Polypharmacy
Getting our medicines right

Draft for Public Consultation
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I RPS Polypharmacy Key Messages

Polypharmacy can be problematic

Whilst it is recognised that medicines have had an enormously positive impact on the lives of millions of people, polypharmacy is a significant, complex and growing issue affecting a broad range of people. Naturally, polypharmacy is often linked to the taking of multiple medicines in older people. However, it is important to recognise that it can also affect a wider group of people, including children and young people, those from deprived backgrounds, people with mental health problems and those with learning difficulties. It occurs in a wide range of health and social care settings such as hospitals, care homes, prisons and affects many different people including those who are housebound or homeless and those in hospices.

There are many definitions of the term problematic polypharmacy.

This guidance uses the term broadly, to cover four main scenarios of problematic polypharmacy:

- The prescribing of medicines that are no longer clinically indicated or appropriate or optimised for that person
- Where the benefit of a particular medicine does not outweigh the harm
- Where the combination of multiple medicines has the potential to or is actually causing harm to the person, and
- Where the practicalities of using the medicines prescribed to a person have become unmanageable or are causing harm or distress.

There is a need to share decisions around the use of medicines

This guidance sets out a range of recommendations but a central theme is that the response to tackling problematic polypharmacy will only be successful if all contributors to individual care enable a significant behaviour change on the parts of both people and healthcare professionals. There is a need to move from a paternalistic, hierarchical healthcare environment where the individual is a passive recipient of medicines, to a situation where shared decision making is the norm in all medicine-related conversations; one where the person, their prescriber and those supplying the medicines are equal partners in supporting decisions that are agreed upon as acceptable by all parties.

There is a need to tackle problematic polypharmacy

The issue of problematic polypharmacy is a growing one. The risks of potential harm to those who are under the care of healthcare professionals is increasing as the number of people taking multiple medicines is increasing. Healthcare professionals have an opportunity to address this with a significant change in the way they speak with people about their medicines but there is a need to act now. Failure to address the causes of problematic polypharmacy and adopt the recommendations in this guidance will have serious consequences for a National Health Service under pressure, for the healthcare professionals who support people with their medicines and most importantly for the people at risk from the potential harms that we know taking many medicines can bring.

Everyone has a responsibility to address problematic polypharmacy
Healthcare professionals have a collective responsibility to address the many areas of polypharmacy. Everyone, healthcare organisations, policy makers, prescribers, pharmacists, nurses, the people taking medicines, carers and the public at large, has a role in ensuring that they all play their part in the collective response to this issue. The recommendations in this guidance aim to explain the responsibilities that everyone has around problematic polypharmacy. Whilst a collaborative approach is required, pharmacists, as the experts in medicines, have some important responsibilities to work with the various stakeholders and in some cases will be responsible for leading the change.

There are significant benefits if problematic polypharmacy can be addressed. If done correctly, this will achieve the behaviour change needed to ensure shared decision making as the norm and adopt the recommendations in this guidance. There are potentially significant gains to be made. These include:

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This guidance has set out to make bold but realistic recommendations to all those involved in the medicines pathway. This guidance also signposts readers to some of the great work that has already been done in this field.
2 Recommendations

This guide is intentionally aspirational. The recommendations made in this guidance may not necessarily reflect the current arrangements in healthcare but aim to set out a picture of what good systems could (and should) have in place and how healthcare professionals could behave in order to address the problems that can arise from polypharmacy.

The central theme identified by the guidance steering group and reflected in this document is:

Polypharmacy and actions to identify and address the problems that it causes, are everyone’s responsibility. Solutions that rely on one sector to conduct medication reviews will fail to deal with the scale of the problem. Instead, systems need to come together to ensure that there are processes to find the individuals who are most at risk from harm. Such processes should include data provision that will systematically identify people at greatest risk from harm who require a structured, holistic medication review* as well as systems that allow for opportunistic identification of people with a high pill burden, those who are taking high risk medicines and/or those who appear not to be coping well with their medicines. However, whilst all those involved in the medicines pathway must play their part, there is a requirement on those who are prescribing medicines to take a lead responsibility to consider the consequences of multiple medicines for people and to address that directly with the person under their care.

Such conversations, if carried out well and in equal partnership between the healthcare professional and the individual, have a number of potential benefits, including:

- A reduction in problematic polypharmacy
- More engaged individuals who are content with the medicines that they have agreed to take
- Greater likelihood that people will adhere to medication regimes
- Less medicines waste, and
- Improved health outcomes for those under their care.

*NICE has defined a structured medication review as ‘a critical examination of a person’s medicines with the objective of reaching an agreement with the person about treatment, optimising the impact of medicines, minimising the number of medication-related problems and reducing waste.’

(www.nice.org.uk/guidance/ng5/chapter/1-Recommendations)

3.1 Recommendations for all healthcare organisations

- In all settings where medicines are being used, there should be access to a pharmacy professional
- All healthcare organisations should aim to have systems in place to ensure people taking multiple medicines (especially those taking 10 or more medicines) can be identified and highlighted as requiring a comprehensive holistic medication review
- Where an individual organisation is unable to carry out a holistic, structured medication review with a person who has been identified as taking multiple medicines and requiring a review, they should have systems in place to ensure that the individual is highlighted as being at risk from harm caused by polypharmacy to their registered GP practice
- Healthcare organisations that provide medicines on a repeat basis should ensure that those repeat prescribing systems are safe, well organised and do NOT contribute to problematic polypharmacy by allowing medicines to be prescribed on a repeat basis without regular medication review
• All healthcare organisations should ensure that where medication reviews occur, that they are truly person-centred and engage fully with the individual and/or their carer to discuss the taking of multiple medicines and the impact on that particular person
• Actions to stop medicines safely should be clearly communicated with the person as well as all healthcare professionals and organisations involved in the prescribing, dispensing and administration of their regular medicines.

3.2 Recommendations for people and carers using healthcare services

• People (or their carers) receiving medicines have a responsibility to share with their healthcare professional when medicines are causing problems; such problems may arise from:
  o A lack of understanding of what the medicine is for
  o Side effects of the medicine
  o Inability to take the medicine properly (for example, due to size of tablet, timing of doses etc.), or
  o Problems caused by the number of medicines being taken
• People have a responsibility to be honest with their healthcare professional about their willingness to take the medicines as prescribed. Tools such as the ‘me and my medicines charter’ can help people and their healthcare professional to have such conversations. See Appendix 5

3.3 All prescribers in any care setting

• All prescribers should ensure that they utilise the tools and resources available to support high quality consultations which incorporate shared decision making and focus on the person in the consultation
• All prescribers should ensure that they enable decisions to be reached about the prescribing or stopping of a medicine in collaboration with people (or their carers) for whom they are prescribing medicines
• Those involved in work to address polypharmacy should ensure that they are familiar with and use the data and risk stratification tools * that are available to help identify those people who are at the greatest risk of polypharmacy
• All prescribers should assess a person’s adherence with their medicines before any decisions are taken about treatment failure or adding in extra medicines
• All prescribers should make a full assessment about whether it is safe and appropriate for medicines to move into a ‘repeat prescribing system’ and must be assured that checks and reviews are in place to highlight when a repeat medicine should be stopped
• All prescribers should think carefully about the ‘pill burden’ of the medicine or medicines that they are prescribing.

3.4 Pharmacists in the community setting (this includes community pharmacists and those working in GP practices)

• Pharmacists working within GP practices should ensure that GP practices use systems that are available to them (for example, NHSBSA polypharmacy prescribing comparators in England, or SPARRA score in Scotland, or Prescribing Indicators in Wales), to systematically identify people who are regularly taking large numbers of systemic medicines
• Pharmacists should screen for potential adverse drug reactions (ADRs) and take steps to reduce the risk of harm, this should include the identification and reporting of suspected ADRs using the Yellow Card Scheme (https://yellowcard.mhra.gov.uk/)
• Pharmacists should ensure that where a person presents with prescriptions, or a request for
multiple regular medicines, that there are processes which enable opportunistic review to understand how they are managing the ‘pill burden’ and if any medicines are no longer needed

- Pharmacists should participate in any locally or nationally agreed systems in place to support collaborative working to address polypharmacy, this might include a regular feedback to prescribers highlighting any person that is thought to be taking a large number of medicines and may not be coping well with taking them
- Pharmacists should ensure that when a medication review is carried out and the person is found to have very complex medicines issues, that mechanisms are in place to refer to their GP or a geriatrician or other services that are able to manage their conditions (for example, intermediate care services etc.)
- Pharmacists in the community should be able to demonstrate that they have undertaken ongoing training to ensure that their consultation skills are such that they enable high quality person-centred discussions about medicines. See section 6.6 on examples of tools to support healthcare professionals consult their consultation skills.

