

Medicines Optimisation Innovation Centre (MOIC)

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Abstract

Title

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Summary

Medicines are the most common medical interventions within our population and, at any one time, 70% of the population is taking prescribed and over-the-counter medicines to treat or prevent ill-health. In simple financial terms, expenditure on medicines in Health and Social Care (HSC) in Northern Ireland is of the order of £550 million per annum. In addition, there is significant sub-optimal use of medicines resulting in sub-standard patient care and waste of healthcare resources. In order to address these issues a new approach is needed that moves the emphasis away from a system and service focus to a patient-focused medicines optimisation (MO) methodology. To this end the Department of Health launched its policy document the Medicines Optimisation Quality Framework (MOQF).

The MOQF has three strands; namely a regional MO model, quality standards, and a regional innovation plan. A key component of the policy was the establishment of a regional Medicines Optimisation Innovation Centre (MOIC). The MOIC will provide a focus for delivering a systematic approach to finding and testing solutions for the HSC in Northern Ireland.

In order to achieve its key aim of 'smarter medicines, better outcomes' the MOIC utilises the 'quadruple helix' approach as identified in the European Innovation Partnership on Active and Healthy Ageing, namely involvement of civil society, academia, healthcare and industry. This approach enables comprehensive inclusive solutions to be developed that meet the needs of the population but with robust academic input as well as industry in the broadest sense in this regard.

Keywords: quality framework, academic practice unit, quadruple helix, European

Medicines Management in Northern Ireland (2000-2014)

Medicines are the most common medical interventions within our population and, at any one time, 70% of the population is taking prescribed and over-the-counter medicines to treat or prevent ill-health. In simple financial terms expenditure on medicines in Health and Social Care (HSC) in Northern Ireland is of the order of £550 million per annum. In comparison with other UK countries the volume and cost of medicines prescribed per head of population in Northern Ireland in primary care is much higher and, with both an ageing population and a rising number of people with long term conditions, demand will only increase.

In 2000, the high prescribing costs, particularly in primary care, were highlighted in the Comprehensive Spending Review. In response, the Department of Health, Social Services and Public Safety (DHSSPS) established a Pharmaceutical Services Improvement Plan (PSIP) which, for the first time, considered a whole system approach encompassing both primary and secondary care. The work utilised the Audit Commission's definition of medicines management, namely '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',¹ to scope the requirement.

This approach, which was initiated in 2000, evolved and was enhanced, developing into the subsequent Pharmaceutical Clinical Effectiveness (PCE) programmes up to the present time. Further, the DHSSPS also initiated an Innovation and Medicines Management Programme based on an 'invest to save' ethos which still continues today.

As a result of work carried out under these schemes, Northern Ireland was formally identified as a reference site with the European Innovation Partnership for Active and Healthy Ageing (EIPAHA). The region was awarded '3 star' status in April 2013 for the level of innovation, scalability and outcomes demonstrated in medicines management. This recognised 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. Building upon this recognition, Northern Ireland was one of the seven regions in Europe to be awarded '4 star' status in 2016.

Need for change – the DHSSPS Medicines Optimisation Quality Framework

A significant degree of improvement has been achieved in modifying and developing systems and services to attain the aim of safe and effective use of medicines. However, there is still a considerable degree of sub-optimal medicines use with patients failing to gain the expected benefits for their health and with services coming under increasing pressure as care needs escalate their treatment (Table 1).

In order to address these issues a new approach is needed that moves the emphasis away from a system and service focus to a patient-focused medicines optimisation (MO) methodology.

MO has been defined by the National Institute for Health and Care Excellence (NICE) as 'a person centred approach to safe and effective medicines use to ensure that people obtain the best possible outcomes from their medicines'.² This resonates with the four principles of MO developed by the Royal Pharmaceutical Society (RPS) in 2013, namely:

1. Aim to understand the patient's experience.
2. Evidence-based choice of medicines.
3. Ensure medicines use is as safe as possible.
4. Make MO part of routine practice.³

However, to deliver sustainable and measurable improvements at a regional level, a strategic approach is necessary and the DHSSPS Medicines Optimisation Quality Framework has been developed to provide the necessary arrangements to support this aim.⁴ The framework is illustrated diagrammatically in Figure 1.

