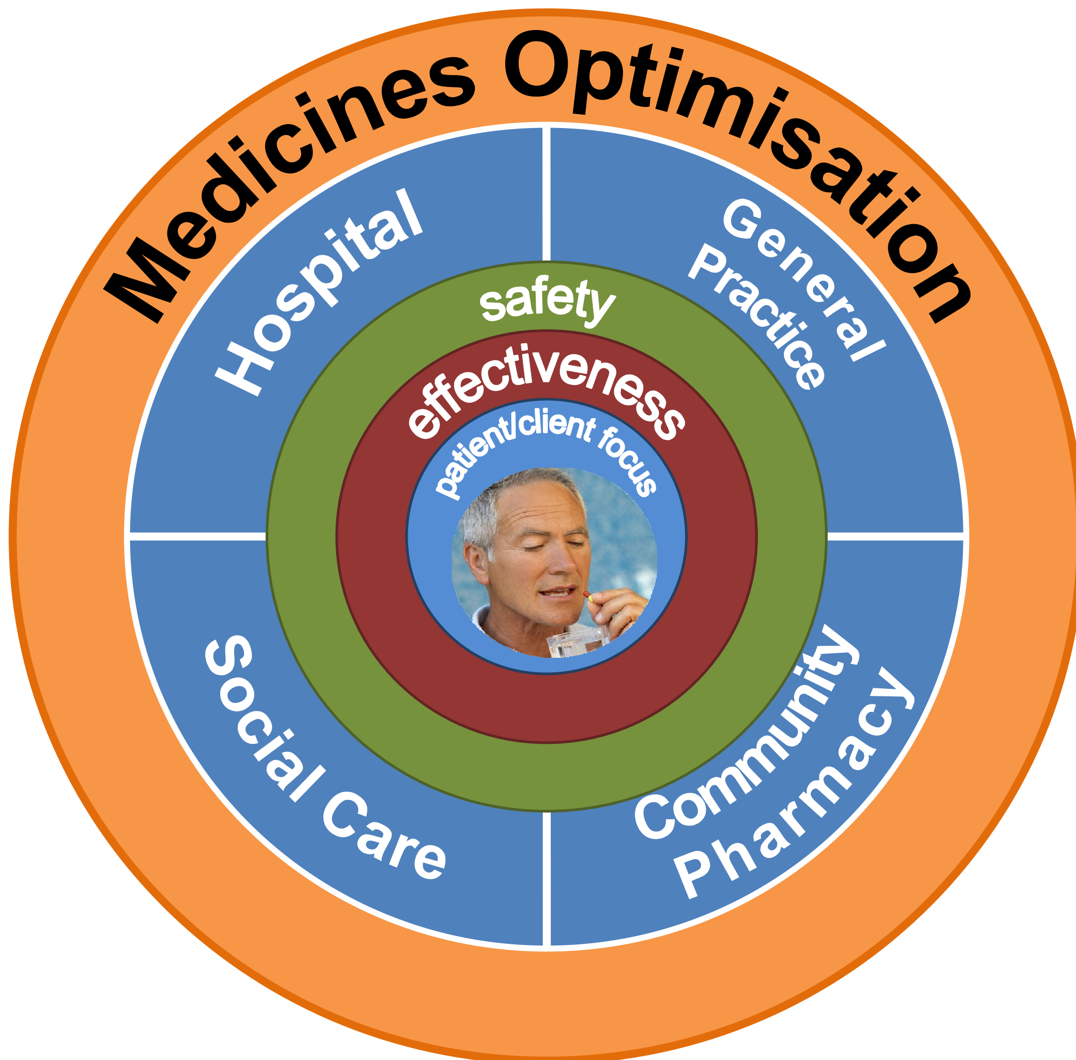
Department of
Health, Social Services and Public Safety
www.dhsspsni.gov.uk

MEDICINES OPTIMISATION QUALITY FRAMEWORK



May 2015

Medicines Optimisation Quality Framework	
Table of Contents	Page(s)

FOREWORD – Minister for Health, Social Services and Public Safety	3-4
INTRODUCTION – Chief Medical Officer and Chief Pharmaceutical Officer	5-8
SECTION 1 – Medicines Management in NI 2000-2014	9-16
SECTION 2 – Moving to Medicines Optimisation – key challenges to address	17-33
SECTION 3 –NI Medicines Optimisation Model	34-42
SECTION 4 – Quality Standards for Medicines Optimisation	43-85
SECTION 5 – Supporting Continuous Improvement and Innovation	86-88
SECTION 6 – Plans for Implementation	89-90

FOREWORD - Minister for Health, Social Services and Public Safety

As Minister for Health, Social Services and Public Safety, my mission is to improve the health and well-being of all people of Northern Ireland. Whilst healthier lifestyle choices may be all that is required for some people to maintain health, most will need medicines at some stage to treat or prevent illness.

Medicines are the most common medical intervention used in the health service with an annual expenditure of over £550m. In comparison with other UK countries the volume and cost of medicines used per head of population in Northern Ireland is high and with an aging population and a rising number of people with long term conditions, demand is expected to increase.

Unfortunately evidence shows variance in best practices relating to the appropriate, safe and effective use medicines and many people do not take their medicines as prescribed resulting in sub optimal health outcomes, wasted medicines and pressure on acute health and social care services.

The Medicines Optimisation Quality Framework aims to support better health outcomes for our population through the consistent delivery of best practice relating to the use of medicines.

Much has been done in recent years to improve the way medicines are used and Northern Ireland is recognised as one of the leading regions in Europe in addressing the health and social care needs of the older population through innovation in medicines management. However, more action is needed to gain optimal outcomes from medicines and provide a sustainable approach to clinical and cost-effectiveness whilst reducing avoidable adverse events and waste.

The Framework provides a focus on quality improvement through the consistent delivery of recognised best practice and supports the development and implementation of new evidence based best practice.

Everyone has a responsibility to improve medicines use and patients need to become more involved in decisions about their treatment and better informed about the role of medicines in their care.

The Framework promotes multidisciplinary working and recognises the role of pharmacists in integrated teams within primary and secondary care. I welcome this and would like to see an increased utilisation of pharmacists' clinical skills working collaboratively with other health and social care professionals optimising patients' medicines use.

The development of the Framework has been an inclusive process, overseen by a multi-disciplinary and multi-agency Steering Group established by the Department of Health, Social Services and Public Safety. Members of the Steering group included representatives from the Health and Social Care Board, Public Health Agency, Business Services Organisation, Royal College of General Practitioners, the Pharmaceutical Industry, Community and Hospital Pharmacy, Nursing, Social Care, Patient Client Council, RQIA, Local Commissioning Groups, and the Community Development Health Network.

I wish to thank the contribution made by all those individuals involved in its development. It establishes a solid foundation from which the application of good practice and continuous improvement and innovation in medicines use will ensure the best outcomes for the citizens of Northern Ireland.

SIMON HAMILTON MLA

Minister for Health, Social Services and Public Safety

JOINT INTRODUCTION

CHIEF MEDICAL OFFICER AND CHIEF PHARMACEUTICAL OFFICER

1. Whilst many people maintain their health without using medicines, for others, medicines play an important role in maintaining wellbeing, preventing illness and curing disease.

2. **Medicines optimisation** is an approach that seeks to maximise beneficial health outcomes and minimise the risk of harm from medicines use.

3. Historically within health policy, the term **Medicines Management**[1] has been used to describe a range of practices relating to the 'five rights' of handling medicines to reduce risk, focussing mainly on processes rather than health outcomes and often for specific patient groups and settings rather than for all patients.

The Five Rights of Medicines Administration[2]
1. The Right Patient
2. The Right Medication
3. The Right Dose
4. The Right Time and Frequency of Administration
5. The Right Route

4. **Medicines Optimisation** seeks to build on robust medicines management to deliver health benefits for patients through the evidence based use of medicines, patient involvement and inter-professional collaboration. It introduces two additional 'rights' to medicines management practice namely – the **Right Outcome** for the patient and the **Right Cost** for the Health and Social Care Service (HSC)**.**

[1] Medicines management has been defined as "encompassing the entire way that medicines are selected, procured, delivered, prescribed, administered and reviewed to optimise the contribution that medicines make to producing informed and desired outcomes of patient care.

[2] Jones and Bartlett, Nurse's Drug Handbook, 2009

5. **The Northern Ireland Medicines Optimisation Quality Framework** has been developed to provide a regional model for medicines optimisation supported by quality standards, best practices, outcome measures and innovation focus for the benefit of all people receiving care within the HSC.

6. The Framework complements existing policies, quality standards and Transforming Your Care principles and is specifically aligned with the Quality 2020 strategic themes of safety, effectiveness and patient/client experience.

7. Medicines are the most commonly used healthcare intervention within health and social care and the Framework is being compiled now in anticipation of the increasing demands of:

   (i) an ageing population;

   (ii) advances in medicines and technology;

   (iii) in recognition of a growing evidence base; and,

   (iv) the need for consistent delivery of best practices and cost effective medicines management.

8. The Framework is primarily aimed at Commissioners and health and social care professionals and is underpinned by existing HSC responsibilities for ensuring the efficient use of resources and facilitating integration, setting expectations for the consistent delivery of best practices in all sectors.

9. It will promote a common understanding for providers, patients, their families and carers[3] of what is expected when medicines are included in an individual's treatment in primary and secondary care.

10. It will help to provide a focus on patient support to achieve improved medicines related outcomes and adherence. It will also support collaboration between health and social care professionals.

[3] Throughout the Framework, when patients are referred to, this also relates to their families and carers

Aim

11. The overall aim of the Medicines Optimisation Quality Framework is to support better health and wellbeing for all people in Northern Ireland through improvements in the appropriate, safe and effective use of medicines.

Objectives

12. The objectives of the Medicines Optimisation Quality Framework are to support:

    - Better health outcomes for individuals through the appropriate use of medicines, taken as prescribed.
    - Better informed patients who are engaged and involved in decisions about their medicines.
    - Improved medicines safety at transitions of care.
    - An active medicines safety culture within health and social care organisations.
    - Reduced variance in medicines use through the consistent delivery of medicines management best practices.
    - Improved intra and inter professional collaboration and a HSC workforce who recognise their role in medicines optimisation and deliver it as part of routine practice.
    - Better use of resources through the consistent, evidence based and cost effective prescribing of medicines.
    - A strategic focus for continuous improvement and innovation in the development and implementation of best practice related to medicines use.

Guide to the Document

13. The Framework applies to all citizens in Northern Ireland. It supports a patient-centred approach where patients are active partners in decisions regarding their treatment and are supported by multidisciplinary professionals

working collaboratively to meet their needs. Active involvement will result in better informed patients with control and responsibility for their medicines use to help achieve optimal health outcomes.

14. The Framework has three components.

- A **Regional Medicines Optimisation Model** which outlines what should be done at each stage of the patient journey to help gain the best outcomes from medicines.
- **Quality standards**[4] which describe what patients can expect when medicines are included as part of their treatment. These standards will identify:
    - what best practice should be delivered and any gaps in best practice which need to be addressed; and
    - recommendations for change.
- **A regional medicines innovation plan** to support the sustainable delivery of the quality standards which identifies the priority areas for research and service development required to address the gaps in best practice in medicines optimisation over a five year period 2015-2020.

Dr Michael McBride
Chief Medical Officer

Dr Mark Timoney
Chief Pharmaceutical Officer

[4] ***Standards*** reflect the agreed way of doing something. Standards, used correctly, will bring about a common understanding about what providers and users of services, goods and establishments can realistically expect to provide and receive. Standards will, as the "agreed" way of doing things, have an authority which may be enforceable (by legislation and regulation) or accepted without being technically enforceable due to the weight of the expertise used in developing them. When we think of words similar to standard we are reminded of uniformity, cohesion, specification and reliability.

Section 1

MEDICINES MANAGEMENT IN NORTHERN IRELAND 2000 - 2014

1. Medicines are the most common medical intervention within our population and at any one time 70% of the population[5] is taking prescribed or over the counter medicines to treat or prevent ill-health.

2. From a financial aspect, HSC medicines expenditure equates to £550m/annum in Northern Ireland, representing 14% of the total HSC budget and is the second largest cost after salaries. This does not take into account private transactions.

3. Social deprivation is linked with health and social care needs and levels of need for medicines. In comparison with other UK countries the volume and cost of medicines used per head of population in Northern Ireland is historically high, as detailed in Figures 1 and 2 and Table 1.

Number of items prescribed per head of population in the UK from 2007-2013

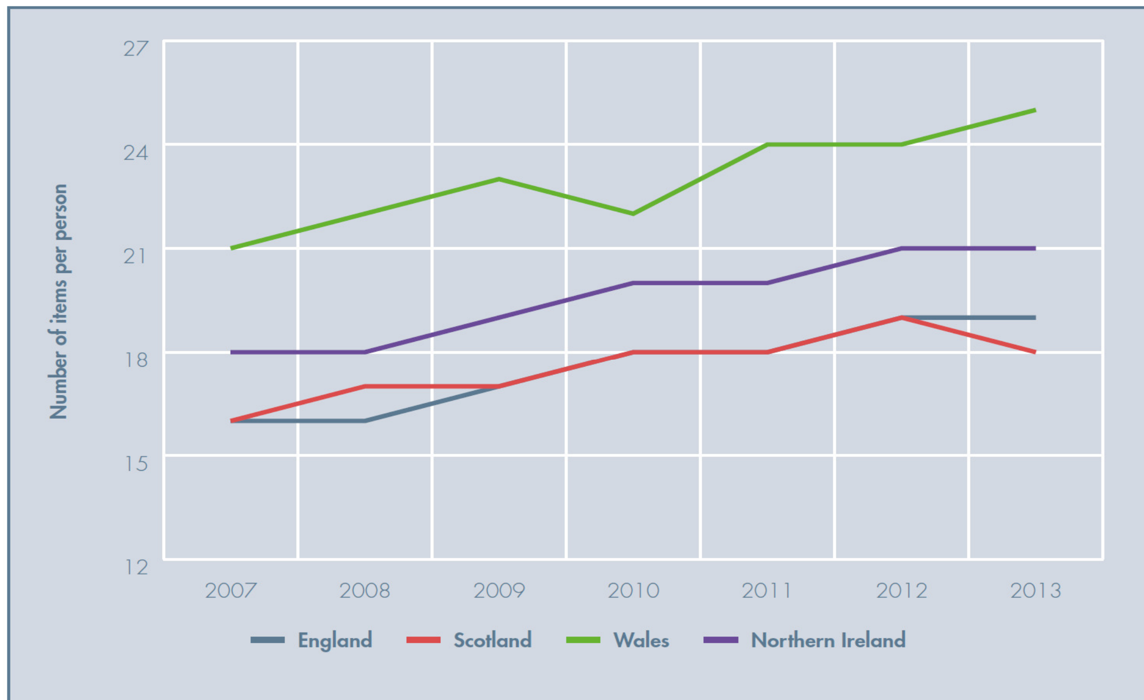


Fig 1: Source – NI Audit Office Primary Care Prescribing Report 2014

[5] Office of National Statistics Health Statistics 1997.

Prescribing cost per head of population

Fig 2: Source – NI Audit Office Primary Care Prescribing Report 2014

		2007	2010	2013
	NI	£221.09	£243.94	£223.54
	England	£162.95	£167.82	£160.12
	Scotland	£187.92	£192.25	£183.73
	Wales	£196.37	£193.05	£182.96

Table 1:Source - Business Services Organisation – Prescription Cost Analysis Reports

4. The 2014 NI Audit Office Primary Care Prescribing Report highlighted that the volume of items prescribed per head of population per annum has been higher in Northern Ireland than in England and Scotland from 2007 and primary care prescribing costs have been consistently the highest here compared with the other regions in the UK from 2007 to 2013. However, it should be noted that the analysis does not consider the differences in data

definitions and prescribing arrangements between the four countries so care is required on interpretation.

