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Patient centred medication review – the 7 steps process

Professor Mike Scott MBE, Director, Medicines Innovation Optimisation Centre

Medication Reviews in Europe (EDQM) - 20th May 2025





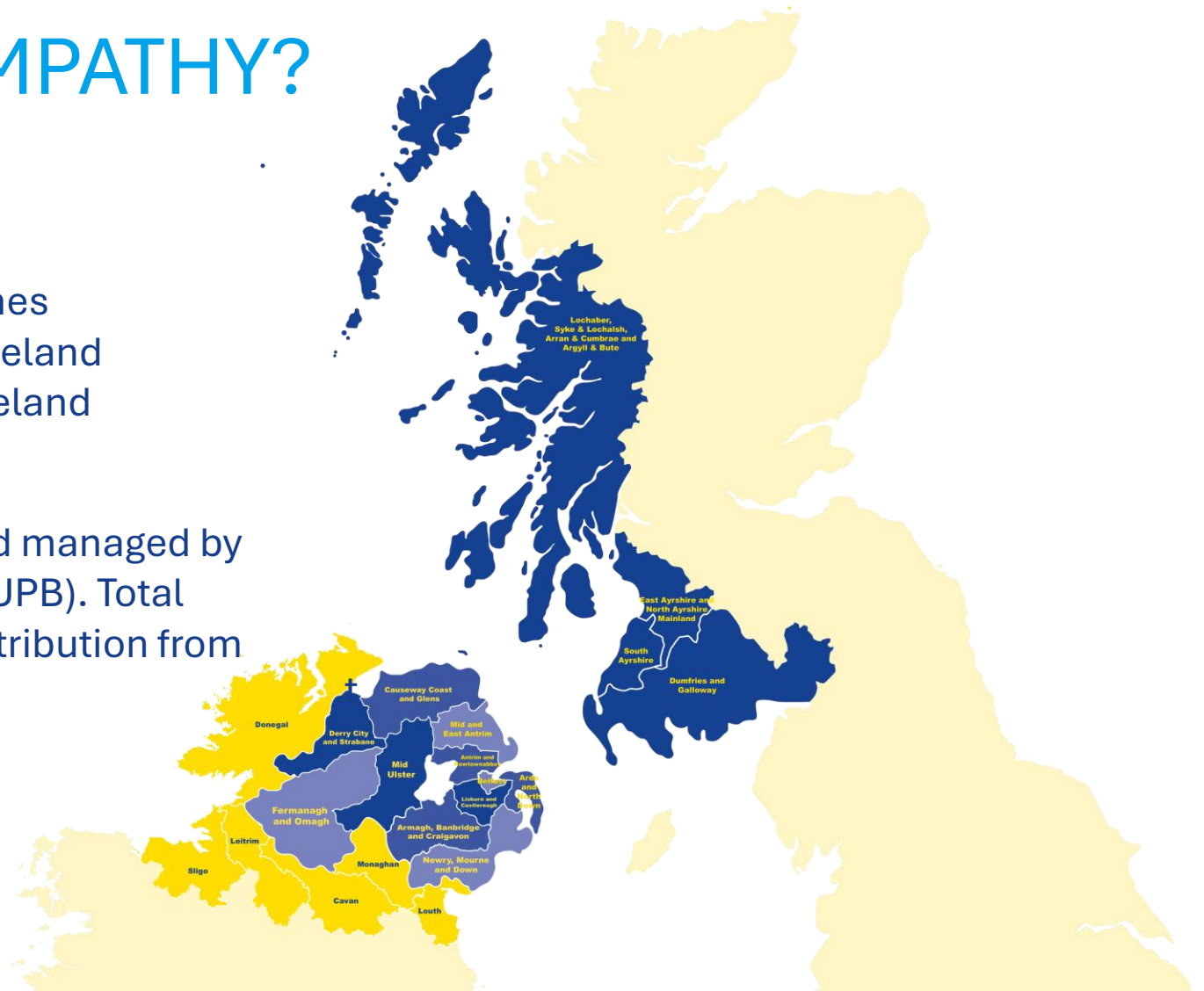
Who was delivering iSIMPATY?

Project Partners

Scottish Government / NHS Scotland
Northern Health & Social Care Trust / Medicines
Optimisation Innovation Centre in Northern Ireland
Health Service Executive in the Republic of Ireland

