Scottish School of Primary Care

Polypharmacy
Briefing
Paper 13

Polypharmacy

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Improvement Topic Series

The improvement topic series is a set of briefing papers about areas of quality and safety which general practice clusters could usefully focus improvement activity on. They summarise research, guideline and other evidence about areas of care which can be improved, and improvement methods and interventions.

Improvement Topic 4
Polypharmacy in Primary Care

Multimorbidity and inappropriate polypharmacy impact patient care, with consequences of drug-drug interactions and adverse drug events, drug-related hospitalisations, non-adherence and higher health care costs. Decisions on starting and stopping medicines in older people are complex due to a number of factors including the plethora of single disease guidelines which are based on evidence from research that largely excludes most people with multimorbidity. This paper describes measures and improvement methods being implemented in the real-world in Scottish general practice.

The Problem

Multimorbidity, 'the co-occurrence of two or more chronic medical conditions in one person' poses many challenges to patient care and is recognised as a global challenge.[1] Scottish epidemiological data highlight that almost one quarter of all patients are multimorbid, with prevalence increasing substantially with age and with socioeconomic status.[2-5] Multimorbidity impacts the number of medicines prescribed. It is now well-recognised that single disease guidelines are based on evidence from research that excludes most people with multimorbidity, and that the cumulative impact of single disease guideline recommendations often results in overwhelming medicines burden.[6,7]

Figure 1 provides analysis of 2017 Scottish national prescribing data by age, highlighting that the number of medicines dispensed increases markedly with age. Just under 30% of those aged 85 years and above are receiving more than ten medicines.