5. High prescribing costs were first highlighted in 2000 when the limited outcome of the Comprehensive Spending Review required the Department to review spend against all budget areas, including the medicines budget.

6. In response, the Department established a Pharmaceutical Services Improvement Plan (PSIP) which for the first time considered a whole system approach encompassing both primary and secondary care.

7. This work identified and challenged all parts of the medicines journey from procurement through to prescribing, supply and utilisation introducing the concept of "Medicines Management"[6],[7] to HSC practice.

8. In 2005, the Appleby Review[8] helped inform the next phase of PSIP. Sir John Appleby's report highlighted the need for new mechanisms to tackle high prescribing costs and to encourage greater use of generic drugs.

9. In response the existing PSIP programme was augmented with a new Pharmaceutical Clinical Effectiveness (PCE) Programme comprising a number of initiatives designed to work together to optimise medicines management which delivered savings for the health service during the period from 2005/06 to 2007/08 of £54m against a community drugs budget of approximately £387m.

10. The PCE programme was extended into the 2008/09 - 2010/11 period and several new initiatives were added to provide a regional focus to medicines management establishing an infrastructure within the HSC through operational models, systems and policies to deliver:

---

[6] Medicines management has been defined as "encompassing the entire way that medicines are selected, procured, delivered, prescribed, administered and reviewed to optimise the contribution that medicines make to producing informed and desired outcomes of patient care.

[7] Audit Commission (2001) A Spoonful of Sugar – Medicines Management in NHS Hospitals.

[8] Prof John Appleby, 2005, Independent Review of Health and Social Care Services in Northern Ireland. http://www.dhsspsni.gov.uk/appleby-contents.pdf

a. Clinical and cost effective procurement.
b. Clinical and cost effective prescribing.
c. Behavioural change by engaging healthcare professionals in decision making.
d. Integrated Medicines Management within the HSC.
e. Extension of the secondary care medicines governance team which was established in 2002 to primary care.

11. In 2010 the McKinsey review[9] was published. This noted that significant efficiencies had been made against the prescribing budget but that further efficiencies could be realised if levels of prescribing (growth and costs) in primary care were in line with the rest of the UK.

12. Responsibility for the prescribing budget was transferred from DHSSPS to the HSC Board in July 2010 and an annual PCE programme was established which continues today[10].

13. In the four year period from 2010/11 to 2013/14 the PCE programme has delivered a total of £132.2m against a target of £122m, an overachievement of approximately £10m.

14. Although the prescribing budget transferred to the HSC Board in 2010 the Department retained a role in pharmaceutical innovation, leading a regional 'Innovation in Medicines Management Programme' based on an 'invest to save' ethos which continues today. The Innovation Programme has overseen a range of medicines optimisation projects within the HSC including the development of the Northern Ireland Medicines Formulary.

15. The PCE and Innovation programmes have resulted in a range of best practices for medicines management as listed in Table 2, many of which are

---

[9] McKinsey 2010, reshaping the System: Implications for Northern Ireland's Health and Social Care Services of the 2010 Spending Review. http://www.dhsspsni.gov.uk/mckinseyreport.htm
10 HSC Board's Pharmaceutical Clinical Effectiveness Programme 2014/15
http://www.hscboard.hscni.net/medicinesmanagement/NMP%20-%20Pharmacist%20Prescribing/03%20Pharmaceutical%20Clinical%20Effectiveness%202014-15.pdf

now embedded within HSC systems, services and patient pathways whilst others are suitable for regional roll out.

TABLE 2: Examples of regional best practice in medicines management	
Procurement	The rational selection and therapeutic tendering of medicines, in secondary care, in line with NICE guidance and emerging evidence using the Safe and Therapeutic Evaluation of Pharmaceutical Product Selection (*STEPSelect*) model[11,12].
Selection	Northern Ireland Medicines Formulary
Prescribing	Prescribing Policies • Generic medicines (*Generics leaflet*) (*Medicines unsuitable for Generic Prescribing*) • Branded generics (product standardization) (*Branded Generics Guidance*) • Identified therapeutic classes of medicines (*Anticoagulants*) (*Antipsychotics*) (*Controlled Drugs*) (*Diabetes*) (*Lithium*) (*Opioid Substance*) • Specialist medicines (Interface Pharmacist Network Specialist Medicines) • *NI Wound Care Formulary* • Prescribing guidance for safe and evidence based prescribing (*National Prescribing Centre*) (*Single Competency Framework for All Prescribers*) • Antimicrobial guidelines for primary care (*Primary Care Management of Infection Guidelines*) and secondary care • Independent Pharmacist, Nurse and other Non-Medical Prescribers (DHSSPS Non-Medical Prescribing)

11 Scott MG ,McElnay JC Janknegt R et al Safe Therapeutic Economic Pharmaceutical Selection (STEPSelect) :development .introduction and use in Northern Ireland European Journal of Hospital Pharmacy Practice 2010 ;16:81-3
12 Scott MG Pharmaceutical Clinical Effectiveness Programme (PCEP) –STEPSelect (Safe Therapeutic Economic Pharmaceutical Selection) British Journal of Pharmaceutical Procurement 2012; 3(1):23-6

Supply	• Extended supplies on hospital discharge (*PCE Programme*) • Repeat Dispensing (*Repeat Dispensing Guidance*) • Minor Ailments scheme (*Minor Ailments*)
Adherence	• *NI Single Assessment Tool* (NISAT) • *NISAT core assessment form* • Targeted Medicines Use Reviews (*Guidance for conducting Medicines Use Reviews*) • Managing Your Medicines Service (*Managing Your Medicines*)
Safe transitions of care and Medicines Reconciliation	• The Integrated Medicines Management Service *NI clinical pharmacy standards*
Appropriate polypharmacy and optimal outcomes in the elderly	• Pharmaceutical Care Model for Older People within intermediate care, residential and nursing homes[13,14] • Consultant led Pharmacist clinical medication reviews in nursing homes[15] • Application of PINCER[16] • Application of STOPP/START tool[17]
Governance	• Medicines Governance Networks in Primary and Secondary Care *Medicines Governance*
Cost effectiveness	• Pharmaceutical Clinical Effectiveness (PCE) programme (*PCE Programme*)

Integrated Medicines Management Service (IMM)

16. One example of best practice is the Integrated Medicines Management Service (IMM) which has strategically re-engineered clinical pharmacy services in Health and Social Care Trusts. By targeting the work of

[13] Darcy C, Miller R, Friel A, Scott M. Consultant pharmacist case management of elderly patients in intermediate care. British Geriatrics Society for better health in old age, Book of Abstracts, Spring Meeting 2014; p78 http://www.bgs.org.uk/pdf_cms/admin_archive/2014_spring_abstracts.pdf

[14] Miller R, Darcy C, Friel A, Scott M, Toner S. The introduction of a new consultant pharmacist case management service on the care of elderly patients in the intermediate care setting. Int J of Phar Prac, 2014; 22 (Suppl 2): 106-107. Available at: http://onlinelibrary.wiley.com/doi/10.1111/ijpp.12146/pdf

[15] McKee H A, Scott M G ,Cuthbertson J and Miller R. Do consultant led pharmacist medication reviews lead to improved prescribing? British Geriatrics Society Autumn Meeting 2014 Page 26

[16] Avery et al: A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomised, controlled trial and cost-effectiveness analysis. Lancet 2012

[17] Gallagher et al: 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 Feb; 46(2):72-83

pharmacists and pharmacy technicians on admission, during the patient's inpatient journey and at discharge, the service has demonstrated significant improvements in patient care validated by two randomised controlled trials. These included reduced length of stay, lower re-admission rates, reduced medication errors and increased medicines appropriateness and revealed that each £1 invested equated to £5-8 in non cash-releasing efficiencies[18,19]. It was demonstrated that the IMM programme of care was transferable to routine hospital care in two hospital sites in NI supporting the case for roll out of IMM as routine clinical practice in all NI Trusts by 2008[20]. A more recent study which applied risk predictive algorithms to a sample of patients who received IMM throughout their hospital stay has shown a correlation between the number of ward-based clinical pharmacy services with a reduction in risk-adjusted mortality index (RAMI)[21,22].

17. Many best practices work synergistically to drive whole system improvements in the use of medicines. For example, innovative methodology for medicines selection has resulted in prescribers within the HSC referring to a NI Medicines Formulary. This along with a regional generic prescribing policy has helped support the effective utilisation of medicines resources in line with clinical guidance for the benefit of patients. Prescription data analysis relating to the period April-June 2013 shows a high level of prescribing compliance (83%) in primary care with Northern Ireland Formulary recommendations and a 68% generic dispensing rate. Generic prescribing policies are also in place in secondary care with generic supply from pharmacy, where appropriate.

18. These are among the initiatives that helped Northern Ireland to be formally identified as a reference site within the European Innovation Partnership in Active and Healthy Aging (EIP-AHA) in April 2013 and awarded three stars for the level of innovation, scalability and outcomes demonstrated in medicines

[18] Scullin et al. An Innovative approach to integrated medicines management. Journal of evaluation in clinical practice. Vol 13, issue 5. Oct 2007: 781-788.

[19] Burnett et al. Effects of an integrated medicines management programme on medication appropriateness in hospitalised patients. American journal of health-system pharmacy. May 1 2009 vol 66, no.9: 854-859

[20] Scullin C Hogg A Scott MG et al Integrated Medicines Management-can routine implementation improve quality? Journal of Clinical Evaluation 2012 ;18(4) :807-15

[21] Feras et al. Enhanced clinical pharmacy service targeting tools: risk-predictive algorithms. Journal of Evaluation in Clinical Practice. Vol 21, issue 2. April 2015: 187-197

[22] RAMI is a predictive tool which was developed to calculate the risk of death during inpatient stay based on a range of variables – age, gender, diagnosis-related group, diagnosis and specific co-morbidities within the population being investigated.

management[23]. This recognises Northern Ireland as one of the leading regions in Europe in addressing the health and social care needs of the older population through innovation in medicines management.

19. Today the HSC Board has mandated responsibility for overseeing the delivery of regional best practices in medicines management in HSC Trusts and primary care. The high quality, consistent delivery of these best practices provides the foundations for medicines optimisation.

[23] European Innovation Programme- http://ec.europa.eu/research/innovationunion/index_en.cfm?section=active-healthyageing&pg=commitment#action_plans

Section 2

Moving to Medicines Optimisation – the need for change

1. It is clear that a significant amount of work has been undertaken to improve how medicines are managed within the HSC Service. However, Northern Ireland has the fastest growing population in the UK, a rising number of older people with increasing multi-morbidities and a health seeking culture in which people use more medicines with higher associated costs per head per annum than other countries. Therefore, there are potentially significant challenges ahead which require a renewed focus on using medicines to gain the right outcomes for patients at the right cost for the HSC.

Increasing need

2. Global innovation in medicines development and improved access to medicines with a good evidence base, for example NICE Guidance, have contributed to an increase in life expectancy helping people to stay healthy for longer and many previously debilitating or fatal conditions are now prevented or managed, often on a long term basis, through regular medicines use.

3. Medicines use increases with age and 45% of medicines prescribed in the UK are for older people aged over 65 years and 36% of people aged 75 years and over take four or more prescribed medicines[24].

4. Each year community pharmacies in Northern Ireland dispense in excess of 38 million prescription items, for medicines costing £375m. In addition, some £175m of medicines are dispensed in the hospital setting.

5. Within Northern Ireland the future need for medicines is expected to increase as the population ages and the prevalence of chronic disease increases. Northern Ireland has the fastest growing population in the UK. Currently there are approximately 1.8m people living in Northern Ireland, a figure which is

[24] Department of Health (2001). Medicines and Older People. Implementing medicines-related aspects of the NSF for Older People. Department of Health. www.dh.gov.uk/PublicationsAndStatistics/Publications/PublicationsPolicyAndGuidance/PublicationsPolicyAndGuidanceArticle/fs/en?CONTENT_ID=4008020

expected to rise to 1.918m by 2022. In 2012, it was estimated that 15% of the population were aged 65 and over. This figure is expected to rise by 26% by 2022 and those aged 85 years and over will increase by 50%[25].

Children aged under 16 and adults aged 65 and over, actual and projected, 1981-2037 (non-zero y-axis)

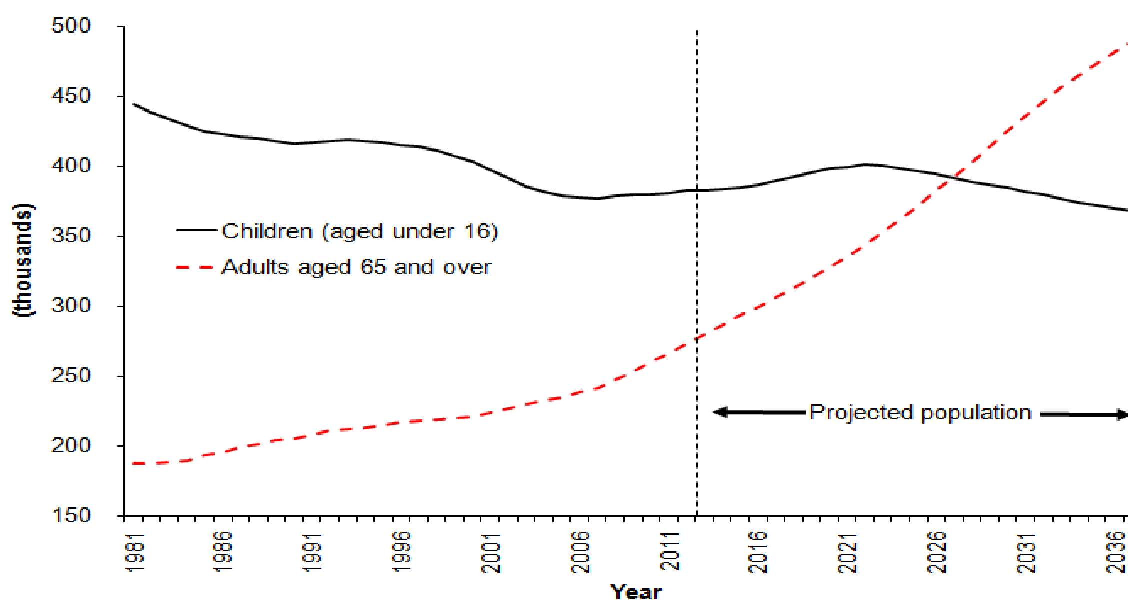


Fig 3: Source – Northern Ireland Statistics and Research Agency, Statistical Report 2012

6. A report from Public Health Ireland predicts that between 2007 and 2020 the number of adults living with long term health conditions (LTC) in Northern Ireland will rise by 30%[26].

	2007		2015		2020	
	No.	% of population	No.	% of population	No.	% of population
Hypertension	395,529	28.7	448,011	30.3	481,867	31.7
CHD	75,158	5.4	87,848	5.9	97,255	6.4
Stroke	32,941	2.4	38,405	2.6	42,457	2.8
Diabetes (Type 1 & 2)	67,262	5.3	82,970	6.0	94,219	6.6

Table 3: Source – Institute of Public Health - "Making Chronic Conditions Count"

[25] **Northern Ireland Statistics and Research Agency, Statistical Report 2012** NISRA 2012 Based Population Projections
[26] Institute of Public Health in Ireland, 2010 -*"Making Chronic Conditions Count"*

7. Lifestyle choices such as unhealthy diets, smoking and harmful misuse of alcohol also contribute to the overall prevalence of disease in Northern Ireland. It is estimated that alcohol is a significant factor in 40% of all hospital admissions, rising to 70% of Accident and Emergency weekend attendances[27]. From the Northern Ireland health survey 2011/12 - 61% of adults measured were either overweight or obese and 10% of children aged 2-15 years were assessed as being obese. Loss to the local economy as a result of obesity is estimated at £400 m, £100m of these costs being direct healthcare costs[28].

