1. General Principles

1.1 What is polypharmacy and why is it important?

Medication is by far the most common form of medical intervention for many acute and chronic conditions. Drug therapy can be highly effective in preventing disease or slowing disease progression, with guidelines for single diseases recommending the use of a variety of evidence based drug treatments. However, there is often a mismatch between prescribing guidelines for specific medical conditions and the range of clinical complexity found in individuals. For complex patients with multiple conditions; frailty; a dominant condition (e.g. dementia) or approaching the end of their lives, the implementation of the sum of evidence based recommendations may not be rational, may increase the risk of adverse drug events and may not align with the patient's preferences.

> **Appropriate polypharmacy** is present, when: (a) all drugs are prescribed for the purpose of achieving specific therapeutic objectives that have been agreed with the patient; (b) therapeutic objectives are actually being achieved or there is a reasonable chance they will be achieved in the future; (c) drug therapy has been optimised to minimise the risk of adverse drug reactions (ADRs) and, (d) the patient is motivated and able to take all medicines as intended.

The term polypharmacy itself just means "many medications" and is defined to be present when a patient takes two or more medications. It is recognised that polypharmacy is often beneficial. For example, secondary prevention of myocardial infarction requires the use of at least four different classes of drugs (antiplatelets, statin, ACE inhibitor, beta blocker).

> **Inappropriate polypharmacy** is present, when one or more drugs are prescribed that are not or no longer needed, either because: (a) there is no evidence based indication, the indication has expired or the dose is unnecessarily high; (b) one or more medicines fail to achieve the therapeutic objectives they are intended to achieve; (c) one, or the combination of several drugs cause inacceptable adverse drug reactions (ADRs), or put the patient at an unacceptably high risk of such ADRs, or because (d) the patient is not willing or able to take one or more medicines as intended.

Appropriate polypharmacy requires consideration at any point of contact involving medication but there are five clear stages which should be used as a trigger to do this:

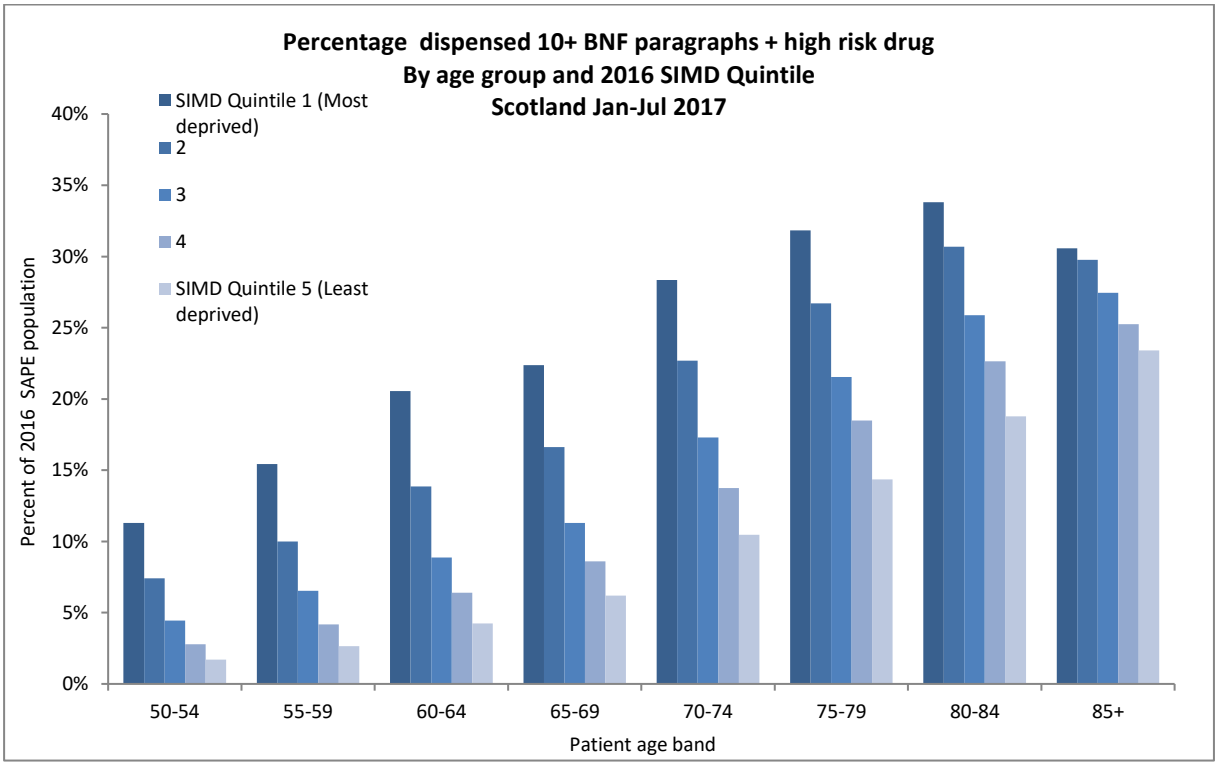
1. Prescribing (and risk assessment)
2. Medication review
3. Dispensing and administration
4. Communication and patient engagement
5. Medication reconciliation (at care transitions)

