

# **Meeting of the Oireachtas Joint Committee on Health**

(Wednesday 21 March 2018)

## **Prescription Pattern Monitoring and the Audit and Usage and Effectiveness trends for Prescribed Medicines**

### **Opening Statement by Professor Tom Fahey,**

**Head of the Department of General Practice, RCSI Medical School and  
Principal Investigator, Health Research Board (HRB) Centre for Primary Care Research**

Thank you for asking me to meet with the members of the Joint Committee on Health about the issue of prescription pattern monitoring and the audit of usage and effectiveness trends for prescribed medications.

To provide the Committee with some background, I am a clinically and research-active general practitioner who trained in epidemiology/public health medicine. I have been a university-based general practitioner for 23 years having worked at the Universities of Oxford (Lecturer), Bristol (Senior Lecturer) and Dundee (Professor), before returning to Dublin in 2006 to take up my current role as Head of the Department of General Practice in RCSI. Since September 2008, I lead the national programme of research in general practice funded by the Health Research Board, the HRB Centre for Primary Care Research ([www.hrbcentreprimarycare.ie](http://www.hrbcentreprimarycare.ie)).

Our research group have an active programme in relation to medicines management and drug safety.[see references 1-26] We work closely with colleagues at the School of Pharmacy in Queen's University Belfast, and this has enabled us to examine the quality and safety of prescribing in Ireland (North and South) as well as benchmark Irish prescribing practice to other countries, such as England and Wales, and Scotland. Current challenges in Ireland are that prescribing in many hospitals remains a paper-based activity; communication in relation to medication for patients between hospitals, general practice and pharmacy is also paper based. This means that transcription, dosage and monitoring errors are more common and patients are at greater risk of adverse drug events.

Electronic prescribing and dispensing is the standard in general practice and pharmacy practice, but electronic prescribing and dispensing systems do not interact effectively, meaning the process of prescribing and dispensing is disjointed and poorly integrated across different health sectors. Lastly, access to prescribing data for research, education and quality improvement purposes is very limited in Ireland. The solution to all of these issues is to develop an eprescribing platform in Ireland with appropriate training and education for all health professionals involved in prescribing. Enhanced transparency in relation to prescribing practice will enable a culture of professional reflection and engagement with nationally established quality improvement initiatives, such as the Medicines Management Programme.

## **Additional details concerning the challenges and potential solutions**

1. Polypharmacy- over the last 20 years the volume and complexity of prescribing has increased dramatically throughout the developed world. In Ireland our own research using Primary Care Reimbursement Scheme (PCRS) data shows that the prevalence of polypharmacy ( $\geq 5$  medicines) particularly among older individuals (aged  $\geq 65$  years) increased from 17.8% to 60.4% whilst “excessive” polypharmacy ( $\geq 10$  medicines) increased from 1.5% to 21.9% (see Figure 1 ). In terms of patient safety, polypharmacy is consistently related to the risk adverse drug events experienced by patients.
2. Prescribing at the interface of healthcare- hospitals, general practices and pharmacies mostly rely on paper-based communications about the indication, responsibility, appropriateness and monitoring of medicines. The transmission of information between prescribing doctors in hospital and the community and between general practitioners and dispensing pharmacists could be substantially improved in terms of Information and Communication Technology (ICT) systems, particularly for repeat prescriptions which account for around 80% of prescribed medicines. Hand written prescriptions are prone to errors in terms of identifying the medicine, understanding its indication as well as making errors in dosage more likely (please see anonymized examples in Figure 2 from a random sample from my own practice last week and from a colleague who is a pharmacist in the community). In the UK an electronic prescription service enables digital transmission between general practices and pharmacies. Similar, the Leeds Care Record allows care providers in hospital and the community to view health and social care information, including prescription records <https://www.leedscarerecord.org/>
3. Systems for monitoring of prescribing patterns, benchmarking prescribing standards and assessing the cost and value of prescribing- we do not have a system that enables comparative analysis of prescribing patterns at an individual practitioner and/or general practice level. Access to PCRS data needs to be enabled and formalized for researchers, professional bodies and quality improvement organizations such as HIQA. In the UK prescribing data is available in an identifiable format at general practice and health authority level (clinical commissioning groups), see Open prescribing <https://openprescribing.net/>. Prescribing data is published at a general practice level every month.
4. Education and continuing professional development of prescribing- encouraging a culture of critical examination of prescribing that includes indication, appropriateness, monitoring, cost and safety. To develop an open and transparent prescribing culture requires an ICT system that enables researchers, postgraduate training bodies and quality improvement organizations to critically examine and reflect on the safety of medicines. We do not have such a system in Ireland.

