



MEDICINES OPTIMISATION INNOVATION CENTRE
Annual Report 2018 / 2019



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Context

The Regional Medicines Optimisation Innovation Centre (MOIC) was established in October 2015 as one of the key components of the Medicines Optimisation Quality Framework¹. This Framework recognises that medicines are the most common medical intervention used in the health service and noted that medicines expenditure represents 14% of the total health & social care budget in Northern Ireland (NI). With an aging population it is anticipated that the prevalence of chronic disease and the need for medicines will increase.

The key aim of MOIC is to work towards better patient outcomes by initiating, developing and sharing best practice with regards to medicines use, and this is achieved via the following primary activities:

1. Developing a systematic approach to finding and testing solutions for Health and Social Care (HSC).
2. Combining strengths in clinical pharmacy, pharmacy practice, research and service development with technology and business acumen.
3. (a) Developing a medicines optimisation network, linking with the HSC and other life science networks and innovation centres in NI and Europe.

(b) Support knowledge sharing both with the HSC and wider networks and the development of collaborative working partnerships and joint working arrangements between participants.

MOIC Workstreams

In addition to work around Infrastructure, communications & marketing, MOIC activity is split across four workstreams, namely to:

- Focus on the needs of patients and the NI population.
- Accelerate the adoption of innovation into practice to improve clinical outcomes and efficiency.
- Build a culture of partnership and collaboration.
- Make a meaningful contribution to the NI economy.

This report will describe the key achievements in these areas during 2018/2019.



Infrastructure, Communications & Marketing

A team of Programme Managers are key to the functioning of MOIC. During the year, there were a number of changes in personnel within that team. As a result, two Programme Managers left their posts and new staff were appointed to work at MOIC. These staff moved to new office space within Bretten Hall during the 2018/19 year.

A temporary Communications Manager (0.5WTE) was in post in MOIC until August 2018. Following work undertaken with Finance and Corporate communications, funding was secured for a permanent (0.6WTE) Communications Manager for MOIC and a recruitment process commenced. It is hoped that the successful individual will take up post during 2019/20.

The MOIC team have attended a range of conferences and workshops across the UK to assist with the promotion of MOIC. In addition, results from specific projects have been disseminated through a variety of means including the publication of papers, attendance and presentations at a range of conferences. A list of publications and presentations is included in Annex A.

Focus on needs of patients and Northern Ireland population

When in hospital, it is likely that changes will be made to medications. During the 2018/19 year, the results from a post-discharge from hospital follow-up study were fully analysed with assistance from researchers at Queen's University Belfast. In the study, patients (n=211) discharged from hospital on multiple medications were followed up by a clinical pharmacist by telephone at 5, 30 and 90 days post-discharge. The results indicated that those receiving such telephone calls had a:

- 9.9% reduction in 30 day readmission rates.
- 15.2% reduction in 90 day readmission rates.
- Positive health economic benefit, with return in investment at £51 per £1 spent at 30 days.
- High level patient satisfaction.

Following the positive results observed an academic paper was published². In addition, funding was applied for under the Northern Ireland Transformation Funding programme and this was awarded during 2019 to roll this initiative out as a service in Antrim Area Hospital.

In primary care, work continues with the Health & Social Care Board (HSCB) to evaluate new services that are being developed. Evaluation of benzodiazepine reduction clinics was completed. In this service, 836 patients from across five GP practices were given additional support to reduce or stop their benzodiazepine or z-drug. Some 65% successfully reduced and stopped their medication and a further 24% were stabilised on a lower dose or continued on a reduction programme. During the winter a new 'Pharmacy First' service for coughs, colds and flu like symptoms was introduced across NI. MOIC have been working closely with HSCB colleagues in order to evaluate this service. The MORE Programme Board was established to oversee a number of different work strands designed to optimise medicines use across NI. As part of this remit the use of nutritional supplements in primary care is being considered, again, MOIC are assisting with this process.