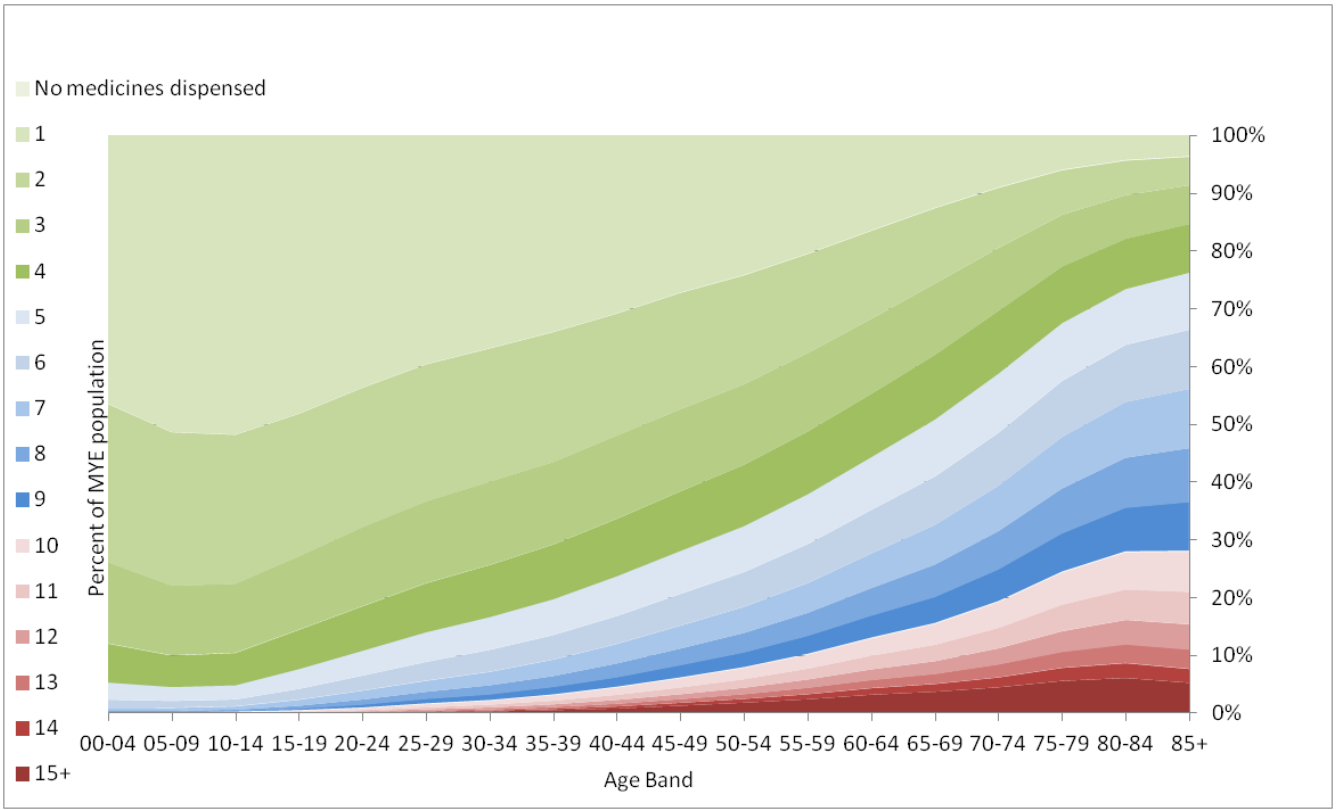


Figure 1. Number of distinct medicines dispensed in Scotland by five year age groups, January – June 2017 (image courtesy of ISD, NHS Scotland). The count of medicines is based on the number of different BNF paragraphs from which drugs were dispensed to each patient within the relevant time period. Patients may be prescribed one or more drugs from the same BNF paragraph, counts of numbers of BNF paragraphs will count each BNF paragraph only once, irrespective of how many drugs were prescribed from that paragraph.

Figure 2 gives data for those aged 50 years and over prescribed ten or more medicines and one or more high risk medicines.

