Review

Managing Polypharmacy through Medication Review Tools – Pros and Cons

Evelina Gavazova[1], Radiana Staynova[1], Daniela Grekova-Kafalova[1]

[1] Department of Organization and Economics of Pharmacy, Faculty of Pharmacy, Medical University of Plovdiv, Plovdiv, Bulgaria

Corresponding author: Evelina Gavazova, Department of Organization and Economics of Pharmacy, Faculty of Pharmacy, Medical University of Plovdiv, 15A Vassil Aprilov Blvd., 4002 Plovdiv, Bulgaria; Email: evelina.gavazova@mu-plovdiv.bg

Abstract

Inappropriate polypharmacy is a common occurrence in elderly patients, resulting in increased adverse drug reactions, nonadherence, and increased healthcare costs. Medication review and deprescribing are the primary strategies described in the literature for dealing with problematic polypharmacy. To effectively carry out the medication review, various tools have been developed. These tools can support medication review in a variety of ways. Some tools include a list of medications requiring detailed attention, while others guide medical professionals with principles and algorithms for reviewing and prescribing medicines. A third category of tools focuses on tracking and identifying symptoms that may be due to drug-related problems.

This article aims to present the medication review support tools used in the management of polypharmacy in the geriatric population, emphasizing their advantages and disadvantages.

INTRODUCTION

The prevalence of polypharmacy tends to rise with age, reflecting the increased likelihood of individuals having multiple health conditions and requiring various medications.[1] While polypharmacy can be necessary and beneficial for managing multiple health conditions, it presents challenges such as an increased risk of adverse drug reactions, drug interactions, and medication non-adherence.[2,3] Therefore, healthcare providers need to carefully assess the necessity of each medication and consider potential risks and benefits when managing patients with polypharmacy.[4] Patients with complex medical conditions often require specialized care from different healthcare providers, each prescribing medications to address specific aspects of the patient's health.[5] Effective management of polypharmacy requires a systematic approach involving a range of strategies.[6] **(Fig. 1).**

A medication review is a comprehensive assessment of an individual's medications by a healthcare professional.[7] A medication review evaluates the appropriateness, effectiveness, and safety of the medications a person is taking.[8] Key aspects of a medication review may include a Medication List where the healthcare provider will compile a complete and accurate list of all medications the individual is currently taking.[9] This includes prescription medications, over-the-counter medications, and supplements. Secondly, the provider will assess whether each medication is still necessary and whether the medical conditions for which they were prescribed are still relevant.[10] The healthcare professional will evaluate the effectiveness of each medical product. If a medication is not providing the necessary benefits, alternatives should be considered.[11]

The review includes an assessment of potential interactions between medications, as well as any interactions with food or other substances.[12] The healthcare provider will
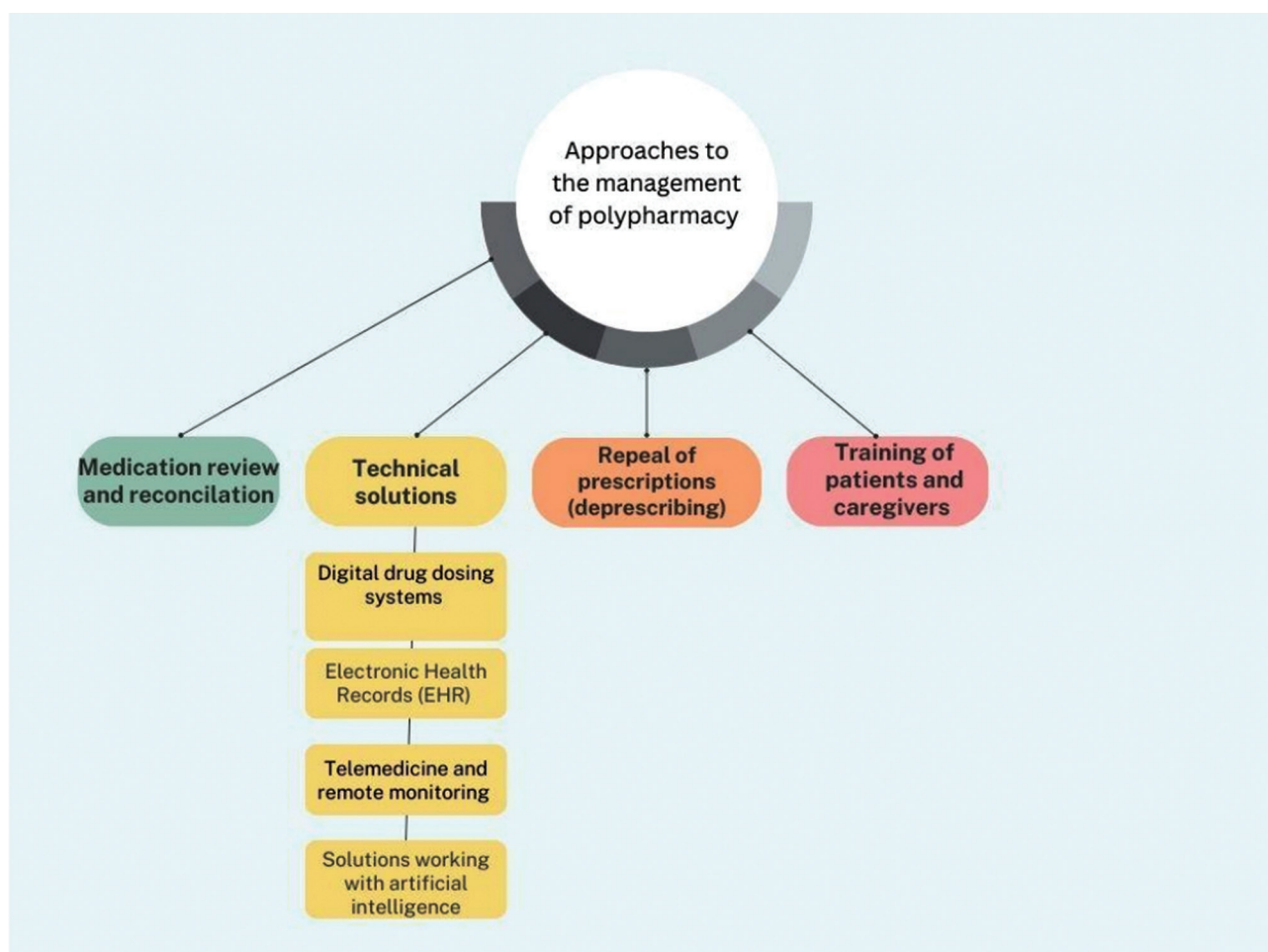
Figure 1. Approaches for managing polypharmacy (created via Canva.com).