The Sláintecare Report recommends “optimal data collections and integration” across Community health Networks. Addressing prescribing data and usage in this way would be an achievable goal in the context of this Sláintecare objective.

5. Requirements for a digital/eprescribing platform in Ireland- focusing specifically on the technology based aspects of medication safety, a prerequisite for making progress in this area is the implementation of national standards supporting consistent coding and structuring of medication information electronically. These standards need to be rolled out to support interoperability across our general practice health records, pharmacies and across our health systems more generally. This will enable medication data to be captured consistently and clearly across the clinical spectrum without duplication of effort, supporting electronic prescribing and dispensing of medications and medication reconciliation. Data driven medication research will also hugely benefit from this. We require progress at a national level on standards addressing four main issues are:
  - Implementation of electronic representations of medications supporting (models)
  - Selection of national standards for coding of medications (terminology)
  - A single centrally controlled regulatory source of medication information from which we can populate and update the electronic medication models from (an electronic national medicinal product catalogue)
  - National rollout of these standards along with education and training for clinical staff in the importance of and proper use of medication coding

Progress has been made by HIQA and eHealth Ireland on development of appropriate standards relating to definition of both medication models and selection of national coding standards such as the SNOMED national license. The HPRA in conjunction with eHealth Ireland are the obvious body to oversee management of a national medicinal product catalogue and this will become even more important after Brexit.

#### Acknowledgement

Thanks for my colleagues in the HRB Centre for Primary Care Research, Dr. Derek Corrigan and Dr. Frank Moriarty for information and critical comments.

