

# **MEDICINES OPTIMISATION INNOVATION CENTRE (MOIC)**

## **First Annual Report 2015/2016**

### **Context**

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. With an ageing population and a rising number of people with long term conditions, demand is expected to increase. Given the critical importance of medicine in what the health service delivers to patients, the Department has developed the Medicines Optimisation Quality Framework so those patients and healthcare professionals can work together to make the most of their medicines. The Quality Framework has five main sections;

1. Quality Framework
2. The NI Regional Medicines Optimisation Model
3. Ten Quality Standards
4. Implementation through Integration Innovation and Change programme
5. Summary of the nine overarching key recommendations to introduce and support the Regional Model for Medicines Optimisation

One of the key components of the Framework was the establishment of a regional hub for innovation, research and service development, quality improvement and knowledge transfer in medicines optimisation. Funding was awarded from the Department Change Fund to enable the setting up of the Centre.

This was one of several medicines optimisation projects set up in this manner. A Regional Innovation Programme Board was put in place to oversee the work being undertaken and also receive reports for onward transmission to the Department of Finance and Personnel.

### **DELIVERABLES IN YEAR 1 2015/16**

**The following comprise the list of the key deliverables as outlined in the Project Initiation Document (PID).**

- i. To prepare a Project Initiation Document (PID)
- ii. To set up the regional centre at NHSCT Antrim with staffing, IT infrastructure and website
- iii. To establish the Regional Medicines Optimisation Innovation Network

- iv. To initiate the development of a regional programme for innovation in medicines optimisation to support both the roll-out of existing solutions across the HSC and develop new solutions to include:
  - a. A baseline assessment of the evidence for regional solutions in medicines optimisation to be utilised for knowledge transfer
  - b. Development methodology for the translation of existing (and new) solutions within the HSC
  - c. To initiate the development of a prioritised programme of research and service development to develop and test new solutions
- v. To develop a plan for EU engagement and collaborative working to include:
  - a. A programme for commercialising, promoting and marketing NI solutions in EU
  - b. A hosting programme in medicines optimisation for EU countries
  - c. An evidence base for European Innovation Partnership (EIP) 4 star reference site status bid
- vi. To project Manage the EU funded SIMPATHY Research Project
- vii. To develop a financial plan to establish funding for the centre post 2015/16
- viii. Establish links to other innovation hubs in NI, UK and EU

The remainder of this report will describe progress against these PID deliverables

## **1. To prepare a Project Initiation Document (PID) / Deputy Chief Pharmaceutical Officer**

The PID was prepared and signed off by Mrs Cathy Harrison, Senior Responsible Officer and Chair of the Regional Innovation Programme Board

## **2. To set up the regional centre at NHSCT Antrim with staffing, IT infrastructure and website**

A core MOIC team was established from existing NHSCT staff, linked to activities that were occurring to a lesser degree under the auspice of the Pharmacy and Medicines Management Centre which had been set up with the Queens University of Belfast in 1994. However, in order to free up the requisite extra time required for the core team to undertake MOIC duties, a number of temporary staff changes were made.

- Band 4 administrative assistant (0.5 wte)
- Band 5 finance officer (0.2 wte)
- Upgrade of 2 Band 8a clinical pharmacists to Band 8b
- Band 7 pharmacists (2.5 wte)
- In addition corporate communication time was also acquired as well as nursing input into the team.

In the initial months all MOIC related activity occurred in the Pharmacy and Medicines Management Centre (Beech House). During the year dedicated space within Beech House was identified and refurbished. In addition the MOIC became the anchor tenant in the new NHSCT Innovation and Training Centre in Bretten Hall. A number of 'hot desks' were established in both areas where staff have full access to phones, PCs, multi-functional copiers and wifi. Further full video-conference facilities were also put in place.

The centre logo was designed encapsulating the key aim of the MOIC which states 'Working towards better patient outcomes by initiating, developing and sharing best practice with regards to medicines use'.

The strap-line of 'Smarter Medicines, Better Outcomes' was also agreed. These are now being used on other stationery, presentations slides, pop-up stands and posters. Further a website was constructed and populated.

## **3. To establish the Regional Medicines Optimisation Innovation Network**

The MOIC was formally launched by DHSSPS Permanent Secretary Mr Richard Pengelly in October 2015. During the initial stages of MOIC set up, it was agreed that the network would consist of the Trust Heads of Pharmacy & Medicines Management, a representative of the HSC Board and a representative of DHSSPS. Agreement for participation in the group was gained from the individuals and Terms of Reference were drafted. However, the DHSSPS subsequently established a Strategic Leadership Group for Pharmacy and it was agreed that the Leadership group would undertake the role of the originally proposed network. It was agreed that Prof Scott, Head of Pharmacy & Medicines Management, NHSCT would be the

Director and that the other 4 Heads of Pharmacy & Medicines Management would become Co-directors of MOIC.