8. As well as the impact on prescribing budgets a rising need for medicines will place increased pressure on primary and secondary care services and community pharmacies. Increased use of medicines by a larger older population will also impact on social care services.

Non adherence

9. The volume and costs of prescribed medicines are increasing but there is evidence that between a half and a third of medicines prescribed for long term conditions are not taken as recommended.[29]

10. This is known as non-adherence and can involve people taking either more or less medicines than prescribed or not taking them at all. The factors which contribute to non-adherence fall into two overlapping categories:
    - Intentional where the individual decides not to follow the treatment recommendations perhaps because of concerns about the value or effectiveness of medicines, their side-effects, and the inconvenience of taking the drugs at the prescribed times and frequency. Also, patients with a mental health illness for example, schizophrenia, may have altered thinking and beliefs about medicines and their illness which may affect adherence.

[27] Belfast Healthy Cities, information on Health Equity in all Policies http://www.belfasthealthycities.com/phase-v-2009-2013/heiap.html
[28] The Cost of Overweight and Obesity on the Island of Ireland – Safefood, November 2011)
[29] Horne R, Weinman J, Barber N, Elliott R, Morgan M. Concordance, adherence and compliance in medicine-taking. Report for the National Co-ordinating Centre for NHS Service Delivery and Organisation R & D. 2005.

- Unintentional where the individual wants to follow the treatment recommendations but is prevented from doing so by practical barriers which include cognitive problems, poor organisational skills, polypharmacy and difficulty accessing medicines[30].

11. Whatever the cause, non-adherence represents a health loss for the individual and an economic loss for society. Consequences include; reduced quality of life; deterioration of health; and unplanned admissions to hospital as people fail to gain the optimal outcomes form their medicines.

Generic Medicines

12. Government policy promotes the use of generic medicines, where appropriate. However, patients have highlighted concerns regarding inconsistency in the medicines they are supplied with. For example, variations in size, colour and shape of their medicines which are made by a range of manufacturers. This is particularly confusing for the elderly who may be on multiple medications leading to an inability to manage their medicines appropriately, risking their independence and impacting on the help they need from carers and families. Lack of support and unexplained changes to how a medication looks can result in patients not taking their medicines.

Medicines related harm

13. All medicines are associated with a level of risk and each year millions of people worldwide are hospitalised due to potentially avoidable, medicine-related factors. Medicines used in combination and patients with multiple co-morbidities who are taking multiple medicines are at increased risk. The constant repeating of medicines without regular medication reviews leaves patients susceptible to harm from medicines which they may not need to be taking. Additionally an individual's social circumstances can significantly affect the level of harm related to medicines use. On average, around 3-6% of hospital admissions are due to the adverse effects of medicines[31,32,33] and this

---

[30] Steinman MA and Hanlon JT. Managing Medications in Clinically Complex Elders "There's Got to Be a Happy Medium". Journal of the American Medical Association. 2010; 304(14):1592-1601. doi: 10.1001/jama.2010.1482

31 Lazarou J, Pomeranz BH, Corey PN. Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. JAMA 1998; 279:1200-5.

can increase up to almost 30% in elderly people who are taking more medicines and are more susceptible to their adverse effects[34]. In Northern Ireland, positive steps taken to reduce harm related to medicines include the work of multidisciplinary medicines governance committees in HSC Trusts, the implementation of National Patient Safety Agency (NPSA) alerts and the HSCB/PHA management of serious adverse incidents (SAIs) through the Quality, Safety and Experience (QSE) multidisciplinary group and the Safety, Quality and Alert Team (SQAT). More recently to improve safety, there has been a standardisation of adult medicines kardexes (process for ordering prescriptions and recording administration of medicines to patients in hospital).

14. UK evidence shows that one in 15 hospital admissions are medication related, with two-thirds of these being preventable[35]. Evidence also shows that some medicines are associated with a higher risk of harm than others with four groups of drugs accounting for 50% of preventable drug related admissions to hospital[36]. A review carried out of medication incidents reported to the National Reporting and Learning System in England and Wales over a 6 year period showed that the top 5 medicines where the clinical outcome was death or severe harm were opioids, antibiotics, warfarin, low molecular weight heparins and insulin[37]. In Northern Ireland, there are a variety of lists of high risk medicines developed locally which are in use but there is no actual regional list of predefined high risk medicines.

15. Another cause of harm is medication errors which can occur at any stage of the medicines process from prescription, to dispensing to the patient taking the medication. A report for the General Medical Council in 2012 investigating the prevalence of prescribing errors in general practice found that one in 20 prescriptions contained an error with a higher prevalence associated with

---

32 Pirmohamed et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. BMJ 2004;329:15-9
33 Roughead EE. The nature and extent of drug-related hospitalisations in Australia. J Qual Clin Pract 1999;19:19-22
34 Chan M, Nicklason F, Vial JH. Adverse drug events as a cause of hospital admission in the elderly.Intern Med J 200; May-Jun;31(4):199-205
[35] Garfield S, Barber N, Walley P, Willson A, Eliasson L. Quality of medication use in primary care--mapping the problem, working to a solution: a systematic review of the literature. *BMC Medicine* 2009; 7:50.
[36] Which drugs cause preventable admissions to hospital? A systematic review. http://www.ncbi.nlm.nih.gov/pubmed/16803468
[37] Cousins DH, Gerrett D, Warner B. A review of medication incidents reported to the National Reporting and Learning System in England and Wales over 6 years. Br J Clin Pharmacol; 2012 Oct;74(4):597-604

prescriptions for the elderly and those taking 10 or more medications[38]. Prescribing errors in hospital in-patients are a common occurrence affecting 7% of medication orders, 2% of patient days and 50% of hospital admissions[39]. The NPSA estimated that medication errors in 2007 cost £770m due to the cost of admissions for adverse drug reactions and the cost of harm due to medicines during inpatient stay[40].

16. When patients transfer between heath and social care settings there is a greater risk of medication error and evidence shows that 30% to 70% of patients have an error or unintentional change to their medicines when their care is transferred[41]. In a study carried out in Northern Ireland, it was shown that 33% of patients post discharge had medication related problems[42].

Polypharmacy

17. Polypharmacy, the concurrent use of multiple medications by one individual, is becoming increasingly common. UK data highlight that of those patients with two clinical conditions, 20.8% were receiving four to nine medicines, and 10.1% receiving ten or more medicines; in those patients with six or more co-morbidities, these values were 47.7% and 41.7 %, respectively, and increasing with age[43].

18. The 2013 Kings Fund report on Polypharmacy and Medicines Optimisation[44] proposes that polypharmacy can be classified as appropriate or problematic recognising that it has the potential to be beneficial for some patients, but also harmful if poorly managed. The value of a co-ordinated, multidisciplinary approach to managing polypharmacy has been recognised by other UK

[38] .www.gmc-uk.org/Investigating_the_prevalence_and_causes_of_prescribing_errors_in_general_practice___The_PRACtICe_study_Reoprt_May_2012_48605085.pdf

[39] Lewis PJ, Dornan T, Taylor D, Tully MP, Wass V, Ashcroft DM. Prevalence, incidence and nature of prescribing errors in hospital inpatients: a systematic review. Drug Saf 2009; 32(5):379-389.

[40] NPSA safety in doses:medication safety incidents in the NHS 2007

[41] Campbell et al. A systematic review of the effectiveness and cost-effectiveness of interventions aimed at preventing medication error (medicines reconciliation) at hospital admission. The University of Sheffield, School of Health and Related Research (ScHARR), Sep 2007

[42] Brookes K Scott MG McConnell JB The benefits of a hospital based community liaison pharmacist. Pharmacy World and Science 2000; 22(2): 33-8

[43] Payne RA, et al. Prevalence of polypharmacy in a Scottish primary care population. Eur J Clin Pharm 2014; in press.

[44] The Kings Fund 2013 Polypharmacy and Medicines Optimisation - Making it Safe and Sound

countries and the Scottish Government has issued specific guidance on polypharmacy in the elderly.[45]

19. Patients are finding it increasingly difficult to manage the volume of medicines they are prescribed. In particular, older people are most likely to be prescribed multiple medications for multi morbidities (different diseases) and polypharmacy is a growing challenge for individuals, carers and social care workers trying to manage complicated medicines regimens at home. Multi-compartment compliance aids/Monitored dosage systems (MDS) are often used to support patients to manage their medicines and are currently perceived as the only solution for the elderly and those with dementia in particular. However, there are many other ways in which patients can be helped to take their medicines safely, or carers supported to administer medicines correctly, and alternative interventions should be considered as outlined in the Royal Pharmaceutical Society guidance, The Better Use of Multi-compartment Compliance Aids.

20. Polypharmacy is also a challenge for prescribers. Prescribing is largely based on single disease evidence-based guidance which does not generally take account of multi-morbidity, now the norm in those over 65 years[46]. Also, prescribing decisions may be made by different medical and non-medical prescribers involved in the individual's care resulting in combinations of medicines which may not work effectively together. This 'layering up' without consideration for removing inappropriate medicines from a patient's regime also increases the risk of medicines related harm.

Access to Information

21. Access to good quality information about medicines is essential to enable optimal management of clinical conditions. However, there is a vast amount of information on the internet regarding medicines, some of which is reliable and relevant in the UK and some is not. There are some credible websites and proposed plans for the development of a patient portal on the NIDirect website to help direct patients to appropriate information about medicines and how to use this information are welcomed.

[45] Scottish Government 'Polypharmacy Guidance' October 2012
[46] Barnett K, Mercer SW, Norbury M et al. Epidemiology of multimorbidity and implications for healthcare, research, and medical education: a cross sectional study. The Lancet 2012:380:37-43

Over use and misuse of medicines

22. Increased access to medicines via prescription, internet and over the counter sale introduces new risks. The New Strategic Direction for Alcohol and Drugs Phase 2 highlighted the emerging issue of the misuse of prescription drugs and over-the-counter drugs with benzodiazepines reported as one of the main drugs of misuse[47] in Northern Ireland. Although there has been some success in tackling benzodiazepine use, other challenges with regards to potential for abuse remain with commonly prescribed medicines including opiate painkillers and pregabalin.

23. A Scottish literature review explored the links between poverty, social exclusion and problematic drug use. It supported the view that the extent of drug problems is strongly associated with a range of social and economic inequalities and is complex[48]. A study which looked at the influence of socioeconomic deprivation on multimorbidity at different ages found that higher rates of drug misuse correlated with deprivation across all age groups, but particularly in those under 45 years of age[49].

24. Inappropriate and overuse of antimicrobial medicines is a particular concern and the consequences are that common infections will be harder to treat as the incidence of antimicrobial resistance and healthcare acquired infections increases presenting a major public health challenge[50]. Increasing healthcare professional, patient and public awareness and changing behaviour by applying behavioural science may help address this issue. A recent literature review and behavioural analysis carried out by the Department of Health and Public Health England proposes a range of behavioural science interventions that could be tested in practice[51].

25. Antidepressant use in Northern Ireland is high compared to other countries in Western Europe. In comparison to other countries in the UK, Northern Ireland had higher antidepressant costs per head of population from 2010 to 2013.

[47] DHSSPS (2011) New Strategic Direction for Alcohol and Drugs, Phase 2 2011-2016
[48] Drugs and poverty:A literature review. Scottish drugs forum report, March 2007
[49] McLean G et al. The influence of socioeconomic deprivation on multimorbidity at different ages: a cross-sectional study. Br J Gen Pract. Jul 2014; 64(624): e440-e447
[50] DHSSPS Strategy for tackling antimicrobial resistance (STAR) 2012-2017
[51] Behaviour change and antibiotic prescribing in healthcare settings, literature review and behavioural analysis. February 2015 Behaviour Change for Antibiotic Prescribing

The cost of anti-depressant prescribing per head of population in the UK over the 4 year period to 2013

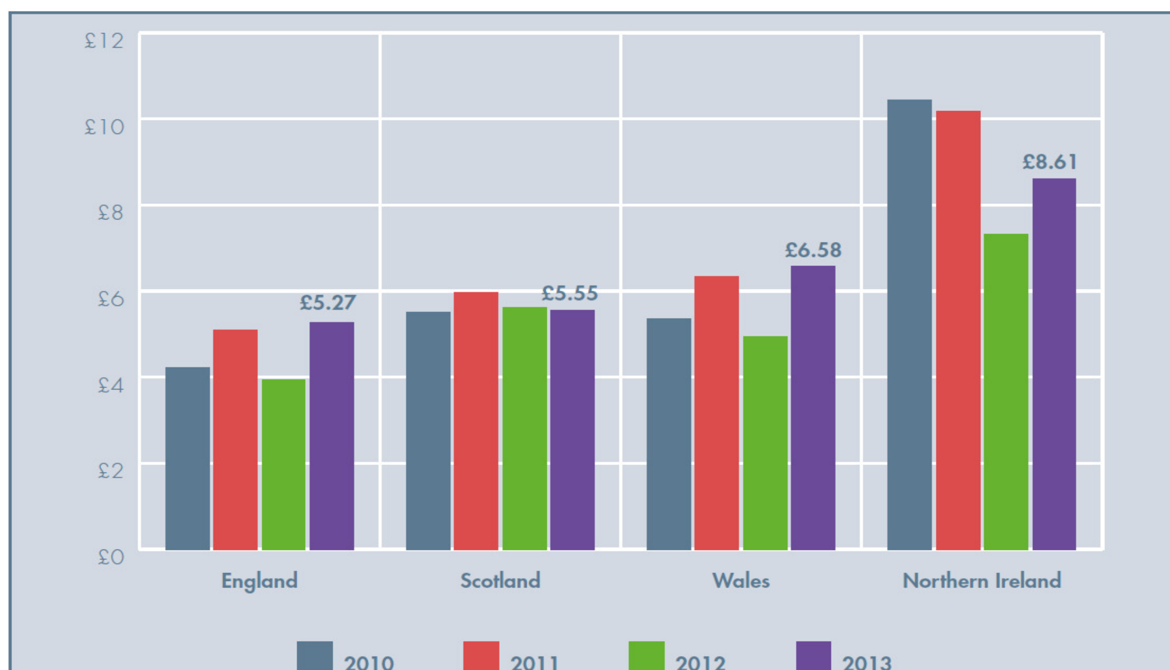


Fig 4: NI Audit Office Primary Care Prescribing Report 2014

Better access to services, for example counselling, stress and anxiety management is crucial if we are to see a reduction in the use of medicines to manage some mental health conditions. Choice and Medication[52] is a good example of where people can access information regarding alternatives to medicines and when necessary and appropriate, information regarding their medicines to manage their condition.

Waste

26. Wasted medicines are a significant problem in Northern Ireland with large quantities of unused medicines regularly returned to community pharmacies for safe disposal. These medicines are either ordered but no longer required or no longer prescribed for a particular condition. Returned medicines to community pharmacies cannot be re-used and are destroyed because their safety and effectiveness cannot be guaranteed. Not all unused medicines are returned to pharmacies and many are kept in patients' homes, sometimes well

[52] www.choiceandmedication.org/hscni/

past their expiry date, or are incorrectly added to household waste. In hospital, medicines that are no longer required are returned to the hospital pharmacy for safe disposal or, where appropriate, recycled and reused to minimise waste. It is difficult to measure the exact value of medicines wasted. Based on research findings elsewhere in the UK the value of medicines wasted in Northern Ireland is estimated to be around £18m per annum[53] although as yet there is no way of accurately validating this figure.