## References- Prescribing appropriateness and safety published by HRB Centre for Primary Care Research

- 1: Moriarty F, Cahir C, Bennett K, Hughes CM, Kenny RA, Fahey T. Potentially inappropriate prescribing and its association with health outcomes in middle-aged people: a prospective cohort study in Ireland. *BMJ Open*. 2017 Oct 16;7(10):e016562. doi: 10.1136/bmjopen-2017-016562. PubMed PMID: 29042380.
- 2: Kim S, Bennett K, Wallace E, Fahey T, Cahir C. Measuring medication adherence in older community-dwelling patients with multimorbidity. *Eur J Clin Pharmacol*. 2018 Mar;74(3):357-364. doi: 10.1007/s00228-017-2388-y. Epub 2017 Dec 3. PubMed PMID: 29199370.
- 3: Murphy ME, Bennett K, Fahey T, Smith SM. Geographical variation in anti-diabetic prescribing in Ireland in 2013 and 2014: a cross-sectional analysis. *Fam Pract*. 2017 Sep 1;34(5):587-592. doi: 10.1093/fampra/cmz036. PubMed PMID: 28472488.
- 4: Wallace E, McDowell R, Bennett K, Fahey T, Smith SM. External validation of the Vulnerable Elder's Survey for predicting mortality and emergency admission in older community-dwelling people: a prospective cohort study. *BMC Geriatr*. 2017 Mar 20;17(1):69. doi: 10.1186/s12877-017-0460-1. PubMed PMID: 28320329.
- 5: Cousins G, Boland F, Barry J, Lyons S, Keenan E, O'Driscoll D, Bennett K, Fahey T. J-shaped relationship between supervised methadone consumption and retention in methadone maintenance treatment (MMT) in primary care: National cohort study. *Drug Alcohol Depend*. 2017 Apr 1;173:126-131. doi:10.1016/j.drugalcdep.2016.12.009. Epub 2017 Jan 25. PubMed PMID: 28232249.
- 6: Moriarty F, Bennett K, Cahir C, Fahey T. Characterizing Potentially Inappropriate Prescribing of Proton Pump Inhibitors in Older People in Primary Care in Ireland from 1997 to 2012. *J Am Geriatr Soc*. 2016 Dec;64(12):e291-e296. doi: 10.1111/jgs.14528. Epub 2016 Nov 7. PubMed PMID: 27996115.
- 7: Barry E, O'Brien K, Moriarty F, Cooper J, Redmond P, Hughes CM, Bennett K, Fahey T, Smith SM; PIPc Project Steering group. PIPc study: development of indicators of potentially inappropriate prescribing in children (PIPc) in primary care using a modified Delphi technique. *BMJ Open*. 2016 Sep 6;6(9):e012079. doi:10.1136/bmjopen-2016-012079. PubMed PMID: 27601499.
- 8: Wallace E, McDowell R, Bennett K, Fahey T, Smith SM. Impact of Potentially Inappropriate Prescribing on Adverse Drug Events, Health Related Quality of Life and Emergency Hospital Attendance in Older People Attending General Practice: A Prospective Cohort Study. *J Gerontol A Biol Sci Med Sci*. 2017 Feb;72(2):271-277. doi: 10.1093/gerona/glw140. Epub 2016 Jul 27. PubMed PMID: 27466245.
- 9: Moriarty F, Bennett K, Cahir C, Kenny RA, Fahey T. Potentially inappropriate prescribing according to STOPP and START and adverse outcomes in community-dwelling older people: a prospective cohort study. *Br J Clin Pharmacol*. 2016 Sep;82(3):849-57. doi: 10.1111/bcp.12995. Epub 2016 Jun 9. PubMed PMID: 27136457.
- 10: Cooper JA, Moriarty F, Ryan C, Smith SM, Bennett K, Fahey T, Wallace E, Cahir C, Williams D, Teeling M, Hughes CM. Potentially inappropriate prescribing in two populations with differing socio-economic profiles: a cross-sectional database study using the PROMPT criteria. *Eur J Clin Pharmacol*. 2016 May;72(5):583-91. doi: 10.1007/s00228-015-2003-z. Epub 2016 Jan 28. PubMed PMID: 26820292.
- 11: Moriarty F, Hardy C, Bennett K, Smith SM, Fahey T. Trends and interaction of polypharmacy and potentially inappropriate prescribing in primary care over 15 years in Ireland: a repeated cross-sectional study. *BMJ Open*. 2015 Sep 18;5(9):e008656. doi: 10.1136/bmjopen-2015-008656. PubMed PMID: 26384726.
- 12: O'Sullivan K, Boland F, Reulbach U, Motterlini N, Kelly D, Bennett K, Fahey T. Antidepressant prescribing in Irish children: secular trends and international comparison in the context of a safety warning. *BMC Pediatr*. 2015 Sep 11;15:119. doi: 10.1186/s12887-015-0436-2. PubMed PMID: 26362648.
- 13: Boland F, Galvin R, Reulbach U, Motterlini N, Kelly D, Bennett K, Fahey T. Psychostimulant prescribing trends in a paediatric population in Ireland: a national cohort study. *BMC Pediatr*. 2015 Sep 10;15:118. doi: 10.1186/s12887-015-0435-3. PubMed PMID: 26357902.