#### **4. To initiate the development of a regional programme for innovation in medicines optimisation to support both the roll-out of existing solutions across the HSC and develop new solutions**

The bulk of the work to be undertaken under this deliverable was to be informed by the action plans flowing from the Northern Ireland Medicines Optimisation Quality Framework. However the publication of the framework did not occur until March 2016 and action plans are being considered by the Pharmacy Leadership Group and will be progressed during 2016/17. The baseline survey of activity has been drafted and will also be undertaken in 2016/17.

A number of projects that addressed new MO solutions were progressed during the 15/16 period and a brief synopsis of each is detailed below:

##### **a) Post-discharge follow up of patients receiving ten or more medicines**

This work was undertaken in conjunction with the ABPI and entailed the follow up of patients post-discharge via either clinical hospital pharmacists or community pharmacists at intervals of 5 days, 30 days and 90 days. Both interventions reduced significantly the rate of re-admission when compared with the control group.

Further work is now continuing to both modify the inclusion criteria and increase the number of patients in the study. The initial work is part of a PhD research programme.

##### **b) Case Management**

A joint working project involving MOIC, QUB, ABPI and three English Academic Health Science Networks namely North West, Wessex and East of England has been agreed. The project will look at case management of patients in the community at risk of medication related problems, by clinical pharmacists. This is a follow on from the post discharge work detailed above and is another key step in further closing the gap in the optimisation of the medicines system. A commencement date of September 2016 is scheduled at this point.

##### **c) Adverse Drug Events and Clinical Coding**

It is recognised that of the order of 10% of hospital admissions (up to 30% in older people) may be medication related and that of the order of 5% of patients in hospital may suffer an adverse event due to medication. One of the DoH delivery plan requirements is to get a handle on the true scale and impact of such events on patients and healthcare resources given that 50% may be preventable. MSc work was already underway in this regard in the NHSC and it was found that similar work was being undertaken in Tallaght Hospital in Dublin. Preliminary discussions have now been had with collaborators in Tallaght which will be progressed and broadened in 16/17.

#### **d) Antibiotic Cycling**

Over the past three years under the auspices of a Research and Development office fellowship, a one year follow-up of the support of the antibiotic cycling programme has been commenced.

#### **e) Smart Procedure Packs (Iskus Health Ltd, Dublin)**

Work has been on-going with respect to further smart procedure packs, in relation to blood culture, peripheral line, lumbar puncture and hic/picc line kits. The blood culture pack work has demonstrated, to date, a reduction in false positives with significant benefits for patients as well as reduced healthcare resource utilisation.

In relation to peripheral lines, a PhD student registered with Ulster University has been carrying out work in this area with optimal kits being developed with regard to contents. The PhD is scheduled to finish in mid-2016.

Further work has been on-going in relation to the contents of the lumbar puncture pack. In addition in conjunction with nursing colleagues a hic/picc line pack has been successfully developed and the work has been recognised nationally with a Queens fund award.

Scoping of future work is under way with the ultimate aim of a robust range of intelligent packs being commercially available.

#### **f) Topical Negative Pressure (Cardinal USA, Iskus Dublin)**

A pilot study was undertaken to look at the use of a new topical negative pressure system compared to the current version available. A final report on this will be completed by August 2016. A potential phase 2 of this work is under consideration at a pre-scoping stage.

#### **g) Disinfectant Assessment (Goldshield)**

This company have various formulations of a new disinfectant agent and some initial work is underway in conjunction with Department of Microbiology at Ulster University to look at the efficiency of the product in the in-vitro setting to inform application in the working environment. On the completion of this work further pre-scoping work may be undertaken.

#### **h) Medicines Adherence (Kainos/QUB)**

This work was completed under the small business research initiative (SBRI) at phase 1 stage and the work did progress well. However Kainos did not want to pursue the phase 2 opportunity as it did not fit their company strategic direction. MOIC / QUB are now checking the situation with a view to exploitation with regard to the IP associated with the work.

### **i) Secure Analytic Tagging (ARC-NET Belfast)**

This is an on-going piece of work in relation to secure analytic targeting with potential in a wide number of applications, including tracking and tracing, adherence, falsified medicines, etc. A pilot phase 1 proof on concept was completed demonstrating that the technology works. Phase 2 and 3 are planned for 2016/17.

