Editor-in-Chief's Note

Polypharmacy, Pill Burden, and Optimizing the Medicine Cabinet

Richard I. Shader, MD

I recently purchased a 4 × 7—cell pill dispenser for a relative and spent quite some time making sure that each of the 28 mini-boxes was correctly filled. Some of the boxes contained antihypertensive agents—three different ones. About a week later, my own physician changed my antihypertensive regimen; two of my three drugs are now different. In my mind these are examples of *polypharmacy*—two or more medications being prescribed simultaneously for the same clinical indication. However, this is only one definition of *polypharmacy*. A more frequently used definition is "the contemporaneous use by the same patient of numerous drugs for one or more clinical conditions." Some suggest that the number of drugs should be five or more for the term *polypharmacy* to be applicable.[1,2] Masnoon et al[1] review the pros and cons of various definitions of *polypharmacy* and conclude that a single, universally accepted definition is needed.

Linked to polypharmacy is the concept of *pill burden*. According to estimates from the Centers for Disease Control and Prevention, in the United States, about one in four people, regardless of age, has taken three or more prescription drugs within the past month, and about one in eight persons has taken five or more drugs.[3] In persons aged 65 years or older, the estimated percentage taking five or more different prescription drugs is about 41%. When assessing pill burden, clinicians should always enquire about over-the-counter products (OTCs). OTCs are similar to prescription drugs except often at reduced dosage strengths. Herbal and botanical products, as well as some foods, must also be considered, especially since some may affect the metabolism of orally administered prescription drugs. Grapefruits and grapefruit juice are well-known examples of the latter.[4,5]

Polypharmacy sometimes occurs when the side effects of a drug are treated by a physician's giving another drug instead of trying to find a drug that has the same primary effect without causing unwanted effects. Polypharmacy may be the cause of nonadherence in patients who feel they are taking too many pills, or who get confused about what pills to take and when to take them. I have even encountered situations in which patients were not taking a drug because they could not afford to take so many. Often when a new dosage strength is prescribed, there are leftover pills from the prior dosage level. It is incumbent on all prescribing clinicians to assess periodically what their patients are actually taking and what they have done with any unused pills.

Polypharmacy can contribute to overstuffed medicine cabinets. I have heard of cases in which a crowded medicine cabinet led to patients' ingesting the wrong drug. Here are some common-sense guidelines to provide to patients to reduce potential self-inflicted medication problems by cleaning out their medicine cabinets or other storage places. They should remove and properly dispose of drugs that:

Are improperly labeled
Are not in their original containers
Do not belong to the person(s) using the medicine cabinet (different shelves should be used when a cabinet is shared)
Are beyond the expiration date, even though some drugs may have shelf lives that go beyond their expiration date, which is usually 1 year after the dispensing pharmacist opened the master container
Do not "look right" (crumbled, discolored)
Were prescribed for a problem that is no longer present ("leftovers"), which is of particular concern with opioid analgesics (aka "pain killers") and antibiotics

It is essential that unused drugs be disposed of properly. Many pharmacies, police stations, and city halls have collection receptacles. For patients for whom these receptacles are not available or convenient, the US Food and Drug Administration has provided easy-to-follow disposal guidelines.[6]

DISCLOSURES

As 2019 comes to an end, I reflect on the progress we have made at *Clinical Therapeutics* this year. Our editorial team devoted much time to the topic of ethics and bias in scientific publishing. It is the ethical obligation of scientific journals to make every effort to ensure that information presented is accurate and that any sources of bias are fully transparent. Notice that I am not saying *free of* bias. Bias can exist in many forms. Financial interests are the most obvious, but other sources exist, such as being a competitor of a rival product or an alternative scientific hypothesis. Almost every year we receive submissions accompanied by statements from the author(s) indicating that they have no conflicts of interests (CoIs). However, from the journal's perspective, CoIs may exist. For example, an author may be an employee of the company that is the sponsor of the study product. The author may believe that no CoI exists because he or she does not own stock in the sponsoring company. However, an author's future employment, bonuses, or promotions may hinge on the success of the study product.

We published an Advisory earlier this year indicating that we require full disclosure of all relevant factors and relationships.[7] Readers can then decide how they wish to weigh this information. I also participated in a panel at the annual meeting of the International Society of Medical Publication Professionals that focused on these issues.[8] As a result, two other panel members have written a Commentary covering what needs to be disclosed and why, which appears in this issue.[9]

SEASON'S GREETINGS

I would like to thank our publishing team at Elsevier, our editorial team, authors, and reviewers for another successful year at *Clinical Therapeutics*. I wish you all a joyful and peaceful holiday season and a Happy New Year.

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