- 14: Murphy C, Bennett K, Fahey T, Shelley E, Graham I, Kenny RA. Statin use in adults at high risk of cardiovascular disease mortality: cross-sectional analysis of baseline data from The Irish Longitudinal Study on Ageing (TILDA). *BMJ Open*. 2015 Jul 13;5(7):e008017. doi: 10.1136/bmjopen-2015-008017. PubMed PMID: 26169806.
- 15: O'Sullivan K, Reulbach U, Boland F, Motterlini N, Kelly D, Bennett K, Fahey T. Benzodiazepine prescribing in children under 15 years of age receiving free medical care on the General Medical Services scheme in Ireland. *BMJ Open*. 2015 Jun 9;5(6):e007070. doi: 10.1136/bmjopen-2014-007070. PubMed PMID: 26059522.
- 16: Moriarty F, Bennett K, Fahey T, Kenny RA, Cahir C. Longitudinal prevalence of potentially inappropriate medicines and potential prescribing omissions in a cohort of community-dwelling older people. *Eur J Clin Pharmacol*. 2015 Apr;71(4):473-82. doi: 10.1007/s00228-015-1815-1. Epub 2015 Feb 11. PubMed PMID: 5666030.
- 17: Moriarty F, Cahir C, Fahey T, Bennett K. Potentially Inappropriate Medicines and Potential Prescribing Omissions in Older People and Their Association With Health Care Utilization: A Retrospective Cohort Study. *Value Health*. 2014 Nov;17(7):A520. doi: 10.1016/j.jval.2014.08.1620. Epub 2014 Oct 26. PubMed PMID: 27201625.
- 18: Cahir C, Moriarty F, Teljeur C, Fahey T, Bennett K. Potentially inappropriate prescribing and vulnerability and hospitalization in older community-dwelling patients. *Ann Pharmacother*. 2014 Dec;48(12):1546-54. doi:10.1177/1060028014552821. Epub 2014 Sep 23. PubMed PMID: 25248541.
- 19: Cahir C, Fahey T, Teljeur C, Bennett K. Prescriber variation in potentially inappropriate prescribing in older populations in Ireland. *BMC Fam Pract*. 2014 Apr 2;15:59. doi: 10.1186/1471-2296-15-59. PubMed PMID: 24690127.
- 20: Galvin R, Moriarty F, Cousins G, Cahir C, Motterlini N, Bradley M, Hughes CM, Bennett K, Smith SM, Fahey T, Kenny RA. Prevalence of potentially inappropriate prescribing and prescribing omissions in older Irish adults: findings from The Irish Longitudinal Study on Ageing study (TILDA). *Eur J Clin Pharmacol*. 2014 May;70(5):599-606. doi: 10.1007/s00228-014-1651-8. Epub 2014 Feb 4. PubMed PMID: 24493365.
- 21: Galvin R, Cousins G, Boland F, Motterlini N, Bennett K, Fahey T. Prescribing patterns of glucosamine in an older population: a national cohort study. *BMC Complement Altern Med*. 2013 Nov 13;13:316. doi: 10.1186/1472-6882-13-316. PubMed PMID: 24219123.
- 22: Cahir C, Bennett K, Teljeur C, Fahey T. Potentially inappropriate prescribing and adverse health outcomes in community dwelling older patients. *Br J Clin Pharmacol*. 2014 Jan;77(1):201-10. doi: 10.1111/bcp.12161. PubMed PMID: 23711082.
- 23: Cahir C, Fahey T, Tilson L, Teljeur C, Bennett K. Proton pump inhibitors: potential cost reductions by applying prescribing guidelines. *BMC Health Serv Res*. 2012 Nov 19;12:408. doi: 10.1186/1472-6963-12-408. PubMed PMID: 23163956.
- 24: Bradley MC, Fahey T, Cahir C, Bennett K, O'Reilly D, Parsons C, Hughes CM. 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 Oct;68(10):1425-33. doi: 10.1007/s00228-012-1249-y. Epub 2012 Mar 25. PubMed PMID: 22447297.
- 25: Keogh C, Motterlini N, Reulbach U, Bennett K, Fahey T. Antibiotic prescribing trends in a paediatric sub-population in Ireland. *Pharmacoepidemiol Drug Saf*. 2012 Sep;21(9):945-52. doi: 10.1002/pds.2346. Epub 2012 Jan 9. PubMed PMID:22231929.
- 26: Cahir C, Fahey T, Teeling M, Teljeur C, Feely J, Bennett K. Potentially inappropriate prescribing and cost outcomes for older people: a national population study. *Br J Clin Pharmacol*. 2010 May;69(5):543-52. doi: 10.1111/j.1365-2125.2010.03628.x. PubMed PMID: 20573091.