### **5. To develop a plan for EU engagement and collaborative working to include:**

- a. A programme for commercialising, promoting and marketing NI solutions in EU**
- b. A hosting programme in medicines optimisation for EU countries**
- c. An evidence base for European Innovation Partnership (EIP) 4 star reference site status bid**

Work has been undertaken in terms of taking the MO solutions developed in Northern Ireland to other parts of Europe. The initial approach has been to utilise the STEPSelect tool, (clinician driven procurement) given the potential efficiencies that can be achieved with the ability to then re-invest in other components of delivery of an optimal medicines system.

The following meetings took place;

#### **Vilnius, Lithuania**

This was held in April 2015 with the Vice Minister of Health Mr Gavrilovic, health insurers, and key officials from the main hospitals in Vilnius and Kaunas.

#### **Zagreb, Croatia**

This meeting was held with the Minister of Health and Chief Medical Officer in July 2015. The meeting did result in a proposal but there were issues in terms of getting appropriate levels of agreements in place. In addition there was a new government elected and work is now in abeyance until the position has stabilised.

#### **Riga, Latvia**

The meeting was held with key officials of the Minister of Health in November 2015 as well as with health insurers.

#### **Poland**

A meeting was held with the Deputy Minister of Health in Warsaw where the role of MOIC was explained with a focus on the initial use of STEPSelect. The Minister was interested but wished to see a pilot in Poland for his consideration.

To this end work has been commenced with the University Medical Centre in Gdansk in order to put in place such a pilot. It is intended that this will be undertaken in early 16/17.

## **World Bank**

A meeting regarding pharmaceutical product pricing and the Western Balkans countries was held in Vienna in March 2016. At the meeting it was considered that the STEPSelect model was of interest in the region. The World Bank was keen to see a pilot commenced with a view to a report being completed for their consideration, in terms of being a reproducible model.

## **Funding Bids**

- An Interreg bid was submitted by one of our commercial partners (Digitalis) relating to biosimilars and patient outcomes. This bid was finalised and submitted in advance of the closing date (30.11.15).
- A further application was prepared during the year for submission to the H2020, Research and innovation action: SC1-PM-21-2016. This project considered the testing of STEPSelect in a range of countries, including African countries (closing date 13.04.16).
- Another Interreg bid was also submitted via the R&D office in conjunction with HRB in the Republic of Ireland in order to increase capacity for R&D in the area of Medicines Optimisation, in both jurisdictions.

## **A host programme in medicines optimisation for EU countries**

As part of knowledge transfer carried out by MOIC a range of “hosting” visits are offered. Visitors can come to Northern Ireland for periods of 1 day – 4 months. A number of visits to Northern Ireland occurred during 2015/16.

- One Swedish pharmacy student completed a 4 month placement during May 2015. During her placement she studied the skill mix of pharmacy staff in the Emergency Department with a view to improving patient flow through the hospital. A further two Swedish Pharmacy students arrived in September 2015 and carried out projects during a 4 month placement. The projects considered use of Pharmacy technicians in the preparation of IVs at ward level and the improved use of skill mix within the dispensary.
- As part of the Sittard (Netherlands) exchange programme, a pharmacist from the Netherlands visited for a period of 2 weeks in November 2015. Plans were made for pharmacists from the NHSC to visit Sittard during May 2016.
- A Spanish pharmacist visited the Trust for 3 weeks in February 2016 and arrangements for a pharmacist from Estonia to visit during April 2016 were made
- Work was carried out with the University of Ulster regarding establishment of a joint programme with the University for Egyptian pharmacy students. A meeting was held with Professor Samar Farghali from Egypt (24.11.15) and the first students are expected in Northern Ireland during the summer of 2016.
- Discussions were also held with the QUB regarding the possibility of hosting a joint programme, with the University, for Jordanian pharmacy students. Work in this area include a meeting with the Jordanian ambassador. Students in this programme are expected during summer 2017.

A visit was also hosted for Dr Maher Khmour from the College of Pharmacy, A1 Quds University Jerusalem, West Bank Palestine in July 2015. The main theme covered was antimicrobial stewardship and communication between healthcare professionals in hospital. A potential collaborative project linked to the antimicrobial stewardship programme in the Palestine Medical Centre Ramallah is under consideration.

### **Evidence base for European Innovation Partnership (EIP) 4 star reference site status bid**

Building upon our 3 star status for medicines management, an application was made to the EU (September 2015) for a project entitled "Scaling up the EIP Awarded Three Star Status Integrated Medicines Management Programme of the Northern Health and Social Care Trust (NHSCT), Northern Ireland (EIP AHA reference site) across the EU".