The Framework is a 'living document' that can be modified and adapted as innovation, service enhancement and improvement occurs. The whole system approach with key components is shown in Figure 2.

The framework has three key standards:

- 1) A regional Medicines Optimisation Model.
- 2) Quality Standards.
- 3) A Regional Innovation Plan.

In terms of innovation, there will be a strategic approach as follows:

- Prioritised work plan for MO
- Regional Centre for Innovation
- Network supporting collaboration and knowledge transfer.

Medicine Optimisation and Innovation Centre (MOIC)

A key element of the regional action plan will involve projects that seek new solutions to address gaps in best practices for the quality standards, which are developed and tested with the HSC prior to commissioning for scale-up and implementation regionally. In this regard, for example, work has been undertaken in both the nursing/residential home and intermediate care settings in terms of models of care that deliver MO and, based on successful outcomes, these are being rolled out regionally. One of the areas of work currently being tested is post-discharge follow-up based on a successful small pilot. These projects will be undertaken in collaboration with the newly established MOIC. The overall aim of the MOIC is to work towards better patient outcomes by initiating, developing and sharing best practice with regards to medicines use and is, in essence, a 'test bed' for Northern Ireland. This will be achieved by using a combination of research, innovation, quality improvement and knowledge transfer.

The MOIC will provide a focus for delivering a systematic approach to finding and testing solutions for the HSC in Northern Ireland and further afield by undertaking the following functions:

- Project manage an innovative 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.
- Assist projects to access and utilise available funding streams.
- Provide a regional centre of expertise for research and service development in MO and post-implementation review of service delivery.
- Build local expertise and competence in developing and transferring research into practice.
- Facilitate a continuous cycle of improvement within the HSC in the area of medicines optimisation.

The MOIC also has wider benefits combining pharmaceutical and research and development (R&D) skills with technology and business acumen to:

- provide evidence-based solutions for medicines

- 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.
- One in 15 hospital admissions are medication related, with two-thirds of these being preventable.
- One in 20 prescriptions in General Practice contains an error, with a higher prevalence associated with prescriptions for the elderly and those taking 10 or more medications.
- Prescribing errors in hospital in-patients affect 7% of medication orders, 2% of patient days and 50% of hospital admissions.
- An estimated £18m of medicines are wasted annually in Northern Ireland.

Table 1: Example of sub-optimal medicines use



Figure 1: The Quality Framework

optimisation which could be developed commercially, marketed, and sold to other countries with HSC as a beneficiary

- attract inward investment into a Northern Ireland Medicines Optimisation Innovation Fund/Programme
- increase collaborative work with other established networks in UK, Europe and internationally.

Medicine Optimisation Network

The work of the MOIC will lead to the development of a medicines optimisation network linking the HSC with other health and life science networks and innovation centres in Northern Ireland, UK and internationally. It will also support knowledge-sharing within the HSC and with wider networks and the development of collaborative working partnerships and joint working arrangements between partnerships that may include:

- community organisations
- policy (DHSSPS)
- patients and their representative bodies
- Independent Contractors (GPs, Community Pharmacists and domiciliary care providers)
- independent domiciliary care providers
- academia (including post graduate education providers)