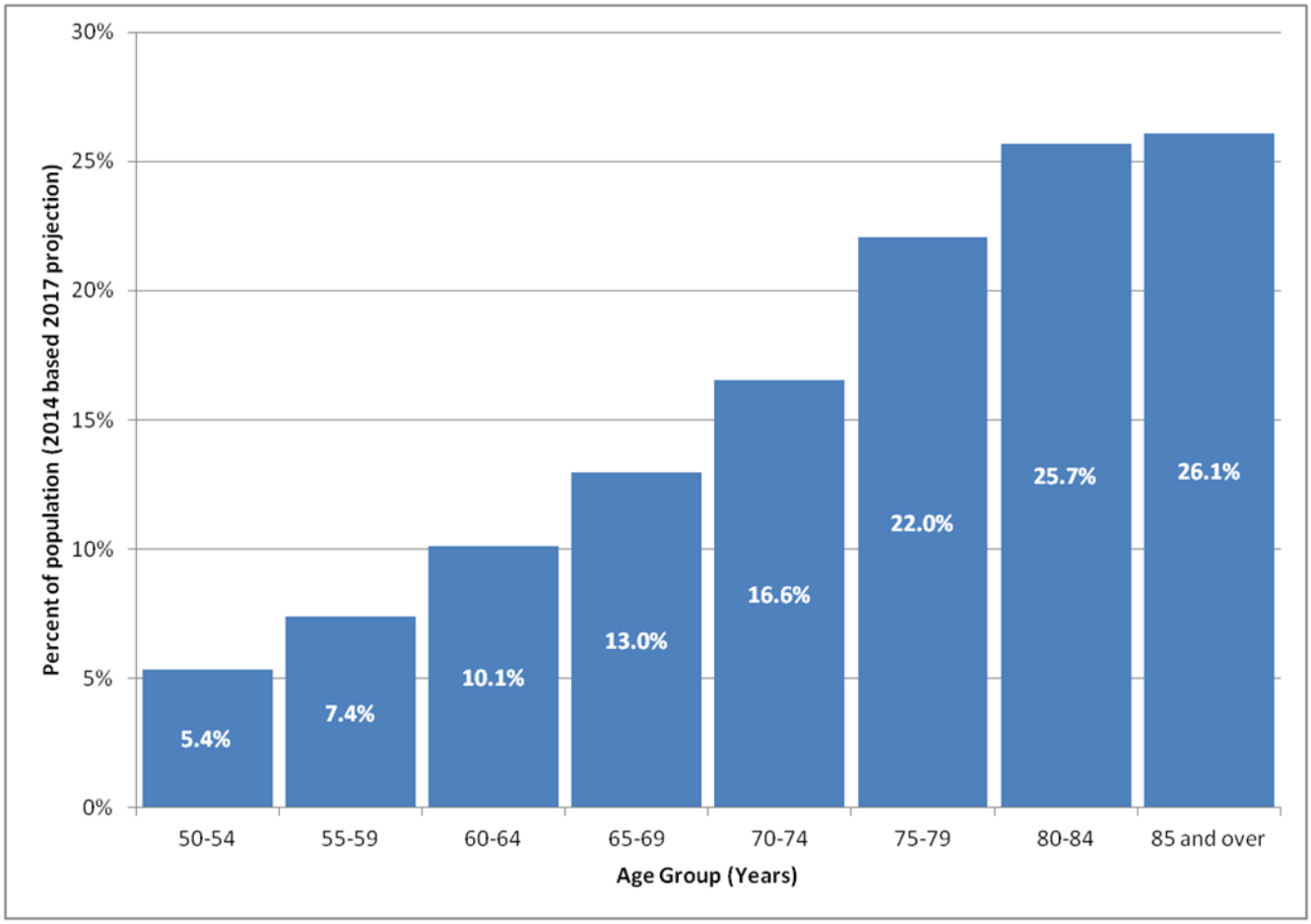
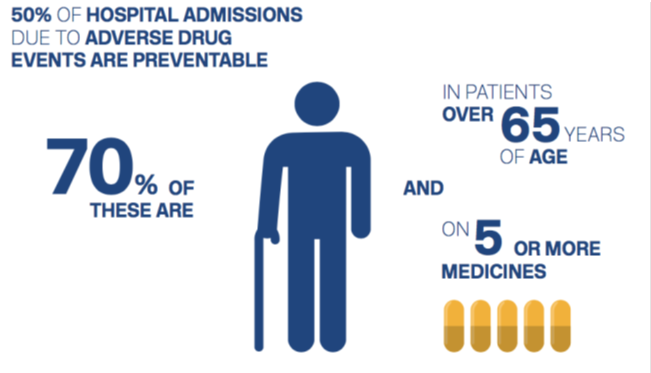


Figure 2. Percentage of population aged 50 years and older dispensed ten or more distinct medicines in Scotland, including at least one high risk medicine*, January – June 2017 (image courtesy of ISD, NHS Scotland). *High risk medicines are those that fall within the categories identified by Pirmohamed et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients BMJ 2004;329:15-19



Polypharmacy, the prescribing of multiple medicines, has been labelled as 'one of the greatest prescribing challenges'.[8,9] Polypharmacy:

- increases the likelihood of drug-drug interactions and adverse drug events[10,11]
- increases drug-related hospitalisations[12]
- contributes to non-adherence[13], and
- leads to higher health care costs[14].

These issues are of particular concern in older people, as is evident from Figure 3.

Figure 3, reproduced with permission from the Scottish Government Polypharmacy Model of Care Group, 2018

Historically, polypharmacy was commonly defined as the use of four or five different prescribed medicines.[15,16] More recently, the terms 'inappropriate polypharmacy' (prescribing of multiple medicines which are either inappropriate or no longer indicated) and `appropriate' or `optimal polypharmacy' (appropriate prescribing of multiple medicines) have been suggested.[17] In Scotland, these definitions have been endorsed and extended as follows.[18]

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.
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 unacceptable 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.