3.5 Pharmacists in the hospital setting

- It is recognised that people taking many medicines may well be identified on admission to hospital (as part of the medicines reconciliation process) but that a holistic, person-centred medication review may not be possible if the person is only in hospital for a very short time. However, pharmacists should ensure that they are able to highlight such people to their GP practice and community pharmacist to flag that a holistic medication review is required
- Pharmacists in hospital settings should raise concerns with prescribers when they identify people taking multiple medicines (especially those taking 10 or more) if it is suggested that more long-term medicines are added, further increasing the pill burden for that person
- Pharmacists should screen for potential adverse drug reactions (ADRs) and take steps to reduce the risk of harm, this should include identification and reporting of suspected ADRs using the Yellow Card Scheme (https://yellowcard.mhra.gov.uk/)
- Factors such as the person’s situation (for example, do they live alone; do they have a carer etc.) should be known to the prescriber before more medicines are added
- Factors such as current adherence with medication regimes should be tested before additional medicines are added in; if this is not possible (for example, due to the nature of the admission or visit to hospital), any concerns about adherence should be flagged with the person’s hospital prescriber, GP practice and community pharmacist.

3.6 Pharmacists in care homes

- Pharmacists in care homes should have medication review at the heart of their role; however, care home pharmacists should ensure that, where possible, reviews are undertaken within a multidisciplinary team and with the input of people using medicines, as well as carers if the situation allows
- Particular attention should be paid to medicines or combinations of medicines that are known to have higher risks for older people or those with mental health problems or learning difficulties
- Pharmacists in care homes should screen for potential adverse drug reactions (ADRs) and take steps to reduce the risk of harm, this should include the identification and reporting of suspected ADRs using the Yellow Card Scheme (https://yellowcard.mhra.gov.uk/)
- Pharmacists in care homes should ensure that they have undertaken training to carry out holistic, structured medication reviews and use evidence-based tools to support high quality medication reviews
- Pharmacists in care homes should be able to demonstrate that they have undertaken ongoing training to ensure that their consultation skills are such that they enable high quality person-
centred discussions about medicines.

3. 7 Nurses

- Nurses who are also prescribers would be expected to adopt the recommendations made to all prescribers in section 3.3 above.
- Nurses in all care settings should be aware of the impact of taking multiple medicines on people under their care and particularly for vulnerable groups such as older people.
- Nurses should be alert to identifying persons taking multiple medicines, especially those who may not be managing the challenges of taking complex regimes or multiple medicines and highlight these people to their prescriber or pharmacist for a possible medication review.
- Nurses should have an awareness of side effects of medicines and also an understanding of the recommended doses and best time to take a medicine for optimum effect.
- Nurses in all care settings, but particularly those working with vulnerable people such as older people, should ensure that they are able to engage people under their care in a discussion about how they are coping with their medicines taking and highlight any issues raised with the most appropriate person (for example, their GP or their prescriber).
3 Audience, Definitions, Purpose and Scope

Audience

The key audience for this guidance is the pharmacy profession. However, as polypharmacy is such a broad topic, influenced by all clinical groups involved with medicines, this document is also aimed at being relevant for all healthcare professionals and organisations involved with the care of people where medicines are likely to be used.

Whilst this guidance has not been written for the general public, the central theme of the work is that if healthcare professionals fail to engage with these people and fail to make person-centred prescribing and shared decision making the norm, then the issue of polypharmacy will never be fully addressed. Therefore, the representatives of people using healthcare services involved in this work were highly valued in its development and we hope that patient groups can use this guidance to help drive the change in approach.

Definition

There are many definitions of the term polypharmacy. This guidance uses the term broadly, to cover four main scenarios of problematic polypharmacy:

- The prescribing of medicines that are no longer clinically indicated or appropriate or optimised for that person
- Where the benefit of particular medicines does not outweigh the harm
- Where the combination of multiple medicines has the potential to, or is actually causing harm to the person, and
- Where the practicalities of using the medicines prescribed to a person have become unmanageable or are causing harm or distress.

The term ‘pill burden’ has been used to describe when a person is taking a number of medicines (mostly in oral form) that may be difficult to manage due to the number of tablets/capsules to be taken, the way they have to be taken, how easy they are to swallow, whether they can be taken all together and the general consequences of ordering, storing and managing a large number of medicines.

Purpose and scope

This guidance is designed to provide an initial, overarching summary of the size, scale and complexity of the issue of polypharmacy; and aims to outline the vital role that people themselves (and their carers) must play in the solutions to problematic polypharmacy. It will aim to signpost to some of the good work already being done and make recommendations to healthcare professionals and healthcare organisations who encounter polypharmacy and its consequences.

This guidance is not intended to be a clinical guideline to inform decisions about stopping medicines in specific individuals, but will signpost healthcare professionals to some of the excellent resources available that do help with those decisions.

The guidance seeks to ensure that the solutions to polypharmacy are always underpinned by the principles of medicines optimisation (www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Policy/helping-patients-make-the-most-of-their-medicines.pdf) and to ensure that the person is at the heart of any decision taken about their medicines.
This guide is intentionally aspirational. The recommendations made in this guidance may not necessarily reflect the current arrangements in healthcare but aim to set out a picture of what good systems could (and should) have in place and how health care professionals could behave in order to address the problems that can arise from polypharmacy.
4 Background

Medicines have made an immeasurable contribution to the health of the population, particularly over the last century. Lives have been saved, lives have been prolonged and improved and illness avoided because of medicines. However, as we have come to rely on the taking of medicines to resolve our health issues, some problems associated with taking multiple medicines have emerged.

Whilst the issue of polypharmacy is important and growing, it is not new. Medical references as far back as the 1800s (W Newnham, Provincial Medical and Surgical Journal, 1848) advise about avoiding polypharmacy. In 2001, the National Service Framework for Older People set a standard that older people ‘do not suffer unnecessarily from illness caused by excessive, inappropriate, or inadequate consumption of medicines’ (http://webarchive.nationalarchives.gov.uk/20121101185402/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4058295.pdf).

Prescribing multiple medicines is associated with various adverse outcomes for people receiving and taking medicines. Unplanned hospitalisation is strongly associated with the number of regular medications prescribed (‘Is Polypharmacy always Hazardous? A retrospective cohort Analysis using linked health records from primary and secondary care. BJCP 77:6 1074-1082 https://bpspubs.onlinelibrary.wiley.com/doi/pdf/10.1111/bcp.12292). As the number of medicines being prescribed to an individual person is increasing, it seems sensible to be concerned about the raised risk that taking more medicines may bring.

It was estimated that in 2015/16 nearly half of all adults in England (48%) had taken one prescribed medicine in the previous week, and three or more prescribed medicines had been taken by nearly a quarter of all adults (24%). (NHS Digital England Health Survey 2016 https://digital.nhs.uk/catalogue/PUB30169).

In 2017, a study into the medication usage in older people, including both prescribed medicines and over the counter products, showed that there had been a dramatic increase in use over the last two decades, with a quadrupling in the number of people taking five or more medicines (from 12 to 49%). The number of people taking no medicines has reduced from 1 in 5 to 1 in 13. (Medication usage change in older people (65+) in England over 20 years: findings from CFAS I and CFAS II www.researchgate.net/publication/320083439_Medication_usage_change_in_older_people_65_in_England_over_20_years_findings_from_CFAS_I_and_CFAS_II).

Prescribing rates across the United Kingdom

Prescribing data from England shows that the total number of items dispensed in 2016 was 1,104.1 million. This is an increase of 46.8% on the number of items dispensed in 2006. The average number of annual prescription items per head of the population in 2016 was 20.0, compared to 19.8 items in the previous year and 14.8 in 2006.

In 2016, Wales dispensed 25.9 prescription items per head of population, in the same year, this compared to 21.9 in Northern Ireland, 20.2 in England and 19.1 in Scotland (http://gov.wales/statistics-and-research/prescriptions-dispensed-community/?lang=en). One third of over those over 75 years of age now takes at least six medicines (ref HSCIC Information

There are serious consequences of this increase for individuals; a person taking ten or more medicines is 300% more likely to be admitted to hospital (Payne RA et al. Is polypharmacy always hazardous? A retrospective cohort analysis linked to electronic health records from primary and secondary care. BJ Clin Pharmacology 2014; 77:1073-1082 http://www.clinmed.rcpjournal.org/content/16/5/465). Adverse effects of medicines account for 6.5% of hospital admissions, and the rates in over 65 varies widely in various studies, rates of over 10 and up to 20% have been seen in the over 65 age group. (Adverse drug reactions as cause of admission to hospital perspective analysis of 18 820 patients, Pirmohamed et al www.w.bmj.com/content/329/7456/15).