Figure 1

Number of regular medicines in Ireland (PCRS) for the years 1997–2012 (taken from reference #11)

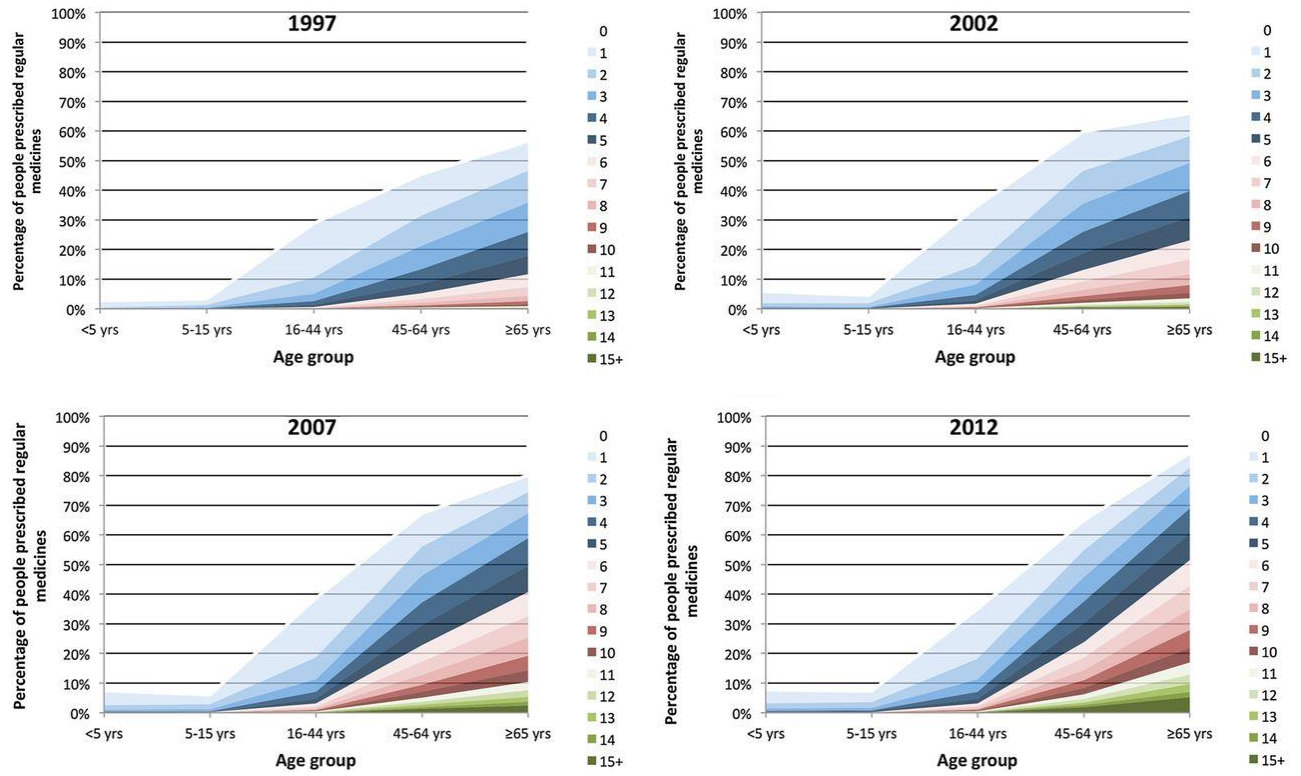


Figure 2

Examples of recent hand written prescriptions (details of patient and prescriber removed).