Also in primary care, interventions and data analysis on a project involving GP practices in four regions (NI, North West England, Wessex and East of England) continued with assistance from researchers at Queen's University Belfast. In each practice, a clinical pharmacist managed the



medicines of patients who were at high risk of complications. This project was carried out under joint working arrangements with the Association of the British Pharmaceutical Industry (ABPI). Early indications are that those in the intervention group had less health care contact time and reduced healthcare utilisation cost. The intervention group costs were lower than the control group costs while the Health Related Quality of Life scores were marginally higher in the intervention group. This is being written up for dissemination.

MOIC continue to work with the Mid & East Antrim Agewell Partnership (MEAAP) on a social prescribing project. Under the project around 1100 eligible people, aged ≥ 70 years are being supported through health and wellbeing Hubs and they are able to avail of a range of Alternative Care Prescriptions (ACPs). MOIC are assisting with evaluation of the pharmacy aspects of this work which will focus on the effectiveness of an IMPACT pharmacist working in the Hub and the effectiveness of the community pharmacy delivering community pharmacy services to service users. The expected period of evaluation is April 2018-19 plus six months follow-up and around 100 service users are expected to be recruited into the pharmacy evaluation.

Work also continued with Primary Care and Community Together (PACT). Under this project, access to pharmacy services for vulnerable groups is being explored. In particular, the project is considering if access to services for isolated people is effectively facilitated by the PACT model and if community pharmacies can work collaboratively to deliver services.

The Antibiotic Review Kit for Hospitals (ARK-Hospital) is a five-year applied research programme, funded by the National Institute for Health Research (NIHR), which will provide information for prescribers about decision making regarding antibiotic use. The Northern Health and Social Care Trust (NHSCT), supported by MOIC, commenced work on the full trial phase of the ARK-Hospital project during 2018/19.

In the area of medicines adherence, work has commenced on a new project for those with Type 2 diabetes. The project is being carried out with colleagues at the South Eastern HSC Trust and Queen's University Belfast and will use dried blood spots to assess patient adherence to metformin. During the 2018/19 year, the project team was established, a protocol was agreed and work commenced on the applications required for research governance.

MOIC staff have been contributing and will continue to contribute to a number of key policy and health infrastructure areas. This has included contributing to the development of a Strategic Action Plan for Antimicrobial Resistance, which will be launched in 2019/20. It is anticipated that MOIC will take the lead in the following areas:

- Investigate novel methods of antibiotic use and its impact on healthcare acquired infections.
- Ensure collaboration between the MOIC and industry and assessing the impact of various rapid diagnostics on infection management.

In Northern Ireland, the ENCOMPASS programme is developing a digital integrated care record for Northern Ireland. MOIC are contributing to the development of the medicines aspects of this system. During the year a baseline audit of medication charts was conducted in all five Trusts and data analysis for the audit was carried out by MOIC.

Within Northern Ireland transformation funding has been awarded to the HSCB in order to scope and establish new models of prescribing by non-medical prescribers. MOIC have been invited to sit



on the Steering Group for this initiative and will contribute to the review methodology and any evaluation as required.

Accelerate the adoption of innovation into practice to improve clinical outcomes and efficiency

A key area for continued development has been the use of secure analytic tagging with our commercial partner Healthcare Analytics. Using the technology, it is possible to track medical equipment as it moves through the hospital and community setting. This can be used to ensure that assets can be found and to record cleaning and maintenance of medical equipment. During the year beacons were installed across the Antrim Area Hospital site and the relevant readers were received. Significant work was undertaken to ensure appropriate information and IT governance were secured, including the completion of the appropriate privacy impact assessment and a data access agreement as well as meeting cyber-security requirements. A number of beds and mattresses have now been tagged and these will be used to demonstrate the system during 2019. Regular meetings continue to be held with CHIC, Multitone and Healthcare Analytics in order to map future projects.

Under the Small Business Research Initiative (SBRI) scheme, commercial companies work closely with the Trusts in order to find new solutions to health and social care problems. During 2018/19 a number of phase 2 projects commenced and MOIC were involved in the following areas:

- SBRI Home considered enhanced domiciliary care. NHSCT/MOIC worked with PillPacPlus Limited on a project considering use of mobile technology in the home care setting. Under this project an app for homecare workers was developed and tested. The app takes information from hospital and community pharmacy settings and aims to improve information available to the homecare worker, thereby optimising client care.
- Under SBRI Fast, NHSCT/MOIC worked with Healthcare Analytics on a project to develop a system to optimise use of hospital pharmacy staff skill-mix. The developed system helps to ensure that pharmacy staff are directed to where their skills are needed most to improve patient care.