inquire about and assess any side effects or adverse reactions experienced by the individual. If the side effects are significant, alternative medications may be considered.[13] The individual's preferences and lifestyle factors are considered. This includes factors such as ease of medication administration, cost, and any challenges the individual may face in adhering to the prescribed regimen.[14] The healthcare provider will work with the individual to develop or adjust a comprehensive treatment plan that optimally addresses their health conditions while minimizing risks and adverse effects.[8]

It is crucial for individuals to actively participate in the medication review process by providing accurate information about all medications, communicating any concerns or side effects, and discussing their preferences and goals with their healthcare providers.[10] Several screening tools are commonly used by healthcare professionals to conduct medication reviews.[15] These tools help identify potential issues related to medication use, including inappropriate prescribing, potential drug interactions, and medication-related problems.[16]

The aim of this narrative review is to outline the main tools recommended in the medication review approach, highlighting their pros and cons.

A comprehensive search of electronic databases (PubMed and Google Scholar), guidelines on polypharmacy management in geriatric patients, and official websites of the national competent authorities in countries implementing the medication review method was carried out. In this narrative review, the following search terms were used alone or in combination: "medication review", "tools", "polypharmacy", "geriatric patients", "multimorbidity", and "pharmacist". Only English-language results were considered for further analysis. In the context of using tools for medication review, we constructed a SWOT analysis. Additionally, a content analysis of available tools was performed, shedding light on the different approaches to medication review and their potential impact on patient care.

Medication review support tools

Medication review tools are often used with clinical judgment and patient input to conduct a comprehensive medication review.[17] They help healthcare providers identify areas for improvement in medication management, reduce the risk of adverse events, and optimize treatment plans.[18] The choice of tool may depend on the specific population being assessed and the goals of the medication review.

Medication review is a continuing process that involves multidisciplinary approaches and continued monitoring of the patient. One of the disadvantages of the more complex types of tools is that in practice the medical specialist does not have more than 10 minutes to conduct a medication review. A tool that provides consultation for 10 minutes is NO TEARS (Need/indication, Open questions, Tests, Evidence, Adverse effects, Risk reduction, Simplification/switches).[19]

As elderly patients are more vulnerable to polypharmacy and drug interactions, many tools have been developed for assessing the medication therapy of this specific patient group[11,16,17,20-35] **(Table 1).**

Table 1. Medication review support tools used in the geriatric population[20]