a) Public hospital script

CO-AMOXICLAV, 1.0G/0.625G

| Drug Name & Strength  | Dose            | Frequency                              | Route                            | Quantity/ Duration<br>(If not ongoing) |
|---|-----------------|--|----------------------------------|--|
| ✓ Ferrous fumarate  | 305mg           | OD                                     | PO                               |  |
| ✓ Folic acid  | 5mg             | OD                                     | PO                               |  |
| <del>✓ Esomeprazole</del>   | <del>40mg</del> | <del>OD</del>                          | <del>PO</del>                    |  |
| ✓ Bisoprolol  | 5mg             | OD                                     | PO                               |  |
| ✓ Creon   | 60 000 units    | TDS                                    | PO                               |  |
| ✓ Seretide inhaler  | 500mcg/50mcg    | B.D                                    | Inhaler (Salbutamol/fluticasone) |  |
| ✓ Tiotropium (Spiriva)  | 18mcg           | OD                                     | PO                               |  |
| ✓ Furosemide  | 40mg            | OD                                     | PO                               |  |
| ✓ Vitamin B <sub>12</sub> injection   | 1mg             | every <sup>month</sup> <del>week</del> | IM                               | next due 3/2/22                        |
| ✓ Clopidogrel   | 75mg            | OD                                     | PO                               |  |
| ✓ GTN patch   | 5mg             | 12 <sup>o</sup> in 12 <sup>o</sup> off | topical                          |  |
| ✓ Lactulose   | 10ml            | TDS                                    | PO                               | PRN                                    |
| ✓ Co-amilorfruse  | 40mg/5mg        | OD                                     | PO                               |  |
| ✓ Lansoprazole  | 30mg            | OD                                     | PO                               |  |
| ✓ Apixaban  | 5mg             | B.D                                    | PO                               |  |
| ✓ MST (Five mg)   | 5mg             | OD                                     | PO                               |  |
| ✓ MST (Ten mg)  | 10mg            | OD                                     | nocte PO                         |  |
| ✓ Furosemide  | 40mg            | OD                                     | PO                               |  |
| Comments (e.g. discontinued medicines)<br>Esomeprazole switched to lansoprazole.<br>Aspirin stopped, Clopidogrel started, Apixaban started. |                 |  |                                  |  |

MDA PRESCRIPTION REQUIREMENTS TOTAL QUANTITY IN WORDS AND FIGURES

b) Private hospital script

Note / Comment: \_\_\_\_\_

Other prescriptions attached: Regular:  Hi-Tech:  Other (please specify): Setw

| Medication          | Form | Dose  | Frequency         | Quantity | Special Instructions |
|---------------------|------|-------|-------------------|----------|----------------------|
| <u>Rx</u><br>Tazari | tblt | 20/10 | bc                | 30/12    | crx / 604            |
| Osagran             | tblt | 10mg  | 6 <sup>o</sup> pm | 30/12    | crx / 1201           |

c) Issues in relation to generic and preferred drugs prescribing

... covers are annexed to all copies of the prescription

| Medication (use CAPITAL LETTERS) | Dose & Frequency | Route | Duration |
|----------------------------------|------------------|-------|----------|
| 1. Rosuvastatin                  | 10mg OD          | PO    | 3/12     |
| 2. Protonix                      | 40mg OD          | PO    | 3/12     |
| 3.                               |                  |       |          |
| 4.                               |                  |       |          |
| 5.                               |                  |       |          |
| 6.                               |                  |       |          |
| 7.                               |                  |       |          |
| 8.                               |                  |       |          |
| 9.                               |                  |       |          |
| 10.                              |                  |       |          |
| 11.                              |                  |       |          |
| 12.                              |                  |       |          |
| 13.                              |                  |       |          |
| 14.                              |                  |       |          |
| 15.                              |                  |       |          |

DO NOT USE FOR FDA DRUGS

depnd'ise

Draw a line through unused prescription spaces.



d) GMS script for dispensing

E

DOCTOR'S SIGNATURE

ONLY FOR ITEMS TO BE REPEATED      PRECISE STRENGTH, QUANTITY AND DOSAGE MUST BE STATED

*1 sus prole*  
*30 x 3/4*  
*Re 1/4      3/11*

DISPENSING      2ND DISPENSING

PHARMACY STAMP, COMPUTER NO. AND DATE OF DISPENSING      PHARMACY STAMP, COMPUTER NO. AND DATE OF DISPENSING

SIGNATURE OF PHARMACIST      DATE OF DISPENSING

THIS PART WILL BE RETAINED BY YOUR PHARMACY

| Month Dis | DRUG                 |
|-----------|----------------------|
|           | <i>Month Dis</i>     |
|           | <i>Drug 3/4 3/11</i> |