Antibiotic resistance and healthcare acquired infection is a major global challenge. Along with colleagues in microbiology and universities, MOIC are involved in a number of projects. Given the number of projects in this area, a group to consider all research and service developments in Healthcare Acquired Infection has been established. The group, based at NHSCT, has representatives from medicine, nursing, pharmacy and MOIC. The antibiotic cycling project which completed during 2017/18 concluded that antibiotic cycling should not be introduced as a policy but the results indicated that further exploration of antibiotic threshold levels is required. The current thinking on antibiotic thresholds is that use of a range of antibiotics below threshold levels will not adversely impact on resistance patterns. MOIC are part of a study being carried out in five centres which is aiming to identify threshold group levels for a range of antibiotics. Work in this area has been accepted for publication in Nature Microbiology. Linked to this work, a research programme with a PhD student at Ulster University (UU) is ongoing and a further PhD in the area of thresholds for prescribing for ESBLs has been proposed.

Many new rapid diagnostic tests which greatly reduce the timeframe for infection diagnosis have recently been developed. During the year, MOIC have been working on two projects in the area of rapid diagnostics. One, in the hospital setting is with Accelerate who have a device that is used in



the diagnosis of septicaemia. This project has included the development of a health economic model and the installation of a number of machines in NI hospitals. Testing using these machines is almost complete. In community pharmacy, Northern Pharmacies Trust have piloted a new point of care test for use in patients with cough, cold and flu symptoms. MOIC are assisting with the evaluation of this service.

Work on a retrospective audit considering the monitoring of physical health parameters of patients with severe mental illness, treated with antipsychotics was completed in four Trusts. Discussions are continuing on the development of an automated system, linked to ECR, to prompt monitoring of physical symptoms.

A number of new projects, in conjunction with companies are being considered. Several of these are in the area of wound healing and as such, MOIC will be establishing a wound management group during the coming year to consider these projects.

Build a culture of partnership and collaboration

MOIC continue to work with a range of collaborators from across the world. Activity includes:

- Attending conferences and events in order to promote MOIC.
- Contributing to the organisation of major conferences.
- Running a successful hosting programme in Northern Ireland.

The World Health Organisation (WHO) have set a global challenge, *Medication Without Harm* which aims to reduce severe avoidable medication-related harm by 50%, globally over a five year period. During 2017/18 Professor Scott was approached by the WHO and invited to join an expert group tasked with shaping this challenge. In addition, Professor Scott participated in an expert panel which aimed to prioritise global research questions in this area. MOIC are now working with International Healthcare Institute (IHI) and the Medicines Optimisation Working Group (MOWG) in the European Connected Health Alliance in areas related to this challenge.

The IHI International Forum was held in March 2019. At this meeting, valuable discussions were held with senior IHI delegates regarding collaboration on the WHO challenge. Additionally, Professor Scott has been invited to be an IHI faculty member on two projects – one is a US medicines optimisation project and the other is a project in Africa. The core group of the MOWG have identified a number of WHO global challenge champions. Each champion has been tasked with holding discussions within their own country and initial feedback on this was presented at the Conference in Poland during March 2019.

Links with Pharmacy Management as a partner organisation have been established. This included representatives from MOIC assisting in the organisation of the first Celtic conference. This was held in Edinburgh in March 2019 and was attended by around 300 delegates. We are contributing to a further two conferences with Pharmacy Management: the second Celtic conference (Cardiff, 2020) and a conference focussing on the WHO Global Challenge (Belfast, 2019).

In March, MOIC co-hosted a highly successful conference in Poland. Over 230 delegates attended from across Poland and surrounding countries and they learnt about medicines management systems in Northern Ireland. Partners included Wroclaw Medical University, The Polish Society of



Clinical Pharmacology and Wroclaw Specialist Hospital. Discussions are now being held regarding future collaboration.