Better systems aimed at identifying those who are at high risk of a preventable hospital admission associated with an adverse drug reaction (namely those aged over 65 years old, those receiving more than five drugs or those starting a new high-risk drug) should be implemented in order to minimise the risks to people and the burden on the healthcare system (www.ncbi.nlm.nih.gov/pubmed/23686895).

‘However, whilst unplanned hospitalisation is strongly associated with the number of regular medications, the effect is reduced in patients with multiple conditions, in whom only the most extreme levels of polypharmacy are associated with increased admissions. Assumptions that polypharmacy is always hazardous and represents poor care should be tempered by clinical assessment of the conditions for which those drugs are being prescribed’ (Payne RA et al. Is polypharmacy always hazardous? A retrospective cohort analysis linked to electronic health records from primary and secondary care. BJ Clin Pharmacology 2014; 77:10731082 http://www.clinmed.rcpjournal.org/content/16/5/465).

Therefore, work aimed at reducing polypharmacy and tools aimed at identifying people at risk from problematic polypharmacy need to be more sophisticated than simply measuring the number of medicines a person takes. Initiatives and tools will need to look at the number, types and combination of medicines being taken as well the number of conditions an individual has.

Finally, an important but uncomfortable factor leading to increased polypharmacy, certainly in western cultures, is the over-medicalisation of some health problems and the failure to embrace changes in lifestyle as a key solution to many long-term health issues. This has led to a number of high profile campaigns such as Slow Medicine in Italy, Choose Wisely by the Association of Medical Royal Colleges, JAMA’s Less is More, the BMJ’s Too Much Medicine and the RCGP Overdiagnosis work (Medicalisation and Overdiagnosis: What society does to medicines https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5088721/)

What is Polypharmacy?

There are numerous definitions of polypharmacy. The Kings Fund report (www.kingsfund.org.uk/publications/polypharmacy-and-medicines-optimisation) defined problematic polypharmacy as being where ‘multiple medications are prescribed inappropriately, or where the intended benefit of the medication is not realised’.

This RPS guidance uses the term broadly, to cover four main scenarios of problematic polypharmacy including:

- The prescribing of medicines that are no longer clinically indicated or appropriate or optimised for that person
- Where the benefit of particular medicines does not outweigh the harm
- Where the combination of multiple medicines has the potential to, or is actually causing harm to the person, and
- Where the practicalities of using the medicines prescribed to a person have become
unmanageable or are causing harm or distress.

It is important to set out that whilst polypharmacy is often linked to concerns about older people, it is not an issue solely confined to this group. Other groups of people such as children, those with mental health problems, those from more deprived backgrounds and those with multiple morbidities are at significant risk from the problems associated with polypharmacy. Polypharmacy crosses all care settings, and all healthcare professionals should be alert to the issue of problematic polypharmacy in hospitals, community pharmacy, care homes and prisons for example.

The World Health Organisation (WHO) has described polypharmacy as a major global problem, saying ‘Irrational use of medicines is a major problem worldwide. WHO estimates that more than half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients fail to take them correctly. The overuse, underuse or misuse of medicines results in wastage of scarce resources and widespread health hazards’. In its 3rd Global Health Challenge, Medication Without Harm, launched in March 2017, WHO aims to reduce severe avoidable medication-related harm by 50% globally in the next 5 years.

WHO has identified some early priority actions and asked countries and key stakeholders to make strong commitments, prioritise and take early action, and effectively manage three key areas to protect people from harm, namely:

- High-risk situations
- Polypharmacy, and
- Transitions of care.

The actions planned in this Global Challenge are based on four domains of work, one for each fundamental problem identified. These are:

- People taking medicines and the public
- Medicines
- Healthcare professionals, and
- Systems and practices of medication.

To support this, we have set out the guidance under three key areas:

**Polypharmacy and People**

**Polypharmacy and Healthcare Systems**

**Polypharmacy and Healthcare Professionals**

A central theme of the guidance is that the solutions to polypharmacy are complex and multifaceted, but will not bring about the desired change if healthcare professionals fail to engage people much more in their medicines taking. Shared decision making around which medicines are most appropriate for that individual is vital to reducing problematic polypharmacy and the potential harm from it. Holistic, structured medication reviews carried out by healthcare professionals who are competent to engage with people under their care in open and honest conversation about medicines will be key.
5 Polypharmacy and People

The term ‘patient’ is defined as ‘a person receiving or registered to receive medical treatment’. In this guidance, ‘person-centred care’ is referred to and the term ‘person’ or ‘people’ is used because people don’t always sign up to the care they receive and that may be especially true in relation to the prescribing of medicines.

It is right to be concerned about the issue of polypharmacy in the UK. There are a number of factors which are impacting on a growing number of people and are likely to be influencing the increase in prescription numbers highlighted earlier.

6.1 The growing population

The UK population has grown by 8.4 million since 1975 (https://visual.ons.gov.uk/uk-perspectives-2016-the-changing-uk-population/), and life expectancy has grown steadily since the 1980s. The projected life expectancy in 2039 is 96 years for women and 93 years for men. However, healthy life expectancy is not increasing as steadily, meaning we live longer but spend a growing proportion of that time in poor health. 18% of the UK population is over 65 years of age and 2.4% are over 85 years. (Ref www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/july2017).

The number of UK residents aged over 90 has tripled since the 1980s and in 2014, 853 of every 100,000 residents in the UK was over 90.

6.2 Multiple long-term conditions

‘Long-term conditions are more prevalent in older people – 58% of people over 60 years live with a long-term condition compared to 14% of those under 40 years of age.

Long-term conditions are also more prevalent in more deprived groups - people in the poorest social class have a 60% higher occurrence than those in the richest social class and 30% increased severity of disease. People with long-term conditions now account for about 50% of all GP appointments, 64% of all outpatient appointments and over 70% of all inpatient bed days.’ (www.kingsfund.org.uk/projects/time-think-differently/trends-disease-and-disability-long-term-conditions-multi-morbidity).

So, some of the key population drivers for prescribing more and more medicines to people are very clear - an ageing population with increasing co-morbidities means an increased risk of more medicines.

However, it isn’t obvious why, in the healthcare system at the various touch points with people being prescribed multiple medicines, no one stops to say, ‘Why is this person taking 19 drugs and how are they managing that?’ To explore this further we will also highlight some of the barriers to stopping medicines. (See section 7.6)

6.3 The role of poor adherence

Medication adherence is defined by the World Health Organization (WHO) “as the degree to which the person’s behavior corresponds with the agreed recommendations from a healthcare professional”. Poor adherence to prescribed regimens can result in serious health consequences.

Adherence is an important but often overlooked factor in polypharmacy. WHO in 2003, highlighted
that 30-50% of medicines are not taken as intended (www.who.int/chp/knowledge/publications/adherence_full_report.pdf).

Often further medicines are prescribed in response to ‘treatment failure’ rather than a check of the level of treatment adherence. This was illustrated by a recent study (B) Clinical Pharmacology Vol 84 Issue 1 Jan 2018 18-24) https://bpspubs.onlinelibrary.wiley.com/doi/10.1111/bcp.12996 which highlighted that hypertension is only controlled in 35% of people. Those in this study were assessed for adherence to their blood pressure medicines (physicians and people under their care were unaware of adherence measurements), and 68% of the people prescribed medicines were non-adherent. Furthermore, for every one more pill prescribed, the prescribed pill was less detectable in their blood, showing reduced compliance.

Therefore, healthcare professionals should consider non-adherence to be a significant factor in treatment failure and should attempt to discuss this with the person before any further medicines are prescribed. Failure to address this may lead to more medicines being prescribed, potentially increasing the pill burden as well as increasing the risk of problematic polypharmacy, which in turn, may cause harm to the person without the underlying illness actually being treated. This approach also potentially increases the risk of medicines waste.

6.4 The role of the patient

The World Health Organisation has said that people are not always medication-wise. They are too often made to be passive recipients of medicines and not informed or empowered to play their part in making the process of medicine prescribing safer.

To address this, both healthcare professionals and the people under their care need to come together and make treatment decisions in a shared and equal way.

The effectiveness of shared decision making and patient decision aids has been extensively researched — a Cochrane systematic review concluded that use of patient decision aids lead to improvement in patients’ knowledge and their understanding of risks, and helps them be clear about what matters most to them, which in turn results in more appropriate treatment—Ref. Stacey D, Legare F, Lewis K et al. Decision aids for people facing health treatment or screening decisions. Cochrane Database Syst Rev 2017;4:CD001431. doi: 10.1002/14651858.CD001431.pub5

NICE described shared decision making as ‘when health professionals and patients work together. This puts people at the centre of decisions about their own treatment and care’. NICE outlines the benefits as:

- ‘People receiving and delivering care can both understand what’s important to the other person
- People feel supported and empowered to make informed choices and reach a shared decision about care
- Health and social care professionals can tailor the care or treatment to the needs of the individual’ (www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-guidelines/shared-decision-making).