Tool	Scope
The American Geriatrics Society (AGS) Beers Criteria (the Beers list)[21]	List of medications that are either not appropriate or should be used with caution in adult patients. By focusing on the identification of potentially inappropriate medications and providing evidence-based recommendations, the criteria contribute to promoting safer and more effective prescribing practices for the elderly population.
Screening Tool of Older Persons' Prescriptions (STOPP) and Screening Tool to Alert to Right Treatment (START) STOPP/START criteria[17]	A series of rules and suggestions related to common problems in adult therapy. By offering specific criteria and recommendations, STOPP aims to enhance the quality of prescribing practices for older adults and reduce the risk of adverse drug events in this vulnerable population.
Need/indication, Open questions, Tests, Evidence, Adverse effects, Risk reduction, Simplification/switches. NO TEARS [22]	The structure of NO TEARS offers a means for conducting a swift medication review during a 10-minute consultation, enhancing efficiency. This adaptable system can be customized to align with the unique consultation style of each practitioner.
Drug Burden Index DBI[23]	A method for calculating an index for the risk of falls due to the intake of medications with a sedative and anticholinergic effect
Anticholinergic Cognitive Burden (ACB) scale / Anticholinergic Risk Scale (ARS)[24]	The primary scope of both ACB and ARS is to identify medications that have anticholinergic properties. Anticholinergic drugs block the action of acetylcholine, a neurotransmitter in the central and peripheral nervous systems, and their use has been associated with various side effects, including cognitive impairment.
PRISCUS list (Latin for "old and venerable")[25]	List of recommendations for specific medications developed in Germany. It contains a compilation of medications that are considered potentially inappropriate for use in older adults. The aim of the PRISCUS list is to improve medication safety and quality of care for elderly individuals by identifying and minimizing the use of medications that may pose a higher risk of adverse effects or have limited efficacy in this population.
Medication Appropriateness Index (MAI)[11]	Method for measuring potentially inappropriate prescribing by index for appropriate medications. It is the only implicit tool with validated inter-rater reliability.
Australian prescribing indicators tool[26]	Contains 41 criteria to assess the relationship between medication intake and the most common drug-related problems in Australian adult patients.
NOR-FRAIL tool (Fatigue, Resistance, Aerobic capacity, Illnesses and Loss of weight)[27]	Identifies frailty in older people, including medication-related aspects.
Brown Bag Medication Review[28]	Visual inspection of all medications the patient is taking. Helps identify any discrepancies, duplicate therapies, or potential medication use problems.
Healthcare Effectiveness Data and Information Set HEDIS[29]	Used by health plans to measure performance on various aspects of care, including appropriate medication use. HEDIS encompasses over 90 metrics distributed across six care domains: Efficiency of Care. Accessibility and Availability of Care. Quality of Care Experience. Utilization and Risk-Adjusted Utilization. Descriptive Information about Health Plans. Metrics Reported Utilizing Electronic Clinical Data Systems.

MedStopper[30]	Deprescribing tool used in Canada. It organizes a patient's medication list, prioritizing drugs from "more likely to discontinue" to "less likely to discontinue." This sequencing is determined by three crucial factors: the drug's potential to alleviate symptoms, its ability to mitigate future health risks, and its likelihood of causing harm.
RxISK Polypharmacy Index[31]	RxISK, established in 2012, is a freely accessible and independent online platform designed to empower individuals to engage in more informed discussions with their healthcare providers about medications. It acknowledges that the person taking a drug holds valuable insights into its effects, emphasizing the importance of individuals actively participating in conversations about their medications with their doctors.
FORTA (Fit for the aged)[30]	An internationally validated tool for managing pharmacotherapy in older adults. The tool combines both negative and positive labelling based on individual indications. It ranks medications into four groups depending on evidence for safety, efficacy, and overall age appropriateness: (**A**) indispensable with obvious benefit; (**B**) proven efficacy but limited effects or possible safety concerns; (**C**) questionable efficacy or safety; (**D**) avoid.
Screening Tool of Older Persons Prescriptions in Frail adults with limited life expectancy STOPPFrail[32]	A list of explicit criteria for potentially inappropriate medication (PIM) use in frail older adults with limited life expectancy.
Improving Prescribing in the Elderly Tool IPET[33]	A list of 14 instances in which inappropriate prescribing may occur for an elderly patient. The tool was developed in 1997 by an expert panel in Canada and has been validated by two studies in acutely hospitalized elderly patients.
Assessing Care of Vulnerable Elders ACOVE[16]	A national project that developed evaluation indicators for the care of elderly patients who suffer from conditions that contribute most to morbidity, mortality, and functional decline.
Geriatric Risk Assessment MedGuide GRAM[34]	Applying the tool in long-term care was proven efficacious in reducing the rate of delirium, hospitalizations, and mortality resulting from adverse drug events.
Specific, Measurable, Acceptable, Realistic, and Time-framed Tool SMART[11]	It consists of 10 questions that draw attention to the appropriateness and safety of the drug plan.
CRIteria to assess appropriate Medication use among complex Elderly patients CRIME[35]	Developed in Italy, this tool represents recommendations for improving the quality of prescribing in geriatric patients with a limited life expectancy, and functional and cognitive impairment.

Beers criteria

The Beers Criteria was developed by the late Mark Beers, MD, and colleagues at the University of California Los Angeles in 1991 to identify medications for which potential harm outweighed the expected benefit and that should be avoided in nursing home residents.[36] The 1997 update, led by Dr. Beers, expanded the criteria to apply to all older adults. The Beers criteria have become a widely accepted standard for assessing the appropriateness of medication use in older adults, and they play a role in promoting medication safety and reducing the risk of adverse events in this population. Healthcare providers may use the Beers criteria as part of a comprehensive medication review process to optimize the care of older patients.[37]

The American Geriatrics Society (AGS) Beers criteria (AGS Beers Criteria) for Potentially Inappropriate Medication (PIM) Use in Older Adults is widely used by clinicians, educators, researchers, healthcare administrators, and regulators. Since 2011, the AGS has been the steward of the criteria and has produced updates on a regular cycle. The AGS Beers criteria is an explicit list of PIMs that are typically best avoided by older adults in most circumstances or under specific situations, such as in certain diseases or conditions.[21]

