Int J Clin Pharm (2014) 36:26–29
DOI 10.1007/s11096-013-9871-z

COMMENTARY

Benefits of deprescribing on patients' adherence to medications

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Abstract Deprescribing is a holistic process of medication cessation that encompasses gaining a comprehensive medication list, identifying potentially inappropriate medications, deciding if the identified medication can be ceased, planning the withdrawal regimen and monitoring, support and follow-up. It is currently being investigated as a mechanism to reduce unnecessary or redundant medications. However, given the systematic and patient-centred nature of the deprescribing process, it is possible that it may also confer additional benefits such as improving adherence to medications, even if there is no net reduction in overall medication use. Specifically, deprescribing may improve adherence via reducing polypharmacy, reducing the financial costs associated with medication taking, increasing the patient's medication knowledge through education, increasing patient engagement in medication management and resolution of adverse drug reactions. More research into deprescribing must be conducted to establish if these potential benefits can be realised, in addition to establishing any negative consequences.

Keywords Adherence · Deprescribing · Inappropriate medication use · Medication withdrawal

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Impacts on practice

- Patients identified as having poor adherence may be suitable for referral to their family physician for deprescribing of one or more of their regular medications.
- A patient-centred deprescribing process that improves the patient-physician relationship should be employed to achieve the greatest improvement in adherence.

Introduction

Inappropriate medication use (IMU) is recognised as a significant challenge in the management of elderly patients and those with multiple morbidities [1]. Deprescribing is a relatively new term that has been coined to describe the process of cessation of medications that are not providing a benefit to the patient or are exposing them to unacceptable risks (i.e. IMU). The use of the term 'deprescribing' reflects the fact that medication cessation is more than just identifying IMU or not writing a new prescription; it is more holistic and encompasses recording a comprehensive medication list, identifying potentially inappropriate medications (via interventions such as medication reviews), deciding if the identified medication can be ceased, planning and discussion of the withdrawal regimen (i.e. tapering) with the patient/carer and monitoring, support and follow-up [2–6].

Non-adherence is common amongst individuals with chronic disease and is a significant contributor to poor patient outcomes, accounting for up to two-thirds of drug-related hospital admissions in the USA at an annual cost of US$100 billion [7]. Non-adherence can be unintentional (i.e. forgetfulness), intentional (i.e. conscious decision to not take the medication) or a combination of the two [8, 9].

Many factors have been linked with non-adherence and are thought to contribute to it, including polypharmacy, cost of medications, lack of understanding, adverse drug reactions (ADRs) and a poor physician-patient relationship [8]. Interventions to improve adherence therefore tend to have a multidimensional approach and may include simplification of the medication regimen, education and provision of medication administration aids [10].

There are some similarities between strategies to improve adherence and the latter stages of the deprescribing process (such as the patient acceptability of deprescribing, tapering and follow-up), but, since large scale deprescribing trials have not been conducted, direct evidence to support an association between deprescribing and non-adherence, hospital admissions or ADRs is lacking. However, given the holistic nature of the process, it is possible that patient benefits, for instance improved adherence, may result from participation in a deprescribing process [2]. These benefits may be due to both cessation of a medication as well as the systematic and patient-centred nature of the process. Specifically, deprescribing may improve adherence via reducing polypharmacy, reducing the financial costs associated with medication taking, increasing the patient's medication knowledge through education, increasing patient engagement in medication management and resolution of ADRs. Below we provide an outline of the indirect evidence to support these claims.

Possible mechanisms of improving adherence through deprescribing

Reduction in number of medications

A number of observational studies have demonstrated a positive association between polypharmacy and non-adherence; a cross-sectional study of 348 individuals identified that patients taking 3 or more drugs were more likely to be non-adherent [11] and elderly patients are adherent with 3 out of every 4 medications that they are prescribed [1]. The strongest predictor of non-adherence in individuals using concomitant antihypertensive and lipid lowering therapy was the number of other prescription medications; those taking no other medications were twice as likely to be adherent than those taking 6 or more medications [12]. The number of times a day that medications have to be taken has also been shown to have a strong influence on adherence [13]. A 2008 Cochrane review identified 4 studies which used interventions to simplify the medication regimen. They all targeted a specific medication and then allocated participants to once or twice daily dosing. Three of the four studies showed improved adherence with the once daily dosing, and one was able to show improved clinical outcomes [10].

Although the above does not directly support a link between reduction in polypharmacy and improved adherence with the other (remaining) medications, it provides circumstantial evidence that a reduction in the number of medications, daily doses and frequency of administration that can result from deprescribing will have a positive impact on adherence.

Reduction in financial cost of medications

Another factor found to be linked to non-adherence is the cost of medications [14], with over two-thirds of patients reporting that cost is a factor in whether or not they take a medication [15]. One quarter of elderly patients reported either not filling a prescription in the previous year because it was too expensive or skipping doses to make their supply last longer [16]. In an Australian study 32 % of patients agreed that cost would be a factor in their willingness to cease a medication [17]. In addition, the population wide medication subsidisation scheme in Australia (where those on low incomes, i.e. aged pensioners, unemployed and the disabled, receive their medications at a highly discounted price) might mean that this does not reflect patient attitudes world wide; for example, individuals with drug coverage in the USA report improved adherence because their medications are more affordable compared to those without any medication subsidisation [16]. Therefore, while reduction in cost itself may or may not be a large motivator for cessation of medications, those patients with low incomes without access to medication subsidisation may have improved adherence if the total cost of their medications is reduced (via cessation of one or more of them) following deprescribing.

