

Evaluation of potentially inappropriate prescribing and deprescription as elements of good medical practice in elderly patient care

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Summary The ongoing increase in the proportion of elderly people in society, sometimes referred to as the aging societies phenomenon, has numerous effects. Multimorbidity affects about every third person in the general population and, on average, the likelihood of chronic illness increases with age, so multimorbidity is more common in older age groups. This increases the demand for medication, leading to concurrent use of many drugs, which is referred to as polypharmacy. We carried out a literature review to identify the problems associated with the use of medications in people sixty years and older. Aging societies contain an increasing number of elderly people struggling with the burden of multimorbidity and the resulting polypharmacy. They require a systemic approach to prescription problems, which include potentially inappropriate medication (PIM) and overprescription, as well as potential prescribing omission (PPO), taking into account issues like lack of patient compliance and self-medication. Any attempt to solve these problems requires tools to objectively evaluate prescription practice, using the existing and emerging capabilities of electronic health records (EHR), actively encouraging all medical personnel who prescribe medications or evaluate their use (including physicians, nurses and pharmacists) to join rational deprescribing attempts, and convincing patients that more drugs are not always better.

Key words: geriatrics, multimorbidity, polypharmacy, potentially inappropriate medication list, deprescriptions.

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Background

Average life expectancy has been on an almost constant rise over recent decades in Europe, which has led to an increase in the proportion of elderly people in these populations. This aging societies phenomenon results in numerous side effects, including loneliness [1], physical and mental disabilities [2], psychomotor disorders [3], dependency on others [4] and thus vulnerability to gerontological ageism [5], neglect and abuse [6], and, most of all, multimorbidity [7]. Multimorbidity can be defined as the coexistence of a chronic disease with at least one other acute or chronic disease or psychosocial factor that is often linked to some somatic issue [8]. Multimorbidity affects about every third person in the general population [9] and, on average, the likelihood of chronic illness increases with age so multimorbidity is more common in older age groups, which increases the demand for medication. Elderly people consequently have a broader scope of health needs than the general population [10], and the costs of treating older patients are significantly higher than for other age groups [11]. Patients in this age group generally trust their doctors and rather rarely question or challenge their therapeutic decisions [12].

Material and methods

We performed a literature review in order to identify the problems associated with the use of medications in people sixty years and older.

Results

Multimorbidity leads to the concurrent use of multiple medications [13] and the use of five or more drugs at the same time in the same patient is referred to as polypharmacy [14]. Although polypharmacy involves justifications for the use of each of the prescribed drugs, often the benefit–risk ratio becomes suboptimal in the patient when they are using them with other prescription or over-the-counter drugs [14]. These situations are often referred to as potentially inappropriate medication (PIM) [15], and are most often identified in case of central nervous system and psychotropic drugs (66% of evaluated patients) [16]. Polypharmacy quite often results from ineffective and thus excessive prescription of drug, not indicated or duplicative therapy, while at the same time desired drugs may be absent from the therapeutic scheme or underused; only about one in nine elderly patient has no detectable flaws in therapy scheme



[17]. The fraction of improperly prescribed medications in patients with detected drug overuse or misuse increases steeply with the total number of prescribed medications, starting from 0.4 in patients taking 5–6 medications and reaching 1.9 inappropriate medications in patients who use ten or more drugs simultaneously [17]. On the other hand, the frequency of underuse or absence of required drugs averages one drug per patient, and is independent of the number of drugs in the therapeutic scheme [17]. This affects 45% of elderly patients in primary health care [18]. The problem of potential prescribing omission (PPO) involves mostly musculoskeletal system treatment (55% of evaluated patients) and cardiovascular system (40% of evaluated patients) [16]. Underuse is unfortunately especially vivid in case of vaccines among the elderly, with flu vaccinations as the leading example [19]. This is a demonstration of the much broader problem in Polish society of generally low vaccination acceptance [20], even though information campaigns mean that it is difficult to ignore [21] the fact that illnesses that can be prevented by vaccination carry considerable health risks for the elderly [22], while also limiting their access to medical services [23].

Safety of medication in polypharmacy is a serious and complex issue [24], as polypharmacy often leads to elevated risk of drug relative overdose or interactions that are sometimes difficult to foresee [25], especially in older patients already limited organ function reserve [26]; it can also cause lowered physical or mental capabilities [27], excessive or prolonged hospitalization [28], and even deaths [29], often presenting as preventable medication errors [30]. Potentially inappropriate medications (PIM) [31] and improper prescribing can be identified and judged using objective means, such as Beer's criteria [32], the Improved Prescribing in the Elderly Tool (IPET) [33], and their apparently more sensitive successors [34], the Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP) [35] or the Screening Tool to Alert doctors to Right Treatment (START) [36]. The prevalence of this type of medical error is significantly underestimated [37], as medication errors are more commonly associated with isolated incidents of administering the wrong drug or dosage of a drug [38], which rarely leads to acute adverse health effects or death, and not with the more widespread polypharmacy, despite the fact that such incidents are quite common and the vast majority go unnoticed [39]. Taking this into account, countering polypharmacy is a neglected area of healthcare quality improvement [40]. It should be considered that the adverse effects of a drug whose use is justified are just another undesired but unavoidable side effect, while the same adverse effects in an overprescribed drug are iatrogenic [41], and as such it may impinge on the prescribing physician's legal responsibility. The basis for each prescription thus needs to be properly documented in the patient's medical file [42] as it may become a valuable (though sometimes misleading [43]) source of evidence in the eventuality of accusations of medical error, whether treated in court, mediation [44], or quasi-administrative proceedings [45]. The use of modern electronic medical files can simplify this repetitive record-keeping task and enforce formal correctness of records, but in many aspects it also limits doctors' freedom in documenting cases [46]. It is worth noticing that migrating from paper medical files into electronic health records also opens up new possibilities of monitoring, analyzing [47], and optimizing pharmacotherapy [48].