Key features of the Beers criteria include:
- **Identification of PIMs:** The Beers criteria provide a list of medications that may pose more risks than benefits for older adults. These medications are categorized into different classes, such as sedative hypnotics, nonbenzodiazepine receptor agonists, antipsychotics, and certain antihistamines.[38]
- **Consideration of individual patient characteristics:** The Beers criteria consider specific patient characteristics, such as age, kidney function, and existing medical conditions, as these factors can influence the risk-benefit profile of certain medications.[39]
- **Cautions and Recommendations:** The criteria include information on potential adverse effects and cautions related to the use of specific medications in

older adults. They also provide recommendations for safer alternatives when available.[40]

The Beers criteria is periodically updated to incorporate new evidence and changes in clinical practice. Updates are typically published by expert panels, such as the American Geriatrics Society (AGS). The Beers criteria serves as an educational tool for healthcare providers, helping them stay informed about medications that may be risky for older adults and prompting thoughtful consideration when prescribing for this population.[41] It is important to note that the Beers criteria are not meant to be strict rules but rather guidelines to assist healthcare professionals in making informed decisions.[42] Individual patient factors, preferences, and clinical judgment should always be considered when determining the appropriateness of a medication. This tool has been in use the longest, and its effectiveness has been investigated in a variety of settings.[43]

Pharmacists' role in medication review

Pharmacists play a crucial role in medication reviews, contributing their expertise to ensure the safe and effective use of medications.[28] There are several ways in which pharmacists can participate in the medication review process.[44] Pharmacists can conduct thorough medication reconciliations, comparing the patient's current list of medications with their medical records to identify any discrepancies, duplications, or omissions.[45] Pharmacists are trained to recognize potential drug interactions.[46] They can assess the patient's medication list to identify and manage any interactions that could compromise safety or efficacy.[47,48]

Pharmacists can assess the appropriateness of medication dosages, by considering factors such as age, weight, renal function, and other patient-specific characteristics.[49] Pharmacists can provide valuable education to patients about their medications, including proper administration, potential side effects, and the importance of adherence to the prescribed regimen.[50] If a patient is experiencing adverse effects from their medications, pharmacists can work with healthcare providers to explore alternative medications or adjust dosages.[51] Pharmacists can establish monitoring plans to assess the patient's response to medications over time.[52] This may involve a routine follow-up to evaluate the efficacy, adverse effects, and adherence.[53] Pharmacists can collaborate with physicians and other healthcare providers to optimize medication regimens.[54] This may include making recommendations for medication adjustments, substitutions, or discontinuations.[55] Pharmacists can work with patients to address barriers to medication adherence, offering strategies and solutions to help patients take their medications as prescribed.[56]

Pharmacists' expertise in pharmacology and medication management makes them valuable members of the healthcare team, and their involvement in medication reviews helps improve patient outcomes, enhance medication safety, and promote overall health and well-being.[57-64] **(Table 2).**

SWOT analysis for the use of medication review tools

Despite offering numerous benefits, medication reviews also pose potential disadvantages or challenges.[65] Rec-

Table 2. Examples of a pharmacist-led medication review

Country	Author, year	Service	Outcomes
United Kingdom	Krska et al., 2001[57]	Use of medication review in providing pharmaceutical care to adult patients	The effectiveness of pharmaceutical care is improved
Ireland	Riordan et al., 2016[58]	Medication review with feedback to the patient's doctor	Improving prescribing habits
Brazil	Aguiar et al., 2016[59]	Medication review provided by a clinical pharmacist	Improvement of HbA1c values
Spain	Malet-Larea et al., 2017[60]	Medication review provided by a community pharmacist	The service is cost-effective. A cost-utility and cost analysis were performed.
United Kingdom	De Barra et al., 2018[61]	All services provided by pharmacists other than the preparation or dispensing of medications	Improvement of HbA1c values, blood pressure, lipid profile and respiratory function
Turkey	Ertuna et al., 2019[62]	Medication review provided by clinical pharmacists in a geriatric ward.	The process of implementation of clinical pharmacy in Turkey is ongoing and reviews need improvement.
USA	Yates et al., 2020[63]	Comparison between pharmacists' interventions in a cardiological ward and the alternative of no intervention.	The interventions provided by pharmacists lead to fewer drug-related problems.
Iran	Shahrami et al., 2022[64]	Medication review provided by clinical pharmacists in outpatient pharmacotherapy clinic.	High patient compliance with the proposed recommendations.