International action to improve polypharmacy management

In 2017, the World Health Organization launched a global initiative, Medication Without Harm, aiming to reduce the level of severe, avoidable harm related to medicines by 50% over the next five years.[19] While the need to tackle inappropriate polypharmacy and promote appropriate polypharmacy is clear, several recent systematic reviews and meta-analyses on approaches to addressing inappropriate polypharmacy concluded that there was no convincing evidence of effectiveness on clinically relevant endpoints.[20-22]

Project SIMPATHY (Stimulating Innovation Management of Polypharmacy and Adherence in the Elderly) sought to address the issue of inappropriate polypharmacy (and related non-adherence) in older patients across the European Union (EU) by stimulating and supporting innovation around polypharmacy management.[23-25] SIMPATHY culminated in the launch of 'Polypharmacy Management by 2030: A Patient Safety Challenge'[26]. The report, 'sets out the case for prioritising working together now to address inappropriate medication use over the next decade, to ensure the quality, economic and political systems are put in place to improve medication safety for patients'. This work has identified six key recommendations to improve medication safety of which polypharmacy is an essential element. These findings have characterised and endorsed the strength of direction of travel in Scotland.

Key Recommendations

1. Use a **systems approach** that has multidisciplinary clinical and policy leadership
2. Nurture a **culture** that encourages and prioritises the safety and quality of prescribing
3. Ensure that **patients are integral** to the decisions made about their medicines and are empowered and supported to do so
4. Use data to drive change and measure **outcomes**
5. Adopt an **evidence based approach** with a bias towards action
6. Utilise, develop and share tools to **support implementation**

Implementation in real life NHS practice in Scotland

In 2018 the Scottish Government published *Polypharmacy Guidance, Realistic Prescribing, 3rd* edition, generated through the collaborative efforts of clinicians, academics and policy makers from across Scotland.[18] The ambition is to reduce drug related harm through the collective efforts of all; centred on shared decision making between the patient (and/or carers) and their clinician(s), supported by the resources and intelligence available through our advancing health and social care systems. This precis of the guidance navigates clinicians through the guidance and help them to apply the principles within their day-to-day practice. Guidance is available as

- PDF guidance, https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/04/Polypharmacy-Guidance-2018.pdf
- Online guidance, http://www.polypharmacy.scot.nhs.uk/
- Professional app, www.polypharmacy.scot.nhs.uk
- Patient app, www.polypharmacy.scot.nhs.uk

Which patients to target for review?

Evolving evidence indicates risk of harm from medicines with increasing age, frailty, multiple medicines and high risk medicines. Outlined below are the criteria recommended to assist in prioritising patients for a polypharmacy 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.

C. Prescribed ten or more medicines irrespective of age (identifies those from deprived communities where the average age is lower when taking 10 or more medications)

D. On high-risk medication, regardless of the number of medicines taken .

These can be more refined by considering particular *age bands* (e.g. >75yrs), *frailty* (HIS Frailty / SPARRA score) or *dominant condition* (e.g. dementia). The guidance also outlines a range of high risk medicines (page 10) and/or combinations (including NSAIDs, anticoagulants, methotrexate, ACEI/ARB – see Appendix E, https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/04/Polypharmacy-Guidance-2018.pdf). Search templates and reports are available for both local and national systems to assist with patient case finding.

When should patients be targeted ?

Review of patients should be embedded within routine care at any point which involves medicines. It may be helpful to think of this at the following five stages in the health care process:

- Prescribing (and risk assessment)
- Medication review
- Dispensing and administration
- Communication and patient engagement
- Medication reconciliation (at care transitions)

How should patients be reviewed?

The guidance provides a useful *7-Steps* approach to guide a medication review, placing the patient at the centre supported by their clinician(s) and the resources to enable safe and effective medicines use.