The Scottish Government in its Quality Strategy 2020 highlights person-centred care as one of its three Quality Ambitions. It defines person-centred care as ‘mutually beneficial partnerships between patients, their families and those delivering healthcare services which respect individual needs and values and which demonstrates compassion, continuity, clear communication and shared decision-making’ (www.gov.scot/Publications/2010/05/10102307/2).

In Wales, the 1000 lives programme supported the implementation of shared decision making; and Cardiff has been a key site in the MAGIC Project, which is a Health Foundation programme aimed at implementing shared decision making (MAGIC stands for ‘making good decisions in collaboration’ and looked at how to embed best practice in shared decision making).
It is possible to make shared decision-making part of routine practice in the NHS. See learning from the MAGIC Project (www.bmj.com/content/357/bmj.j1744.full.print).

A more engaged approach as suggested by NICE or the work led by lay people themselves such as the ‘Me and My Medicines’ work or ‘My Medication Passport’ should be embraced and supported by healthcare systems.

The table below sets out a selection of shared decision tools to support the conversation with a person and/or their carer(s) to ensure that the decision to prescribe or stop a medicine is reached appropriately and with equality of influence from both the prescriber and the person under their care taking important factors in to consideration.

In addition, all those working with people to help them to use their medicines should ensure that they have reflected on their consultation skills to enable people under their care to be open and honest about their medicines taking and about the key factors in their lives that may influence their engagement and adherence with their medicines.

### 6.5 Examples of tools and guidance to support shared decisions making

<table>
<thead>
<tr>
<th>Example</th>
<th>Link</th>
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<tbody>
<tr>
<td>NICE Shared Decision making</td>
<td><a href="http://www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-guidelines/shared-decision-making">www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-guidelines/shared-decision-making</a></td>
</tr>
<tr>
<td>NHS Scotland Scottish Government Polypharmacy Guidance – 7 steps</td>
<td><a href="http://www.polypharmacy.scot.nhs.uk/7-steps/">www.polypharmacy.scot.nhs.uk/7-steps/</a></td>
</tr>
<tr>
<td>Me and My Medicines</td>
<td><a href="http://meandmymedicines.org.uk/">http://meandmymedicines.org.uk/</a></td>
</tr>
<tr>
<td>My medication passport</td>
<td><a href="http://clahrc-northwestlondon.nihr.ac.uk/resources/mmp">http://clahrc-northwestlondon.nihr.ac.uk/resources/mmp</a></td>
</tr>
<tr>
<td>Patient.co.uk</td>
<td><a href="https://patient.info/doctor/multimorbidity">https://patient.info/doctor/multimorbidity</a></td>
</tr>
<tr>
<td>NICE Patient decision making aids</td>
<td><a href="http://www.evidence.nhs.uk/Search?om=%5b%7b%22ety%22%5b%22Patient%20Decision%20Aids%22%5d%7d%7b%22sm%22%5b%22National%20Institute%20for%20Health%20and%20Care%20Excellence%20%20NICE%22%5d%7d%5d">www.evidence.nhs.uk/Search?om=%5b%7b%22ety%22%5b%22Patient%20Decision%20Aids%22%5d%7d%7b%22sm%22%5b%22National%20Institute%20for%20Health%20and%20Care%20Excellence%20%20NICE%22%5d%7d%5d</a></td>
</tr>
<tr>
<td>The Health Foundation: The MAGIC Programme</td>
<td><a href="http://www.health.org.uk/publication/magic-programme-evaluation">www.health.org.uk/publication/magic-programme-evaluation</a></td>
</tr>
</tbody>
</table>

### 6.6 Examples of tools to support healthcare professionals improve their consultation skills

<table>
<thead>
<tr>
<th>Example</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centre for Postgraduate Pharmacy Education (CPPE) – Consultation skills for Pharmacy Practice</td>
<td><a href="http://www.cppe.ac.uk/programmes/l/consult-e-0">www.cppe.ac.uk/programmes/l/consult-e-0</a></td>
</tr>
<tr>
<td>Wales Centre for Pharmacy Professional Education (WCPPE) –</td>
<td><a href="http://www.wcppe.org.uk/product/consultation-skills/">www.wcppe.org.uk/product/consultation-skills/</a></td>
</tr>
</tbody>
</table>
Regardless of what polypharmacy initiatives are put in place, and which tools are used, people make decisions about their medicines every day. They may choose to adhere or not, but unless a conversation is undertaken with the person about what their priorities for their health and their life are, it will be difficult to understand the context in which their medicines taking fits (or doesn’t). Therefore, polypharmacy will remain problematic until healthcare professionals and people work together to arrive at a shared decision about the priority areas of health, the agreed number of treatments and the treatment regimens and how they will be adopted.

Good Practice
All healthcare professionals should familiarise themselves with a tool or tools to help them conduct high quality, shared decision-making conversations with people under their care that result in agreed outcomes.
Those supporting people to take their medicines should ensure that they have reflected on their consultation skills to enable people under their care to be open and honest about their medicines taking.
6 Polypharmacy and Healthcare Systems

7.1 Medication safety

The challenges faced around polypharmacy are inextricably linked to the fact that as the number of medicines prescribed increases, the risk from adverse effects increases too. Medication safety is a particular concern in key people groups, such as older people. A study commissioned by the GMC in 2012 and carried out in general practice aimed to determine the prevalence and nature of prescribing errors in general practice. It showed that 1 in 20 prescription items has an error and 1 in 550 potentially has a serious outcome.

As over a billion items are dispensed in England each year, this equates to around 1.8 million potentially serious errors (www.gmc-uk.org/-/media/about/investigatingtheprevalenceandcausesofprescribingerrorsingeneralpracticethepracticestudyreportmay2012.pdf?la=en&hash=62C1821CA5CCC5A4868B86A83FEDE14283686C29).

Studies in the hospital setting show similar levels of error that are of concern. The EQUIP study showed that of 4,238 prescriptions evaluated, one or more errors were noted in 43.8% of prescriptions, with a total of 3,011 errors detected. 54.1% of the errors were deemed significant, 109 (3.6%) were serious and 9 (0.30%) were potentially life threatening and the error rate was not significantly different between newly qualified doctors compared with junior, middle grade or senior doctors. (http://bmjopen.bmj.com/content/3/1/e002036)

More recently, academics in York, Manchester and Sheffield were asked to review the prevalence and economic burden of medication errors in the NHS. They estimated that 66 million potentially clinically significant errors occur in the UK each year, 71% of which occur in primary care. Prescribing in primary care accounts for 33.9% of all potentially clinically significant errors. The estimated cost of avoidable adverse drug reactions is £98.5 million per year, with 181,626 hospital bed days, 712 deaths and contributing to 1,708 deaths. It was found that the medication errors were more likely in older people, in those with multiple morbidity conditions or polypharmacy.

Adverse drug reactions (ADRs) account for 6.5% of hospital admissions and more than 70% of these ADRs are deemed avoidable (www.bmj.com/content/329/7456/15).

Over 50% of medication errors occur in four drug classes: antiplatelets, non-steroidal anti-inflammatory drugs (NSAIDs), diuretics and anticoagulants.

Key studies show that errors remain high in medicines classed as ‘high risk’, namely antiplatelets, NSAIDs, diuretics, anticoagulants and ACE inhibitors.
7.2 High risk medicines

Actions to systematically address problematic polypharmacy should not only focus on the holistic review of a person and their medicines, but healthcare professionals should also be particularly alert to safety concerns when medicines from one or more of the high risk classes are prescribed.

Good practice
Even with the best systems around medicines, medication errors can occur. GP practices and NHS Organisations should routinely deploy audit tools that capture and highlight those people at high risk from medication errors. Tools such as the PINCER medication safety tool (ref www.thelancet.com/journals/lancet/article/PIIS0140-6736(11)61817-5/abstract) and polypharmacy specific tools such as the Polypharmacy prescribing comparators in England or SPARRA Scoring system in Scotland should be deployed so that organisations are aware of those people who are taking risky combinations or high-risk medicines and prioritise those people for medication review.

Case Study
West Hampshire CCG experienced a serious event with a person who was prescribed the high-risk medicine amiodarone. The person, although being monitored, developed pulmonary toxicity. The incident triggered a CCG review of amiodarone prescribing. 480 people were found to be taking amiodarone, but the reasons for the medicine being prescribed were not always clear. All people taking amiodarone were offered a review by a cardiologist and 32% were found not to need this medicine and as a result the medicine was stopped. Amiodarone is a high-risk medicine and should only be prescribed where there is a clear clinical indication as part of an ongoing treatment plan and processes for routine monitoring must be robust and measurable.