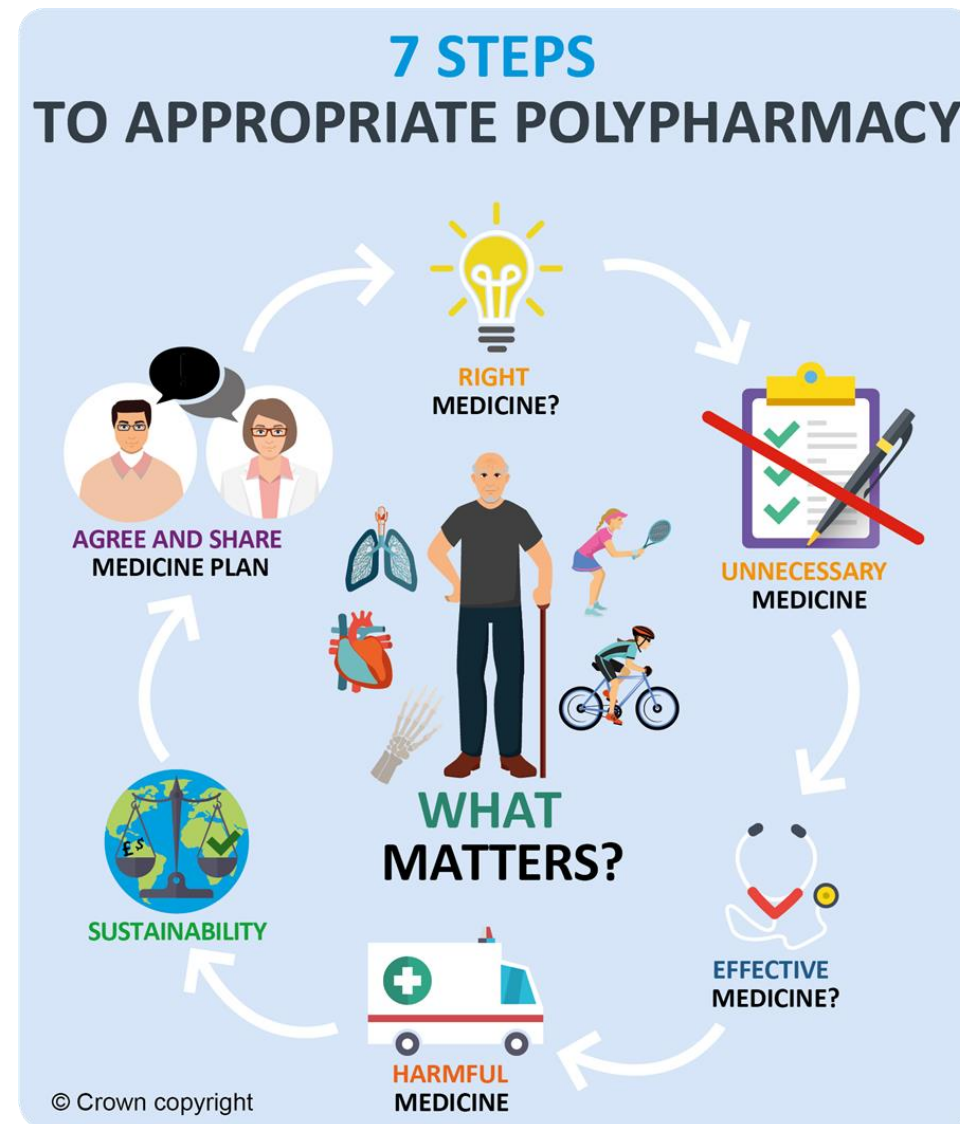
Funding

The project was funded by the EU Interreg and managed by the Special EU bodies programmes body (SEUPB). Total funding: €3,520,671 which includes 15% contribution from project partners.



iSIMPATHY

- £3.1m EU funded project
- Pharmacists recruited, trained, QA processes, practices/locations recruited
- Patients at high risk of medication-related harm:
 - Polypharmacy or
 - high risk meds or
 - care home or end of life
- Pharmacists delivered 7 steps reviews
- In-patients in NI, GP practices in ROI and multiple settings in Scotland
- Follow up with doctors, healthcare professionals and patient as required



Important for patients:

- ★ A medicines review is a meeting to talk about all of your medicines with an expert such as a pharmacist, doctor, or nurse.
- ★ As part of the **iSIMPATHTY** project, medicines reviews are carried out by one of our specialist pharmacists. These pharmacists will work with your wider health care team to help you get the most from your medicines.

★ Why do I need a medicines review?

- ★ The aim of a medicines review is to ensure that your medicines are helping you with **What Matters to You in your life.**
- ★ When you are first prescribed a medicine, it is usually the best one for you; however, things change: **You might have developed a side effect**

Important for healthcare professionals and healthcare system:

- ★ **iSIMPATHY** is important because medicine reviews achieve the best outcomes for patients' health and wellbeing.
- ★ Medicine reviews are also cost-effective: not only owing to immediate interventions such as medicine optimisation (which may result in deprescribing) but also because of the downstream effect reviews can have, such as reduced hospital admissions, time in hospital, and other primary care and social care settings.

Who should I be reviewing?

Medicine reviews for adult patients will be prioritised according to the following categories:

- ★ **Prescribed 10 or more medicines** (this will identify those from deprived communities where the average age is lower when taking 10 or more medications).
- ★ **On high-risk medication** (as defined by the case finding indicators, regardless of the number of medications taken).
- ★ **Approaching the end of their lives:** adults of any age, approaching the end of their life due to any cause, are likely to have different medication needs, and risk versus benefit discussions will often differ from healthy adults with longer expected life spans. Consider frailty score.
- ★ **Aged 50 years and over and resident in a care home,** regardless of the number of medicines prescribed.

7 STEPS Medicine Review Tool

Domain	Step (7 steps)
Aims	1. What matters to the patient?
Need	2. Identify essential drug therapy.
	3. Does the patient take unnecessary drug therapy?
Effectiveness	4. Are therapeutic objectives being achieved?
Safety	5. Does the patient have ADR/Side effects or are they at risk of ADRs/Side effects? Does the patient know what to do if they are too ill?
Cost-Effectiveness	6. Is drug therapy cost-effective?
Patient Centeredness	7. Is the patient willing and able to take drug therapy as intended?