Reform of health and social care services

27. Ongoing HSC reform supporting care closer to home will mean that in future more people will receive care at home rather than in residential care or hospital. For many people care at home will require support with managing and taking multiple medicines. This will require changing roles for social care workers and an increasing demand for pharmaceutical care in the community and primary care to support safe and effective medicines use[54].

28. Another issue is the increasing use of third party homecare services. Homecare services in this context is defined as the delivery of medicines and where necessary, associated care, which is initiated by the hospital prescriber, direct to the patient's home with their consent. This is a growing market and the volume and costs of medicines supplied through homecare services in Northern Ireland has increased from £6m in 2008 to almost £22m in 2014. Homecare services bring both benefits and risks for patients and new challenges for the provision of pharmaceutical care by HSC Trusts. A review of homecare medicines supply in England in 2011[55] included having stable contractual arrangements which would enable Trusts to adapt easily and safely to changes in homecare providers and through a quality framework have clear lines of responsibility for dispensing, delivery to patients and nursing care provision when required. Better use of technology could track expenditure and interface with electronic care records would allow information to be available in real time. Communication of the service to all healthcare professionals

---

[53] Evaluation of the Scale, Causes and Costs of Waste Medicines, University of London and York 2010

[54] Pharmaceutical Care is defined as "A patient-centred practice in which the practitioner assumes responsibility for a patient's medicines-related needs and is held accountable for this commitment". Cipolle RJ, Strand LM, Morley PC. Pharmaceutical care practice: the clinicians guide. 2nd ed. New York:McGraw-Hill; 2004.

[55] Homecare medicines – towards a vision for the future, DH 2011

involved in a patient's care is essential. A regional assessment of the optimal approach to homecare medicines is needed to ensure quality, good governance, accountability and effective use of resources.

29. HSC reform will also support new integrated models of care as exemplified by Integrated Care Partnerships (ICPs). ICPs are collaborative networks of care providers, bringing together doctors, nurses, pharmacists, social workers, hospital specialists, other healthcare professionals and the voluntary and community sectors, as well as service users and carers to design and coordinate local health and social care services. These collaborative networks present new opportunities for the integration and co-ordination of care for frail older people and those with long term conditions. ICPs are tasked with focussing on four key aspects for delivery of integrated care; **R**isk Stratification, **I**nformation Sharing, **C**are Planning and **E**valuation (RICE). All 17 ICPs in Northern Ireland are currently delivering person centred proactive care management for a risk stratified cohort of patients through collaborative multidisciplinary working. A more co-ordinated and person centred approach to medicines management has been an important aspect of this work. There are also a number of local ICP service improvements which involve improved integration of community pharmacy services as part of the care pathway. The structure of ICPs which has community pharmacists embedded at a local level to promote the development of collaborative relationships is an effective platform for the delivery of improved medicines management and associated patient outcomes.

30. In future, patients are likely to have a number of health and social care professionals involved in their overall care at the same time. This will include an increasing number of non-medical prescribers (DHSSPS non-medical prescribing) using existing skills and knowledge to ensure better patient access to advice about medicines, assessment of their condition and help patients receive appropriate medication without delay alongside helping reduce demand on GPs and medical staff in hospitals.

31. The Donaldson Report, Transforming Your Care, and the Living with Long Term Conditions Framework all recognise the increased role that pharmacists

have to play in raising a patient's quality of care and improving their health outcomes. The profession could be further utilised and by using their clinical skills, working in partnership with patients and other health and social care professionals, pharmacists can contribute significantly to medicines optimisation within HSC reform.

32. A recent Royal Pharmaceutical Society (RPS) and Royal College of General Practitioners (RCGP) Joint Statement supports the inclusion of practice based pharmacists within primary care teams to improve patient care. They state that there is considerable evidence to support the benefit of this role and the RPS and RCGP will work together to promote the uptake of practice based pharmacists.

33. As new models of care develop it will be necessary to establish a clear understanding of roles and responsibilities for medicines optimisation for health and social care professionals within the patient's care. This will require clarification of existing roles and the development of new roles within integrated secondary care, general practice and community pharmacy linking to social care supporting safe, appropriate and effective medicines use throughout the patient journey. This is a patient centred model in which multidisciplinary professionals will work collaboratively and share information to meet the needs of patients.

Variance

34. There is variation in how medicines are used and managed across the HSC. For example there are differences in; the uptake of NICE approved medicines and implementation of NICE guidance; levels of prescribing compliance of GP practices with the Northern Ireland Formulary and delivery of the Integrated

Medicines Management Service within HSC Trusts.

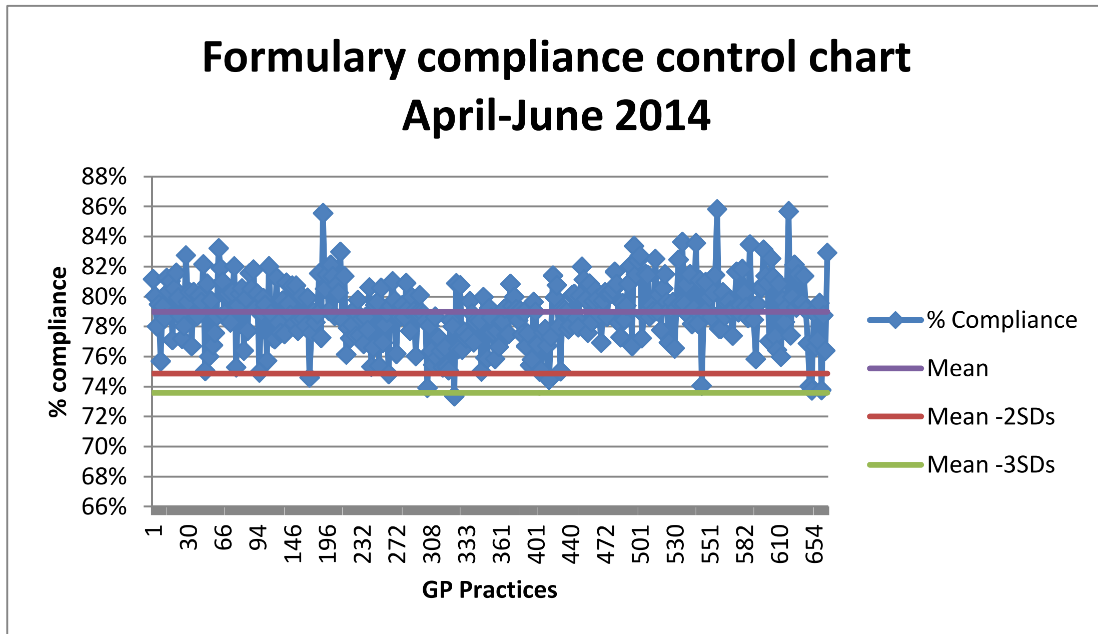


Fig 5: % compliance with the Northern Ireland Formulary, quarter 2, 2014

35. A King's Fund report in 2011 concluded that there are wide variations in the quality of care in general practice stating that the delivery of high-quality care requires effective team working for which the skill-mix needs to evolve, so that the GP should no longer be expected to operate as the sole reactive care giver, but should be empowered to take on a more expert advisory role, working closely with other professionals[56].

36. There is a growing awareness of the risks of variance in the quality of service delivery within the health service as exemplified by the Francis Report 2013 which emphasised the need to put patients first at all times and that they must be protected from avoidable harm and the Berwick Report 2013 which recommends 4 guiding principles for improving patient safety including:

- Place the quality and safety of patient care above all other aims for the NHS
- Engage, empower and hear patients and carers throughout the entire system and at all times.

[56] **Improving the quality of care in general practice.** Report of an independent inquiry commissioned by the King's Fund, 2011. http://www.kingsfund.org.uk/publications/improving-quality-care-general-practice

- Foster wholeheartedly the growth and development of all staff, especially with regard to their ability and opportunity to improve the processes within which they work.

- Insist upon, and model in your own work, thorough and unequivocal transparency, in the service of accountability, trust, and the growth of knowledge.

Patient engagement

37. The value and importance of involving individuals in decisions about their care is recognised in national guidance from NICE [NICE CG76] although full implementation of its recommendations may require change in existing service models. For example, consultations with patients may need to be longer to provide time to provide better information about newly prescribed medicines, anticipated treatment outcomes and to consider patient choice, benefits and acceptability. Furthermore, sufficient time will be needed for regular medication and adherence reviews and patients taking multiple or high risk medicines will require regular scheduled specialist clinical reviews.

Evidence based decision making

38. Evidence-based medicine (EBM) is the cornerstone of modern medical practice. Defined as the conscientious, explicit, and judicious use of current best evidence, in combination with the physician's clinical expertise and the preferences of the patient in making decisions about the care of individual patients,[57] EBM relates to all aspects of medical practice including the prescribing of medicines.

[57] Dawes M, Summerskill W, Glasziou P, et al. Second International Conference of Evidence-Based Health Care Teachers and Developers. Sicily statement on evidence-based practice. BMC Med Educ. 2005;5(1):1.

39. With over 13,000 medicines with Marketing Authorisations in the UK[58], prescribers need to be able to keep up to date with the evidence base in order to select the most appropriate, safe, clinically effective and cost effective medicines for their patients.

40. Scientific advances in drug development mean that the clinical use of medicines is becoming more complex and increasing sophistication inevitably leads to higher costs both for the medications themselves and for the clinical management process (e.g. increased monitoring).

41. Not only does this pose challenges in terms of resource implications but it requires increasing diligence as to the appropriateness of the introduction of new medicines. In Northern Ireland, systems exist through NICE (DHSSPS NICE guidance) and the Scottish Medicines Consortium to adjudicate the utility of new medications allied to their provision within the NHS through managed entry arrangements (HSC Board Managed Entry).

42. There is already clear evidence of where the pressures are, for example in the areas of cancer, biologics and mental health and these will continue to be significantly resource intense areas. Similarly, the growth in long term preventative medicine e.g. use of statins and an escalating trend in treatments for lifestyle related disease such as anti-obesity medicines has major cost implications for the pharmacy elements of the health and care system.

43. In addition, the evidence base for medicines management practices will continue to expand in the coming years. For example, the NICE Medicines Optimisation Clinical Guideline was published in March 2015 and other NICE clinical guidelines and quality standards are under development relating to medicines optimisation, domiciliary care, managing medicines in care homes, older people with long term conditions and multi-morbidities.

[58] This figure includes different strengths of the same medicine and generics. Source – Medicines and Healthcare Products Regulatory Agency

44. These guidelines and standards are useful and will inform best practice in Northern Ireland but their timely implementation and consistent incorporation into existing services and roles will have to be monitored and managed.

Improvements in communication, technology, data management

45. The electronic care record and ongoing ICT development programme will facilitate better sharing of information between healthcare professionals and enable advances such as electronic prescribing. The growing use of health analytics (which analyses large, complex data sets with sophisticated software) will help clinicians and managers to utilise various information sources to identify and target interactions of patients with the highest risk. This will further necessitate role clarification among health and social care professionals and standardised approaches to medicines management.

46. However, tracking activities in secondary care requires improvements in informatics and data management systems to provide the level of whole system monitoring of medicines use and service delivery needed to support improved quality and governance across the HSC and allow comparison with other UK countries.

47. Further advances in technology, robotics and tele-health will enable the automation of routine processes and self-monitoring by patients and allow health and social care professionals more time to focus on clinical care and optimising health outcomes. To maximise the benefit of these advances for patient outcomes their integration into patient care plans needs to be planned and managed.

Prevention and alternatives to medicines

48. This Framework deliberately focuses on improving the use of medicines. However, it is recognised that over time the aim of health policy is to reduce the population's need for medicines. Current Government strategies like Making Life Better[59] and Making it Better through Pharmacy in the Community[60]

[59] Making Life Better 2013-2023

support this, encouraging people to be more aware of healthier lifestyle choices and supporting prevention through initiatives to help address the underlying causes of disease. In modern healthcare there is a heavy reliance on medicines and the system needs to change to adopt a more holistic approach where medicines are not seen as the only solution available. This issue is highlighted in the Patient and Client Council's Pain Report.

Summary

49. In summary, the future will bring new challenges as the number of older people rises, demand for medicines grows, advances in medicine, therapeutics and technology accelerate and the evidence base for decision making expands.

50. In this era of economic, demographic and technological challenge, optimal use of medicines will help secure better quality, patient outcomes and value from medicines.

[60] Making it Better through Pharmacy in the Community 2015-2019

Section 3

The Northern Ireland Medicines Optimisation Model

1. Most people will take a medicine at some point in their lives. This could be a short term curative treatment, for example, a course of antibiotics for an infection or long term treatment for high blood pressure medication to prevent heart disease.

2. When medicines are prescribed patients should be involved in decisions about their use, know why the medicine is needed, understand the expected outcome, the duration of treatment and be informed of any risks or side effects.

3. When medicines are supplied, pharmacists must ensure that all medicines are dispensed safely and patients should receive appropriate information to enable safe and effective use and be offered support to help them take their medicines as prescribed and on time if needed. Pharmacists must advise patients when the presentation of their medicine changes and provide reassurance of continued efficacy.

4. During treatment, patients should have their medicines reviewed on a regular basis and if a GP or other relevant health professional involved in assessing the patient makes a clinical decision that there is no health benefit or clinical need for the patient to continue taking the medication, the medication should be stopped.

5. When medicines for long term conditions are started, stopped or changed, patients should have their treatment regimen checked to ensure it remains safe and effective.

6. Medicines optimisation has been defined as 'a person-centred approach to safe and effective medicines use, enabling people to gain the best outcomes from their medicines'. In day to day practice it relies on patient and health and social care professional partnerships and aims to help more patients to self manage, to take their medicines correctly, reduce harm, avoid taking

unnecessary medicines, cut down on waste and improve medicines safety. Ultimately it can help encourage patients to take increased ownership of their treatment and support care closer to home.

7. Successful patient treatment is reliant on practitioners delivering best practices, the availability of quality systems and supporting infrastructure. Considering how existing medicines management practices as outlined in Table 2 could work synergistically to address the challenges for medicines optimisation highlighted in Section 2 has informed a new regional model for medicines optimisation.

8. The model is for all patients/clients of health and social care services and identifies four different settings where services related to their medicines are provided which are:

   a. Hospital
   b. General Practice
   c. Community Pharmacy
   d. Social Care

9. Within each setting there are best practices which should be followed as outlined in Tables 4-7. The Medicines Optimisation Model is shown in Figure 6.

10. The basis of the model is the Integrated Medicines Management (IMM) Service which targets the work of clinical pharmacists and pharmacy technicians at specific points in the patient journey on admission, during the hospital stay and at discharge.

12. The model delivers IMM consistently across secondary care and expands it into the interface and primary care. It targets pharmacists in the community (General Practice and community pharmacies) working with multidisciplinary teams to provide regular clinical medication reviews and risk stratified support at key points of the patient's journey, for example, following the start of a new treatment or on discharge from hospital.

13. It includes specific roles for community pharmacists supporting adherence through Medicines Use Reviews, providing information and advice as part of the safe supply of medicines, supporting adherence and safer transitions by providing information to assist medicines reconciliation on transfers of care. The model recognises the role of care workers in helping people with their medicines in the domiciliary care setting.