ognizing and effectively addressing these factors is crucial to maximizing the benefits of medication reviews. In this regard, employing a SWOT analysis proves to be a valuable tool. A SWOT analysis is a strategic planning tool that assesses the **S**trengths, **W**eaknesses, **O**pportunities, and **T**hreats related to a specific initiative or situation. Conducting a thorough medication review can be time-consuming for healthcare professionals.[9] This may be a challenge in busy clinical settings where time and resources are limited. Additionally, there may be variations in how medication reviews are conducted, and standards for what constitutes a comprehensive review may differ. This lack of standardization could lead to variability in the quality of reviews.[10] Another obstacle is the limited access to patient information.[66] Incomplete or inaccurate patient information may hinder the effectiveness of a medication review. If a healthcare provider does not have access to the patient's complete medical history or medication list, it may be challenging to make informed decisions. Even after identifying issues and recommending changes, patients may not always adhere to the proposed medication regimen. Non-adherence can limit the success of interventions suggested during the review. Some healthcare providers' resistance to change may be a problem when changing established medication regimens, particularly if there is uncertainty about the potential benefits or if they are accustomed to a particular approach. In some cases, healthcare systems may lack effective integration, making it difficult to share comprehensive patient information across different care settings. This can impede coordination during transitions of care. Medication reviews may not always fully consider patient preferences and goals, potentially leading to a mismatch between the prescribed regimen and the patient's lifestyle or values.[67] Changes to medication regimens, even when well-intentioned, can have unintended consequences. For example, discontinuing a medication may result in symptom recurrence or exacerbation of a condition.[68]

Despite these potential disadvantages, the overall goal of medication reviews is to enhance patient safety, optimize therapeutic outcomes, and improve quality of life. Addressing these challenges through collaboration, standardized processes, and patient engagement can help mitigate potential drawbacks associated with medication reviews.

We constructed a SWOT analysis to identify strengths and weaknesses, as well as opportunities and threats related to the implementation of medication review tools **(Fig. 2)**.

Medication review tools provide a data-driven approach to assessing medication regimens, helping healthcare providers make informed decisions based on evidence and patient-specific factors. On the other hand, one of the weaknesses is that medication review using tools is resource intensive. Conducting thorough medication reviews can be time-consuming, and implementation may require additional resources, which could be a limitation in busy healthcare settings. There may be variations in how tools are used or interpreted, leading to inconsistencies in the medication review process. Some tools may not fully capture patient preferences or factors affecting medication adherence, potentially overlooking crucial aspects of the patient's experience. Tools that rely on technology may face challenges in terms of accessibility, usability, and integration with existing healthcare systems.

The opportunities are related to advancements in technology. Opportunities exist to leverage advancements in

STRENGTHS

- Enhanced patient safety
- Improved medication adherence
- Efficiency and standartization
- Interdisciplinary collaboration
- Data-driven decision making

WEAKNESS

- Resource intensive
- Lack of standartization
- Limited patient input
- Technological barriers

OPPORTUNITIES

- Advancements in technology
- Education and training
- Patient engagement
- Telehealth integration

THREATS

- Resistance to change
- Data privacy and security concerns
- Reimbursement challenges
- Regulatory constraints

Figure 2. SWOT analysis of the use of medication review tools for managing polypharmacy (created via Canva.com).

technology, such as electronic health records and clinical decision support systems, to enhance the efficiency and effectiveness of medication review tools. Investing in education and training healthcare professionals on medication review tools can improve their adoption and effectiveness. Integrating tools that promote patient engagement and shared decision-making can enhance the overall success of medication reviews. The increasing use of telehealth provides an opportunity to integrate medication review tools into virtual care settings, improving accessibility and continuity of care.

Threats are in the first place the resistance to change. Healthcare providers may resist adopting new tools or changing established practices, particularly if there is skepticism about the benefits or concerns about disruptions to workflow. The use of technology in medication review tools raises concerns about data privacy and security, especially given the sensitive nature of healthcare information. Reimbursement policies may not adequately support the time and resources required for comprehensive medication reviews, posing a financial challenge for healthcare organizations. Regulatory constraints or changing guidelines may impact the implementation and use of medication review tools.

This SWOT analysis provides an overview of the factors influencing the use of tools for medication review. Addressing weaknesses and threats while capitalizing on strengths and opportunities can help optimize the integration and impact of these tools in healthcare settings.

CONCLUSION

The management of polypharmacy is a systematic approach that optimizes care for multimorbid patients by maximizing benefits while simultaneously reducing patient safety risks. Medication review tools contribute to identifying and mitigating potential risks, improving patient safety by reducing the likelihood of adverse drug events. The use of tools can help healthcare providers identify barriers to medication adherence and develop strategies to enhance patient compliance. Tools facilitate a more efficient and standardized approach to medication reviews, ensuring that healthcare professionals follow evidence-based guidelines and protocols. Tools promote collaboration among healthcare professionals, including pharmacists, physicians, and other team members, fostering a comprehensive and holistic approach to patient care. The extent and nature of medication review services can vary widely even within regions or countries. The adoption of these practices often depends on the specific healthcare policies, regulatory frameworks, and the integration of pharmacists into the healthcare team. The aim, however, is universal: to ensure that patients receive the most appropriate and safe medication regimens tailored to their individual needs.