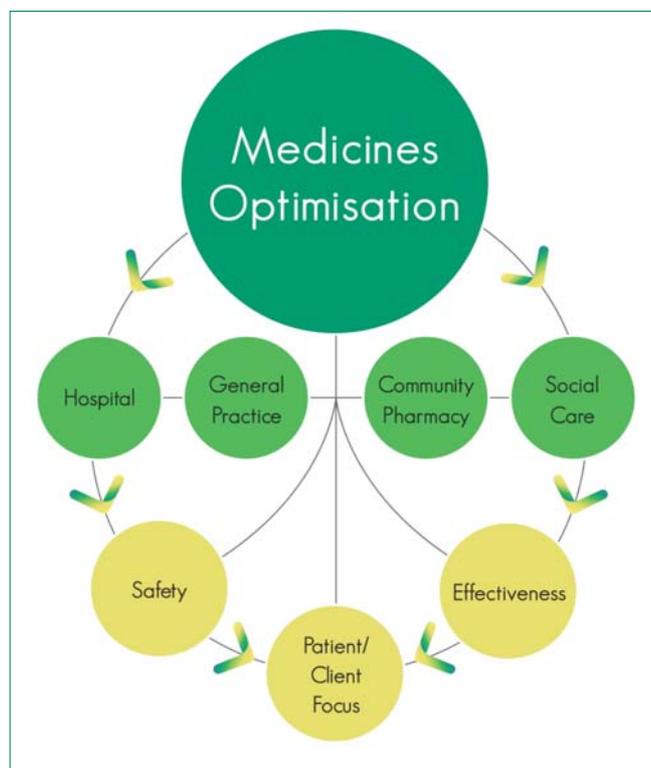


Figure 2: The Northern Ireland Medicines Optimisation Model

- pharmaceutical and technology industries
- voluntary sector and charities
- experts with research skills including other innovation centres and translational research groups.

MOIC Launch

The MOIC has been established and is based at Antrim Area Hospital site in the Northern Health and Social Care Trust. It was officially launched on 15th October 2015.

The work of the MOIC will build upon a significant track record of research and service development undertaken by the Academic Hospital Clinical Pharmacy Practice Unit, which was established between the Northern Health and Social Care Trust and the School of Pharmacy at The Queen's University of Belfast in 1994. The Academic Practice Unit (APU) was based at the Antrim Area Hospital and focused on the areas of medicines management and healthcare acquired infection. Staff at the APU have worked with a wider range of collaborators, including commercial partners. A range of outputs have been achieved, including over 60 published papers, 13 PhD students supervised and in excess of 50 MSc and diplomas completed.

A key area of work has been the development of a number of enabling technologies for use in the clinical setting. These include an electronic solution for medicines reconciliation, a programme for antimicrobial surveillance and a novel tool to aid the procurement of medicines and medical devices.

The value of the historical work undertaken in the APU can be seen in the publications with regard to initially medicines management and, subsequently, MO. This is now enabling solutions to other gaps in the process to be evaluated. Exemplar publications include those on Integrated Medicines Management,^{5,6} health care acquired infection⁷ and new models of care for the elderly.^{8,9}

The establishment of MOIC gives an even greater impetus to the work commenced by the APU. Research and service development will continue to focus on improving patient outcomes. Since the launch of the centre in October 2015, there has been an increase in the number of collaborations formed in the UK and Europe. This has included development of further relationships with both the pharmaceutical industry and technology companies. This has consequently enabled and enhanced the capability to apply for funding bids and has led to the submission of a number of applications to EU funding programmes.

Knowledge translation both within and outside of Northern Ireland is another key aim for the MOIC. A hosting programme that facilitates knowledge transfer with regards to medicines optimisation has been developed. The MOIC team currently welcomes visitors from a number of countries. The visitors, who range in their level of experience in pharmacy/medicines optimisation, visit for periods of between 1 day and 5 months depending on their particular needs. In addition, a new bespoke programme was put in place in 2016 for visitors from Egypt and another is being developed for Jordan for this year. The programmes are undertaken in conjunction with Ulster University and Queen's University Belfast respectively.

Conclusion

The MOIC has been established to identify gaps and improve patient care in relation to optimising medicines use. The MOIC utilises the 'quadruple helix' approach as identified in the European Innovation Partnership on Active and Healthy Ageing,¹⁰ namely involvement of civil society, academia, healthcare and industry. This approach enables comprehensive inclusive solutions to be developed that meet the needs of the population but with robust academic input as well as industry in the broadest sense in this regard.

Declaration of interests

The authors have nothing to disclose.

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