MOIC assisted with the organisation of the European Society of Clinical Pharmacy (ESCP) conference which was held in Belfast in October 2018. This conference attracted several hundred delegates to Northern Ireland. In addition, a satellite session to conference was held at Antrim Area Hospitals, so that international delegates could learn about MOIC and pharmacy in Northern Ireland.

A key component of MOIC work is knowledge translation via the hosting programme. Under this programme, visitors are welcomed to NI for periods lasting between one day and five months. During 2018/19 these visits included:

- The first international pharmacists completing the final year of the QUB Masters in Advanced Clinical Pharmacy Practice undertook a two week residential programme to experience hospital pharmacy practice in Northern Ireland. These visitors came from Austria, Greece, Estonia and Singapore.
- MOIC/NHSCT were successful in becoming a Statement Implementation Learning Collaborative Centre (SILCC) host (one of only two sites in the UK). The SILCC programme allows hospital pharmacists to visit hospitals from other countries to learn about pharmacy procedures. Väinö Vähämäki, from Finland, arrived in Northern Ireland in March and stayed for two weeks.
- Under the joint MOIC / UU programme, a group of Egyptian pharmacists visited NI in August 2018 for a period of two weeks.
- Two pharmacists visited the NHSCT during October 2018 and a further two visited during March 2019 under the Memorandum of Understanding with the Spanish Hospital Pharmacists Association.
- A student from Uppsala, Sweden, spent five months in Antrim. During her time, she completed a clinical pharmacy project.

Make a meaningful contribution to the Northern Ireland economy

Through building networks and collaborations, MOIC are well placed to join consortia in order to apply to a range of funding organisations for funding.

During the 2017/18, the EU funded SIMPATHY 3rd Health programme was completed. In this project ten teams from across Europe worked together to help promote and support innovation across the EU in the management of appropriate polypharmacy and adherence in older people. As a follow up to this project, MOIC have worked with colleagues in Scotland and Ireland in order to submit a funding application to the Interreg programme. If successful, the funding will allow fuller medicines reviews in all three jurisdictions.

Work continued with a consortium from England, Sweden, Norway and Ireland. Professor Scott and Dr Kerr received funding from HSC R&D to attend a consortium meeting in Tromsø (Norway) in December 2018. At this meeting work was carried out on two major funding applications. One



application was submitted to an EU Horizon 2020 call in January 2019 and a second will be submitted to the Norwegian Research Council in April 2019.

Last year, the Trust signed revenue agreements relating to procedure packs developed with ISKUS Health, as such, the Trust receives a share of the income generated when these packs are sold to other hospitals across the UK and Ireland. During the year, initial work was carried out to see if a new pack, for use in the placement of nasogastric tubes should be developed.

Two applications have been submitted to the Engineering and Physical Sciences Research Council (EPSRC). The first, with Queen's University Belfast, is developing sensors which will detect a range of factors for wound healing. The second, with Ulster and Loughborough University is considering the development of photocatalytic coatings to prevent healthcare acquired infection. In addition, an application to the Health Foundation was made by MOIC and UU during March 2019. If successful, this grant will permit the appointment of a Data Scientist to work in MOIC

A major funding bid was submitted to the EU under the smart and healthy living at home (Horizon 2020) call in November 2018. This bid was led by Prof. Mac MacLachlan, Director of the Assisted Living and Learning (ALL) Institute in Maynooth and was from a collaborative of 36 partners.

STEPSelect is a method of selecting medicinal products for procurement based on safety and clinical efficiency. Work on STEPSelect is continuing with Poland and Catalonia in this area. Following completion of a successful pilot study in Gdansk (Poland), a STEPSelect resource group was set up and a paper was published. In Catalonia an expert team is adapting the methodology for the treatment of type 2 diabetes.

During the year, work continued with Invest NI and MOIC has now been accepted as an Invest NI Knowledge Partner. The first company to apply under this scheme (Trimedika) has been successful and they have been awarded some funding to allow them to work with MOIC.

Financial Report 2018/19

The Medicines Optimisation and Innovation Centre has reported an overall surplus of £257.6k and has £213.9k of deferred income from commercial funding carried forward into 2019/20. An income and expenditure report is included in Annex B

References.