7 STEPS Medicine Review Tool :Example (1/3)

Domain	Steps	Process
Aims	1. What matters to the patient?	Review diagnoses and identify therapeutic objectives with respect to: <ul style="list-style-type: none"> What matters to me (the patient)? Understanding of objectives of drug therapy Management of existing health problems Prevention of future health problems
Need	2. Identify essential drug therapy	Identify essential drugs (not to be stopped without specialist advice): <ul style="list-style-type: none"> Drugs that have essential replacement functions (e.g., levothyroxine) Drugs to prevent rapid symptomatic decline (e.g., drugs for Parkinson's disease, heart failure)
	3. Does the patient take unnecessary drug therapy?	Identify and review the (continued) need for drugs: <ul style="list-style-type: none"> With temporary indications With higher than usual maintenance doses With limited benefit in general for the indication they are used for With limited benefit in the patient under review (See: Drug Efficacy NNT table)
Effectiveness	4. Are therapeutic objectives being achieved?	Identify the need for adding/intensifying drug therapy in order to achieve therapeutic objectives: <ul style="list-style-type: none"> To achieve symptom control To achieve biochemical/clinical targets To prevent disease progression/exacerbation

7 STEPS Medicine Review Tool :Example (2/3)

Domain	Steps	Process
Safety	5. Does the patient have ADR/Side Effects or is at risk of ADRs/Side Effects? Does the patient know what to do if they're ill?	Identify patient safety risks by checking for: <ul style="list-style-type: none"> • Drug-disease interactions • Drug-drug interactions (see Cumulative Toxicity tool) • Robustness of monitoring mechanisms for high-risk drugs • Risk of dose-dependent adverse effects due to drug-drug interactions • Risk of accidental overdosing (Yellow Card Scheme) • Identify adverse drug effects by checking for: <ul style="list-style-type: none"> • Specific symptoms/laboratory markers (e.g., hypokalemia) • Cumulative adverse drug effects (see Cumulative Toxicity tool) • Drugs that may be used to treat ADRs caused by other drugs • Sick Day Rule guidance can be used to help patients know what to do with their medicines if they fall ill
Cost-effectiveness	6. Is drug therapy cost-effective?	<ul style="list-style-type: none"> • Identify unnecessarily costly drug therapy by: • Considering more cost-effective alternatives (but balance against effectiveness, safety, convenience)

7 STEPS Medicine Review Tool :Example (3/3)

Domain	Steps	Process
Patient centeredness	7. Is the patient willing and able to take drug therapy as intended?	<ul style="list-style-type: none"> • Does the patient understand the outcomes of the review? • Does the patient understand why they need to take their medication? • Consider Teach back • Ensure drug therapy changes are tailored to patient preferences • Is the medication in a form the patient can take? • Is the dosing schedule convenient? • Consider what assistance the patient might have and when this is available • Is the patient able to take medicines as intended? • Agree and Communicate Plan • Discuss with the patient/carer/welfare proxy therapeutic objectives and treatment priorities • Decide with the patient/carer/welfare proxies what medicines have an effect of sufficient magnitude to consider continuation or discontinuation • Inform relevant healthcare and social care carers of changes in treatments across care interfaces • Add READ code 8B31B to the patient's record so that when they move across transitions of care it is clear their medication has been reviewed

Training

Royal College of Physicians (RCP)
accredited HCPs (TURAS)

<https://learn.nes.nhs.scot/59670/isimp-athy-evidence-based-polypharmacy>



Modules

ONE – Why should we address Polypharmacy

- Definition and dangers of Polypharmacy
- Medication Adherence
- Adverse Drug reactions
- Criteria for selection for Polypharmacy reviews
- Short introduction to the ‘7 step’ medication review process

TWO – 7 Steps Methodology

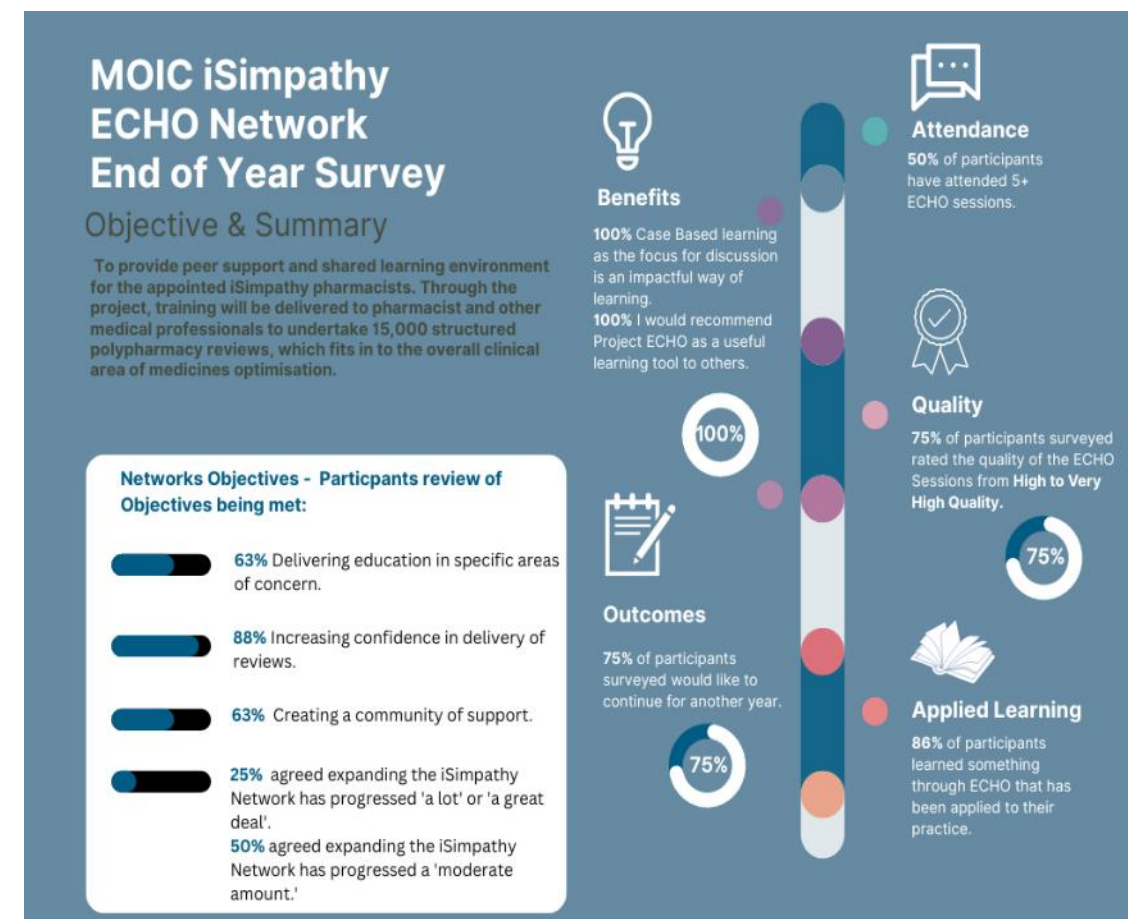
- The 7 Step Medication review process
- Numbers Needed to Treat
- The 7 steps review process in practice

