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Deprescribing To Improve Polypharmacy

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Polypharmacy is defined as an irrational use of medicines where the number of drugs prescribed to a patient can be considered excessive [1]. It is estimated that more than 50% of all drugs prescribed are unnecessary [2]. It is also estimated that 50 percent of all the patients fail to take these medicines correctly, thereby compounding the problem [2].

Some authors define Polypharmacy as the use of a greater number of drugs than clinically indicated [3]. The main issue with Polypharmacy is duplication of therapy, antagonist effects and non-compliance. It becomes quite difficult for patients to comply with taking medicines once they go above four. As a result patients dispose of large quantities of expired or unused medicines from time to time. This leads to escalating health funder's cost both in public and private sector.

The concurrent use of multiple medications has been shown to increase admissions to the hospital, and mortality due to interactions. It is estimated that Adverse Drug Reactions represent the fourth leading cause of death in the United States and Canada behind heart diseases, cancer, and stroke. And the sixth leading cause of death worldwide [4].

Several components contribute to polypharmacy e.g. multiple prescriptions from different prescribers, as well as self-medication. This results in duplication of therapy, drug-drug interactions and disease-drug interactions.

Observational Study at a Public Hospital
The researcher conducted a study at a public hospital, using Medscape's Interaction Checker to verify interactions. The aim was to improve compliance and develop strategies to improve polypharmacy. Patients on chronic medication serviced by the hospital were selected, and 250 prescriptions were randomly selected over March 2019 and May 2021.

The study found a higher number of interactions than expected. They ranged from "monitor closely", "serious adverse drug events – avoid" to "contra-indicated". The examples of more concerning drug interactions that were observed are given below according to their seriousness:

A. Contra-Indications
The interaction between Amitriptyline and Indapamide; Promathazine and Indapamide all cause the increase in QTc interval. This may increase risk of sudden death in elderly population.

B. Serious Adverse Drug Events
The following drugs though not contraindicated are not recommended to be used together because of the seriousness of the side effects: Perindopril and Allopurinol: There is a high risk of developing an anaphylaxis and Stevens Johnson Syndrome. Perindopril and Pregabalin: their co-administration results in additive risk of developing angioedema of the face, neck and mouth.

Risk Factors for Polypharmacy
What the researcher observed was that clinic visits or consultations usually last for about 15-20 minutes. Perhaps, not sufficient for a comprehensive pharmaceutical review. The inaccessibility of full medical history may hinder a prescriber from stopping a particular drug if not sure why it was initiated.

Literature review found that Age Factor: meaning patients older than 60 years were mostly affected by polypharmacy. Globally the number of older patients is increasing and with this the potential for polypharmacy [5].

The other two groups of patients who may require multiple agents are those with multiple comorbidities irrespective of age and mental health status [6]. For example, Multiple chronic conditions (e.g., pain conditions, diabetes mellitus, coronary artery disease, cerebrovascular disease, cancer, etc.). Also seeing multiple subspecialists was seen as a significant contributing factor to polypharmacy and poor medical record keeping [6].

Strategies to Minimise Polypharmacy
Deprescribing is one of the most significant means that can be utilized to improve polypharmacy. Deprescribing is a "Systematic process of identifying and discontinuing drugs in instances in which existing or potential harms outweigh existing or potential benefits within the context of an individual patient's care goals, current level of functioning, life expectancy, values and preferences" [7].

Deprescribing can help reduce drugs that are potentially harmful or no longer needed, more so in your elderly population that is most affected [8]

Also to pay attention to are prescription medications that may increase a patient's risk of adverse health outcomes, given the availability of safer alternatives, sometimes more effective medicines or where the risk of therapy outweighs the benefits [9]. This is what is commonly known as the "Inappropriate Prescribing". For example in some instances the patient will be better of with the condition left untreated, or treated with non-pharmacological means. Inappropriate prescribing also involves overprescribing and prescribing cascades.

Prescribing Cascades is defined as the situation in which a first drug administered to a patient causes side effects and symptoms that are misinterpreted as a new condition, resulting in a new medication being prescribed [10].

It is important to apply the principle of "Do No Harm", consider non-pharmacological interventions and only prescribe if drug is really needed. Therefore, it is important to match each medication to a diagnosis on reviewing patient's medication. Assess risk for accidental overdosing due to forgetfulness especial in much older population of 75 years and above [11].

Tools and Frameworks for Deprescribing

It is important to conduct drug reviews within reasonable periods and discontinue drugs that are of concern or no longer needed. The following are some of the tools and frameworks available for rational prescribing:

BEERS Criteria: This is the American Geriatrics Society (AGS) medication tool for Geriatrics (patients 65 years old and above).
START: Screening Tool to Alert to Right Treatment
STOPP: Screening Tool of Older Person's Prescriptions
IGRIMUP: International Group for Reducing Inappropriate Medication Use and Polypharmacy
DRUGS: Discuss, Review, Use tools, Geriatric Medicine approach and Stop inappropriate drugs where applicable

Beers Criteria as an Example

The researcher is choosing this tool because it is specifically for the geriatric population. This population we already know that is the most affected by the polypharmacy and adverse drug events. It is a tool that is maintained by the American Geriatrics Society for medication that should be avoided in older Adults. It highlights potential inappropriate medications, medications to avoid with certain conditions, medicines to be used with considerable caution, medication combination that may lead to harmful interactions, list of medications to be avoided or dosed differently e.g. in poor renal function [12].

The tool includes the list of medications to be avoided in over 65+ Category A (Inappropriate Drug Use) Severity rating HIGH. This essentially means avoid this drug for this population [12]. Some of the drugs under this category include: Chlorpheniramine (Allergex®), Hyoscine Butyl Bromide (Buscopan®), Diphenhydramine (DPH), Diazepam (Valium®), Bisacodyl (Dulcolax®), Amitriptyline (Trepiline®), Nitrofurantoin (Macrodantin®), Amiodarone (Cordarone®), and more [12].

Recommendations

The researcher would highly recommend the use of Tools, Frameworks, and APPs like Essential Medicine Guidance and Medscape Interaction Checker. Tools and Frameworks will help eliminate inappropriate prescribing and reduce polypharmacy. The researcher would encourage forming multi-disciplinary teams for example the inclusion of pharmacists in clinical teams. Pharmacists can help other healthcare professionals navigate drug utilization reviews with ease.

Conclusion

The study found numerous drug-drug interactions, disease-drug interactions and unused medicines returns. Evidence in the literature supports the idea that deprescribing will minimise drug-drug and drug-disease interactions and will improve compliance. In turn, will reduce hospital costs associated with complications as a result of drug-drug and drug-disease interactions.

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