Although *Polypharmacy Guidance, Realistic Prescribing 2018* concentrates on the holistic patient-centred medication review, the principles, tools and recommendations can be used at any stage, especially at the point of prescribing.

1.2 Which patients should be targeted for review?

Patients at highest risk of inappropriate polypharmacy are those with the greatest frailty, on the most medicines and taking high risk medicines. There has been a comprehensive review of the case finding criteria by which patients, who may benefit the most from a polypharmacy review are identified. In the previous version of this guideline, these criteria were based on age, residency in a care home, number of repeat medicines prescribed and Scottish Patients at Risk of Readmission and Admission (SPARRA) score of 40-60% (Appendix G).

Emerging trial evidence demonstrates the importance and impact of targeting patients with high-risk prescribing.[5-13] Holistic face-to-face review of these patients reduced risk for the individuals and also demonstrated a reduction in hospital admissions for acute kidney injury. The success of this approach has been used by the guideline development group to consider a wider range of *Case Finding* indicators to target patients on high risk medications (Appendix E).



Another important area that the guideline development group considered was the effect of deprivation on rates of polypharmacy. The review of polypharmacy prescribing data (10+ BNF paragraphs plus a high risk medicine) by deprivation demonstrates that multi-morbidity, and its associated problems, presents 10 to 15 years earlier in more deprived communities.

The following revised case finding criteria are recommended as a way to prioritise patients for a polypharmacy medication review:

A. Aged 50 years and older and resident in a care home, regardless of the number of medicines prescribed
B. 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 (see section 1.6.1)
C. Prescribed 10 or more medicines (this will identify those from deprived communities where the average age is lower when taking 10 or more medications)
D. On high-risk medication (as defined by the *Case Finding* indicators (Appendix E), regardless of the number of medicines taken

1.2.1 High Risk Medicines

During a study in 2004 carried out by Pirmohamed[64] into the burden of Adverse Drug Reactions (ADRs) on hospital admissions, a number of high risk medicines were identified; they are:

BNF Section	Examples
2.1 Positive inotropic medicines	*Digoxin*
2.2 Diuretics	*Bendroflumethiazide, spironolactone, furosemide*
2.5 Hypertension / heart failure	*Ramipril, enalapril, losartan*
2.8 Anticoagulants and protamine	*Warfarin, rivaroxaban, edoxaban, apixaban, dabigatran*
2.9 Antiplatelets	*Clopidogrel, dipyridamole*
4.1 Hypnotics and anxiolytics	*Benzodiazepines, Z-drugs*
4.2 Antipsychotic / antimanic drugs	*Amisulpride, risperidone*
4.3 Antidepressants	*Amitriptyline, fluoxetine, paroxetine*
4.7.2 Opioid analgesics	*Tramadol, co-codamol, morphine, fentanyl*
10.1 Rheumatic diseases and gout	*NSAIDs, corticosteroids, methotrexate*

The study concluded that while these drugs have proven benefit for patients, they still present a potential harm to the patient and measures should be put in place to reduce the burden of ADRs and further improve the benefit:harm ratio.