Conflict of Interest

We have no conflicts of interest to disclose

REFERENCES

1. Okpechi IG, Tinwala MM, Muneer S, et al. Prevalence of polypharmacy and associated adverse health outcomes in adult patients with chronic kidney disease: protocol for a systematic review and meta-analysis. Syst Rev 2021; 10(1):1–7.
2. Mair A, Wilson M, Dreischulte T. Addressing the challenge of polypharmacy. Annu Rev Pharmacol Toxicol 2020; 60:661–81.
3. Sarkar S. Geriatric poly-pharmacy: a growing epidemic. How to prevent it. Br J Med Med Res 2017; 21(1):1–1.
4. Hoel RW, Connolly RM, Takahashi PY. Polypharmacy management in older patients. Mayo Clinic Proceedings 2021; 96(1):242–56.
5. Kuluski K, Ho JW, Hans PK, et al. Community care for people with complex care needs: bridging the gap between health and social care. Int J Integr Care 2017; 17(4):2.
6. Kurczewska-Michalak M, Lewek P, Jankowska-Polańska B, et al. Polypharmacy management in the older adults: a scoping review of available interventions. Front Pharmacol 2021; 12:734045.
7. Huiskes VJ, Burger DM, Van den Ende CH, et al. Effectiveness of medication review: a systematic review and meta-analysis of randomized controlled trials. BMC Family Practice 2017; 18:1–5.
8. Centre (UK) NM and P. Medication review [Internet]. www.ncbi.nlm.nih.gov. National Institute for Health and Care Excellence (NICE); 2015. Available from: https://www.ncbi.nlm.nih.gov/books/NBK355921/
9. Dalin DA, Vermehren C, Jensen AK, et al. Systematic medication review in general practice by an interdisciplinary team: a thorough but laborious method to address polypharmacy among elderly patients. Pharmacy 2020; 8(2):57.
10. Rose O, Cheong VL, Dhaliwall S, et al. Standards in medication review: an international perspective. Can Pharm J 2020; 153(4):215–23.
11. NICE Medicines and Prescribing Centre (UK). Medicines Optimisation: The Safe and Effective Use of Medicines to Enable the Best Possible Outcomes. Manchester: National Institute for Health and Care Excellence (NICE); 2015 Mar. (NICE Guideline, No. 5.) 8, Medication review. Available from: https://www.ncbi.nlm.nih.gov/books/NBK355921/
12. Renfro CP, Turner K, Desai R, et al. Implementation process for comprehensive medication review in the community pharmacy setting. J Am Pharm Assoc 2019; 59(6):836–41.
13. De Bock L, Tommelein E, Baekelandt H, et al. The introduction of a full medication review process in a local hospital: successes and barriers of a pilot project in the geriatric ward. Pharmacy 2018; 6(1):21.
14. McCahon D, Denholm RE, Huntley AL, et al. Development of a model of medication review for use in clinical practice: Bristol medication review model. BMC Medicine 2021; 19:1–0.

Folia Medica

15. Masnoon N, Shakib S, Kalisch-Ellett L, et al. Tools for assessment of the appropriateness of prescribing and association with patient-related outcomes: a systematic review. Drugs & Aging 2018; 35:43–60.

16. Walsh KA, O'Riordan D, Kearney PM, et al. Improving the appropriateness of prescribing in older patients: a systematic review and meta-analysis of pharmacists' interventions in secondary care. Age Ageing 2016; 45(2):201–9.

17. Thevelin S, Mounaouar LE, Marien S, et al. Potentially inappropriate prescribing and related hospital admissions in geriatric patients: a comparative analysis between the STOPP and START criteria versions 1 and 2. Drugs & Aging 2019; 36:453–9.

18. Geurts MM, Talsma J, Brouwers JR, et al. Medication review and reconciliation with cooperation between pharmacist and general practitioner and the benefit for the patient: a systematic review. Br J Clin Pharmacol 2012; 74(1):16–33.

19. Zermansky AG, Petty DR, Raynor DK, et al. Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving repeat prescriptions in general practice. BMJ 2001; 323(7325):1340.

20. Jones E, et al. Polypharmacy and multimorbidity. In: Ferguson R, Burton J, eds. Pharmacy Management of Long-Term Medical Conditions. 1st Ed. London: Pharmaceutical Press; 2021: pp 336–60.

21. American Geriatrics Society. American Geriatrics Society 2023 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. J Am Geriatr Soc [Internet] 2023; 71(7). Available from: https://agsjournals.onlinelibrary.wiley.com/doi/full/10.1111/jgs.18372

22. Lewis T. Using the NO TEARS tool for medication review. BMJ 2004; 329(7463):434.

23. Hilmer SN. Calculating and using the drug burden index score in research and practice. Expert Rev Clin Pharmacol 2018; 11(11):1053–5.

24. Salahudeen MS, Duffull SB, Nishtala PS. Anticholinergic burden quantified by anticholinergic risk scales and adverse outcomes in older people: a systematic review. BMC Geriatrics 2015; 15(1):1–4.

25. Holt S, Schmiedl S, Thürmann PA. Potentially inappropriate medications in the elderly: the PRISCUS list. Dtsch Arztebl Int 2010; 107(31-32):543–51.

26. Basger BJ, Chen TF, Moles RJ. Application of a prescribing indicators tool to assist in identifying drug-related problems in a cohort of older Australians. Int J Pharm Practice 2012; 20(3):172–82.

27. Poh AW, Teo SP. Utility of frailty screening tools in older surgical patients. Ann Geriatr Med Res 2020; 24(2):75.

28. Petkova VB, Petrova GI. Pilot project for education of patients with type 2 diabetes by pharmacists. Acta diabetologica 2006; 43:37–42.