1. Northern Ireland Medicines Optimisation Quality framework, Department of Health 2016.
2. Odeh M, Scullin C, Fleming G, Scott MG, Horne R, McElnay JC. Ensuring continuity of patient care across the healthcare interface: telephone follow up post hospitalization. *British Journal of Clinical Pharmacology*. 2019 (85): pp 616-625

Papers & published abstracts

Elhajji FD, Al-Taani GM, Anani L, Al-Masri S, Abdalaziz H, Qabba'h SH, Al Bawab AQ, Scott M, Farren D, Gilmore F, Versporten A, Goossens H, Aldeyab MA. Comparative point prevalence survey of antimicrobial consumption between a hospital in Northern Ireland and a hospital in Jordan. *BMC Health Services Research* (2018) Nov 12;18(1):849. doi: 10.1186/s12913-018-3656-y.

Versporten A, Zarb P, Caniaux I, Gros M, Drapier N, Miller M, Jarlier V, Nathwani D, Goossens H on behalf of the Global-PPS network. Antimicrobial consumption and resistance in adult hospital inpatients in 53 countries: results of an internet-based global point prevalence survey. (2018) *The Lancet Global Health* 6 (6) p e619-29. DOI: 10.1016/S2214-109X(18)30186-4

McCloskey A P, Brown J, Haughey S, O'Hare R. Pharmacy students and pharmacist perceptions of professional socialism and communication in a real-life clinical setting. *Int J Pharm Pract.* 2018; 27: 3. DOI: <http://doi.org/10.1111/ijpp.12493>

Conlon-Bingham G, Aldeyab M, Scott M, Kearney M, Farren D, Gilmore F, McElnay JC. Effects of Antibiotic Cycling Policy on Incidence of Healthcare-Associated MRSA and *Clostridioides difficile* Infection in Secondary Healthcare Settings. *Emerging Infectious Diseases.* (2019) 25(1):52-62. <https://dx.doi.org/10.3201/eid2501.180111>

McIntosh J, Alonso A, MacLure K, Stewart D, Kempen T, Mair A, Castel-Branco A, Codina C, Fernandez-Llimos F, Fleming G, Gennimata D, Gillespie U, Harrison C, Illario M, Junius-Walker U, Kampilis CF, Kardas P, Lewek P, Malva J, Menditto E, Scullin C, Wiese B, on behalf of the SIMPATHY Consortium. **A case study of polypharmacy management in nine European countries: Implications for change management and implementation** 2018. *PLOS ONE* 13(4): e0195232. <https://doi.org/10.1371/journal.pone.0195232>

Stefaniak T, Scott M, Brenninkmeijer R, Janknegt R, Frackowiak T, Hogg A, van Andel F. STEPSelect for the rational selection and procurement of LMWHs in a Polish hospital. *Hospital Pharmacy Europe* 2018;90:11-14

Odeh M, Scullin C, Fleming GF, Scott MG, Horne R, McElnay JC Ensuring continuity of patient care across the healthcare interface: Telephone follow-up post-hospitalization. *British Journal of Clinical Pharmacology* (2019) 85 (3) pp 616-625

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Conference presentations and posters

Authors	Title	Poster or Oral	Conference/Meeting
Hogg A	The Medicines Optimisation Innovation Centre	Oral presentation	Sunovian Mental Health Event, Belfast, September 2018
Scott, M	Medicines Optimisation in the Aging Population	Oral presentation	TMED9- Innovating to live well for longer. Derry, September 2018
Hogg A	Reference Site Collaboration in Medicines Optimisation & Innovation Northern Ireland - Catalonia	Oral presentation	WHO International Healthy Cities Conference, Belfast October 2018
Scott, M	Tools to stratify patients for clinical pharmacy interventions	Oral presentation	47 th ESCP Symposium on Clinical Pharmacy, Belfast, October 2018
Brown, J	Mentoring for Foundation Programme: what do our mentees expect of the mentors?	Poster	47 th ESCP Symposium on Clinical Pharmacy, Belfast, October 2018
Brown J, Cundell J, McMullan P, Campbell-Smyth A	Best foot forward' – an analysis of a pharmacology update for podiatrists.	Poster	47 th ESCP Symposium on Clinical Pharmacy, Belfast, October 2018