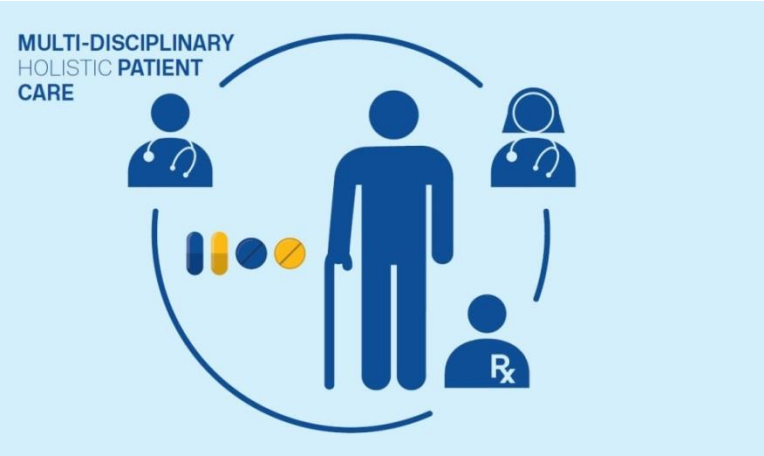
1.2.2 Coding for Review

When reviews are undertaken, in order to facilitate evaluation on the impact of polypharmacy reviews and patient outcomes, the reviews should be coded with the READ code **8B31B**. This will ensure that as patients move across transitions of care there is continuity in the management of their medicines.

A polypharmacy review is a medication review following the principles of the 7 steps, that considers all the clinical information and where outcomes from the review are discussed with the patient and/or carer; either face to face or by telephone.

1.3 Who is this guideline targeted at?

Everyone, including patients, policy makers and healthcare professionals, has a role to play in ensuring that when polypharmacy is used it is safe and appropriate. This guideline aims to provide resources, expertise and insight for all involved with polypharmacy management, despite the need for far more published research. It will take all members of the healthcare team to bring about significant improvement in this area, and utilising the multidisciplinary team for more complex interventions should be considered.



The core foundation of *Polypharmacy Guidance, Realistic Prescribing 2018* approach remains the holistic patient centred *7-Steps* medication review. However, once embedded, the principles should be considered at all critical stages of the medication use process: prescribing; reviewing; dispensing; communicating and reconciling. This is of particular importance at initiation of treatment in order to support shared decision making between the patient (and/or carers, and/or welfare proxies) and clinician.

Patients play a vital role if provided with the right information, tools and resources to make informed decisions about their medicines. Although many of the resources provided are aimed at clinicians, an App, patient leaflets and revised *Sick Day Rule* guidance will be available to aid patient understanding and involvement, in the review and supports shared decision making.

1.3.1 Recommended actions for Boards/IJBs

Boards and IJBs should consider this information alongside the data provided by the indicators (Appendix F) and identify a lead within the medicines management team and a local clinical lead, geriatrician or GP. These two leads should work together to drive delivery and implementation of the recommendations within this document, ensuring that the primary and secondary care interface is appropriately developed.

1.3.2 Recommended actions for clusters

Clusters should engage with local medicines management team to review data and consider utilising a quality improvement based approach to deliver change. They should also consider the adoption of Kotter's framework as set out in the SIMPATHY handbook[4] and shown below:

1 Establishing a sense of urgency
Communicating to stakeholders the need to change current ways of reviewing medication to benefit patient care- improvement in patient safety and outcomes from medicines. Examining other projects that are developing and whether they pose a threat to the development of the framework. Existing projects may focus on cost efficiencies rather than on patient safety due to budgetary pressures.

2 Forming a powerful guiding coalition
A project group is assembled including both primary and secondary care clinicians made up of doctors, pharmacists and geriatricians and Long-term Conditions collaborative leads locally and nationally. Have discussions about working together to inform work of Director of Pharmacy and public health both locally and nationally.

3 Creating a vision
A vision is created as to what the project might achieve for patient care and for the Healthcare Provider. Project plan outlines strategies for achieving the vision.

4 Communicating the vision
Share this in written communication and have face to face dialogue with people both locally and nationally.

5 Empowering others to act on the vision
Looking at the obstacles to change the biggest one will be ownership so provide feedback and adaptation of the protocol e.g. link with anticipatory care plans

6 Planning for and creating short-term wins
To gather data and provide feedback within a relatively short space of time after review framework is piloted; share data from pilots and used to build the business case. Break the project down into smaller tasks so that results can be seen and shared. E.g. design of guidance for review.

7 Consolidating improvements and producing still more change
Engage with individuals that might influence change in policy to adopt the vision. Transfer of project to other areas to reinvigorate the project e.g. running project in another locality and other health care providers.

8 Institutionalising new approaches
Sharing of benefits to the new process to the organisation e.g. reduced admissions and improved patient care. Adoption of project into nationally delivered service development, e.g. sharing outcomes with local and national leads on service development.