29. Campbell CI, Weisner C, Binswanger IA, et al. Predictors of healthcare effectiveness data and information set (HEDIS) treatment initiation and engagement among patients with opioid use disorder across 7 health systems. Substance Abuse 2019; 40(3):328–34.

30. Anlay DZ, Paque K, Van Leeuwen E, et al. Tools and guidelines to assess the appropriateness of medication and aid deprescribing: An umbrella review. Br J Clinic Pharmacol 2024; 90(1):12–06.

31. RxISK Polypharmacy Index – RxISK [Internet]. rxisk.org. 2015 [cited 2024 Jan 28]. Available from: https://rxisk.org/tools/polypharmacy-index/

32. Lavan AH, Gallagher P, Parsons C, et al. STOPPFrail (Screening Tool of Older Persons Prescriptions in Frail adults with limited life expectancy): consensus validation. Age Ageing 2017; 46(4):600–7.

33. Naugler CT, Brymer C, Stolee P, et al. Development and validation of an improving prescribing in the elderly tool. Can J Clin Pharmacol 2000; 7(2):103–7.

34. Lapane KL, Cameron K, Feinberg J. Technology for improving medication monitoring in nursing homes. In: Henriksen K, editor. Vol. 4. Advances in Patient Safety: From Research to Implementation. 2005; 4:410–3.

35. Onder G, Landi F, Fusco D, et al. Recommendations to prescribe in complex older adults: results of the CRIteria to assess appropriate Medication use among Elderly complex patients (CRIME) project. Drugs Aging 2014; 31(1):33–45.

36. Levy HB. Polypharmacy reduction strategies: tips on incorporating American Geriatrics Society Beers and screening tool of older people's prescriptions criteria. Clin Geriatr Med 2017; 33(2):177–87.

37. Alturki A, Alaama T, Alomran Y, et al. Potentially inappropriate medications in older patients based on Beers criteria: a cross-sectional study of a family medicine practice in Saudi Arabia. BJGP Open 2020;4(1).

38. Viana SD, Souza NP, Aliberti MJ, et al. Use of potentially inappropriate medications and adverse events in older outpatients with acute conditions. Einstein (Sao Paulo) 2022; 20.

39. Shao Q, Xu Y, Li M, et al. Research on Beers Criteria and STOPP/START Criteria based on the FDA FAERS database. Eur J Clin Pharmacol 2021; 77(8):1147–56.

40. Steinman MA, Beizer JL, DuBeau CE, et al. How to use the American Geriatrics Society 2015 Beers Criteria – a guide for patients, clinicians, health systems, and payors. J Am Geriatr Soc 2015; 63(12):e1–7.

41. Alshehri S, Alshibani M, Magboul G, et al. Adherence to Beers criteria in geriatrics: A retrospective study in a Saudi teaching hospital. Geriatrics 2020; 5(4):97.

42. Aparasu RR, Mort JR. Inappropriate prescribing for the elderly: Beers criteria-based review. Ann Pharmacother 2000; 34(3):338–46.

43. Brown JD, Hutchison LC, Li C, et al. Predictive validity of the Beers and STOPP Criteria to detect adverse drug events, hospitalizations, and emergency department visits in the United States. J Am Geriatr Soc 2016; 64(1):22.

44. Monzón-Kenneke M, Chiang P, Yao N, et al. Pharmacist medication review: An integrated team approach to serve home-based primary care patients. Plos One 2021; 16(5):e0252151.

45. Fernandes BD, Almeida PH, Foppa AA, et al. Pharmacist-led medication reconciliation at patient discharge: a scoping review. Res Social Adm Pharm 2020; 16(5):605–13.

46. Smith M, Bates DW, Bodenheimer TS. Pharmacists belong in accountable care organizations and integrated care teams. Health Affairs 2013; 32(11):1963–70.

47. Yuan C, Ding Y, Zhou K, et al. Clinical outcomes of community pharmacy services: A systematic review and meta-analysis. Health Soc Care Community 2019; 27(5):e567–87.

48. Marín-Gorricho R, Lozano C, Torres C, et al. Impacto de la atención farmacéutica en pacientes polimedicados ingresados en un servicio de Geriatría. [Impact of pharmaceutical care in polymedicated patients admitted to a geriatric ward]. Anales del sistema sanitario de Navarra. 2022;45(1):e0990.

49. Kamusheva M, Ignatova D, Golda A, et al. The potential role of the pharmacist in supporting patients with depression – a literature-based point of view. Integr Pharm Res Pract 2020; 49–63.

50. Blom L, Krass I. Introduction: the role of pharmacy in patient education and counseling. Patient Education and Counseling 2011; 83(3):285–7.

51. Lebanova H, Balkanski S, Naseva E, et al. What does self-medication counseling in Bulgarian community pharmacies look like – a field study. Pharmacia 2020; 67(4):289–93.

52. Fendrich M, Bryan JK, Hooyer K. Prescription drug monitoring programs and pharmacist orientation toward dispensing controlled substances. Subst Use Misuse 2018; 53(8):1324–30.