THREE – Change Methodology and Numbers Needed to Treat

- Implementing Change Methodology
- Case study example of the ‘7 steps in practice’
- ‘Understanding NNT’s’ - Numbers Needed to Treat

Peer and project team support including Project ECHO sessions

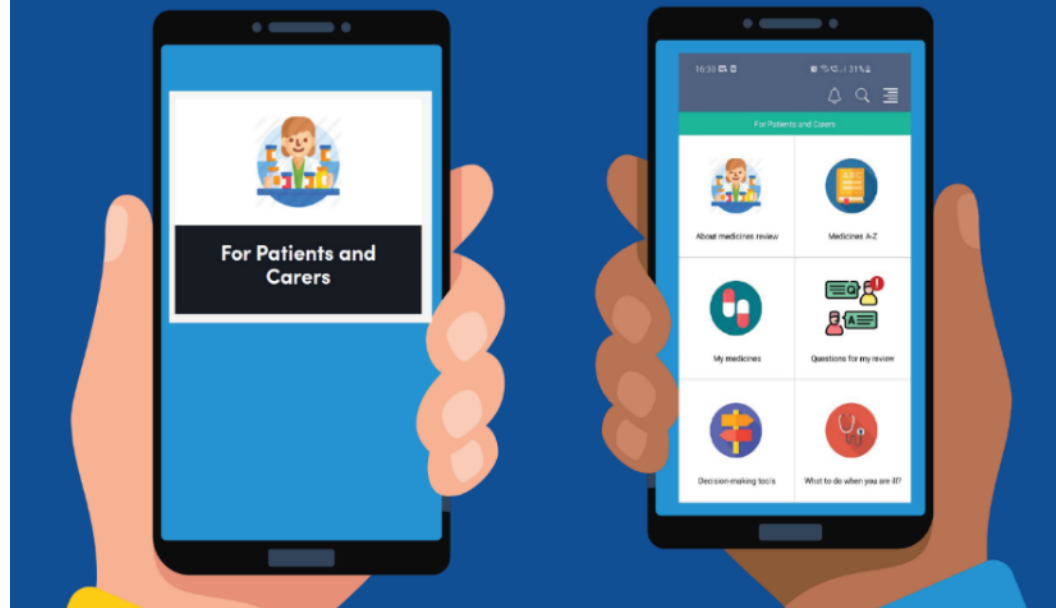
Date	Curriculum/Education Topic
27 May 2021	Numbers Needed to Treat for Hard Pressed Pharmacists
24 June 2021	Skills & Tools to Manage Difficult Conversations
23 September 2021	Pain Management in the Frail
21 October 2021	A Day in the Life of the iSIMPATY Pharmacist – 3 nations
25 November 2021	High Risk Combinations in relation to anti-thrombotics
16 December 2021	Tapering of Antidepressants – generically psychoactive agents
27 January 2022	Parkinson's Disease & minimising the risk of falls
24 February 2022	Maximising the Impact of the Consultation
24 March 2022	Issues Surrounding Diabetes / Cardio Metabolic issues



Robust evaluation

Supporting reviews with the Manage Medicines app

The [Manage Medicines app](#) is a key way to support the medicines reviews process. With easy to navigate toolkits for both professionals and patients or carers, the app also lets patients answer questions ahead of their reviews. As well as giving practitioners this information in advance, it helps patients get the most out of their medicines reviews. Look out for our short animation explaining the app and the PROMs (Patient Reported Outcomes Measures) questionnaire coming soon on our website and twitter.