14. The model introduces a new role for pharmacists working in General Practice to deliver the medicines optimisation model and a regional consultant pharmacist led polypharmacy care model for the elderly in intermediate and nursing home care settings with links into general practice and secondary care.

15. It recommends the optimal delivery of existing roles and commissioned services which are already supported by HSC contractual or service level agreements and funding streams.

16. To deliver the model consistently in all settings additional recurrent funding will need to be targeted to support new roles and infrastructure.

17. To monitor progress a regional medicines optimisation dashboard is proposed that will identify outcome measurements associated with:
    - Achievement of expected therapeutic outcomes
    - Medicines Safety
    - Cost Effective Use of Medicines
    - Patient/client satisfaction.

18. The model is underpinned by:
    - **Delivery of best practices** through new Controls Assurance Standards for Medicines Optimisation – see Section 4.
    - **The availability of quality systems** including ICT infrastructure supporting connectivity, electronic transmission of prescriptions and access to the Electronic Care Record, prescribing support, Northern Ireland Formulary, enhanced prescription data analysis.

- **Supporting infrastructure** including the Regional Medicines Governance Team, Regional Medicines Management Pharmacy Team, Education, Learning and Development Providers, Effective commissioning, Funding Streams, A Regional Innovation Programme – see Section 5.
- **Multidisciplinary professionals** working collaboratively, communicating and sharing information to meet the needs of patients.

19. The Northern Ireland Medicines Optimisation Quality Framework is a 'living document' with examples of what to expect as current best practice medicines optimisation in each of the four settings in Tables 4 to 7. This will provide a necessary short term focus on improving standards and reducing variance in best practice, providing a firm foundation on which to build for the future.

20. The expectation is that innovation and continuous improvement will inform changes to the Framework over time. New innovative solutions which aim to optimise medicines use will be developed and tested through a regional innovation programme (see Section 5).

MEDICINES OPTIMISATION MODEL

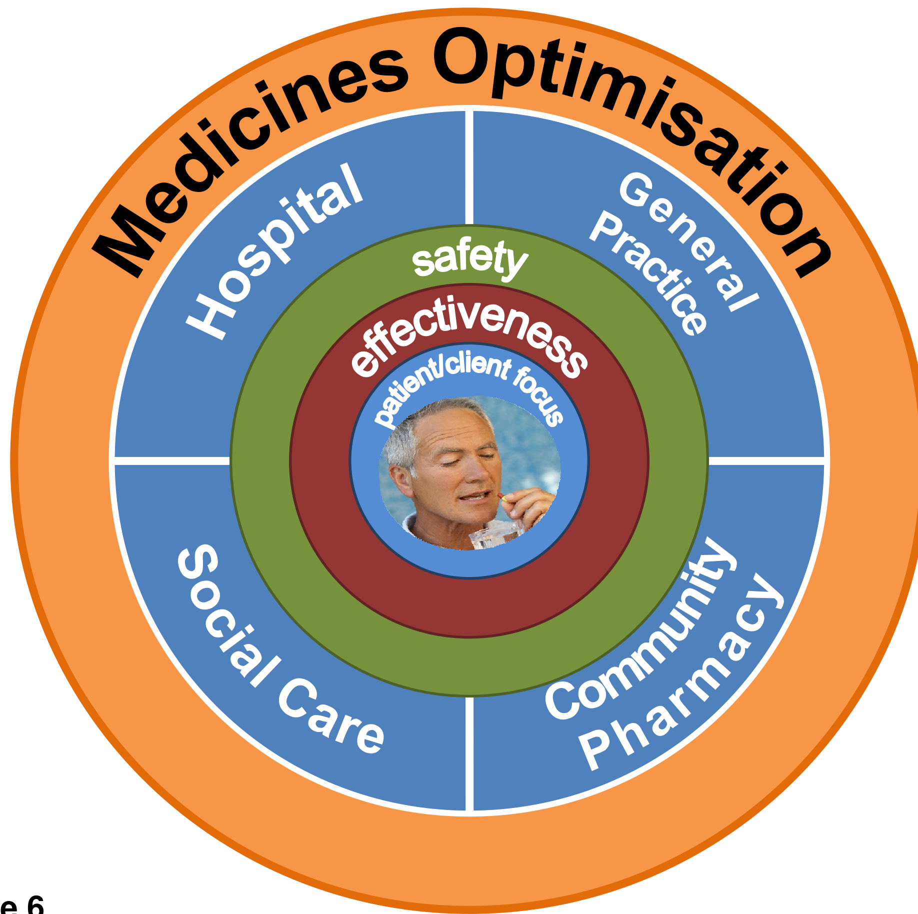


Figure 6

What patients can expect when medicines are included in their treatment

Tables 4-7 below provide a summary of what patients can expect as routine practice with regards to medicines optimisation in different settings – Hospital, General Practice, Community Pharmacy and Social Care.

Hospital

On Admission

- Patients bring their medicines to hospital so that they can be checked and used where possible.
- Within 24 hours of admission, patients have a medicines reconciliation check by a pharmacist or pharmacy technician. It involves collecting information about current medicines, checking for omissions, duplications and other discrepancies and then recording and communicating any changes. Patients, family members or carers may be involved in this process.
- If patients move from one ward to another within a hospital, medicines reconciliation occurs again.

Following Medical Assessment/Diagnosis

- Patients are involved in decisions about their medicines and receive information about new medicines and the expected health outcomes.
- Patients have the opportunity to speak to a healthcare professional and ask questions about their medicines.
- During the inpatient stay, prescription charts are monitored by a pharmacist and reviewed in conjunction with medical notes and relevant medical laboratory results.
- Patient responses to medication therapy are monitored and best practices relating to 'high risk medicines' are followed.

Administration of medicines

- On some wards patients may be able to administer their own medicines. However, if this is not possible medicines are administered on time following a check that the direction to administer is appropriate and other related factors are taken into consideration.

On discharge

- Prior to discharge the medicines reconciliation process is repeated.
- Patients receive a supply of their prescribed medicines and are provided with accurate, up-to date information about their ongoing treatment where necessary.
- Patients know who to contact if they have a query about their medicines after discharge.
- Accurate and up-to date information about medicines is communicated to the patient's GP, Community Pharmacy and social care worker where relevant

Table 4: What you should expect when you are admitted to hospital as routine practice

General Practice

- Patients registering with the practice for the first time have a medicines reconciliation check.
- During consultations, patients are involved in decisions about their medicines, they receive information about new medicines and the expected health outcomes.
- Patients taking multiple medicines or taking 'high risk medicines' are identified and, where appropriate, receive additional information and advice to help take their medicines safely and effectively.
- All patients on repeat medication have an annual face to face clinical medication review. (This may be more frequent depending on the individual's care plan or type of medication).
- Patient responses to medication therapy are monitored. Medicines that are not beneficial and not evidence based are not continued.
- Patients with problems taking their medicines as prescribed (non-adherent) are referred for an adherence assessment.
- Patients are involved in decisions about their medicines and are encouraged to ask questions about their treatment and to be open about stopping medication.
- Patients discharged from hospital have their medicines reviewed.
- Prescribers have up to date information to support clinically appropriate and safe prescribing.
- Prescribers have access to a pharmacist for information and advice about polypharmacy and patients taking multiple medicines.
- Practices provide information about prescribed medicines to hospitals and other appropriately authorised health and social care professionals to assist medicines safety during transitions of care.

Table 5: What you should expect from general practice as routine practice

Community Pharmacy

- On presentation of a prescription the pharmacist will carry out a check of the prescription before it is dispensed. This will inform the level of information and advice that is needed for the patient to take their medicines safely and effectively.
- High quality medicines are dispensed safely.
- Patients receive appropriate information and advice with the supply of medicines, particularly if a new medicine or a 'high risk medicine' is supplied.
- If the presentation of a repeat medicine changes, the patient is advised of this change and reassured of continued efficacy.
- Patients are offered a medicines review after a significant change in their medication. For example, following discharge from hospital or after starting a new treatment regimen.
- Patients having problems taking their medicines as prescribed have their adherence needs assessed and appropriate support provided.
- Patients are asked if they need all their repeat medicines before they are supplied to reduce the risk of waste.
- Pharmacists work closely with other health and social care professionals to ensure patients are on the most appropriate medication and have contact with pharmacists working in local GP practices and hospitals.
- To support safe transitions, pharmacies provide information about medicines supplies to the pharmacist or pharmacy technician conducting a medicines reconciliation check after admission to hospital or to appropriately authorised health and social care professionals in a nursing or residential home.
- On discharge from hospital the community pharmacy receives up to date, timely information regarding the patient's medication.
- Pharmacies may provide other services such as clinical medication reviews and monitor health outcomes from medicines to support medicines optimisation.

Table 6: What you should expect from your community pharmacy as routine practice

Nursing, Residential homes and Children's homes

- When individuals first move into the home and at each transition of care thereafter their medicines are checked with their GP Practice and Community Pharmacy.
- Adequate supplies of medicines are always available and prescription ordering systems in homes are carefully managed and monitored to avoid over-ordering and waste.
- Individuals with specific medication needs such as Parkinson's Disease or Diabetes or those taking multiple or 'high risk medicines' are identified and receive the appropriate care in line with best practice.
- Individuals who take their own medicines are monitored to ensure they are taking them as prescribed.
- Medicines are administered on time following a check that the direction to administer is appropriate.
- Individuals taking repeat medication have an annual clinical medication review; the frequency of the review may vary depending on the care plan.
- Care home staff have contact with pharmacists in the community to assist with queries about medication.

Domiciliary care

- Domiciliary care staff have a defined role in helping with medicines taking.
- They have appropriate information about the individual's current medication and are aware of any changes following a transition of care, such as discharge from hospital.
- They receive training on 'High Risk Medicines' and have easy access to information about all medicines.
- They have contact with pharmacists in the community to assist with queries about medication.

Table 7: What you should expect from social care as routine practice

Section 4

Quality Standards for Medicines Optimisation

1. In support of the Regional Medicines Optimisation Model new minimum quality standards have been developed to drive consistency and bring about a common understanding about what service providers are expected to provide and what patients can expect to receive when medicines are included as part of their treatment.

2. Any new evidence based best practice associated with each of the standards developed and implemented over time will be carried out in partnership with patients, actively seeking their views and listening to their experiences. For example via the Public Health Agency's 10,000 Voices initiative and through regular health surveys.

3. The standards are applicable to all patients in all settings within the HSC. They complement existing DHSSPS minimum standards for medicines management and will be added as new medicines optimisation standards to the Controls Assurance Standards. The Health and Social Care Board and HSC Trusts are responsible for ensuring the delivery of this framework throughout the region.

4. The standards address issues relevant to all patients within the three overarching quality domains of safety, effectiveness and patient/client focus as outlined in Table 8.

Table 8.

Quality Theme	Medicines Optimisation Standards
Safety - Preventing and minimising harm related to medicines use.	1. Safer Transitions of Care 2. Risk Stratification of medicines 3. Safety/Reporting and Learning culture
Effectiveness - Right patient, right medicine, right time, right outcome, right cost.	4. Access to medicines you need 5. Clinical and Cost Effective Use of Medicines and Reduced Waste 6. Clinical Medication Review 7. Administration
Patient/Client Focus - Patients involved in decisions about their treatment with medicines.	8. Safer Prescribing with Patient Involvement 9. Better information about medicines 10. Supporting Adherence and Independence

5. The standards will be applied on a consistent basis across Northern Ireland and adherence to the standards will be monitored by the Department to ensure delivery.

6. The remainder of this section of The Framework lists the ten Quality Standards, identifies the best practice that should be delivered for each standard in each patient setting, the gaps in best practice and recommendations for change.

STANDARDS

Standard 1 – Safer Transitions of Care
Checks occur at each transition of care to ensure that the transfer of medicines and medicines information between patients, carers and health and social care workers is safe, accurate and timely.

Standard 2 – Risk Stratification of Medicines
Patients who may be at risk because of the medicines that they use receive the appropriate help to take their medicines safely.

Standard 3 – Safety/Reporting and Learning Culture
Organisations promote an open and transparent culture with evidence of processes for the reporting, prevention, detection, communication and cascade of learning from medication incidents and adverse drug reactions.

Standard 4 – Access to medicines you need
Patients have appropriate, equitable and timely access to quality assured, evidence-based and cost-effective medicines.

Standard 5 - Clinical and Cost Effective Use of Medicines and Reduced Waste
Within organisations a culture exists promoting a shared responsibility for the appropriate, clinical and cost effective use of medicines supported by systems for avoiding unnecessary waste.

Standard 6 – Clinical Medication Review
Patients have face to face clinical medication reviews on a regular basis.

Standard 7 – Administration
Following an initial check that the direction to administer a medicine is appropriate, patients who have their medicines administered receive them on time and as prescribed.

Standard 8 - Safer prescribing with patient involvement
Prescribing is carried out in a manner which promotes safety and optimal health outcomes, with patients involved in decisions about their treatment.

Standard 9 – Better information about medicines
Patients/carers receive the information they need to take their medicines safely and effectively.

Standard 10 – Supporting adherence and independence
People are helped to remain independent and self manage their medicines where possible but receive support with adherence when needed.

Quality Theme - Safety

Standard 1 – Safer Transitions of Care

Checks occur at each transition of care to ensure that the transfer of medicines and medicines information between patients, carers and health and social care workers is safe, accurate and timely.

Background

When patients move between care settings it is important that their medicines and information about their medicines transfer safely and accurately with them to avoid harm. Over half of all hospital medication errors occur at the interfaces of care, most commonly on admission to hospital[61]. A report for the General Medical Council in 2012 investigating the prevalence of prescribing errors in general practice highlighted risks at the primary/secondary care interface with significant problems concerning correspondence about medications particularly at the time of hospital discharge[62]. Older people, those taking multiple and higher risk medicines are most at risk. Risks also exist at transitions of care with intermediate care, community settings including residential, nursing or children's homes, transfers between GP practices and entering or leaving prison. The Donaldson Report highlighted the role that pharmacy can offer at transitions between hospital and the community. The Royal Pharmaceutical Society Innovators' Forum has produced a toolkit to support safer transition from secondary care to community pharmacy[63]. The toolkit was designed to help implement a referral system for patients from hospital to their community pharmacist to improve medicines safety and efficacy when patients are discharged home.

[61] Garfield S, Barber N, Walley P, Willson A, Eliasson L. Quality of medication use in primary care--mapping the problem, working to a solution: a systematic review of the literature. *BMC Medicine* 2009; 7:50.

[62] Investigating the prevalence and cause of prescribing errors in general practice www.gmc-uk.org ___The_PRACtICe_study_Report_May_2012.

[63] Hospital referral to community pharmacy, Royal Pharmaceutical Society, December 2014 www.rpharms.com/.../3649---**rps**---**hospital**-toolkit-brochure-web.pdf

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• People admitted to hospital receive full electronic medicines reconciliation on admission and discharge through the Integrated Medicines Management (IMM) Service.	• The IMM service is limited to around 50% of all hospital beds mainly during weekdays from 8:00am to 6:00 pm and delivery of the service model varies between HSC Trusts. • Software for medicines reconciliation is in place in only one Trust.
	• Regional Guidelines for the Supply of 'Take Home Medication' from Emergency Departments developed by GAIN	
	• Polypharmacy in older people in intermediate care and nursing/residential homes is overseen by Consultant Pharmacists.	• Consultant Pharmacist-led services are not available in all Trusts.
General Practice	• All GPs are notified electronically when their patients are admitted to hospital. • All GPs receive post discharge medicines information from secondary care electronically.	• GPs do not receive timely notification that their patients have been admitted to hospital. • GPs receive post discharge medicines information from secondary care although more streamlined and robust IT systems are needed to

		ensure this information is accurate and timely.
	• GP practices provide information relating to prescribed medicines to secondary care and to appropriately authorised health and social care professionals looking after patients in care homes or their own homes. • GP practices should be advised if any of their patients are admitted to prison. • Prescribing information from the Prison health GP IT EMIS system should be uploaded onto, and available on, the Electronic Care Record.	• There is no agreed approach to the timely provision of this information. • No process currently in place to ensure that GP practices are advised if any of their patients are admitted to prison • Prison health can see ECR when prisoner arrives in prison, but cannot add to it, so that no information about prescribing during the prison stay is available to the patient's GP on release of the patient.
Community pharmacy	• With patient agreement a nominated community pharmacy receives post discharge medicines information from secondary care electronically.	• HSC Trusts do not routinely provide information to community pharmacies post discharge. • No specific role for community pharmacy regarding patients on discharge.