Magee J	Pharmacist Led Medication Review of Older People with an Aim to Deprescribing within the Hospital Setting	Poster	47th ESCP Symposium on Clinical Pharmacy, Belfast, October 2018
Scott, M	What is new in Medicines Optimisation and Innovation	Oral presentation	Northern Ireland Pharmacy Conference, Belfast, February 2019
McCrudden M	Case Management Study in GP practices	Oral presentation	First Celtic Conference, Edinburgh, March 2019
Fleming G	Development of the Regional Medicines Optimisation Innovation Centre (MOIC)	Oral presentation	First Celtic Conference, Edinburgh, March 2019
Magee J	Pharmacist Led Medication Review of Older People with an Aim to Deprescribing within the Hospital Setting	Oral presentation	First Celtic Conference, Edinburgh, March 2019
Scott, M	Workforce Challenges	Workshop leader	First Celtic Conference, Edinburgh March 2019
Boucher L	An audit to assess the completion rate of patients' weight on inpatient kardexes and the significance of related pharmacist interventions.	Poster	NHSCT Pharmacy training Showcase, Antrim, March 2019
Burns S	Audit of Missed Doses of Critical Medicines in Acute Care Settings in Antrim Area Hospital.	Poster	NHSCT Pharmacy training Showcase, Antrim, March 2019
Hyde J	Audit of the Prescribing of Intravenous (IV) Paracetamol in Adults within an Acute Hospital Setting.	Poster	NHSCT Pharmacy training Showcase, Antrim, March 2019

Manson M	Investigation into Omitted Doses of Critical Medications in the Emergency Department in Causeway Hospital.	Poster	NHSCT Pharmacy training Showcase, Antrim, March 2019
McAtamney C	Verification Rate of Immediate Discharge Summaries (IDS) in Antrim Area Hospital.	Poster	NHSCT Pharmacy training Showcase, Antrim, March 2019
McClintock K	Audit of Antibiotic Prescribing in Patients Discharged from the Emergency Department in Causeway Hospital.	Poster	NHSCT Pharmacy training Showcase, Antrim, March 2019
Scott M	Medicines Optimisation: The Northern Ireland Journey	Oral Presentation	Pharmacists in the Ward Team: Optimising Patient Care, Wroclaw, Poland, March 2019
Hogg A	The Integrated Medicines Management Model	Oral Presentation	Pharmacists in the Ward Team: Optimising Patient Care, Wroclaw, Poland, March 2019

Medicines Optimisation and Innovation Centre						
Income and Expenditure position at 31st March 2019						
	Deferred Income	Income from other Sources	DOH Funding	Total Income	Total Expenditure	Closing Balance
	£000's	£000's	£000's	£000's	£000's	£000's
Projects	202	35	574	811	-	811
Core			-	-	553	553
Total	202	35	574	811	553	258
	Deferred Income as at 31st March 2019					214
	Surplus as at 31st March 2019					44

Medicines Optimisation and Innovation Centre Income & Expenditure as at March 2019				
	Project	Partners	Outturn March 2019 £	Deferred Income £
Deferred Income as at 1st April 2018				
HSC Innovation Fund - B94945			201,663	201,663
2018/19				
HSCB			529,578	
PHA Research & Development Programme			44,284	
External Funding				
MOIC007 / B9R004	To give advice on the evaluation of the Palliative Care Clinical Care Project	MacMillan Cancer Support	12,980	
B94545	Developing Educational Materials	QUB	874	874
MOIC0021	Impact of Pill Pack Information stream in Dom Care	Pill Pack Plus	10,000	
R008	Ikus Blood culture	Ikus Ltd	4,814	4,814
B94545	Hosting		6,200	6,200
	Speaker Fees		394	394
Total Forecast Income as at 31st March 2019			810,787	213,945
Expenditure as at 31st March 2019				
	MOIC Costs			
	Staffing Costs		520,352	
	Non pay Costs		32,812	
Total Expenditure as at 31st March 2019			553,165	-
Surplus / Deficit			Surplus	213,945
	Deferred Income as at 31st March 2019		213,945	
	Net Surplus as at 31st March 2019		43,678	