The MOIC also contributed to the working of the A1 adherence groups and useful meetings were held at the December meeting of the Partnership in Brussels and this will be developed in 2016/17 when the reference site network programme is being revamped with integration across the other work group.

Staff at the MOIC contributed to the DHSSPS submission for European Innovation Partnership (EIP) 4 star reference site status. The final submission was made in March 2016.

### **6. To project Manage the EU funded SIMPATHY Research Project**

The EU grant agreement for the SIMPATHY project was signed and work commenced on the project on 01.06.15. The initial kick-off meeting, held in June 15 was attended by 2 members of the Northern Ireland team. The NI team contributed to work packages on the dissemination database, baseline literature search and benchmarking. A case study considering the Elderly Care project in Northern Ireland was undertaken. Members of the SIMPATHY team attended a 2-day consortium meeting in Athens during September 2015 and a further 2-day consortium meeting in Naples during December 2015.

### **7. To develop a financial plan to establish funding for the centre post 2015/16**

The key aim during 15/16 was to achieve recurrent funding of the £300K provided by DHSSPS for the initial set-up. Secondly to further investigate and develop relationships with external organisations with the aim of developing both on-going partnerships and income streams. Thirdly to make a case for increased funding to allow further capacity to be achieved to enable a clinical mass to be attained.

### **8. Establish links to other innovation hubs in NI, UK and EU**

Staff at MOIC are working with a range of partners across Europe including the SIMPATHY partners, the North West Coast Academic Health Science Network in England, Digitalis and Tallaght (Dublin). As described above, formal applications for EU funding were made throughout the year with a range of partners namely:

- Strengthening Academic Skills in Medicines Optimisation in Poland. Submitted to H2020 Twinning: H2020-TWINN-2015 (May 15)
- Scaling up the EIP Awarded Three Star Status Integrated Medicines Management
- Programme of the Northern Health and Social Care Trust (NHSCT), Northern Ireland (EIP AHA reference site) across the EU – Submitted to 3<sup>rd</sup> Health Programme, PJ-04-2015 (Sept 15)
- Development and implementation of a multi-targeted strategy and action plan in Europe NW for the diffusion of a new class of medicines, the biosimilars Submitted to Interreg VB NEW (Nov 15)
- Stepping up a European Medicines Selection Optimisation Model to LMIC's, prepared during 2015/16 for submission to H2020, Research and Innovation action: SC1-PM-21-2016 in April

A new Medicines Optimisation Working Group under the EU Connected Health Alliance was established with the Director of MOIC as the Chair. The group currently has 30 members, all with expertise in the area of MO.

In addition, discussions have been held with the Institute for Healthcare Improvement (IHI) in the USA regarding establishing a formal link with MOIC.

### **Invest Northern Ireland and Northern Ireland Company Overseas (NICO)**

Meetings were held with, initially Invest NI, in terms of getting advice as to how MOIC could develop its economic / commercial potential both within Northern Ireland and beyond. Invest NI indicated that they would consider how best they could assist MOIC in relation to their own terms of reference and a non-private sector entity.

In relation to external development they recommended discussions with NICO which took place and was of value in terms of how MOIC could potentially do business and generate overseas income. This was particularly useful with regard to initial discussions in Croatia where NICO were already working in the Social Work area.

New links with potential partners were encouraged via a range of presentations throughout the year including:

- The RPS conference (13.09.15)
- A workshop focusing on up-scaling examples of good innovation practices within AHA in Ghent, Belgium (23.09.15)
- The ABPI Clinical Innovation conference (08.10.15)
- Hospital Pharmacy Europe Conference (13.10.15)
- Pharmacy Management Forum (20.11.15)
- The European Association of Hospital Pharmacists in Vienna (March 2016)

A comprehensive tabulation of all presentations and publications is appended to this report.