	• Community pharmacies provide information relating to medicine supplied to secondary care and to appropriately authorised health and social care professionals in care homes.	• There is no agreed approach to the timely provision of this information. • The Electronic Care Record is not accessible to community pharmacies.
Social Care	• Nursing staff conduct medicines checks for new patients in nursing homes and independent healthcare settings. • Medicines checks are completed by social care workers when children move into a children's home or change day care setting[64]. • Domiciliary care staff are made aware of changes to patients' medicines following transitions of care. • Community nurses and appropriately authorised health and social care staff with visibility of medicines through access to ECR.	• Community Nurses can contact GPs to discuss a patient's medication on transfers of care however the ECR is not accessible to them The Electronic Care Record is not accessible to appropriately authorised health and social care professionals in care homes. • When patients are discharged from hospital or return home from a care setting there is no system to make domiciliary care workers, who assist them with their medicines aware of changes to their medication.
Patients	• Patients are advised to bring all their medicines with them to hospital and all Trusts have policies for using patients own drugs where possible.	• The patient's role in managing their own medicines during transitions of care is not well understood.

[64] Standards can be found at: [DHSSPS Safety, Quality and Standards]()

Recommendations

- A standard model of IMM service should be delivered across the HSC providing full medicines reconciliation at admission and discharge from hospital and communication with GPs, community pharmacies and other health and social care workers, where relevant.
- A regional model for polypharmacy in the elderly should be introduced to support the appropriate, safe and effective use of medicines for older people in intermediate care, nursing and residential care settings across all Trusts.
- A regional protocol should be developed to ensure that medicines checks occur at each transition of care within the community with defined roles for GPs, Community Pharmacists, and health and social care workers in care settings.
- The ECR capability should be amended to enable appropriate access by community pharmacists and health and social care workers responsible for medicines checks during transitions of care.
- The patient's role in managing their own medicines during transitions of care should be promoted.
- Quality assured reconciled medicines information should be visible using appropriate software.
- GPs should be notified electronically when their patients are admitted to hospital.
- A process should be established to ensure that GP practices are advised if any of their patients are admitted to prison.
- Information about prescribing during a prison stay should be uploaded onto the ECR for the patient's GP to see on release of the patient.

Standard 2 – Risk Stratification of Medicines

Patients who may be at risk because of the medicines that they use receive the appropriate help to take their medicines safely.

Background

Although the use of all medicines is associated with a level of risk, some medicines are known to carry a greater risk of side effects, adverse events and/or admission to hospital than others. A systematic review of medicines related admissions to hospital found that four groups of drugs account for more than 50% of the drug groups associated with preventable drug-related hospital admissions - antiplatelets, diuretics, NSAIDs and anticoagulants[65]. In addition, a review was carried out of medication incidents reported to the National Reporting and Learning System in England and Wales over a 6 year period. The top 5 medicines for which the clinical outcome was death or severe harm were opioids, antibiotics, warfarin, low molecular weight heparins and insulin[66]. Antimicrobial resistance is among the civil emergencies listed in the Cabinet Office's National Risk Register of Civil Emergencies. In Northern Ireland, antimicrobial prescribing is high and the prevalence of systemic antimicrobial prescribing in residential homes was found to be relatively high compared with care homes (particularly nursing homes) in other countries[67]. By measuring and addressing performance indicators, the quality of antibiotic prescribing could be improved[68]. The misuse of prescription and over the counter drugs is a significant public health and social issue in Northern Ireland, resulting in negative impacts on physical and mental health, and there have been an increasing number of deaths related to the misuse of a range of prescription drugs. There are particular issues in relation to poly-drug use, especially when combined with alcohol and the use of hypnotics which are associated with increased mortality, even in patients taking fewer than 18 Doses/Year[69]. Other medicines also require caution in use including some specialist 'red and amber list' medicines which may

[65] Which drugs cause preventable admissions to hospital? A systematic review. www.ncbi.nlm.nih.gov/pubmed/16803468

[66] Cousins DH, Gerrett D, Warner B. A review of medication incidents reported to the National Reporting and Learning System in England and Wales over 6 years. Br J Clin Pharmacol; 2012 Oct; 74(4):597-604

[67] McClean et al. Antimicrobial prescribing in residential homes. J Antimicrob Chemother, 2012.

[68] Maripu H et al. An audit of antimicrobial treatment of lower respiratory and urinary tract infections in a hospital setting. Eur J Hosp Pharm 2014;21:139-144

[69] Kripke DF et al. Hypnotics' association with mortality or cancer: a matched cohort study. Pharmacology and therapeutics, 2012

need ongoing patient monitoring. These are initiated by a hospital prescriber and may be delivered directly to a patient's home with associated services (homecare services). Risks of harm are higher for some patient groups, for example,; older people, those taking multiple medicines (polypharmacy), and for whom careful adherence is critical for example in the treatment of diabetes, Parkinson's disease and some mental health conditions.

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• Consistent provision of information to patients and their GPs regarding specialist medicines. • Consistent regional approach to the management of patients identified as being on high risk medicines. • Improved reporting/clinical coding of the incidence of unplanned admissions to hospital associated with medicines. • Health and Social Care Professionals aware of incidence of unplanned admissions	• Interface pharmacists' network provides care for patients in relation to specialist 'red and amber list' medicines. Patients may not always receive all the information they require regarding these medicines. Also, there is inconsistency in the level of information provided to patients, carers and social care workers when other high risk medicines are prescribed and dispensed. • Under reporting of incidences of unplanned admissions to hospital associated with medicines. Inaccurate and inconsistent clinical coding. • In only one Trust, a system is in use for surveillance and monitoring of antimicrobial resistance and antimicrobial stewardship with alert

	to hospital in Northern Ireland which are related to medicines. • Regional electronic antimicrobial surveillance system to include resistance tracking, alert functionality and antimicrobial stewardship.	functionality.
General Practice	• All patients on high risk medicines receive appropriate help to take their medicines safely. • Regional electronic antimicrobial surveillance system to include resistance tracking, alert functionality and antimicrobial stewardship.	• There is no regional multi-disciplinary approach to the management of patients on high risk medicines. However, the work of ICPs includes supporting proactive case management and targeting care to those most at risk through a primary care enhanced service for risk stratification. • In only one Trust, a surveillance system is in use which captures microbiological data in general practice.
	• Patients records including the ECR highlight the use of high risk and specialist medicines.	• Documents uploaded on to the ECR often unverified. GP and community pharmacy systems also need information regarding high risk and specialist medicines highlighted.
Community	• Risk stratified provision of	• There is no current list of high risk medicines or protocol which

pharmacy	appropriate support, information and advice with supply of medicines.	community pharmacies use to stratify risk.
	• Community pharmacies with access to up to date information regarding and relating to patient medication including high risk and specialist medicines.	• Community pharmacies do not currently have access to the patient ECR.
Social Care	• All patients in nursing and residential homes who are identified as being on high risk medicines receive an enhanced service.	• In primary care, a GP local enhanced service (LES) for those patients in nursing and residential homes supports those who may have more complex needs supported by pharmacist prescribers and case management nurses in primary care. This service does not currently specify management of patients on high risk medicines.
	• Domiciliary care workers training regarding support for patients on high risk medicines. • Consistent provision to social care workers of information regarding patients on high risk medicines.	• In domiciliary care, there is compliance aid support for at risk patients based on a person's physical capability/cognitive ability/mental health difficulties. Domiciliary care workers need training extended, where appropriate, to raise awareness and how to support patients on high risk medicines.

	• Regional electronic antimicrobial surveillance system to include resistance tracking, alert functionality and antimicrobial stewardship.	• The surveillance system in use in one Trust has the facility to capture microbiological data in nursing/residential homes.
Patients	• Patients with a greater awareness of high risk medicines and empowered to seek support, information and advice in the use of these medicines.	• There is a lack of knowledge among patients regarding high risk medicines to enable them to manage them appropriately.

Recommendations

- A regional risk stratification tool should be developed and implemented in primary and secondary care to identify patients who may be at risk because of the medicines they use.
- Patients and carers should be made aware when high risk medicines are prescribed and dispensed and receive the necessary information to assist safe and effective use.
- The ECR should highlight when high risk and specialist medicines are being used.
- Information to patients and their GPs regarding specialist medicines should be consistently provided.
- A regional plan to improve reporting/clinical coding of the incidence of unplanned admissions to hospital associated with medicines should be developed and implemented.
- GP and community pharmacy computer systems should have high risk and specialist medicines highlighted.
- High risk patients should be prioritised for regular clinical medication reviews (See Standard 6).

- Roles and responsibilities relating to risk stratification and medicines optimisation should be included in ICP patient pathways for at risk patient groups.
- A regional antimicrobial prescribing and surveillance system should be established which includes resistance tracking, an alert functionality and antimicrobial stewardship.

Standard 3 – Safety/Reporting and Learning Culture

Organisations promote an open and transparent culture with evidence of processes for the reporting, prevention, detection, communication and cascade of learning from medication incidents and adverse drug reactions.

Background

The medicines governance teams in primary and secondary care are well established in promoting medication incident reporting, developing risk management processes, implementing regional best practice policies and risk education. However there is variance in the degree to which medicines incidents are reported across the HSC and reluctance from community pharmacies to report due to current legislative penalties for errors. One of the recommendations of the Donaldson Report was a need to make incident reports really count.

The Medicines and Healthcare Products Regulatory Agency (MHRA) has received over 700,000 UK spontaneous adverse drug reactions (ADRs) since the scheme was first started and typically they receive around 25,000 reports per year. In the 5 years prior to June 2013, there have been 2,110 ADR reports reported to MHRA from Northern Ireland. We need to improve our reporting of medicines incidents including ADRs across the HSC and raise public awareness of patient reporting of ADRs.

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• All medicines incidents and ADRs are reported via the	• The rates of medicines incident reporting and yellow

	appropriate mechanisms • All near miss information from pharmacist interventions are captured electronically to enable learning.	card reporting are low and vary between Trusts, across professionals and clinical areas/specialities • Electronic Pharmacist Intervention Clinical System (EPICS) software to capture pharmacist interventions is not in use in all Trusts.
	• A modified risk assessment tool based on the national quality assurance and fit for purpose and medicines error potential tools is used in the procurement process However, there is a need for other tools to identify medication safety risks.	• Whilst Datix is used to report AIs and SAIs, and can be used to help identify medicines safety risks, there are currently no tools, for example, global trigger tool/medication safety thermometer tool.
General Practice	• A software system is in place to allow the recording of incidents by GPs in their general practice (e.g. Datix) and to analyse medicines incidents.	• The rates of medicines incident reporting are low.
	• All ADRs are reported via the yellow card scheme through the GP IT clinical system.	• The rates of yellow card reporting are low.
	• Tools are available to identify medication safety risks.	• There are currently no approved tools for example global trigger tool/medication safety thermometer tool.

Community pharmacy	• A software system is in place to allow the recording of incidents by community pharmacists in their pharmacy practice (e.g. Datix) and to analyse medicines incidents.	• The rates of medicines incident reporting are low.
	• Community pharmacists actively report ADRs via the yellow card scheme and can do so through their pharmacy IT system.	• The rates of yellow card reporting are low.
Social Care	• Systems are in place to report ADRs and incident reporting systems for medicines. • Medication incidents are reported from all registered facilities to RQIA.	• The rates of incident and yellow card reporting are low.
Patients	• Systems are in place to allow patients to report medication incidents.	• Patients are not currently encouraged to report medication incidents.
	• Patients report ADRs via the yellow card scheme.	• The rates of yellow card reporting are low.

Recommendations

- An open and fair culture to encourage timely reporting of medicines incidents and ADRs should be established across the HSC.
- A regional programme should be launched to increase yellow card reporting by health care professionals and patients with consideration of introducing contractual requirements to support implementation.
- A regional system should be introduced to allow electronic reporting, monitoring and analysis of medicines incidents by GPs, Community

Pharmacies and Social Care Workers.

- A regional system should be introduced to identify and review incident data, identify and develop learning and explore new ways of how to deliver learning and share knowledge.
- Formal links should be established with other UK countries with respect to incident reporting and learning.
- Process reviews along with engineering and technological solutions should be developed which aim to minimise system failures that underpin medication errors.
- The use of Institute for Healthcare Improvement (IHI) methodology and other improvement science tools should be increased to improve medicines safety.
- A Never Event approach should be introduced as recommended in the Donaldson report for medication errors.

QUALITY THEME- EFFECTIVENESS

Standard 4 – Access to medicines you need

Patients have appropriate, equitable and timely access to quality assured, evidence-based and cost-effective medicines.

Background

Improved access to medicines has contributed to an increase in life expectancy, helping people to stay healthy for longer and many previously debilitating or fatal conditions are now prevented or managed, often on a long term basis, through regular medicines use. The population of Northern Ireland uses a high volume of medicines per head of population. Robust systems are in place to ensure that medicines are prescribed to patients across the region in line with evidence and best practices in a cost effective manner. Furthermore, regional and local procurement practices in Trusts ensure the availability of quality assured medicines in hospitals. Equally, community pharmacies comply with professional standards for the sale and supply of medicines in the community. The consistent delivery of safe, high quality and cost effective prescribing and procurement is essential to facilitate continued access to medicines for the population.

For new medicines, a regional managed entry process exists which aim is to ensure timely and equitable access for patients to those medicines for which there is an evidence base on efficacy and cost-effectiveness. However, there is a perception that there are differences in access across the region and compared to other UK countries particularly in respect to cancer and specialist medicines.

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• Hospital pharmacies ensure timely access to safe, quality assured medicines so as to avoid delays in administration.	• NI is part of a wider UK and global medicines market and shortages in the availability of some medicines arise.

	• All Health and Social Care Professionals are aware of the HSCB Regional Managed Entry process which supports timely and appropriate access to new medicines • Timely and appropriate access to new medicines for patients. • Compliance with regional guidelines for managing medicines shortages in hospitals.	• Lack of understanding of the funding mechanisms and the process of applying for funding may be restricting timely access to new medicines for patients.
	• Improved support regarding access to unlicensed or off-label medicines in areas of unmet medical need, thus enhancing the landscape for developing, licensing and procuring innovative medicines.	• Unlicensed and off-label medicines are not part of the established regional Individual Funding Request (IFR) process.
General Practice	• All Health and Social Care Professionals are aware of the HSCB Regional Managed Entry process which supports timely and appropriate access to new medicines. • Compliance with regional guidelines for managing medicines shortages in	• Lack of understanding of the funding mechanisms which may be restricting timely access to new medicines for patients. • There are no regional guidelines for managing medicines shortages in primary care.

	primary care.	
Community pharmacy	• All community pharmacists are aware of the HSCB Regional Managed Entry process which supports timely and appropriate access to new medicines. • Community pharmacies ensure timely access to safe, quality assured medicines so as to avoid delays in administration. • Compliance with regional guidelines for managing medicines shortages in primary care. • All patients have their repeat medicines dispensed on time to avoid clinical consequences.	• Lack of understanding of the funding mechanisms which may be restricting timely access to new medicines for patients. • Northern Ireland is part of a wider UK and global medicines market and shortages in the availability of some medicines arise which can result in patients not receiving their repeat medicines on time. • There are no regional guidelines for managing medicines shortages in primary care.
Patients	• Patients are aware of the HSCB Regional Managed Entry process which supports timely and appropriate access to new medicines. • Timely and appropriate access to new medicines for patients.	• Public perception of variance in the managed entry of new medicines.