53. Jokanovic N, Tan EC, Sudhakaran S, et al. Pharmacist-led medication review in community settings: An overview of systematic reviews. Res Social Adm Pharm 2017; 13(4):661–85.

54. Freeman PR, Curran GM, Drummond KL, et al. Utilization of prescription drug monitoring programs for prescribing and dispensing decisions: Results from a multi-site qualitative study. Res Social Adm Pharm 2019; 15(6):754–60.

55. Pereira F, Von Gunten A, Rosselet Amoussou J, et al. Polypharmacy among home-dwelling older adults: the urgent need for an evidence-based medication management model. Patient Preference and Adherence 2019: 2137–43.

56. Cason JB, Rein LJ, Atchley DH, et al. Impact of a pharmacist-led, primary medication nonadherence intervention program on prescription fills in underserved patient populations. J Am Pharmac Assoc 2023; 63(4):1057–1063.e2.

57. Krska J, Cromarty JA, Arris F, et al. Pharmacist-led medication review in patients over 65: a randomized, controlled trial in primary care. Age Ageing 2001; 30(3):205–11.

58. Riordan DO, Walsh KA, Galvin R, et al. The effect of pharmacist-led interventions in optimising prescribing in older adults in primary care: a systematic review. SAGE Open Medicine 2016; 4:2050312116652568.

59. Aguiar PM, Brito GD, Lima TD, et al. Investigating sources of heterogeneity in randomized controlled trials of the effects of pharmacist interventions on glycemic control in type 2 diabetic patients: a systematic review and meta-analysis. PLoS One 2016; 11(3):e0150999.

60. Malet-Larrea A, Goyenechea E, Gastelurrutia MA, et al. Cost analysis and cost-benefit analysis of a medication review with follow-up service in aged polypharmacy patients. Eur J Health Econom 2017; 18:1069–78.

61. De Barra M, Scott CL, Scott NW, et al. Pharmacist services for non-hospitalised patients. Cochrane Database of Systematic Reviews 2018; 9(9).

62. Ertuna E, Arun MZ, Ay S, et al. Evaluation of pharmacist interventions and commonly used medications in the geriatric ward of a teaching hospital in Turkey: a retrospective study. Clin Interv Aging 2019: 587–600.

63. Yates L, Valente M, Wadsworth C. Evaluation of pharmacist medication review service in an outpatient heart failure clinic. J Pharm Pract 2020; 33(6):820–6.

64. Shahrami B, Sefidani Forough A, Najmeddin F, et al. Identification of drug-related problems followed by clinical pharmacist interventions in an outpatient pharmacotherapy clinic. J Clin Pharm Therapeut 2022; 47(7):964–72.

65. Baqir W, Hughes J, Jones T, et al. Impact of medication review, within a shared decision-making framework, on deprescribing in people living in care homes. Eur J Hosp Pharm 2017; 24(1):30.

66. Hammer A, Wagner A, Rieger MA, et al. Assessing the quality of medication documentation: development and feasibility of the MediDocQ instrument for retrospective chart review in the hospital setting. BMJ Open 2019; 9(11):e034609.

67. Louw JM, Marcus TS, Hugo JF. Patient– or person-centred practice in medicine? – A review of concepts. Afr J Prim Health Care Fam Med 2017; 9(1):1–7.

68. Kirby MG, Allchorne P, Appanna T, et al. Prescription switching: rationales and risks. Int J Clin Pract 2020; 74(1):e13429.

Управление полипрагмазией с помощью инструментов обзора лекарств – плюсы и минусы

Евелина Гавазова[1], Радиана Стайнова[1], Даниела Грекова-Кафалова[1]

[1] *Кафедра организации и экономики фармации, Факультет фармации, Медицинский университет - Пловдив, Пловдив, Болгария*

Адрес для корреспонденции: Евелина Гавазова, Кафедра организации и экономики фармации, Факультет фармации, Медицинский университет - Пловдив, бул. „Васил Априлов" № 15А, 4002 Пловдив, Болгария; Email: evelina.gavazova@mu-plovdiv.bg

Резюме

Неуместная полипрагмазия является частым явлением у пожилых пациентов, что приводит к увеличению побочных реакций на лекарства, несоблюдению режима лечения и увеличению затрат на здравоохранение. Обзор и отмена назначения лекарств являются основными стратегиями, описанными в литературе для борьбы с проблемной полипрагмазией. Для эффективного проведения обзора лекарств были разработаны различные инструменты. Эти инструменты могут помочь в анализе лекарств различными способами. Некоторые инструменты включают список лекарств, требующих пристального внимания, а другие знакомят медицинских работников с принципами и алгоритмами проверки и назначения лекарств. Третья категория инструментов направлена на отслеживание и выявление симптомов, которые могут быть связаны с проблемами, связанными с наркотиками.

Целью этой статьи является представление инструментов поддержки обзора лекарств, используемых при лечении полипрагмазии у гериатрической популяции, подчёркивая их преимущества и недостатки.

Ключевые слова

пожилые люди, обзор лекарств, фармацевт, полипрагмазия, инструменты