Pharmacologic Issues in Management of Chronic Disease

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KEYWORDS

• Polypharmacy • Inappropriate prescribing • Adherence • Adverse drug events

KEY POINTS

- As the number of medications that patients are prescribed increases, an increase in pharmacologic-related issues and complications may occur, such as polypharmacy, inappropriate prescribing, medication nonadherence and nonpersistence, and adverse drug reactions and events.
- By attempting to reduce polypharmacy, inappropriate prescribing, medication nonadherence and nonpersistence, and adverse drug events, health care professionals will improve patient safety and well-being, and optimize medical management of chronic disease.

More often than not, the management of chronic diseases is coupled with the use of multiple medications. The number of medications that each individual takes is determined by a variety of factors and greatly depends on the patient's underlying conditions, health status, and related health beliefs. Medication use does not only include prescription medications but also involves over-the-counter medications, vitamins, minerals, herbal products, and dietary supplements that are available without a prescription.

Prevalence of medication use in the United States has been well documented. The 2006 Slone Survey, a telephone survey of 2529 ambulatory patients 18 years and older, revealed that 82% of participants had taken at least 1 medication (prescription, over-the-counter, vitamin, mineral, herbal, or supplement) during the week prior, 29% had taken at least 5, and 7% had taken at least 10. The survey also found that 52% had taken at least one prescription medication within the previous week and 12% had taken 5 or more.[1] A survey study of 2976 community-residing adults aged 57 to 85 years reported that 81% of adults used at least 1 prescription medication and 29% used at least 5 prescription medications.[2] In addition, a cross-sectional study

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was completed in 3070 patients aged 75 years and older enrolled in the Ginkgo Evaluation of Memory Study to examine the use of prescription drugs and dietary supplements. This study found that nearly 90% of patients were using at least 1 prescription drug and approximately 60% of patients were using at least 3 prescription drugs. In addition, more than 80% of the cohort patients were using at least 1 dietary supplement and about 50% were using at least 3. The average number of prescription drugs per patient was 3.5 (range 0–18), and the average number of dietary supplements per person was 3.4 (range 0–17).[3]

Management of chronic disease heavily relies on the use of medications. This fact is of great importance because chronic diseases have emerged as the leading cause of morbidity and mortality in the United States.[4] As a result, more medications will be prescribed, which may result in increasing numbers of pharmacologic-related problems and complications, including polypharmacy, inappropriate prescribing (IP), medication nonadherence and nonpersistence, and adverse drug reactions and events.

POLYPHARMACY

Multiple definitions for polypharmacy are used throughout the literature, but it is most often defined in one of two ways. The first relates to an absolute number of medications. This number varies and may range from 2 to 9 medications.[5] A literature review of 16 studies related to polypharmacy found that of 7 studies that defined polypharmacy, 4 defined it as the use of 5 or more medications.[6] This definition can be limiting, as it implies that patients should not be on 5 or more medications when, in fact, patients may require numerous medications for the management of chronic disease. Patients often suffer from multiple chronic diseases, each requiring multiple medications as per guideline recommendations to be adequately treated.

The second definition for polypharmacy involves the use of more medications than are clinically indicated.[5] With this definition, medications without an indication or lacking efficacy for a condition and therapeutic duplications would be considered unnecessary, and therefore labeled as polypharmacy. This definition takes into account medication appropriateness and requires a thorough review of each medication. The incidence and prevalence of polypharmacy thus varies depending on which definition is used. For example, one may look at prevalence of medication use as already described or IP prevalence, discussed in more detail later.

Risk Factors

Polypharmacy has been investigated frequently in the elderly.[5–9] Several risk factors for polypharmacy have been identified and include increased age, white race, increased numbers of health care visits, supplemental insurance, and seeing multiple providers.[5,10] In addition, several characteristics related to health increase the risk for polypharmacy, including overall poorer health status, depression, hypertension, anemia, asthma, angina, diverticulosis, osteoarthritis, gout, diabetes mellitus, and the use of 9 or more medications.[5] In the Kuopio 75+ Study conducted in Finland, investigators evaluated factors associated with polypharmacy (defined as 6–9 drugs) and excessive polypharmacy (defined as 10 or more drugs) in home-dwelling individuals age 75 years and older. Characteristics associated with excessive polypharmacy included age 85 years and older, female gender, and moderate self-reported health (in contrast to good or poor self-reported health). Poor self-reported health and diagnoses of chronic obstructive pulmonary disease, diabetes, depression, heart disease, and pain were all significantly associated with both polypharmacy and excessive