7.3 Medication safety in the older person

The potential for adverse drug reactions (ADRs) should always be considered in older people. The risk of an ADR increases with age, along with the risks associated with comorbidity, polypharmacy, inappropriate prescribing and possible issues with the monitoring of drugs.

Medicines most likely to be related to a hospital admission:

- Antiplatelets
- NSAIDs
- Diuretics
- Anticoagulants
- ACE inhibitors

In addition to the five classes of high-risk medicines cited above, other medicines that should be prescribed with extreme caution in older people include (NICE: Prescribing in elderly https://bnf.nice.org.uk/guidance/prescribing-in-the-elderly.html):

- Anticholinergic agents – research has suggested a link to increased mortality with the number and potency of anticholinergic agents prescribed
- Digoxin
- Sulfonylureas
- Methotrexate, and
- Antipsychotics.

7.4 The prescribing cascade

The prescribing cascade has been described as ‘when a drug is prescribed, an adverse drug event occurs that is misinterpreted as a new medical condition, and a subsequent drug is prescribed to treat this drug-induced adverse event’ (Ref https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)31188-1/abstract?code=lancet-site)

The person is placed at risk of developing additional adverse effects relating to the addition of a potentially unnecessary medicine.

The identification and interruption of prescribing cascades is an important, actionable, and often underappreciated opportunity to improve medication safety, particularly in older people.

Drawing prescribers' attention to this disturbing sequence of events may be an important step in minimising the occurrence of preventable adverse drug events associated with suboptimal prescribing decisions (ref BMJ https://www.bmj.com/content/315/7115/1096?variant=full-text).

To prevent the prescribing cascade, prescribers are advised to consider:

- Whether any new signs and symptoms are as a result current drug treatment
- Before any new drug treatment is started, the need for the new drug should be re-evaluated and whether a non-drug treatment option is available
- If drug treatment is necessary the lowest feasible dose of the drug should be used and if there is an alternative drug with fewer adverse effects.

Common examples of prescribing cascades include:

<table>
<thead>
<tr>
<th>Common prescribing cascade</th>
<th>Brief description of the cascade</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-steroidal anti-inflammatory drugs (NSAIDs) and starting anti-hypertensive treatment</td>
<td>The anti-inflammatory properties of NSAIDs may result from their ability to inhibit cyclo-oxygenase, a critical enzyme in the biosynthesis of prostaglandins; prostaglandins have an important role in the vasoconstriction of arteriolar smooth muscle and control of extracellular fluid volume; the effects of NSAIDs are most prominent in people with existing hypertension</td>
<td>Gurwitz et al Initiation of antihypertensive treatment during nonsteroidal anti-inflammatory drug therapy. JAMA 1994;272:781–8</td>
</tr>
<tr>
<td>The use of metoclopramide and starting levodopa treatment</td>
<td>The anti-dopaminergic side effects of metoclopramide are well documented; metoclopramide confers an increased risk of starting treatment generally reserved for managing idiopathic Parkinson's disease; such multiple prescribing may represent the misdiagnosis of Parkinson's disease in people with drug induced parkinsonian symptoms</td>
<td>Avorn J et al. Increased incidence of levodopa therapy following metoclopramide use. JAMA 1995;274:1780–2</td>
</tr>
</tbody>
</table>

The prescribing of a new drug specifically to treat an adverse drug effect should be considered the choice of last resort in the care of older people. More prudent strategies include:

- Carefully re-evaluating the absolute need for the offending agent
- Using non-pharmacological treatment for managing a person’s medical condition
- Reducing the dosage of the implicated drug to the lowest feasible dose that is effective in treating a person’s medical condition, and
- Considering alternative drugs that might be safer in terms of the risk of adverse effects in older people.

See [www.bmj.com/content/315/7115/1096](http://www.bmj.com/content/315/7115/1096)


### 7.5 The role of repeat prescribing systems

Undoubtedly, repeat prescribing systems contribute to problematic polypharmacy. The sheer volume of medicines prescribed and dispensed every month to millions of people means that high quality medication reviews cannot happen each time a medicine is repeated. A study in 2014 found that 77% of all medicines issues in primary care were repeat medicines.

The volume of prescription items dispensed in the Great Britain:

- England 2016: 1,104.1 million
- Scotland 2015/16: 102.22 million
- Wales 2016: 80.3 million

77% of this total were supplied to people on repeat prescriptions, this would indicate that around 900 million items are dispensed over the course of a year.

43% of the population were prescribed at least one repeat medicine and this rose to 75% of those aged 60 years and over.

So, a significant proportion of the population receive repeat prescriptions and this proportion increases with age. Whilst the proportion of repeat items to acute items has remained unchanged over the last two decades, the number of repeat prescription items issued has doubled. This has huge implications for general practice and community pharmacy workloads, the convenience of people taking medicines, NHS costs and risk (ref [https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-14-76](https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-14-76))
Overburdened repeat prescribing systems are more likely to enable the supply of medicines that perhaps should not be repeated, or medicines that were intended to be prescribed for a finite duration. As a result these remain as repeatable items long after they were due to be stopped.

Agreed guidance around what constitutes a good repeat prescribing system is lacking. However, their contribution to problematic polypharmacy should not be overlooked.

7.6 Stopping medicines safely

Whilst research on the size of the issue of problematic polypharmacy is fairly abundant, literature to support the solutions to addressing this are not widespread. The evidence base to support prescribers in stopping medicines safely is small and peoples’ attitudes to medicines being stopped can be a challenge to healthcare professionals.

Barriers to stopping medicines
Both healthcare professionals and people taking medicines may have concerns about stopping medicines, even when there is no clear benefit to taking it or even when there is a potential risk of harm. This may seem counter-intuitive but is widely recognised by those working to address and reduce problematic polypharmacy. An understanding of these barriers is important when planning work to reduce problematic polypharmacy.

A comprehensive review of the barriers and enablers to stopping potentially inappropriate medicines safely highlighted four themes:

- Lack of awareness of the problem
- Inertia secondary to lower perceived value proposition for stopping a medicine versus continuing
- Self-efficacy in regard to personal ability to alter prescribing, and
- Feasibility of altering prescribing in routine care environments given external constraints.

The first three themes are intrinsic to the prescriber (for example, beliefs, attitudes, knowledge, skills, behaviour) and the fourth is extrinsic (for example, the person, work setting, health system and cultural factors)

(REF http://bmjopen.bmj.com/content/4/12/e006544).

This review concluded that there are many factors that determine prescribers' behaviour towards continuing or discontinuing medicines. A full understanding of these barriers and enablers to changing prescribing behaviour is really important for the development of targeted interventions aimed at safely stopping potentially inappropriate medicines and reducing the risk of harm.

A recent review of deprescribing (ref EJHP 2017 Feb 2018) highlighted the importance of being mindful of the concerns about stopping medicines. They identified four categories of concern, these are:

- Withdrawal/adverse events
- Recurrence of the condition
- Consequences of change to drug interaction, and
- Negative impact on the person prescriber relationship.

This review states that mitigation of these factors requires a person-centred approach to stopping medicines with a structured process which includes planned medication reduction and withdrawal with appropriate follow up and monitoring.

The geriatrician, Professor Doron Garfinkle described that for all drugs, the positive risk/benefit ratio decreases or is inverted in correlation to:

- Very Old age
Garfinkel described the main obstacles to routinely stopping medicines as largely being composed of emotional and/or psychological myths, namely that there is an expectation that when people see a prescriber they expect a prescription, and that the prescriber will choose the right and appropriate medicines.

Although most guidelines are not proven in older people, prescribers are afraid of the consequences and the reactions of a person or their family if they do not follow all guidance and prescribe appropriate medicines in certain conditions, regardless of the person’s situation.

However, the evidence and confidence to stop medicines, particularly in older people, is emerging. A number of countries have produced excellent evidence based resources to help prescribers to stop medicines safely (See http://www.polypharmacy.scot.nhs.uk/medicines/).

See Section 7.7 to read about what is already being done to tackle polypharmacy.

### Good practice

A Health Foundation project led by Yorkshire and Humber Academic Health Science Networks (AHSN) across 12 GP practice teams supported by Harrogate & Rural District CCG, aimed at tackling the barriers GPs face when stopping medicines in frail people. The Safer Prescribing for Frailty project achieved a 6% reduction in the average number of prescription items prescribed to people with frailty. This equated to 795 prescription items across the cohort of people in the project.

Case studies demonstrated individual and team level impact in four ways:
- Achieving changes in behaviours related to deprescribing in frailty
- System impact through the development of new prescribing protocols, and
- Cost savings (for example, one practice calculated a cost saving of £704 per month /£8448 per annum.