Polypharmacy constitutes a significant burden for patients for several reasons. Firstly, it may result in drug interaction-related side effects that can lead to serious health issues, or can at least limit the ability to perform everyday tasks [49], as well as quality of life deterioration, including elevated risk of depression [50] or even suicide [51]. Secondly, taking multiple medications, often under the multiple-per-day dose regimen that varies from drug to drug, is difficult to maintain over long time even with support of modern technologies [52], while patients with chronic diseases are supposed to take their drugs for many years, often until the end of their lives. Thirdly, there is a signifi-

cant role for the connection between the perceived severity of the ailment and the strength of the relief brought by the medication, which may not be clear enough to the patient, partly due to limited levels of health literacy [53]. Fourthly, for the same reason, the patient may ask for a prescription that objectively may not be required or optimal in case of the patient's condition, and the doctor may acquiesce [54]. Fifthly, the patient may self-medicate out of a belief in his or her own judgement, because of a lack of time or long waiting times for a doctor's appointment [55], because of a lack of support in obtaining an appointment, or because of unmet emotional or social needs [4]. Such self-medication may employ over-the-counter [56] or even prescription drugs, obtained earlier for him or herself or shared with them by other people [57].

Rationalizing drug prescriptions demands multilevel interventions [58]. These may include educating patients and prescribing medical professionals [59] – who in Poland include not only physicians but also nurses [60] (for limited list of drugs) [61] and pharmacists [62] (in case of danger to the patient's health) [63] – about the need for rational drug prescription and use. Engaging pharmacists to review and evaluate or control doctors' prescription practices may provide constructive feedback or a basis for monitoring the rational performance of doctors, even encouraging good practices and sanctioning bad practices [58].

Deprescribing is the process of reviewing and evaluating the therapeutic plan of the patient with the aim of withdrawing prescribed drugs, temporarily suspending the use of prescribed drug, substituting prescribed drugs with other drugs that have multiple desired actions or with a pill containing a compound formula, altering the dosage of prescribed drugs, or adjusting the administration regimen of prescribed drugs. In all cases this range of deprescriptive actions considers drugs that were originally prescribed purposefully and according to the standards of care but which, given the patient and the number of concurrently used drugs they have, now exceeds the desired or practically acceptable maximum [64].

Patients may approach their physicians to consider deprescribing, either directly by raising the topic or indirectly by demonstrating their helplessness and low compliance with therapeutic regimen [65], along with the poor outcomes or side effects of therapy [66]. However, the physician needs to take the lead in the first place, taking into account other doctors' prescribing practices while making his or her own decisions to introduce new drugs or withdraw old ones—always with the expected benefits for the patients in mind, especially when they are elderly [67]. Obtaining the patients' informed consent to deprescribe is as crucial as in every other aspect of pharmaceutical treatment [68].

Family doctors also play a crucial role, especially in case of deprescribing for patients who have been discharged from hospitals with prescriptions that then need to be merged with the previously established therapeutic regimen, in order to avoid the simple and unfortunately common practice of adding the new medications to the existing list [69]. It is critical in case of certain drugs, especially antibiotics, not to exceed the maximum time of administration, in order to avoid the negative side effects of the development of resistance in the patient and in society in general [70]. Such drugs should thus be withdrawn as soon as possible, and their administration should be immediately discontinued if it is found that they were introduced into the treatment without proper indication [71], especially when there is a dominance of viral infections [72]. On the other hand, justified antibiotic treatment must also not be discontinued too early [73].

National regulators have a duty to maximize the health safety of patients [74]. In order to optimize pharmacotherapy in Poland, pharmacists are enabled by law [75] and encouraged both by the government [76] and by professional pharmaceutical organizations to provide pharmaceutical care to patients, including pharmacotherapy reviews and advice [77]. Consulta-

tions with pharmacists are a perfect opportunity for deprescribing because, like the family doctor, they can avoid sector view and are capable of taking a holistic approach, including into the process all medication coming from all sources, including possibly from prescriptions from multiple specialist doctors and the patient's own over-the-counter drugs and dietary supplements [78]. As the therapeutic schemes of individual patients often differ from each other and are often complex and thus time consuming to review, consultations may be considered a demanding but professionally fulfilling task by some pharmacists while others may prefer to avoid them [79]. In general, however, pharmacists should be available to assess the appropriateness of medications and to optimize the expected health outcomes of pharmacotherapy in elderly patients [80].

Although as many as 72% of physicians are in favor of deprescribing, it is difficult to introduce this into everyday practice, especially in geriatric medicine [14]. It is easier to achieve when it pertains to preventive drugs, where the decisions can be made as part of a team with other doctors, and where the patient is also in favor of deprescribing. Individual physicians may be reluctant to engage with other physicians' prescriptions or

when the time for changes is limited [14]. While physicians commonly accept adverse effects of drugs in patients, they are unlikely to engage in deprescribing for fear that adverse effects related to drug withdrawal might arise [81]. There is no clearly recognizable pattern that distinguishes patients who abstain from participating in deprescribing when offered [15].

Conclusions

Aging societies, with their increasing proportion of elderly people struggling with the burden of multimorbidity and the polypharmacy that results, require a systemic approach to prescription-related problems, which include potentially inappropriate medication (PIM) and overprescribing, as well as potential prescribing omission (PPO). Any attempt to solve these problem requires the use of all available tools for objectively evaluating prescribing, using already existing and emerging capabilities of electronic health records (EHR), actively encouraging all medical personnel who prescribe medications to join rational deprescribing attempts, and convincing patients more drugs does not always mean better.

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