Recommendations

- Regional guidance should be developed to improve public and healthcare professional awareness and understanding of the processes for managed entry and access to new, unlicensed and specialist medicines in Northern Ireland.
- This should include accessible, accurate and up to date information for the public to view and include a schematic that shows how to access medicines in the HSC.
- Regional guidelines on handling medicines shortages in primary care should be developed.

Standard 5 - Clinical and Cost Effective Use of Medicines and Reduced Waste
A culture exists promoting a shared responsibility for the appropriate, clinical and cost effective use of medicines supported by systems for avoiding unnecessary waste.

Background

Within health and social care organisations it is important that systems for the procurement, prescribing, ordering and supply of prescribed medicines provide cost effective use of medicines providing optimal health outcomes, safety and avoiding waste.

A regional focus on evidence based and cost effective prescribing has resulted in significant improvements in the quality of prescribing in recent years with evidence of change in terms of drug costs and volumes and levels of compliance with the Northern Ireland Formulary. Advertising campaigns have sought to raise public awareness of the need to reduce medicines waste by only re-ordering repeat medicines that are needed and highlighting actions for community pharmacies, GP practices and care homes. However, evidence shows that around 11% of UK households have one or more medicines that are no longer being used[70] and estimates, based upon a study conducted by the University of York, put the cost of wasted medicines in Northern Ireland at £18m per year[71]. The highest levels of wasted medicines are associated with repeat medicines that are ordered, prescribed, dispensed, collected by the patient/carer but never used and subsequently wasted. Waste in nursing and residential homes is recognised as a particular challenge.

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• Prescribing is informed by the Northern Ireland Formulary.	• Prescribing data by clinical indication in secondary care is not available.
	• All Trusts have policies promoting the use of patient's	• There are differences between Trusts in how the

[70] Woolf, M. Residual medicines: a report on OPCS Omnibus Survey data
[71] Evaluation of the Scale, Causes and Costs of Waste Medicines, University of London and York 2010

	own drugs (PODs) where possible on admission to hospital.	process of using PODs is adopted.
General Practice	• Prescribing is informed by the Northern Ireland Formulary.	• The Northern Ireland Formulary is not linked to GP ICT systems. • Prescribing compliance with the Northern Ireland Formulary varies between GP practices.
	• HSC Board medicines management advisors, prescribing support pharmacists and practice-based pharmacists support effective prescribing in GP practices.	• Not all GP surgeries have prescribing support.
	• Repeat prescribing policies and processes aim to restrict over-ordering and reduce errors in ordering.	• The current repeat dispensing service is paper based, inefficient and underused. • Unwanted items previously prescribed may be re-ordered.
Community pharmacy	• Systems are in place to check that items ordered on repeat prescription are required before supply is made.	• There is no requirement for pharmacies not to dispense prescribed items and unwanted items may still be supplied.

	• Medicines waste returned to pharmacies for disposal is safely handled and levels of waste are monitored.	• The level of waste returned for disposal is not monitored.
	• Pharmacies follow HSC Board guidance relating to ordering and collection of medicines.	• Full compliance with the guidance is not assured.
Social Care	• Systems are in place to manage the ordering of prescribed medicines to ensure adequate supplies and prevent wastage. The RQIA encourages and promotes good stock control.	• Stock control is an ongoing problem. • Over ordering and waste returned for disposal from nursing and residential homes is not monitored.
Patients	• Systems are in place to allow patients to order their medicines when needed and prevent inappropriate ordering.	• Inappropriate ordering (over ordering, ordering unwanted items and under ordering) may still occur.
Other	• A regional medicines waste advertising campaign seeks to influence patient behaviour and prescription ordering processes in GPs, Community Pharmacies and care homes.	• There is a continuous need to promote a culture of prudent medicines use and as the campaign runs only once a year its impact may be limited.

Recommendations

- A regional prescribing database should be available for secondary care with the Dictionary of Medicines and Devices (DM&D) as the dictionary to enable merging with primary care data.
- Prescribers should have access to an electronic Northern Ireland Formulary to inform prescribing.
- Consistent prescribing compliance with the Northern Ireland Formulary should be achieved.

- A regional system for minimising medicines waste should be introduced and levels of waste returned from pharmacies and care homes should be monitored.
- Consideration should be given to a role for minimising medicines waste to be included in GP and community pharmacy contracts.
- The repeat dispensing service should be reviewed and re-launched in electronic form.
- To influence patient behaviour regarding medicines waste, the medicines waste advertising campaign should be ongoing.

Standard 6 – Clinical Medication Review

Face to face clinical medication reviews occur on a regular basis.

Background

The importance of medication reviews is recognised and a number of health policies and service frameworks recommend regular reviews for specific patient groups including: older patients, people with diabetes, respiratory disease and cardiovascular disease.

Medication reviews in this context are clinical reviews conducted face to face with the patient and with full access to patient medication records. They are not medicines reconciliation checks. medicines use reviews (MURs), Manage Your Medicines service reviews or desk top patient medication record checks.

Currently medication reviews may occur at various stages in the patient journey carried out by a range of healthcare professionals with varying levels of clinical autonomy and expertise in medicines. There is a level of inconsistency in approach in terms of what the review involves, the optimal time and frequency for completion and who is best to conduct it.

An increasing challenge for medication reviews is the prevalence of multi-morbidities and polypharmacy as the population ages. Another issue is that patients may have medicines prescribed concomitantly by a number of different doctors and non-medical prescribers involved in their care.

These issues reinforce the need for a robust regional approach to medication reviews.

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• 95% of people admitted to hospital receive a consistent IMM service involving a medication review to optimise medicines use conducted by a clinical pharmacist	• There is inconsistency in clinical medication reviews carried out in secondary care as the IMM service is currently only available for 50% of beds and there is variance in the quality of delivery of the

	which is documented.	service between Trusts.
	• Clinical medication reviews to optimise medicines use in outpatient clinics for example diabetes, anti-coagulant and rheumatology.	
General Practice	• Within the core GMS contract is an expectation that patients on chronic medication have an annual clinical medication review. The appropriate frequency should be tailored to the individual and their care plan and may need to be carried out more frequently than annually • High risk patients are prioritised for 'regular' medication reviews as agreed in patient's care plans.	• Face to face, detailed clinical medication reviews are not being undertaken. • There is no regionally agreed approach to clinical medication reviews.
Community pharmacy	• People will have access to pharmacists in the community providing face to face detailed clinical medication reviews. • Pharmacists have access to patient records to allow full clinical medication reviews.	• There are a small number of Pharmacist Independent Prescribers (PIPs) working in community pharmacies with remote access to patient records from general practice offering annual clinical medication reviews for chronic conditions. Access to records

		is essential to allow PIPs to carry out reviews in the community pharmacy setting.
Social Care	• Consultant pharmacist led care in intermediate care, nursing and residential homes supporting the safe and effective use of their medicines. • GP Local Enhanced Service (LES) 2014/15 Pharmacist Independent Prescribers (PIPs) conduct clinical medication reviews of registered patients in nursing and residential homes.	• New models of Consultant pharmacist led care piloted and have been shown to reduce patient risk of admission or re-admission to hospital. This pilot is being extended.
Patients	• Patients are aware of what a full clinical medication review is, when it is required and the healthcare professional responsible for carrying this out with them.	• Lack of understanding of what a full clinical medication review is and when it is required.

Recommendations

- There should be a common understanding among patients and health and social care professionals working in all settings of what a full face to face clinical medication review entails.
- In primary care the frequency of clinical medication reviews for patients should be agreed within individual care plans and the requirement for completion of reviews included in GP contracts.
- The use of the ECR should be broadened to greater facilitate clinical medication review and medicines optimisation.
- A regional model for clinical medication reviews should be developed for use

in all settings which can be delivered by GPs, secondary care clinicians or pharmacists.

- The availability of the IMM service in Trusts should be increased and the service delivered to a consistent quality involving a clinical medication review conducted by a pharmacist.
- The role of pharmacists should be expanded to include detailed clinical medication reviews with access to patient medical records.
- The clinical medication review standard should be included as a generic standard in all service frameworks relating to patients with long term conditions, multi-morbidity, and polypharmacy.

Standard 7 – Administration

Following an initial check that the direction to administer a medicine is appropriate, patients who have their medicines administered receive them on time and as prescribed.

Background

A review of all medication incidents reported to the National Reporting and Learning System (NRLS) in England in Wales between 1st January 2005 and 31st December 2010 was undertaken. Incidents involving medicine administration (50%) and prescribing (18%) were the process steps with the largest number of reports. Omitted and delayed medicine (16%) and wrong dose (15%) represented the largest error categories[72]. A Rapid Response Report from the National Patient Safety Agency on 'Reducing harm from omitted and delayed medicines in hospital' highlighted that medicine doses are often omitted or delayed in hospital for a variety of reasons[73]. This can lead to serious harm or death for some critical conditions, for example patients with sepsis or pulmonary embolism where there is a delay/omission of intravenous medicines[74]. A study which investigated the prevalence of medication errors in care homes in the UK found that 22.3% of 256 residents were observed to receive an administration error. The commonest administration errors were omissions because the drug was not available, so omissions need to be monitored and ordering, particularly of "as required" medicines, needs to be improved[75]. In a 2011 study of medicine administration errors in older persons in hospital wards in the UK, the number and severity of medication administration errors was found to be higher than previous studies. During 65 medicine rounds 38.4% of doses were administered incorrectly.[76] Domiciliary care workers have little training or support to assist patients with administration.

---

[72] Cousins DH, Gerrett D, Warner B. A review of medication incidents reported to the National Reporting and Learning System in England and Wales over 6 years. Br J Clin Pharmacol; 2012 Oct;74(4):597-604

[73] National Patient Safety Agency. Patient Safety Observatory Report 4: Safety in doses; 2007.

[74] National Patient Safety Agency. Rapid Response Report, 2010.

[75] Alldred DP, Barber N, Carpenter J, Dean-Franklin B, Dickinson R, Garfield S, Jesson B, Lim R, Raynor DK, Savage I, Standage C, Wadsworth P, Woloshynowych M, Zermansky AG. Care homes use of medicines study (CHUMS). Report to the Patient safety {Portfolio, department of Health). 2009.

[76] Kelly J and Wright D. Medicine administration errors and their severity in secondary care older persons' ward: a multi-centre observational study J Clin Nursing. 2011

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• All patients should receive their medicines on time following a check that the direction to administer is appropriate and other related factors taken into consideration e.g. insulin dose close to meal time and meals are not delayed.	• Audit carried out in the five Trusts in Northern Ireland in 2013 showed that 12.7% of doses were omitted and delayed.
	• Patients self-administer their own medicines, where the risks have been assessed and the competence of the patient to self-administer is confirmed.	• Self-administration occurs in varying degrees in Northern Ireland hospitals.
	• 'One-stop' dispensing and the use of patient bedside medicines lockers to improve access and reduce medicines administration errors. The move from a 'trolley-based' system for administering medicines to a 'one-stop' dispensing system using patient's own drugs and custom-designed patient bedside medicine lockers has resulted in safer and faster medicine administration rounds.[77,78]	• One-stop dispensing occurs in varying degrees in Northern Ireland hospitals.
Community Pharmacy	• All patients required to take their medicines under supervision are treated in a confidential, non-judgmental manner in a private area within the pharmacy.	

[77] Anon. Giving medicines from patient lockers reduces errors. Pharmaceut J 2002;268:274

[78] Hogg et al. Do patient bedside medicine lockers result in a safer and faster medicine administration round? Eur J Hosp Pharm, July 2012

Social care	• All residents in care homes should receive their medicines on time following a check that the direction to administer is appropriate. • Patients self-administer their own medicines, where the risks have been assessed and the competence of the patient to self-administer is confirmed.	• Evidence of administration errors in care homes due to omissions.
	• Domiciliary care workers are trained and supported to assist and prompt patients with medicines taking to ensure compliance with medication.	• Domiciliary care workers need training extended, to address the principles of medicines optimisation as relevant to their role.
Patients	• All patients living at home are supported to self-administer their medicines and to remain independent for as long as possible.	• There are limited solutions available for supporting independence with medicines taking.

Recommendations

- In secondary care, an ePrescribing & Medicines Administration (EPMA) system and the computerisation of records and processes should be introduced.
- The number of wards in hospital providing a ‘one-stop’ dispensing service should be increased.
- There should be an appropriate skill mix within clinical settings to ensure safe administration of ‘critical’ medicines.
- Self-administration schemes should be rolled out in secondary care where the risks have been assessed and the competence of the patient to self-administer is confirmed.

- Community pharmacies providing a substitution treatment service should have a private area where supervised administration can be undertaken.
- There should be a recognised role for domiciliary care workers in medicines optimisation with regional certified training developed and rolled out.

Quality Theme – Patient/Client Focus

Standard 8 - Safer prescribing with patient involvement

Prescribing is carried out in a manner which promotes safety and optimal health outcomes, with patients involved in decisions about their treatment.

Background

UK studies have highlighted the prevalence of prescribing errors in primary and secondary care showing that medication errors are common and are associated with considerable risk of potentially avoidable patient harm[79,80]. Studies have also shown that the prevalence of error and potentially inappropriate prescribing are greater for people taking multiple medicines (polypharmacy); generally older people and those living in residential and nursing homes[81,82]. A range of safer prescribing initiatives are in place to address these issues and a number of tools are available and in development for prescribing support. For example, the pharmacy-led technology intervention (PINCER) [83] has been demonstrated as an effective method for reducing the range of medication errors in general practice. In secondary care computerised prescriber order entry and decision support have also been shown to improve safety[84].

Modern prescribing practice recognises the importance of involving patients in decisions about their treatment and medication. In this area prescribers are guided by the 2009 NICE Clinical Guideline 76, '*Involving patients in decisions about prescribed medicines and supporting adherence'* which recommends improving communication and increasing patient involvement in decisions about prescribed medicines; a better understanding of the patient's perspective and the provision of more information for patients[85]. Doctors also comply with the GMC Prescribing Guidance 2013 which provides comprehensive advice on the prescribing of

---

[79] Investigating the prevalence and cause of prescribing errors in general practice www.gmc-uk.org ___The_PRACtICe_study_Report_May_2012.

[80] Dornan et al. An in depth investigation into causes of prescribing errors by foundation trainees in relation to their medical education. EQIP Study. 2009 A report to the GMC

[81] Bradley et al. 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

[82] Alldred et al. Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. Quality and Safety in Health Care. 2009

[83] Avery et al: A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomised, controlled trial and cost-effectiveness analysis. Lancet 2012

[84] Bates D W. Using information technology to reduce rates of medication errors in hospitals. BMJ 2000 Mar 18; 320(7237): 788-791

[85] NICE clinical guideline 76

medicines to serve the patient's needs with agreement for the treatment proposed. In addition, the Service frameworks for older people, mental health, learning disability and children all include standards for patient choice and shared decision making. However, time pressures for doctors may make this difficult to achieve and support from other healthcare professionals in supporting patients in decision making is needed.

