

# Managing polypharmacy for ageing populations

As populations become older, they are more susceptible to multiple chronic diseases, which require the use of multiple medicines, or polypharmacy. The challenges of polypharmacy are gaining traction globally, as patients on multiple medicines are at increased risk of negative clinical outcomes. Recognising this challenge, NHS Scotland published a guideline to ensure appropriate prescribing of medication and polypharmacy. Additionally, the EU-funded study SIMPATHY identified recommendations to improve polypharmacy and adherence to medication among the elderly. Learnings from these two programmes can be used to guide the effective implementation of polypharmacy management globally and is being used to embed the work across three EU projects in the newly funded EU programme iSIMPATHY.

Globally, communities are becoming older and this demographic shift will pose multiple health challenges, as the risk of contracting chronic diseases increases as populations age. The prevalence of multimorbidity, which is the co-occurrence of two or more chronic diseases, will also increase. As a result, the use of many medications to manage different conditions will be prevalent for the ageing population – this is defined as polypharmacy.

Polypharmacy can be beneficial in certain conditions. For example, for the treatment of heart attack, at least four different classes of medication – antiplatelets, statins, angiotensin-converting enzyme inhibitors, and beta blockers – are needed.

However, the risk of negative clinical consequences for the elderly is significantly higher due to their reduced kidney or liver function to metabolise the drugs, as well as an increased vulnerability to a medication's adverse effects, caused by general frailty or drug–drug/drug–disease interactions. A previous study found that older patients taking more than four medications have an increased risk of injurious falls.

Moreover, polypharmacy also poses a significant financial burden to healthcare systems. It was estimated in 2012 that inappropriate polypharmacy contributes to 0.4% of unnecessary costs to the healthcare system globally, which is estimated at USD

18 billion. More than 11% of hospitalisations in the United Kingdom are due to avoidable harm from medication, more than 70% of which were elderly patients who were taking multiple medications. The key challenge in polypharmacy management, therefore, is to optimise treatments while minimising treatment burden and the risk of medication-related harm. Recognising polypharmacy as a public health threat, the World Health Organization (WHO) launched an initiative in 2017, Medication Without Harm, as part of the third Global Patient Safety Challenge, with the goal of halving severe preventable medication-related harm globally over a period of five years.

Dr Alpana Mair from the Scottish Government, and colleagues, reviewed the lessons learned from three programmes developed to address these challenges: the Scottish polypharmacy guidance on realistic prescribing, and the EU's SIMPATHY (Stimulating Innovation Management of Polypharmacy and Adherence in the Elderly) project and ongoing iSIMPATHY (Implementing Stimulating Innovation in the Management of Polypharmacy and Adherence Through the Years) programme.

## NHS SCOTLAND'S POLYPHARMACY GUIDELINE

A polypharmacy guideline published by the Scottish Government and NHS Scotland in 2012 (updated 2015 and 2018), aimed to improve the use of medicines, especially for the elderly with multiple morbidities, at every stage of the patient journey. It outlined a seven-step approach to medication review, to equip healthcare professionals and patients with decision-making around medication:



NHS Scotland published a guideline to ensure appropriate prescribing of medication.

- Step 1: Review diagnoses and identify therapeutic objectives and life priorities.
- Step 2: Review need for essential drugs.
- Step 3: Review need for unnecessary drugs – consider stopping or reducing dose. For example, medication with time-limited, marginal, or questionable benefit in individuals should be deprioritised.
- Step 4: Identify if therapeutic objectives are being met and whether therapy should be added or intensified.
- Step 5: Identify patient safety risks and adverse effects. The more similar an individual is to a clinical trial population, the more likely the patient will share similar benefits and risks.
- Step 6: Cost effectiveness.
- Step 7: Ensure patient-centeredness by making sure the plan is communicated clearly to patients and clinicians are according with the patient's preferences.

As both clinicians and patients review the seven steps together, they can

gain a better understanding of the drug safety profiles, drug–drug/drug–disease interactions, highlight sources of undertreatment, and identify any unnecessary medication to deprescribe. Applying these steps as part of a holistic medication review also has the potential to address all six dimensions of quality in healthcare: efficacy, safety, efficiency, timeliness, equity, and acceptability.

The guide uses six case studies based on clinical cases to exemplify putting

**Across Scotland, more than 120,000 unnecessary medications were discontinued annually through a patient-centred approach, asking 'what matters to you?'**

its principles into practice and provide better understanding for both patients and clinicians, as well as to ensure that information on appropriateness of medicines is shared across transitions of care, from pharmacists to nurses. The NHS Scotland guidance also includes a list of high-risk medications (for example a number of diuretics and

antidepressants) and suggests targeting patients on those medications for polypharmacy reviews.

The approach was initially designed to apply at the point of medication review, to ensure no inappropriate prescription, but its principles apply equally for preventing inappropriate prescription when initiating new medications.