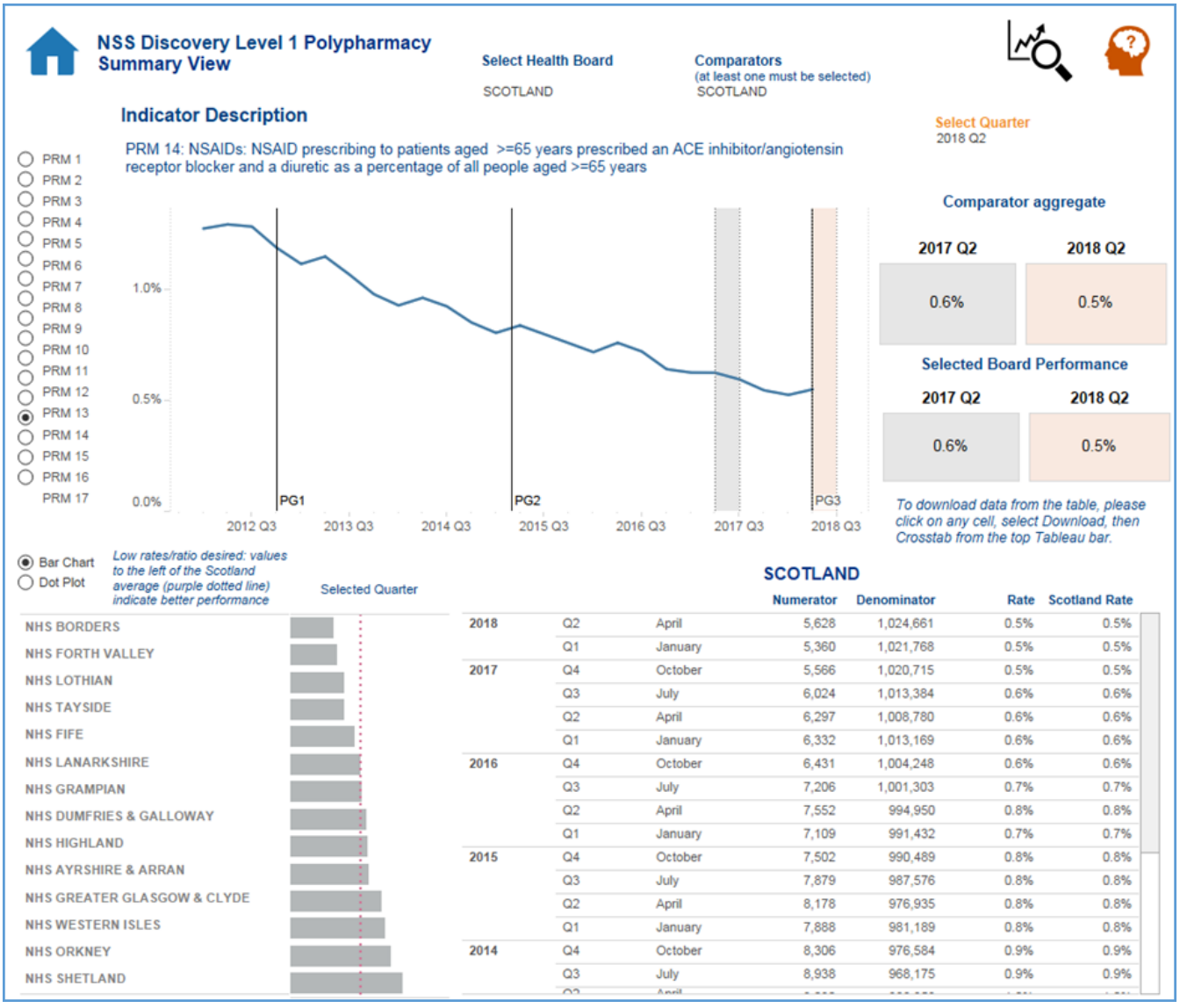
	Steps	Process
Aims	**1.** What matters to the patient?	**Review diagnoses and identify therapeutic objectives with respect to:** What matters to me (the patient)? Understanding of objectives of drug therapy Management of existing health problems Prevention of future health problems
Need	**2.** Identify essential drug therapy	**Identify essential drugs (not to be stopped without specialist advice):** Drugs that have essential replacement functions (e.g. levothyroxine) Drugs to prevent rapid symptomatic decline (e.g. drugs for Parkinson's disease, heart failure)
	3. Does the patient take unnecessary drug therapy?	**Identify and review the (continued) need for drugs:** With temporary indications With higher than usual maintenance doses With limited benefit in general for the indication they are used for With limited benefit in the patient under review
Effectiveness	**4.** Are therapeutic objectives being achieved?	**Identify the need for adding/intensifying drug therapy in order to achieve therapeutic objectives:** To achieve symptom control To achieve biochemical/clinical targets To prevent disease progression/exacerbation
Safety	**5.** Does the patient have ADR/ side effects or is at risk of ADRs/ side effects? Does the patient know what to do if they're ill?	**Identify patient safety risks by checking for:** Drug-disease interactions Drug-drug interactions Robustness of monitoring mechanisms for high-risk drugs Drug-drug and drug-disease interactions Risk of accidental overdosing **Identify adverse drug effects by checking for** Specific symptoms/laboratory markers (e.g. hypokalaemia) Cumulative adverse drug effects Drugs that may be used to treat ADRs caused by other drugs
Cost-effectiveness	**6.** Is drug therapy cost-effective?	**Identify unnecessarily costly drug therapy by:** Consider more cost-effective alternatives (but balance against effectiveness, safety, convenience)
Patient centredness	**7.** Is the patient willing and able to take drug therapy as intended?	**Does the patient understand the outcomes of the review?** Does the patient understand why they need to take their medication? Consider Teach back **Ensure drug therapy changes are tailored to patient preferences** Is the medication in a form the patient can take? Is the dosing schedule convenient? Consider what assistance the patient might have and when this is available Is the patient able to take medicines as intended? **Agree and Communicate Plan** Discuss with the patient/carer/welfare proxy therapeutic objectives and treatment priorities Decide with the patient/carer/welfare proxies what medicines have an effect of sufficient magnitude to consider continuation or discontinuation Inform relevant healthcare and social care carers change in treatments across the care interfaces Add the READ code **8B31B** to the patients record so that when they move across transitions of care it is clear their medication has been reviewed