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• Patients are involved in decisions about their treatment.	• Time to enable an informed discussion with the patient/carer is an issue.
	• To support clinically appropriate and safe prescribing, prescribers have access to an end to end paperless prescribing and administration systems.	• An ePrescribing & Medicines Administration (EPMA) system is in development.
General Practice	• Patients are involved in decisions about their treatment.	• Routine GP consultation times may be insufficient for some patients.
	• Prescribers have access to pharmaceutical advice and up to date information to support clinically appropriate and safe prescribing.	• Pharmacists and electronic prescribing support systems such as PINCER are not available in all GP practices.
Community pharmacy	• See general practice. • Increase in number of pharmacists trained as Independent Prescribers, built	• See general practice. • Low numbers of Pharmacist Independent Prescribers working in

	on a strong clinical foundation and working in Community Pharmacy settings. • Access to electronic care record.	community pharmacies. • No access currently to electronic care records.
Patients	• Patients are involved in decisions about their prescribed medicines.	• Patients do not see themselves as equal partners in decision making.

Recommendations

- In secondary care an ePrescribing & Medicines Administration (EPMA) system and the computerisation of records and processes should be introduced and linked to general practice and community pharmacy.
- GP practices should have pharmacists available to advise on complex medicines and polypharmacy, to conduct clinical medication reviews and to help patients with information and advice to take their medicines safely and effectively.
- In GP practices the role of technology enabled screening tools and clinical decision support systems during prescribing for optimising medicines selection and reducing medication errors should be considered.
- The Northern Ireland Formulary should be integrated within GP and community pharmacy systems.
- Greater awareness of the patient's role in decision making should be promoted.
- The use of patient decision aids in consultations involving medicines should be explored.
- Community pharmacists should develop clinically and train as independent prescribers.
- Community pharmacists should have access to electronic care records.
- The hybrid independent prescribing model should be expanded where doctors diagnose and routine prescribing is then carried out by non-medical prescribers.
- There should be a greater multi-disciplinary approach to prescribing in the most appropriate setting for the patient to ensure medicines use is optimised.

Standard 9 – Better information about medicines

Patients/carers receive the information they need to take their medicines safely and effectively.

Why is the standard needed

Ten days after starting a new medicine, 61% of patients feel they are lacking information and only 16% of patients who are prescribed a new medicine are taking it as prescribed, experiencing no problems and receiving as much information as they believe they need[86]. Good quality information is essential for greater patient involvement and shared clinical decision making and sufficient high quality information alongside good professional interaction is key to helping clinical decision making[87]. The regional public health strategy 'Making Life Better' states that we need to empower people to make informed decisions about their health by improving health literacy which includes providing appropriate and accessible health information (making greater use of modern communication technology) and advice to all, which is evidence informed and tailored to meet specific needs[88].

Information needs to be communicated effectively at a level that will help patients to manage their condition effectively as opposed to just providing information. Limited health literacy capabilities have implications regarding medicines use. Census data shows that almost 60% of adults aged 16 -74 in Northern Ireland have no or low level educational qualifications. Not having English as a first language can also impact significantly on the ability to assimilate and use information related to medicines.

The timing and method of communicating information to enable patients to understand their medicines needs to be considered and the medicines optimisation model allows clarification of the roles of health and social care professionals at particular points in the patient journey.

Provider	What best practice should be	Gaps in delivery of

[86] Barber et al. Patients' problems with new medication for chronic conditions. Quality and safety in healthcare 2004.
[87] Coulter et al. Assessing the quality of information to support people in making decisions about their health and healthcare. Picker Institute, 2006.
[88] Making Life Better 2013-2023

	delivered	best practice
Hospital	• Patients receive appropriate information about their medicines during pre admission clinics and pre discharge counseling. • Patients on specialist medicines have access to a healthcare professional for advice and information.	• This is not provided consistently in all Trusts. Time is an issue to enable this to be carried out effectively. • There is no agreed support system for patients post discharge.
General Practice	• Patients receive appropriate information about medicines when first prescribed and during clinical medication reviews.	• GP consultation times may not be sufficient to provide all the information required by the patient.
Community pharmacy	• Patients receive appropriate advice and information when medicines are supplied. • Medicines Use Reviews (MURs) are provided to improve patient knowledge, adherence and use of their medicines.	• The provision of advice and information with medicines supplies is inconsistent. • MURs are not hugely available in all community pharmacies.
	• It is a legal requirement that all medicines are supplied with a Patient Information Leaflet (PIL) provided by the pharmaceutical manufacturer.	• The content of the PIL can be both difficult to read and comprehend.

Social Care	• Nursing and social care staff have access to appropriate up to date information sources for medicines.	• Access to accessible and appropriate up to date information about medicines is limited especially for domiciliary care workers.
Patients	• Patients have access to information about medicines via the patient zone on the Northern Ireland Formulary website, a patient portal on the NIDirect website and other websites, for example NHS choices. Patients with mental illness have access to information about their medicines via the Choice and Medication website. • Patient helpline available for advice and information.	• Patient awareness of recommended sources of information is low. • Patient helpline pilot underway in BHSCT and WHSCT.

Recommendations

- A regional system should be agreed to support patients with their medicines after discharge from hospital.
- In GP practices, pharmacists should be available so that patients can be referred to them for information, advice and help to take their medicines safely and effectively.
- Community pharmacies should follow a Standard Operating Procedure (SOP) for the risk stratified provision of appropriate support, information and advice with supply of medicines. Information sources for patients should be promoted [patient portal].
- A regional patient helpline should be available for advice and information.
- There should be increased availability of the current MUR service in community pharmacy and developed further to include other conditions.

Standard 10 – Supporting adherence and independence

People are helped to remain independent and self manage their medicines where possible but receive support with adherence when needed.

Why is the standard Needed

UK evidence shows that 30-50% of long term conditions sufferers do not take their medicines as prescribed[89]. Consequences of non-adherence include poorer than expected clinical outcomes; reduced quality of life; deterioration of health and unplanned admissions to hospital. In the UK the NHS costs of hospital admissions resulting from people not taking medicines as recommended were estimated at £36-196 m in 2006-7[90]. A Cochrane review 'Interventions for enhancing medication adherence' concluded that improving medicines-taking may have a far greater impact on clinical outcomes than improvements in treatments[91].

It is important that people are helped to remain independent and self-manage their medicines for as long as they are able, with the confidence that they will be supported if the time comes when they need more help. Self management should provide people with the knowledge and skills they need to manage their own condition more confidently and to make daily decisions which can maintain or enhance their health and well-being as well as their clinical, emotional and social outcomes.[92] The King's fund paper, 'supporting people to manage their health – an introduction to patient activation describes the patient activation measure (PAM) which measures an individual's knowledge, skill and confidence for self-management. It is stated that patient activation is a better predictor of health outcomes than known socio-demographic factors such as ethnicity and age[93]. Good communication and effective systems can help support people, particularly as they age, to stay in control of ordering, collecting and taking their prescribed medicines.

[89] Horne R, Weinman J, Barber N, Elliott R, Morgan M. Concordance, adherence and compliance in medicine-taking. Report for the National Co-ordinating Centre for NHS Service Delivery and Organisation R & D. 2005.
[90] NICE Costing Statement: Medicines Adherence: involving patients in decisions about prescribed medicines
[91] Cochrane review: Interventions for enhancing medication adherence, 2008
[92] DHSSPS Living with Long Term Conditions Strategy, 2012
[93] Supporting People to Manage Their Health – An Introduction to Patient Activation. The King's Fund, 2014

Provider	What best practice should be delivered	Gaps in delivery of best practice
Hospital	• On admission to hospital, patients with sub-optimal adherence are identified through the NI Single Assessment Tool (NISAT) and/or IMM Medicines Reconciliation. Their needs are assessed and appropriate post-discharge support is arranged prior to discharge. • Improved clinical coding of the incidence of unplanned admissions to hospital associated with non-concordance.	• There is no common approach to using NISAT, identifying and assessing non-adherence and to the provision of solutions or support at discharge. • The IMM service is currently only available for 50% of beds. • The clinical coding of medicines related admissions including non-concordance is under reported.
General Practice	• Patients with sub-optimal adherence are identified and referred for assessment.	• There is no common regional approach to identifying and assessing non-adherence and to the provision of solutions.
Community pharmacy	• Patients with sub-optimal adherence are identified through the Targeted Medication Use Review (MUR) and Manage Your Medicines Services.	• The targeted Medicines Use Review Service is limited to patients with respiratory disease and/or diabetes and the service is not hugely available from all pharmacies. • The Manage Your Medicines Service has low uptake.

	• Adjustments are made to medicines packs and adherence aids provided to assist patients to take their medicines more effectively. • On the request of GPs community pharmacies can supply medicines weekly for high risk patients when it is essential to protect the patient and prevent life-threatening non-compliance.	• There is no common regional approach to identifying and assessing non-adherence and to the provision of solutions. • A Medicines adherence (MASS) pilot is underway.
Social Care	• Patients should have the necessary support to remain independent and manage their medicines for as long as possible without the need for interventions such as Monitored Dosage Systems (MDS).	• Healthcare professionals undertake many specialist clinics and invest significantly in supporting patients in medicine adherence and independence including techniques and ADRs. However there is still a heavy reliance on (MDS).
Patients	• Patients have access to a wide range of patient education/self management and training programmes provided within the HSC and by voluntary and community organisations to help provide the skills and tools they need to self-care/manage for example the Pain Toolkit and Beating the Blues. • Patients have self-management plans to support self	• There is low awareness of the resources available. • There is no regional approach to self-management plans to empower patients to be more involved in managing their chronic or long term condition(s).

	management of their chronic or long term condition using medicines	
Other	• Patients have access to tele-monitoring services which enable them to monitor e.g. BP at home, avoiding visits to GP or A&E with their readings being monitored remotely and help available if required.	• Tele-monitoring services are still under development.

Recommendations

- An integrated regional system for identifying and assessing non-adherence and providing solutions should be agreed with defined roles for secondary care, general practice, community pharmacy services and social care.
- A range of low and high tech solutions to support adherence should be developed and commissioned.
- The MUR service should be developed for patients with multi-morbidities and polypharmacy.
- A regional system for improving the quality of coding for medicines related factors to identify admissions due to poor adherence should be developed and implemented.
- The availability of self help information relating to medicines and adherence should be promoted.
- Self-management plans should be developed to support patients with a chronic or long term condition(s).

Section 5

Supporting continuous improvement and innovation in medicines use

1. The Quality Standards have identified a number of gaps in medicines management systems which impact on the delivery of the Medicines Optimisation Model. Many of the recommendations to address these gaps require regional systems which may involve an element of whole system change with interdependencies across the HSC.

2. Traditionally a range of organisations have had active programmes of research and service development relevant to medicines optimisation with funding coming from a variety of sources.

3. The ultimate success of these programmes is for their outputs to inform practice throughout the HSC through changes to medicines policy or commissioned services. However, this does not always occur and in many instances outputs are not recognised or valued by commissioners and policy makers or practices are not successfully translated across the HSC leaving fragmented or disjointed services. Outputs need to be demonstrably transferrable across the wider HSC and monitored to ensure the programmes continue to be a success following roll-out.

4. A new strategic approach to pharmaceutical innovation is proposed to support and drive continuous improvement through the development and implementation of best practice in medicines optimisation in Northern Ireland using existing funding streams and resources where possible.

5. This will require a high level strategic alliance of stakeholders involving commissioners working to provide the necessary leadership and focus for the development and implementation of evidence based best practice associated with each medicines quality standard.

6. The approach has three components

    - **A regional medicines innovation plan**
    - **A regional centre for medicines innovation, research and service development.**
    - **A medicines optimisation network**

7. **The regional medicines innovation plan** will be agreed by the high level alliance of stakeholders. The plan would prioritise projects in a programme of translation, research and service development with clear outputs and timelines for developing, testing and implementing solutions.

8. As the programme will draw on the activities of a range of different organisations, accessing different funding streams and with varied outputs, it is proposed that this work is undertaken under the governance of a new **Northern Ireland Medicines Optimisation and Innovation Centre (NIMOIC).**

9. The centre would provide a locus for developing a systematic approach to finding and testing solutions for the HSC and would have the following functions.

    - Project manage an innovation programme of research and service development projects.
    - Develop, test and evaluate solutions to pre-commissioning stage.
    - Support successful translation into HSC service delivery and commissioning.
    - Help projects to access and utilise available funding streams.
    - Provide a regional centre of expertise for research and service development in medicines optimisation and post-implementation review of service delivery.
    - Build local expertise and competence in developing and translating research into practice.
    - Facilitate a continuous cycle of improvement within the HSC in the area of medicines optimisation.

10. The centre would also have wider benefits combining pharmaceutical and R&D skills with technology and business acumen to:

- Provide evidence based solutions for medicines optimisation which could be developed commercially, marketed and sold to other countries with the HSC as a beneficiary.

- Promote Northern Ireland as a leading area for medicines optimisation research and development and strengthen Northern Ireland's 4 star EU reference status bid.

- Attract inward investment into a Northern Ireland Medicines Optimisation Innovation Fund/ Programme.

- Increase collaborative work with other established research networks in UK, Europe and internationally.

11. **The medicines optimisation network** would link to other health and life science networks and provide an opportunity for building and sharing knowledge and developing collaborative working partnerships.

. Suggested participants are as follows:

- Commissioners (HSC Board, Trusts, PHA, BSO)
- Policy (DHSSPS)
- Patients (Patient Client Council)
- Independent Domiciliary Care Providers
- Academia (UU and QUB)
- Pharmaceutical and Technology Industries
- Voluntary sector
- Expert(s) with research skills
- NIMDTA, NICPLD, nursing
- Current translational research groups e.g. CTRIC
- Health and Social Care professionals
- Experts from across the UK and international

Section 6

Plans for Implementation

1. During 2015/16 a high level strategic alliance of stakeholders will be convened, led by DHSSPS, to manage the implementation of the Framework. The alliance will involve senior health and social care professionals, commissioners and policy makers and will agree a **prioritised work plan** for the five year period 2015/16 – 2020/21.

2. The plan will include:

   - A baseline assessment of best practice
   - Actions to improve quality and reduce variance in the delivery of best practice
   - Methodology for the translation of best practice across the HSC.
   - A prioritised innovation programme of research and service development to develop and test new solutions.
   - Actions to promote solutions to markets outside Northern Ireland.

Resources

3. There are resource implications associated with the implementation of the Framework. During 2015/16 initial implementation will be supported through the DHSSPS Strategic Innovation in Medicines Management Programme which is funded by the Executive's Change Fund, EU funding and Health and Social Care Board (HSCB) service development.

4. Future budgetary needs will be identified in a strategic financial plan developed in partnership between DHSSPS and the HSCB which will also consider the potential of existing HSC, UK and EU funding streams and resources to deliver the work plan objectives.

Medicines Optimisation Dashboard

5. A medicines optimisation dashboard is proposed which will bring together data related to medicines use across the region and will allow Trusts, Local Commissioning Groups and GPs to monitor how well they are optimising the use of medicines and will enable comparisons. It will monitor trends, enable benchmarking and will help drive quality improvements. It will also provide an understanding of how well patients are supported across the region to use their medicines safely and effectively to improve health outcomes. Outcome measurements associated with the dashboard include:
    - Achievement of expected therapeutic outcomes
    - Cost Effective Use of Medicines
    - Impact on acute health services
    - Medicines Safety incident reporting
    - Patient/client satisfaction