See http://www.yhahsn.org.uk/service/population-health-service/medicines-optimisation/

saving based on 88 prescription items stopped (using an assumed cost £8 per prescription item);

### 7.7 Healthcare systems and systems of good medication practice to tackle polypharmacy

In highlighting what should be done to address problematic polypharmacy, it is important to look at the good work already being done.

**What is already being done?**

Activities to address polypharmacy can be categorised into two key areas:
- Tools to help prescribers stop medicines safely, and
- Strategies or national polices at the population level aimed at coordinating activities to address
problematic polypharmacy.

'Tools’ to help the prescriber make an evidence-based judgement about whether a medicine is inappropriate or not.

Such tools can be helpful in reminding healthcare professionals about which medicines are more likely to cause harm and helping them to prioritise areas that need to be addressed as part of a holistic person-centred medication review.

Whilst there are a number of ‘Polypharmacy tools’ routinely being used to help healthcare professionals to conduct a review of a person’s medicines (See Appendix X ), no single tool has been highlighted as the most effective and the reality is that in order to address polypharmacy, a collaboration across practice, health policy and public attitudes will be needed.

<table>
<thead>
<tr>
<th>Example of tools to aid polypharmacy medication review</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO TEARS</td>
<td><a href="http://www.bmj.com/content/329/7463/434">http://www.bmj.com/content/329/7463/434</a></td>
</tr>
<tr>
<td>STOMP Stopping over medication of people with a learning disability, autism or both</td>
<td><a href="https://www.england.nhs.uk/learning-disabilities/improving-health/stomp/professionals/">https://www.england.nhs.uk/learning-disabilities/improving-health/stomp/professionals/</a></td>
</tr>
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</table>

Strategies or policies

There are some emerging examples of good work that is taking effect. This guidance aims to highlight those areas of good work and outline recommendations for various stakeholders.

National strategies and policies to address polypharmacy have underlined the fact that addressing polypharmacy successfully requires a collaborative, broad and multidisciplinary approach involving specialists and generalists and where all players (including people taking medicines and the public) address their responsibilities.

Examples of such policies from the UK and more widely include:

7.7.1 NHS Scotland

Among Scottish people with two medical conditions, 20.8% were receiving four to nine medicines and 10.1% were receiving 10 or more medicines.

NHS Scotland has led the way with a programme to review inappropriate polypharmacy that has been implemented nationally by developing clinical guidance and building an economic case that would ensure sustainability for healthcare managers and policy makers. A key feature has been workforce sustainability and an innovative model of pharmacists undertaking reviews with doctors was deployed. See [www.polypharmacy.scot.nhs.uk](http://www.polypharmacy.scot.nhs.uk)

The Scottish guidance builds on the economic case, with data collected during the reviews that demonstrated that the number of medicines was decreased but also that the medicines reduced were high risk medicines (i.e. those more likely to cause admission to hospital).
7.7.2 NHS Wales

In line with its policy work 'Achieving prudent health care' the All Wales Medicines Strategy group has developed guidance for prescribing and promotes the NO TEARS tool to help clinicians carry out person-centred medication review.


7.7.3 NHS England

There are a number of recently published studies demonstrating good practice, particularly in care homes.

The Northumbria Shine Care Homes project aimed to reduce the amount of unnecessary medicines prescribed to older people in care homes and to involve both them and their families or carers in decisions about prescribing and deprescribing. It was also designed to build evidence about ethical decision making in prescribing.

The medication reviews were conducted by clinical pharmacists, with the findings discussed by multidisciplinary teams which included care home nurses and GPs as well as the people under their care, along with their families and carers (where this was possible). Day-to-day project management was carried out by the trust’s transformation team.

Outcomes
The project led to 422 reviews carried out in 20 care homes. There were 1,346 interventions, most of which involved stopping medicines. An average of 1.7 medicines were stopped for every resident reviewed.

The main reasons for stopping medicines were 'no current indication' or 'resident requested to stop'. The work resulted in a net annualised savings of £77,703 or £184 per person reviewed.

For every £1 invested in the intervention, £2.38 could be released from the medicines budget.

This model has been spread to the Northumbria region and NHS England is looking at the model as part of its work looking at medicines in care homes.

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**Good Practice**

The Scottish polypharmacy guidelines were developed by geriatricians, pharmacists and general practitioners from both hospital and community settings and consist of a seven-step process, which includes a holistic assessment of indication, determination of effectiveness, checking of side effects, number needed to treat and a discussion with the person under their care about their medications. See Appendix 2
In 2016, NICE published guidance on multimorbidity. The NICE guidance ‘covers optimising care for adults with multimorbidity (multiple long-term conditions) by reducing treatment burden (polypharmacy and multiple appointments) and unplanned care. It aims to improve quality of life by promoting shared decisions based on what is important to each person in terms of treatments, health priorities, lifestyle and goals.’ NICE advises that people have the right to be involved in discussions and make informed decisions about their care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), as well as safeguarding.

### 7.7.5. A brief overview of other countries in Europe

The SIMPATHY Project (Stimulating Innovation and Management of Polypharmacy and Adherence in the Elderly) is funded by the EU health programme. The project is being delivered by a consortium of 10 institutions from 8 countries across Europe including Scotland, Sweden and Northern Ireland. The project suggests that whilst medication reviews are suggested as effective interventions to reduce inappropriate polypharmacy, the majority of these interventions are described in research articles but their actual implementation as national or regional policies seems limited across Europe.

### 7.7.6 Elsewhere around the world

#### Canada

Polypharmacy.ca has a range of resources and tools to help clinicians conduct good medication reviews. 
The Bruyere Research institute in Canada has a range of deprescribing resources helping clinicians to stop certain medicines. The Canadian Deprescribing Network (CaDeN) is a network of advocates for people taking medicines, healthcare professionals, researchers and health policy leaders aimed at reducing harm by curbing prescribing of inappropriate medications by 50% by 2020 and promoting health by ensuring access to safer pharmacological or nonpharmacological therapies. See Deprescribing.org

In addition to the prescriber-focussed resources, work in Canada has developed patient leaflets and community pharmacy resources to prompt conversations about why people are taking certain medicines.

**Australia**

Australia has a well-developed social media resource addressing polypharmacy. This embraces the person-centeredness as well as clinical resources to support stopping medicines safely.

### 7.8 Polypharmacy measurement – how do we capture the size of the issue, observe variation and identify where good and poor practice exist?

England, Scotland and Wales now have such systems in place for primary care:

- **NHS England - NHS BSA Polypharmacy prescribing comparators**

- **NHS Scotland - SPARRA**
  [http://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/04/Polypharmacy-The.route.to.identifying.where.polypharmacy.exists.where.it.might.be.causing.harm.and.assessing.if.our.approaches.to.tackling.polypharmacy.have.been.successful.in.a.systematic.way.is.dependent.upon.high.quality.data.management.systems.that.can.help.clinicians.to.identify.people.who.are.taking.multiple.medicines.or.combinations.of.medicines.that.are.thought.to.increase.the.risks.from.harm.in.those.people.](http://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/04/Polypharmacy-The.route.to.identifying.where.polypharmacy.exists.where.it.might.be.causing.harm.and.assessing.if.our.approaches.to.tackling.polypharmacy.have.been.successful.in.a.systematic.way.is.dependent.upon.high.quality.data.management.systems.that.can.help.clinicians.to.identify.people.who.are.taking.multiple.medicines.or.combinations.of.medicines.that.are.thought.to.increase.the.risks.from.harm.in.those.people.)

- **NHS Wales – National Prescribing Indicators**

Those involved in working to address polypharmacy should ensure that they are familiar with these tools and how they can be deployed locally to ensure that people at risk from problematic polypharmacy are identified and reviewed.

It is arguably difficult to measure the impact of initiatives aimed at reducing problematic polypharmacy. However, high quality polypharmacy prescribing data (particularly measured over time) used in combination with data showing hospital admissions or harm to people caused by taking medicines could be utilised in combination to identify where initiatives to address polypharmacy have been successful or not and how they could be improved.

Quality improvement methodology should form the basis for ensuring that initiatives are deployed carefully and successfully with results attributable to change and then sustainable in the longer term. See [http://www.health.org.uk/publication/quality-improvement-made-simple](http://www.health.org.uk/publication/quality-improvement-made-simple)

Data based on geographic location can also help to inform health systems how well they are tackling polypharmacy collectively. Data sources should be shared within a health economy and should prompt discussions and questions.
Questions for healthcare systems (CCGs, STPs, Health Boards) to ask in order to self-assess their response to polypharmacy

- “How well do we work together as a system to address polypharmacy?”
- “Do individual healthcare professionals have the support they need to carry out person-centred holistic polypharmacy medication reviews?”
- “How are we engaging with people under our care to discuss the issues of problematic polypharmacy and what are our efforts to address it?”
7 Polypharmacy and Healthcare Professionals

8.1. Medication or polypharmacy medication reviews

Whilst healthcare professionals are reliant on good health systems to enable them to work well with people under their care and identify those at risk of problematic polypharmacy; ultimately at some point a medication review will be conducted in order to assess what the medicines are being used for, how well treatment goals are being achieved, including looking at any issues and concerns that people taking medicines may have. How well these reviews are carried out is dependent upon the individual healthcare professional, the person and the quality of the interaction between them.