★ Interventions

- Eadon – type, result, clinical significance

★ Appropriateness

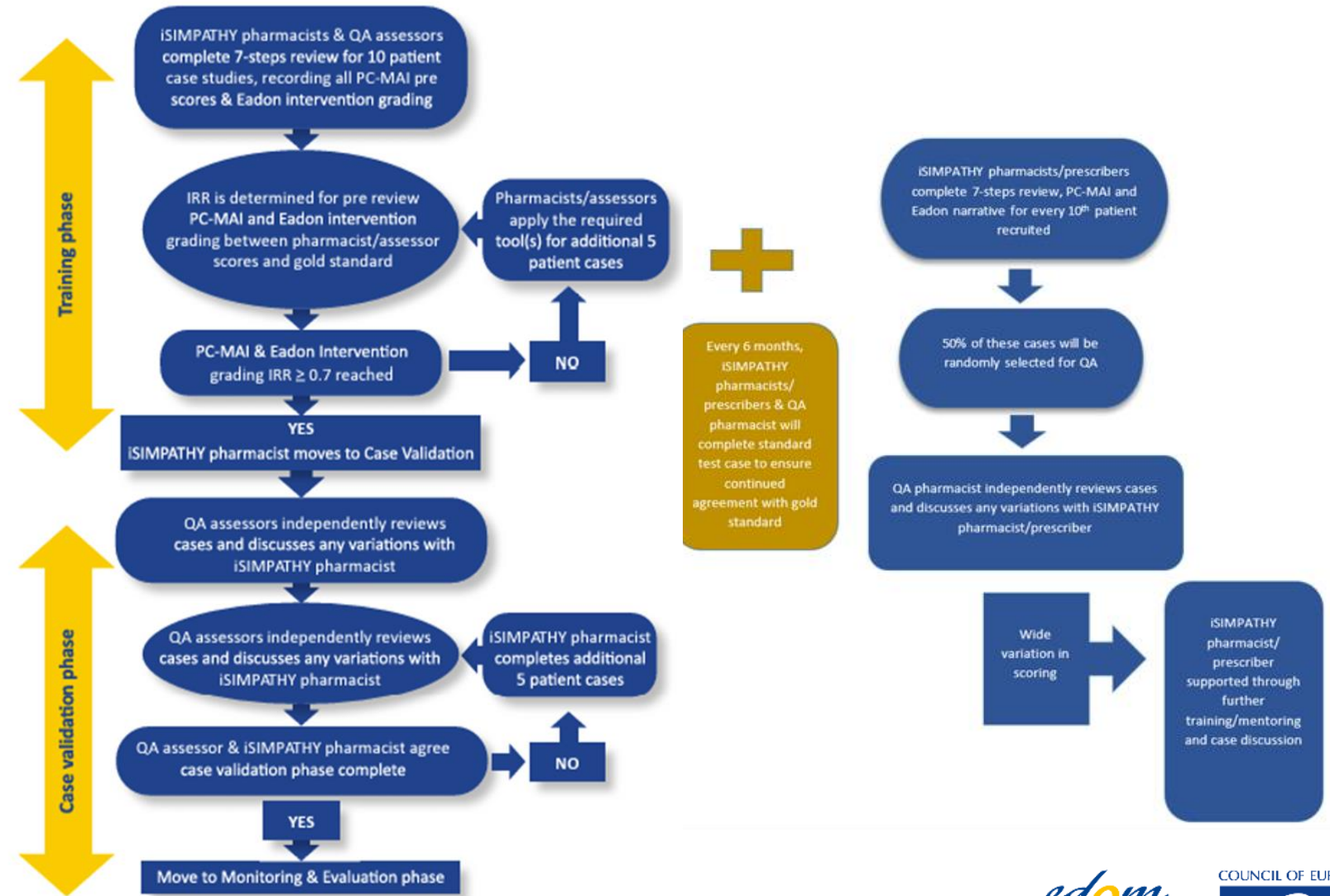
- Person-centred modification of the medication appropriateness index implicit tool (PC-MAI)
- Polypharmacy indicators based on explicit tools (Polypharmacy Guidance)

★ Patient reported outcome measures (PROMS)

★ Economic analysis

Quality assurance

- ★ Training, guidance, peer review
- ★ Eadon grading and PC-MAI scoring of standard cases
- ★ Interrater reliability
- ★ Ongoing peer case reviews, quality assurance process



Overview



Reviews carried out in multiple settings: hospital, out-patient clinics and GP practices



Reviewed over 6000 people, average age 72, 53% female. Variation between countries: ROI and NI, people were older (75 and 72), in Scotland age was 67 with more males reviewed



Average of 6 co-morbidities, 11 interventions undertaken, 12 drugs pre review. Scotland had the highest level of multi-morbidity but lower number of medicines pre-review



95% of patients on 5 or more medicines, 35% on high-risk medicines



23% most deprived, 65% average, 12% least deprived

Interventions

Eadon Result Category	Count
Prescription altered (stop)	3,904
Specific or additional patient/carers education	3,588
Requested/reviewed test/investigation/measurement e.g. labs, vital signs, spirometry	3,134
Medicines reconciled (iSIMPATY intervention)	2,622
Standard patient and/or carers education (iSIMPATY intervention)	2,622
Information given – healthcare professional	2,341
Prescription altered (start)	1,813
Referral made	1,427
Prescription altered (decrease)	1,345
Information given – patient	1,267
Other	1,205
Prescription endorsed e.g. medication record endorsement	1,134
Prescription unaltered advice accepted *	768
Prescription altered (increase)	563
Unresolved *	511
Prescription unaltered advice NOT accepted *	415
Patient's own medicines reviewed	102

Total: 28,761 Unaltered and unresolved account for 6% of total interventions indicating that 94% of interventions were actioned at the time of data collection.