Role of the patient and development of the 'Patient App'

The updated guidance builds on the patient centred approach by ensuring that the review is considered from the patients perspective, by first asking the question "*What Matters to you?".* The aim is to empower the patient to take part in the shared decision making around medicines use and review. The polypharmacy app www.polypharmacy.scot.nhs.uk was previously available for clinicians but the updated app now includes a patient tool that provides shared decision making tools such as information on numbers needed to treat for patients. This has been developed with the health literacy team and supports the principles of realistic medicines and shared decision making.

How to monitor the impact of polypharmacy reviews

In Scotland, suite of 17 indicators of prescribing appropriateness have been developed, using the national Prescribing Information System. An example is shown illustrating the impact of the Scottish polypharmacy guidance on the reduction of specific harmful combinations. The indicators are available in the Discovery data platform http://www.nssdiscovery.scot.nhs.uk/ at Health Board, GP Practice and GP Cluster level.



Clinical outcome measures are also under development, combining prescribing information together with SMR01 data. The use of hospital admission data is being explored in certain situations as a measure of clinical outcome following polypharmacy reviews is being explored, recognising the potential lack of direct association between review and admission. Further work is underway exploring the development of clinical decision support tools using the richness of data being collected by current and evolving clinical systems. Innovative solutions could be embedded in these systems to support continuous review of patients' medicines as their clinical conditions change in real time. For example, there amy be potential to scan patient information and data in real time to signal changing risk profile prompting review.

Implications for collaborative quality improvement in general practice clusters

While the management of polypharmacy in multimorbid individuals is not straightforward, various measures and tools described throughout this paper are readily available for use within GP practices and clusters. If you have not already done so, download the *Polypharmacy Guidance, Realistic Prescribing*, and the Professional and patient apps. Review and reflect on the approaches take in your practice and cluster around the identification and management of those with potentially inappropriate polypharmacy. Also consider how you can better promote appropriate polypharmacy in each contact with those with multimorbidity. The Discovery data platform was launched at the start of October 2018 and can be used to map performance against the national indicators over time

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