## **Consultations / Pre-scoping**

- Exploristics - re data analytics in health-care acquired infection
- McLernon / Yarra re Community Pharmacy EPICS
- 360° Medilink re MO Software application
- Community Pharmacy Northern Ireland re potential projects to extent clinical role of Community Pharmacists
- Connected Health Innovation Centre (CHIC) re potential collaborations in the benchmarking area and medicines
- Pillpack Plus Ltd and Evondos (Finland) re adherence solutions and evidence based
- Orion – to discuss potential collaboration across the whole MO area

## APPENDIX

### PRESENTATIONS 2015/2016

| <b>Title</b>  | <b>Presenter</b>                    | <b>Conference/Meeting</b>   | <b>Location/Date</b>         |
|---|-------------------------------------|---|------------------------------|
| Evidence based choice of medicines                                    | M G Scott                           | North West Coast Academic Health Science Network                    | April 2015                   |
| Medicines Management Best Practice                                    | M G Scott                           | DG Sanke  | Brussels<br>May 2015         |
| Integrated Medicines Management to Optimisation                       | M G Scott                           | Royal Pharmaceutical Society Conference                             | Birmingham<br>September 2015 |
| Northern Ireland Medicines Optimisation Innovation Centre             | C Harrison,<br>M G Scott,<br>E Reid | Northern Ireland Clinical Innovation Conference                     | October 2015                 |
| Multidisciplinary Working and Efficiency; The Role of the Pharmacist  | D Gill                              | Hospital Pharmacy Europe Live                                       | Birmingham<br>October 2015   |
| Adherence with Oral Chemotherapy in a Cancer Unit in Northern Ireland | J C Doyle                           | Pharmacy Management National Conference                             | London<br>November 2015      |
| Audit of Pharmacist Prepared Intermediate Discharge (IDS)             | M McManus, D Gill                   | Pharmacy Management National Conference                             | London<br>November 2015      |
| Hosting Programmes at the MOIC  | L Ashfield                          | Pharmacy Management National Conference                             | London<br>November 2015      |
| Live Automated Microbiology Pharmacy Surveillance System (LAMPS)      | S Tohill                            | Pharmacy Management National Conference                             | London<br>November 2015      |
| Medicines Optimisation in Northern Ireland: STEPSelect                | M G Scott                           | Pharmacy Management National Conference                             | London<br>November 2015      |
| Writemed: Electronic Medicines Reconciliation System                  | S Tohill                            | Pharmacy Management National Conference                             | London<br>November 2015      |
| Northern Ireland medicines optimisation innovation across Europe      | C Harrison,<br>M G Scott            | European Innovation Partnership on Active and Health Agency meeting | Brussels<br>December 2015    |
| Integrated Medicines Management Maximising and Measuring Impact       | C Harrison,<br>M G Scott            | European Innovation Partnership on Active and Health Agency meeting | Brussels<br>December 2015    |
| MOIC Update   | M G Scott                           | Northern Ireland ECH Alliance Ecosystem meeting                     | December 2015                |
| Medicines optimisation  | D Gill                              | Slovenian ECH Alliance Ecosystem Launch                             | Slovenia<br>February 2016    |
| New and emerging roles for pharmacy staff                             | M G Scott                           | 21 <sup>st</sup> European Association of Hospital                   | Vienna                       |

|                        |                                    |  |                        |
|------------------------|------------------------------------|--|------------------------|
|                        |                                    | Pharmacy Congress  | March 2016             |
| Medicines Optimisation | C Harrison,<br>M G Scott<br>E Reid | Northern Ireland Clinical Innovation Conference                            | October 2015           |
| Medicines Optimisation | M G Scott                          | WHO Collaborating Centre, Pharmaceutical pricing and reimbursement meeting | Vienne<br>October 2015 |

## PUBLICATIONS 2015/2016

| Title   | Author  | Journal   | Date        |
|---|---|---|-------------|
| Medicines reconciliation in the Emergency Department  | C M Irwin, M G Scott, D Gill, G F Fleming                                   | Hospital Pharmacy Europe 79, 41-44                | Autumn 2015 |
| Auditing the medication section of the IDS  | M McManus, D Gill, A Loomie, G F Fleming, M G Scott                         | Hospital Pharmacy Europe 80, 21-24                | Winter 2015 |
| Integrated medicines management to medicines optimisation in Northern Ireland (2000-2014)   | M G Scott, C Scullin, A Hogg, G F Fleming, J C McElroy                      | European Journal of Hospital Pharmacy 22, 222-228 | 2015        |
| Reduction in the incidence of hospital acquired MRSA following the introduction of a chlorine dioxide based disinfectant agent in a district general hospital | G Conlon-Bingham, M Aldeyab, M P Kearney, M G Scott, N Baldwin, J C McElroy | European Journal of Hospital Pharmacy 23, 28-32   | 2016        |

## AWARDS 2015/2016

| Award   | Awarding Body                      | Date        |
|---|------------------------------------|-------------|
| Best Project across the Interface   | Pharmacy Management National Forum | London 2015 |
| Northern Trust Medicines Optimisation Innovation Centre: Highly Commended | Healthcare Awards                  | 2016        |