Eadon Grading (n=2,623)	Total (%)
1. Detrimental to patient	0
2. No significance to patient	412 (1%)
3. Significant: does not improve patient care	3,878 (14%)
4. Significant: improves patient care	23,463 (82%)
5. Very significant; prevents a major organ failure or adverse reaction of similar importance	968 (3%)
6. Potentially lifesaving	
Total	28,721

Change in appropriate polypharmacy – PC-MAI

- 92% of patients had a decrease in PC-MAI score, no patient had an increase

	Mean (SD)	ROI (n=228)	NI (n=54)	Scot (n=80)
Pre-review summated PC-MAI (n=376)	20.6 (15.0)	25.4 (15.2)	12.4 (9.5)	12.5 (11.3)
Post-review summated PC-MAI (n=367)	6.8 (8.8)	9.3 (9.8)	1.9 (3.2)	3.1 (4.6)
Difference	13.8	16.1	10.5	9.4

- Pre-review PC-MAI in ROI twice that in Scotland and NI

Change in appropriate polypharmacy – polypharmacy indicators

- Increased likelihood of a serious adverse outcome due to medication-related harm.
- Triggered 1,179 times in 793 patients, with risk fully resolved for 77% of the indicators

Indicator category	Number	%	Most common indicator
Bleeding	324	27.5%	Patient on an oral anticoagulant is prescribed an antiplatelet n=116
Falls	304	25.8%	Patient without dementia aged 75 years or older is prescribed TWO or more drugs with significant sedating or anticholinergic effects (excluding drugs only used for epilepsy) n=171
Renal	149	12.6%	Patient with eGFR <60 and on an ACEI or ARB is prescribed an NSAID n=51
Cardiac	123	10.4%	Patient is prescribed a betablocker and has a pulse of <60bpm n=63
Hyperkalaemia	57	4.8%	Patient on an ACEI or ARB, potassium sparing diuretic, aliskiren or potassium supplement has hyperkalaemia (last K >5.5 mmol/l) n=23
Hypoglycaemia	48	4.1%	Patient aged 65 or older without dementia is on intensive hypoglycaemic therapy and HbA1c is <48 (<6.5%) n=20
Cerebrovascular disease	46	3.9%	Patient with AF and CHADSVASC score ≥3 is not prescribed an oral anticoagulant n=34

iSIMPATHTY embedded a multidisciplinary collaborative approach to deliver pharmacist-led, person-centred medicines reviews using the 7-Steps methodology.

8.6 million unplanned hospital admissions each year across Europe due to adverse drug reactions



50% of hospital admissions due to adverse drug reactions are preventable

Over 6400 patients reviewed

- average age 72
- 53% female
- average 6 co-morbidities



Average 11 interventions per review e.g. education, medicine reconciliation, drug changes, monitoring

iSIMPATHTY's methodology can be applied across healthcare systems. An implementation pack and accredited online training is available.



"We have definitely made significant changes to medications as a direct result of these reviews and advice." (Consultant, Scotland)



Direct medicines cost savings per review of £131 and potential total of £1688 savings from avoided healthcare resource usage



82% of interventions rated clinically significant. 4% of interventions (968) potentially prevented major organ failure or adverse drug reactions of similar clinical importance

Medication Review: 7-Steps to Appropriate Polypharmacy



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Appropriateness of medicine was improved in 92% of reviews



Average reduction of 1 medicine: 12 to 11



Better understanding of medicines, improved adherence and less harm reported in Patient Reported Outcome Measures (PROMs) and average 7.4 Quality-Adjusted Life Years (QALY) gained per 100 patients.



"Before my medication review, I suffered badly with heavy legs and wheezing... after just a few small changes to my tablets I'm now out walking for 30 minutes every morning." (Patient, Ireland)

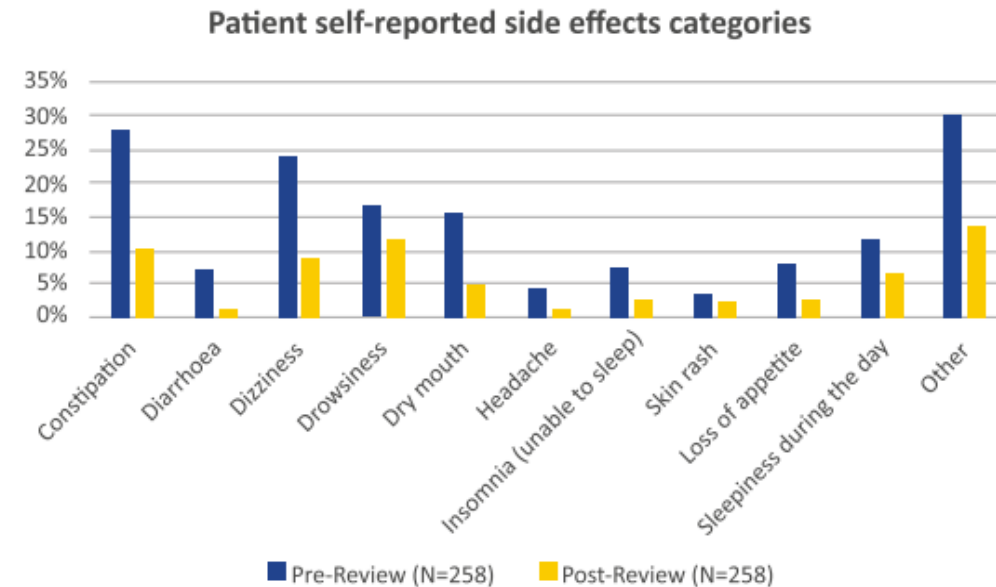


Patient experience – Patient Reported Outcome Measures (n=258)

- PROMS with difference between pre- and post-review responses ($p < 0.05$)

	Pre-review	Post-review
Understanding of purpose of medicines	16%	93%
Understanding of problems medicines may cause	13%	93%
Experiencing side effects	64%	34%
Ever have problems remembering to take medicines?	14%	1%
Stopped taking medicine(s) when felt better?	14%	1%
Stopped taking medicine(s) when felt worse?	22%	3%
I have no problem performing my usual activities	58%	69%
I have no pain or discomfort	48%	56%
I am not anxious or depressed	63%	73%

“huge improvement – walked for half an hour this morning, used to have to stop every few minutes because of the dizziness” Patient



What patients say...