8.1.1 What constitutes a good medication review?

There are numerous support tools for good medication review. Both NICE and NHS Scotland have set out the components of a structured medication review. Ref https://www.nice.org.uk/guidance/qs120/chapter/quality-statement-6-structured-medication-review http://www.polypharmacy.scot.nhs.uk/7-steps/

Many of the medication review tools share common principles such as:

• Seeking the person’s (and/or their carer’s) perspective of their medicines and how they will take them
• Identification of the aims of the drug therapy (from a clinical perspective and from the person’s perspective)
• Assessment of whether the medicines are essential or not
• Assessment of the person’s level of adherence to the medicines
• Assessment of the effectiveness (both clinical and cost effectiveness) of the medicines
• Assessment of the safety of the medicines
• Decision and actions regarding stopping or continuing the medicines.

Yet, despite these tools and guidance, people remain concerned about the way that decisions are taken about their medicines.

8.2 The perspective of people taking medicines

Often, individuals may not be clear about the purpose of a medication review. Organisations such as Age UK provide people with some useful guidance such as: https://www.ageuk.org.uk/brandpartnerglobal/walthamforestvpp/documents/medication-faq.pdf

The work led by people in Leeds, ‘me and my medicines’, advises a medication communication charter to help the prescriber and person under their care to be clear about the role of medication review. See Appendix 5

8.3 What should this mean for people receiving medicines?

If we conduct medication reviews in line with best practice, then people should feel the following:

• That when they leave the consultation they know what they are taking the medicines for
• If they have any further questions, they know where to go to for help
• That they have been listened to and their concerns have been heard and addressed
• That if they have further concerns about side effects or how to take the medicines properly that they can raise them.
8.4 Better conversations about medicines from the start

Focus should be (rightly) on person-centred medication review as a vital part of tackling polypharmacy. However, one area about prescribing that can be overlooked is how we start medicines. Often people are given little or no information about the medicines that are being prescribed and little attention is given to setting out clearly for the person the likely length of the course of the treatment. In some cases, medicines prescribed for long term conditions will be prescribed with a recommendation to the person that the medicine will need to be ‘taken for life’. Whilst this may be true for a small number of medicines, for example, insulin, often medicines for long term conditions will be changed over time and possibly stopped as the person ages or their condition changes. Therefore, prescribers ought to set the expectation at the outset that medicines will be frequently reviewed and may be stopped if they are no longer appropriate. This should help people to understand when decisions are being discussed about stopping medicines that the rationale is driven by medication safety and appropriateness rather than cost savings.

The decision to move a medicine to be a ‘repeat medicine’ is a critical decision. Once a medicine is able to be obtained on a ‘repeat prescription’, the risk of it not being reviewed or being continued after it is still clinically appropriate may be increased. The risk of repeat medicines and their contribution to problematic polypharmacy can often be overlooked.

8.5 Opportunities to tackle polypharmacy (triggers for a review)

Whilst systematically targeted, holistic, person-centred medication reviews conducted in line with best practice guidance should be considered to be the best way for all healthcare organisations as a whole to tackle problematic polypharmacy, opportunities will arise for individuals and organisations to take immediate action which will support the efforts to address polypharmacy in an individual person.

Triggers for such actions could be proactive or reactive:

**Proactive triggers include:**
- Individuals identified as taking more than 10 or 15 medicines
- A change in the evidence base for a particular medicine
- A person’s annual medicines review
- Individuals identified as taking high risk medicines or risky combinations of medicines, and
- The decision to make a medicine a ‘repeat medicine’.

**Reactive triggers include:**
- An unplanned admission to hospital
- A sudden crisis, such as a change in family situation
- A serious incident (may be linked to medication directly or indirectly, for example, a fall), and
- A request for medicines to be managed via a Monitored Dosage System should be considered as a possible trigger for a medication review.

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**Good practice**

Healthcare professionals will deploy a range of tools to aid them in identifying people at risk from harm from polypharmacy. These will include audit type or data tools to highlight individual people at risk of problematic polypharmacy as well as opportunities for healthcare professionals to respond to triggers for a polypharmacy medication review.
8 The Future for Polypharmacy

There are a number of areas that will need further development in order that problematic polypharmacy is able to be tackled successfully.

These include:

- Risk stratification tools to help healthcare professionals to identify people at an increased risk of problematic polypharmacy
- Better collaboration between health and social care sectors to identify and resolve polypharmacy
- Greater interoperability of IT systems which identify those taking multiple medicines or flag those that have had a medications review where medicines have been stopped, so that other healthcare professionals do not inadvertently re-start medicines that have been agreed as no longer needed
- Better utilisation of digital tools to help with polypharmacy: apps and support services are being developed and used already but a greater systematic deployment of tools to help the conversations between prescriber and person under their care would be particularly helpful
- Better guidance around safer systems for repeat prescribing
- Holistic, person-centred medication review embedded in education and training for all healthcare professionals
- Education and training to help healthcare professionals and all those conducting polypharmacy reviews to understand the barriers to stopping medicines safely
- A change in culture for people in Great Britain from a passive role receiving medicines that are prescribed for them towards a more engaged partnership where decisions about medicines are agreed between the person and their healthcare professional, and
- The impact of polypharmacy on special groups of people, such as children, those in prison, those in deprived areas etc.

Research gaps

There are numerous questions and research gaps in the arena of polypharmacy, but the most significant include:

- Evidence based tools to help healthcare professionals be more confident to stop medicines safely
- What constitutes a high-quality medication review consultation?
- By whom and where is the best place for holistic, structured medication reviews to occur to have the greatest impact?
- Will greater use of genomics reduce the unnecessary prescribing of medicines that won’t work?
- How are healthcare professionals supported to work across disciplines and sectors to address polypharmacy?
- How do we best engage with people to reduce problematic polypharmacy?
- What should our workforce look like to address problematic polypharmacy well?
- Evaluation of the impact of initiatives to address problematic polypharmacy especially those in the community pharmacy and general practice setting.
Conclusion

The expectation is that organisations will review how problematic polypharmacy is addressed for people under their care in line with the recommendations made in this document. In order that this issue is effectively tackled, stakeholders from a range of backgrounds and disciplines will need to come together and each play their part.

Polypharmacy is not an issue that can be resolved quickly or simply, or by organisations or individuals working in isolation. It will require a multi-faceted, multi sector collaborative approach. However, many of the actions driven by healthcare professionals or organisations will not deliver the desired impact if there is failure to engage with people under their care. Open and honest discussions about medicines and the burden and consequences of taking multiple medicines should be addressed in consultations with people.

It is hoped that:
- Individual pharmacists will consider and act upon their responsibilities to people who are taking multiple medicines
- All healthcare professionals will reflect on this guidance and think about how their practice could be improved to reduce the risk from harm from problematic polypharmacy
- This work will provide a platform for all healthcare professions to recognise that this is a major issue for people and that the systems by which medicines are prescribed, dispensed, administered and advised about may need to change
- People will, over time, be better supported to have meaningful conversations with their healthcare professionals about the medicines they take and feel empowered to highlight when the number of medicines becomes unmanageable or when they feel unsure about what the aims of drug therapy are
- All healthcare organisations will support initiatives to help people to have shared decision-making conversations about their medicines
- Holistic, shared decision-making conversations become part of routine practice
- Healthcare organisations will support efforts to rigorously and meaningfully measure the size and impact of polypharmacy on both individuals and healthcare systems
- Policy makers remove perverse incentives in the current healthcare system that drive up polypharmacy and may inadvertently be increasing harm
- Regulators build this guidance into their inspections of all healthcare organisations.
Appendix 1: Guidance development process

<To be inserted upon completion>.
Appendix 2: Tools to help with polypharmacy reviews

The NHS in Scotland has described the 7 steps to good medication review. See http://www.polypharmacy.scot.nhs.uk/7-steps/

NHS Scotland 7 steps to medication review. See http://www.polypharmacy.scot.nhs.uk/general-principles/the-review-process/

The ‘7-steps’ approach to medication review
The following seven steps are intended as a guide to structure the review process. An overview of aspects to cover in each step is presented in Table 2A, Table 2B (contained in table 2A) lists drugs and drug classes that may be relevant under each step and links to Table 2C, where more detailed information on each drug (class) is provided. Table 2C is organised by BNF chapter, which will facilitate access to drug specific information. Where relevant, tables 2A to 2C provide links to section 1.2 (background information for reviewing medication need and effectiveness) and section 1.3 (Tool to assess cumulative risk of drug toxicity and ADRs).