In addition, non-adherence to prescribed medicine is common amongst chronic disease patients, either consciously – as patients are concerned about the effectiveness of their medication or the inconvenience of prescription times and frequency – or unconsciously, due to practical barriers such as poor

organisational skills and polypharmacy. The guidance published by the Scottish Government and NHS Scotland enables discussions of these adherence issues during the review sessions with healthcare professionals, to identify barriers to patient understanding and ensure shared decision-making in the best interest of patients,



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iSIMPATHY will deliver 15,000 medication reviews across three European countries.

so they can effectively adhere to multiple medications.

It had previously been identified that patients with the greatest frailty, on most medications or taking high-risk medicines, are at the highest risk of inappropriate polypharmacy. These vulnerable patient groups are usually the elderly, aged 65 and above, and living in care homes. Tools used in electronic health records can automatically identify such patient groups and facilitate assessment of risk factors of inappropriate prescribing. The guidance includes a list of indicators of high-risk patients, which can help identify patients to review.

## An open patient-safety culture is important for open discussions between different healthcare professionals when collaboratively reviewing polypharmacy appropriateness.

Indicators can also be used to identify patients at risk from harm independently of the electronic health records.

A health economic analysis demonstrated that, since the guidance was published, one to two medications per patient had been discontinued; across Scotland this meant more than 120,000 unnecessary medications were discontinued annually.

### SIMPATHY PROGRAMME

The EU-funded SIMPATHY project developed tools to support implementation in different healthcare settings. It was a two-year study of polypharmacy and adherence management in nine EU countries, which identified six key recommendations to improve medication safety:

1. Use a systems approach that has multidisciplinary clinical and policy leadership.
2. Nurture a culture that encourages and prioritises the safety and quality of prescribing.

3. Ensure patient-centricity in the decision-making process about their medication, through support and empowerment.
4. Ensure data-driven measurement outcomes.
5. Adopt an evidence-based approach and prioritise action.
6. Utilise, develop, and share tools to support implementation.

However, the study demonstrated that the competing interests of different healthcare professionals poses a challenge in designing innovative polypharmacy management initiatives. Moreover, an organisation's work culture was cited as one of the main reasons that planned change initiatives were unsuccessful. For example, an open patient-safety culture is important for open discussions between different healthcare professionals when collaboratively reviewing polypharmacy appropriateness.

Stakeholders involved in the SIMPATHY programme developed an economic tool to enable different countries and healthcare organisations to explain the economic benefits of appropriate polypharmacy management and therefore sustain long-term commitment by healthcare providers.

### ENSURING ONGOING POLYPHARMACY MANAGEMENT

While effective polypharmacy management continues to be a global challenge, there remains a lack of evidence on the effects of polypharmacy on patient-centricity and clinical outcomes, so current guidance on polypharmacy is based predominantly on consensus rather than evidence. More research is needed to elucidate the risks of drug-drug interaction when patients are prescribed multiple drugs to ensure evidence-based decision-making by both patients and providers.

As next steps, the impact of the guidance on patient outcomes will be monitored to guide the development of upcoming guidelines. The role of patients as shared decision-makers has to be developed by measuring patient-reported outcomes, so a truly patient-centric approach can ensure that any decisions are in their best interests. Currently, the Scottish government is leading a three-year-funded project implementing the findings from SIMPATHY and the Scottish Polypharmacy Guidance in iSIMPATHY. This will deliver 15,000 medication reviews across three European countries and collect patient-reported outcome measures (PROMS) data, using this patient feedback to drive improvement.



# Behind the Research Dr Alpana Mair

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## Research Objectives

Communicating effective polypharmacy management to reduce harm from medications and improve adherence.

## Detail

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University Hospital, The CLINIC Foundation for Biomedical Research, Medizinische Hochschule Hannover, University of Coimbra, Azienda Ospedaliera Universitaria Federico II, Uniwersytet Medyczny W Lodzi, University of Peloponnese and Robert Gordon University.

### Bio

Alpana Mair leads work for the WHO on polypharmacy and is a WHO expert adviser on patient safety. For International Foundation of Integrated Care (IFIC), she coordinates the Special Interest Group on Appropriate Polypharmacy & Adherence, and is EU coordinator for work on Active and Healthy Aging on polypharmacy and medications adherence. She is Associate Professor at Edinburgh

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### Collaborators

Scottish Government Polypharmacy Model of Care Group. *Polypharmacy Guidance, Realistic Prescribing 1<sup>st</sup> Edition, 2012*, Scottish Government; SIMPATHY project consortium: The Scottish Government, Uppsala

### iSIMPATHY Project Partners

Scottish Government Effective Prescribing and Therapeutics, Northern Health & Social Care Trust / Medicines Optimisation Innovation Centre in Northern Ireland, and Health Service Executive in the Republic of Ireland.

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## Personal Response

**How do we ensure that polypharmacy reviews are undertaken across all transitions of care, from physicians to pharmacists to nurses, and finally patients?**

There is a key role for patients to have the joint responsibility with healthcare professionals to keep an accurate medication list using the polypharmacy, managing medicines app or a paper-based list. It is the responsibility of each healthcare professional to work as part of the team to review a person's medication when a person moves from different care settings, asking the patient 'What matters to you?' and using the 7-steps process.