Improved medication knowledge

The highest rate of non-adherence occurs in patients with the lowest understanding of their medications [11], and interventions with an educational component generally have a positive effect on adherence, particularly in elderly patients with multiple chronic morbidities [18]. Education regarding medications may change beliefs about medications; Horne and Weinman found that patients with less concerns about the harmful effects and more belief in the necessity of medications had better medication adherence [19, 20]. Therefore, a deprescribing process conducted with a focus on education regarding the potential harms and benefits (i.e. necessity) of medications has the potential to improve adherence. However, education provided as part of a deprescribing process may not be sufficient for all patients, particularly those whose non-adherence is

unintentional, where interventions that aim to change behaviour (e.g. use of a medication administration aid) are more likely to be successful [21].

Encouraging self-monitoring

With the move from using the term 'non-compliance' to 'non-adherence' it was recognised that patients should not be seen as passive participants in their own health. Intentional non-adherence may be a form of patients exerting control over their medical treatment; not because they do not wish to take that medication, but because it is part of the medication taking experience [9]. By encouraging patients to be in control of their medication use in an informed way, for example being engaged in monitoring symptoms related to a medication, adherence with agreed upon medication regimens may be enhanced. In fact, interventions that include a component of encouraging patients to self-monitor for symptom relief are more effective in improving adherence than those that do not contain this component [21]. Deprescribing is designed to be patient-centred, because for it to be effective, patients must be engaged in the process and take some control so that any return of condition or withdrawal symptoms can be managed properly [2]. This gain of control (even if only over a single medication) may fulfil this inherent need to exert control over medication taking, and if so, it could lead to improved adherence that extends beyond effects on that individual medication.

Resolution of adverse drug reactions

A demonstrated benefit of cessation of inappropriate medications is resolution of ADRs known to be caused by the medication [22, 23]. ADRs can lead to reduced adherence as patients may attempt to minimise their severity through self-dose reduction [24, 25]. However, it may be difficult for a patient to know which medication is responsible, and therefore they may be taking a less than therapeutic dose of a medication which is not the causative agent. Utilising the pharmacological knowledge of a pharmacist, the medication most likely to be responsible for causing the ADR can be identified and targeted for deprescribing, resolving the ADR and potentially improving adherence to the remaining medications.

Discussion

A deprescribing process has not been systematically tested to determine actual benefits and harms. A recent pilot study measured adherence, quality of life, sleep quality and cognitive impairment as clinical outcomes [26]. Details on adherence scores at follow-up showed no difference between the intervention and control groups, but given the small size and limited power of this study, a significant difference was unlikely. The adherence scores at baseline were not provided, and the direction of the effect (if any) on adherence post intervention, despite being non-significant, was not clear. Other studies which employed a systematic process for identification and cessation of IMU have shown good adherence with the recommendation to cease the medication, but adherence to other medications was not reported [27, 28].

Non-adherence may be a suitable trigger for deprescribing [6, 29]. If a review of a patient's medications identifies non-adherence to an inappropriate medication, then removal of this medication from their medication list will not only remove the label of non-adherence, but also prevent future medication errors. In fact, identification of non-adherence may indicate that the patient no longer requires the medication (i.e. if the medication is for symptomatic relief only), indicating that it can be deprescribed. In the case that the medication that the patient is non-adherent to is still necessary, or if the patient is non-adherent with their medications in general, this too may be a suitable trigger to deprescribe other (inappropriate) medications, as these patients are more likely to benefit from the process.

Despite the potential for a deprescribing process to improve adherence, it also must be acknowledged that, without the evidence to support this, it is possible that it may decrease adherence. While the evidence we have so far suggests that interventions that promote self-management result in positive effects on outcomes [21, 30], it is known that patients often 'test' their medications through self-dose reduction or discontinuation [8, 15]. Whilst withdrawal reactions and/or symptom recurrence will be noticeable following dose reduction and/or cessation of some medications, many others are preventative and do not provide any noticeable symptom relief (e.g. antihypertensives). If a patient is not aware of this, following successful cessation of a medication for symptomatic relief, they may independently feel that it is appropriate to take the same approach with other medications and feel that it has been successful if they have not noticed a flare of symptoms.

There is also a potential for deprescribing to adversely affect the patient's relationship with their physician, which may affect medication adherence [8]. Patients may have reduced trust in their physician and their prescribing abilities if they are told by a separate health professional that one of the medications is inappropriate, leading them to question the appropriateness of their other medications [31, 32]. These concerns strengthen the need for good communication between the health care professional conducting the deprescribing and the patient, and also monitoring post medication withdrawal. If there is any evidence of reduced adherence

during follow-up, additional (adherence specific) intervention(s) can be employed.

Conclusion

If there is a positive effect of deprescribing on adherence it is likely to occur via a combination of cessation of inappropriate medications and the process that is employed to achieve this. Despite the current lack of evidence, or potentially because of it, the proposed benefits of deprescribing warrant further investigation. While adherence specific interventions have their place, optimisation of patient outcomes could also be achieved through interventions such as deprescribing, which not only have the potential to improve adherence, but also reduce IMU.

Funding Ms Emily Reeve's PhD candidacy (of which this review was conducted within) is funded by an Australian Postgraduate Award (APA).

Conflicts of interest None.

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