Step:
1. Identify aims and objectives of drug therapy. Before embarking on a clinical medication review it is helpful to establish the aims and objectives of drug therapy on the basis of the information available, i.e. patient demographics, medical and drug history, laboratory markers, social situation. Based on this information, likely treatment objectives can often be identified, and will require agreement with the patient (see step 7).
2. Identify essential drug therapy. A rational first step of the medication review is to separate the list of drugs the patient is currently taking into those that are essential and should usually not be stopped from those that could potentially be stopped. Essential drugs in this respect are those that have a replacement function or may cause a symptomatic decline or loss of disease control if stopped.
3. Does the patient take unnecessary drug therapy? For the remaining drugs, it should be verified that each has a function in achieving the above defined therapeutic objectives and whether their use is supported by a sufficient up to date evidence base. In addition to stopping drug therapy with expired indications, the continued need for prophylactic treatments in patients with a short life expectancy should be considered.
4. Are therapeutic objectives being achieved? The next step is to check whether the remaining drugs are the most effective for the indication they are used for and whether they are actually achieving what they are intended to achieve. If this is not the case, the possibility of patient nonadherence should be investigated as a potential explanation. Otherwise, the need for intensifying doses or adding or replacing drugs may also be considered.
5. Is the patient at risk of ADRs or suffers actual ADRs? The presence of ADRs can sometimes be identified from laboratory data (for example, hypokalaemia from diuretic use), or the patient reports such symptoms. However, ADR identification often requires a more pro-active approach of identifying ADR risks (including drug-drug and drug-disease interactions, but also the patient’s ability to self-medicate) and asking the patient specific questions (for example, about the presence of anticholinergic symptoms, dizziness or drowsiness).
6. Is drug therapy cost-effective? Opportunities for cost minimisation should be explored, but changing drugs for cost reasons should only be considered if effectiveness, safety or adherence are not comprised.
7. Is the patient willing and able to take drug therapy as intended? Assessment of adherence has been mentioned in steps 4 and 5 as a way to explain drug therapy failure or identify drug therapy risks, but this step aims at optimising the drug regimen so that adherence is as easy as possible. In order to maximise their involvement and cooperation, patients should be explicitly asked what they hope to achieve from drug therapy and be empowered to make decisions regarding effectiveness.
versus safety as well as symptom control versus longevity.

NICE Guidance recommend structured medication review for people taking multiple medicines. See https://www.nice.org.uk/guidance/ng5/chapter/Recommendations#medication-review

They advise,
During a structured medication review, take into account:
- the person’s, and their family members or carers where appropriate, views and understanding about their medicines
- the person’s, and their family members’ or carers’ where appropriate, concerns, questions or problems with the medicines
- all prescribed, over-the-counter and complementary medicines that the person is taking or using, and what these are for
- how safe the medicines are, how well they work for the person, how appropriate they are, and whether their use is in line with national guidance
- whether the person has had or has any risk factors for developing adverse drug reactions (report adverse drug reactions in line with the yellow card scheme)
- any monitoring that is needed.

See also their guidance on shared decision making and care plans.

**Royal College of General Practitioners**
The RCGP recommends a range of tools to help identify those people at risk from harm from medicines. These include trigger tools, prescribing safety indicators (such as those used in the PINCER study) http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(11)61817-5/abstract

**Centre for Post Graduate Pharmacy education**
The CPPE in its polypharmacy distance learning support recommended a person-centred approach based on the work of the Specialist Pharmacy Service. The steps in this are similar to the 7 steps in Scotland in that it asks pharmacist to assess the person’s overall goals, identify medicines with potential risks, assess the risks and agree actions (such as stopping a medicines) and communicate these actions with all relevant parties.
In addition, the CPPE provide an extensive range of consultation skills for pharmacy practice. See https://www.cppe.ac.uk/programmes/i/consult-a-01

**PREVENT TOOL**

**STOPP/START tool**
https://academic.oup.com/ageing/article/44/2/213/2812233


**NO TEARS** http://www.bmj.com/content/329/7463/434

**7 STEPS**
All wales
http://www.awmsg.org/docs/awmsg/medman/Polypharmacy%20Supplementary%20Guidance%20-%20BNF%20Sections%20to%20Target.pdf

Consultation skills for Pharmacy Practice
https://www.cppe.ac.uk/programmes/l/consult-a-01

Developing a measure of polypharmacy appropriateness in primary care: systematic review and expert consensus study
Appendix 3 The Kings Fund definition of appropriate and problematic polypharmacy

‘Appropriate polypharmacy’ is prescribing for an individual for complex conditions or for multiple conditions in circumstances where medicines use has been optimised and the medicines are prescribed according to best evidence. The overall intent for the combination of medicines prescribed should be to maintain good quality of life, improve longevity and minimise harm from drugs.

Problematic polypharmacy is where multiple medications are prescribed inappropriately, or where the intended benefit of the medication is not realised. The reasons why prescribing may be problematic may be that the treatments are not evidence based, or the risk of harm from treatments is likely to outweigh benefit, or where one or more of the following apply:

1. The drug combination is hazardous because of interactions
2. The overall demands of medicine-taking, or ‘pill burden’, are unacceptable to the patient
3. These demands make it difficult to achieve clinically useful medication adherence (reducing the ‘pill burden’ to the most essential medicines is likely to be more beneficial)
4. Medicines are being prescribed to treat the side effects of other medicines where alternative solutions are available to reduce the number of medicines prescribed.’

Appendix 4: Tools to help identify patients at risk of problematic polypharmacy

NHS BSA Polypharmacy prescribing Comparators (England)

NHS Scotland
http://www.polypharmacy.scot.nhs.uk

NHS Wales
Appendix 5: Tools to support patients in medication review consultations

Me and my medicines

The Brand

It’s OK to ask...

me + my medicines

The Charter

- I would like to help you get the best from your medicines, and to achieve that we need to work together
- Though I am your (GP/Pharmacist/nurse), you are the expert when it comes to the things affect you and your life
- Being honest about your understanding and feelings towards medicines helps me better appreciate your situation
- I will listen to you and respect what you tell me, so we can share responsibility
- We will share honest and clear advice and support decisions
- This will help us to have a more meaningful conversation and agree a way forward
- If you wish, I can write things down for you

My Medication passport

NICE Guidance ref https://www.nice.org.uk/about/nice-communities/public-involvement/your-care outlines:
It is your right to be involved in making choices about your care. People often find they are happier with their care, and more likely to stick with any treatments or care plans, when they make decisions jointly with their health or care professional.
To make a decision, you need to know what your options are and what might happen if you don’t want any treatment or care. Your health or care professionals should explain what might work for you – some options may not be suitable.
You need to have information about the pros and cons of the options. This must be easy for you to understand.
Your health and care professionals need to know what matters to you – no two people are
the same and they should listen carefully to your views and concerns. You and your health or care professionals need time to talk through what you want to get out of any treatments or care and any worries or questions you have.

Patients Know best (www.patientsknowbest.com)

A patient controlled online medical record system used by some hospitals and NHS trusts in England and Wales. https://www.patientsknowbest.com/case-studies.html
Appendix 6 Polypharmacy Algorithm

Healthcare Organisations to consider how the various triggers will be identified and acted upon

<table>
<thead>
<tr>
<th>Triggers for a structured medication review</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROACTIVE</strong></td>
</tr>
<tr>
<td>Polypharmacy data tool or similar identifies person as being potentially ‘at risk’ or as being ‘at risk from harm’ from multiple medicines.</td>
</tr>
<tr>
<td><strong>REACTIVE</strong></td>
</tr>
<tr>
<td>Crisis or incident such as admission to hospital should be explored to see if polypharmacy is a contributory factor. Consider also if carer becomes poorly then medication issues may become acute for the person they care for.</td>
</tr>
<tr>
<td><strong>REACTIVE</strong></td>
</tr>
<tr>
<td>Person highlights concern about the growing number of medicines they are being asked to take.</td>
</tr>
<tr>
<td><strong>REACTIVE</strong></td>
</tr>
<tr>
<td>Healthcare professional or healthcare worker highlights concern about the growing number of medicines a person is trying to manage.</td>
</tr>
</tbody>
</table>

Holistic, structured medication review should aim to:

- Identify and discuss the person’s goals
- Identify and discuss any adherence issues
- Identify and assess medicines with potential risks to cause harm
- Identify and assess the use of any unnecessary medicines
- Agree with the person the actions to be taken regarding medicines, including stopping
- Share any decisions with the person, their carers, healthcare professionals, pharmacist etc.
- Review and adjust as needed or refer if required.

Healthcare professionals to ensure they are skilled in good consultations and shared decision making