'The service and empathy I received from the hospital chemist was very comforting. She was able to help me understand how the medication I would need would benefit my health. At the moment my health has improved and the medication I have been given has served their purpose well. Thank you for your help.'

'No one has ever sat down with me and taken time to go through all my medicines with me'

'It means so much to me to be involved in decisions about my brother's care. He is non-verbal and I do everything for him'

'A wonderful person. It was the first time anyone ever listened and understood what I was coping with and helped me in so many ways. I wish you all the very best in your job'

'The pharmacist I spoke to was so friendly and helpful reassuring me with regard to my medication. My health has certainly improved as I understood more about any medicines I was taking. She explained what the tablets were for and why each dosage was being given. I would highly recommend this service to anyone'

Pharmacist experience (qualitative interviews)

- Pharmacists felt the impact on patients was substantial, with improved quality of care and patient understanding and autonomy.
- The 7 steps model and the project approach (including time available) contributed to the effects.
- Project training, guidance and experience gained during the project impacted on professional practice directly and practice of colleagues was positively impacted also.

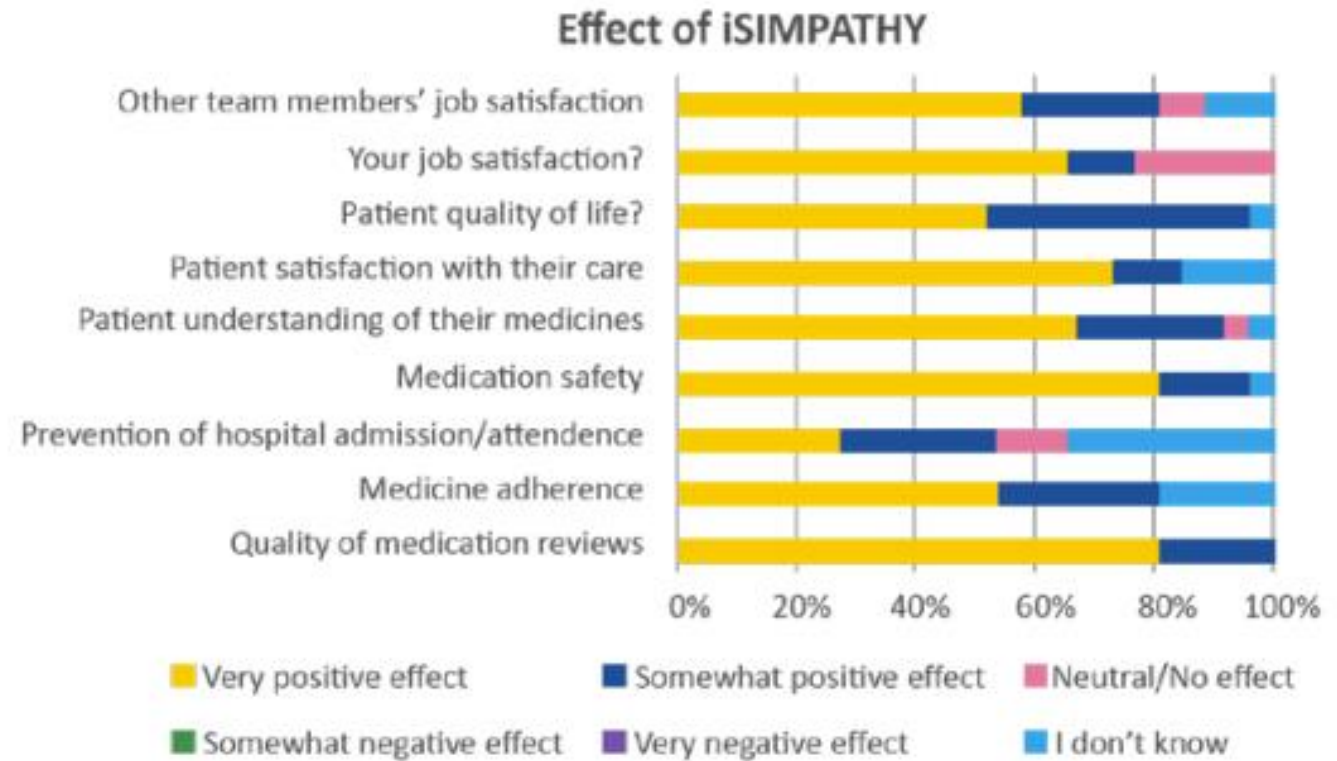
My clinical knowledge is completely...it's completely changed. It's very vast, I see things from a completely different perspective from when I started iSIMPATY

There's a lot more honesty coming from the patients as well. They feel like they've got time to talk... Tell you what their anxieties are around medications...

...they're able to do more things or able to get out a bit more or even kind of more confident

Multidisciplinary team experience (survey)

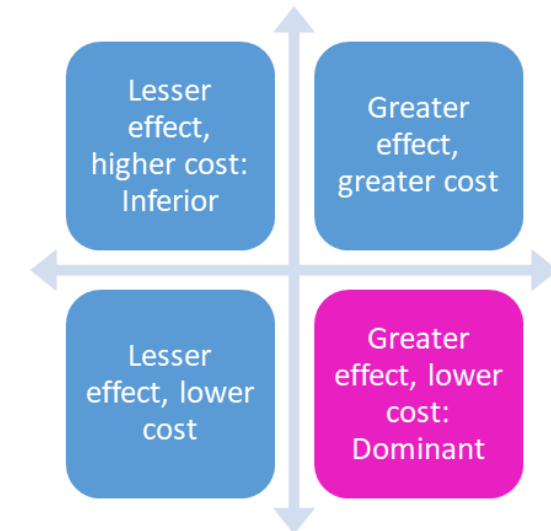
- **Enablers:** Good communication, funding, support from and engagement with the project
- **Barriers:** Lack of funding, time to conduct review-related activity, work culture and the need to embrace change



Health economic analysis

- ★ Dominant in the health economic sense, delivering cost savings and QALY gains
- ★ Per 100 reviews:
 - ★ Cost £7,500 to deliver
 - ★ Medication cost savings of £13,100
 - ★ Avoided ADR-related hospital admissions £6,600
 - ★ Avoided medical costs associated with interventions £168,800
 - ★ 7.4 QALY gain
- ★ Medication-related cost savings outweigh the cost of service delivery in ROI and Scotland

Reducing unplanned admissions from medication-related harm could save; **£24.7m** for ROI, **£11m** for NI and **£36m** for Scotland (avoidance of unplanned hospital admissions costs for 65yr+ in Scotland and ROI, 75yr+ age group in NI)



> Int J Clin Pharm. 2024 Aug;46(4):957-965. doi: 10.1007/s11096-024-01732-y. Epub 2024 May 30.

Economic cost-benefit analysis of person-centred medicines reviews by general practice pharmacists

Cian O'Mahony ¹, Kieran Dalton ², Leon O'Hagan ³, Kevin D Murphy ¹, Clare Kinahan ³, Emma Coyle ³, Laura J Sahm ¹, Stephen Byrne ¹, Ciara Kirke ⁴

Effect of scaling up

- ★ If comprehensive medicine reviews were provided to all patients aged 65+ taking 5+ medicines in each country (75+ in NI) the maximum avoidable inpatient cost would be:
 - ★ £24.7m for ROI
 - ★ £11.0m for NI and:
 - ★ £36.0m for Scotland
- ★ Methodology is scalable – iSIMPATY has demonstrated that it can be of benefit across all healthcare settings.
 - ★ Implementation pack and accredited on-line training pack is available
 - ★ Over 200 healthcare professionals have already completed training

Key contributors to success?



Adding dedicated capacity - time



Adding capability – pharmacist knowledge and skills, Polypharmacy Guidance, training, professional governance, peer support



Person-centred – improved understanding facilitating shared decision making, minimised burden associated with participation (e.g. multiple questionnaires)



Access to information – medication and medical history, the patient, labs




Part of multidisciplinary team – patient and MDT trust

Scale and spread

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For Healthcare Professionals and Clinicians



iSIMPATHY Evaluation Report

Final evaluation of the iSIMPATHY project


[View](#)



Polypharmacy Guidance Realistic Prescribing

Polypharmacy guidance developed by the Scottish Government Polypharmacy Model of Care Group.

[View](#)




Polypharmacy Indicators

Polypharmacy measures, unscheduled

[View](#)


For Patients



Medicines Sick Day Guidance

The Medicines Sick Day Guidance has been produced to aid patients in understanding which medicines they should stop taking temporarily during illness.


[View](#)



Patient Information Leaflet

Useful information for patients to help prepare for and understand a medicines review.


[View](#)



Medicines Sick Day Guidance

The Medicines Sick Day Guidance has been produced to aid patients in understanding which medicines they should stop taking temporarily during illness.


[View](#)



Questions for your Medicines Review PROMs

To prepare for your medicines review, please complete the 'Questions for my Review' section on the Polypharmacy: Manage Medicines app. This YouTube video explains how to do this.


[View](#)



Preparing for your Medicines Review with the Polypharmacy: Manage Medicines App

This animation will give you tips on how to prepare for your medicines review using the Polypharmacy: Manage Medicines app.

[View](#)



Managing Medicines

Project lead for Scotland Alpana Mair discusses the challenges of polypharmacy, NHS Scotland's response to these challenges, and how the iSIMPATHY and iSIMPATHY projects supported this.

[View](#)



What now 1?

- ★ Available now (www.isimpathy.eu)

- ★ Project resources, app, reports
- ★ Online training via Turas

- ★ Scotland

- ★ Polypharmacy guidance update : 4th edition
- ★ Medicines review with Pharmacogenomics

- ★ Northern Ireland

- ★ Adopting polypharmacy guidance and 7 steps methodology as standard

- ★ Republic of Ireland

- ★ Engagement to convert evidence to business cases to roles

What now 2?

- ★ Innovation in person centred **M**edication **P**rescribing and **R**evue for **O**ptimal **V**alue and **E**fficacy (€10 million)
- ★ 10,000 reviews including pharmacogenomics and/or 7 step structured medication review
- ★ Derry GP Federation, Donegal and Sligo and Tayside in Scotland
- ★ Four-year project from March 2025 - March 2029



iSIMPATHy Evaluation Report



iSIMPATHy is supported by the European Union's INTERREG VA Programme and managed by the Special EU Programmes Body (SEUPB)



More information



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