



# Prescription Writing to Maximize Patient Safety

*These tips can help you avoid two important causes of prescription error.*

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**T**he Institute of Medicine's 1999 report, *To Err Is Human: Building a Safer Health System*,<sup>1</sup> and the 2001 follow-up report, *Crossing the Quality Chasm: A New Health System for the 21st Century*,<sup>2</sup> have appropriately provoked interest and debate regarding the scope, severity and detrimental impact of medication errors on individual patients and health care systems. Though some have disputed the reported 7,000 deaths annually attributed to medication errors and the \$37.6 billion price tag for adverse medical events,<sup>1</sup> it is clear that errors are a pervasive and cumbersome problem. This problem need not be insurmountable. In this article, we review two categories of prescription-based errors and suggest simple techniques you can use to prevent these medication errors and build a safer health system.

## Distractions

Regulators and patients implicitly expect undivided physician attention and caution when prescribing medications and have accorded prescribing privileges based upon competence and constancy. However, modern physician-patient encounters are increasingly marked by competing demands for limited physician attention. Compressed

within individual encounters is the need to address the patient's presenting concern while updating health histories, documenting adherence to disease-specific guidelines, selecting and ordering preventive care services, promoting healthy lifestyles, defusing Internet-induced anxieties and navigating capricious insurance protocols. Concurrently, a background cacophony of unscheduled yet daily intrusions, such as pages, telephone calls and meetings, further disrupts patient care. Acknowledging and reducing these distractions are integral to decreasing medication errors and protecting prescribing privileges.

Though seemingly innocuous, disruptions and distractions account for a large portion of errors in all professional fields. Health care is not spared. In pharmacotherapy, approximately three quarters of transcription errors can be traced to distractions.<sup>3</sup> Strategies used in other industries for reducing distractions include separating cognitive activities from secondary tasks and guarding cognitive performance with both physical and temporal

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**Modern physician-patient encounters are increasingly marked by competing demands for limited physician attention.**



Recent reports show that medical errors are a pervasive and cumbersome problem.



Modern physician-patient encounters are increasingly marked by competing demands for limited physician attention.



Reducing distractions is integral to decreasing medication errors and protecting prescribing privileges.



This can be done by separating competing demands from the "prescribing moment."

## KEY POINTS

- Seven thousand deaths have been attributed annually to medication errors.
- Distractions account for a large portion of errors in all professional fields, including health care.
- Distortion errors are often caused by illegibility and misunderstood translations of symbols or abbreviations.

barriers. For example, though now recognized for their security purposes, airline cockpit doors were originally introduced to reduce pilot distractions. Additionally, acknowledging the role of fatigue on pilots' performance, federal laws mandate limits on their work hours. While neither law nor custom reduces distractions in medicine, distractions can be reduced within each patient encounter by separating competing demands from the cognitive activity necessary to safely complete the "prescribing moment."

Though not always perceptible to patients, clinical encounters progress through various stages, with the prescribing of a medication as the penultimate activity. Because the physician is concentrating on accessing information and transmitting it to paper or a digital assistant, this prescribing moment is typically the quietest time during the exam. Frequently, patients use this time to expand their presenting concerns, seek advice on unrelated conditions or return to a prepared list of questions.

To dedicate attention to the prescribing moment, temporarily delay the patient's additional comments via verbal or nonverbal cues. For example, say, "Let me complete your prescription, and then I'll answer your question" or "Once I finish this, we'll go over it together," or simply hold up a single finger as a delaying signal. Most patients expect and respect this dedicated prescribing time and realize that it is for their benefit. Rarely will you need to leave the room in order to reclaim a few moments for reflection and concentration.

**Distractions can be reduced by separating competing demands from the "prescribing moment."**

## Distortions

Distortions that occur when prescriptions are created or deciphered may lead to erroneous substitutions of whole medication regimens and generate severe errors. Because many distortions arise from illegibility and misunderstood translations of symbols or abbreviations, they are also some of the most remediable sources of medical errors.

Illegibility – the progeny of insufficient time – continues to plague pharmacists and patients. Since medications are the tangible cornerstones of therapy, the prescribing moment should be the last place for shortcuts. Any time saved by scrawling prescriptions is often lost in subsequent telephone tracking and delayed explanations. Though some view illegibility as a professional emblem or harmless quirk, reports of injuries secondary to poor handwriting continue to accumulate in the regulatory literature to the point that the Institute for Safe Medication Practices (ISMP) published a call to action to eliminate handwritten prescriptions by 2003 (see [www.ismp.org/msaarticles/whitepaper.html](http://www.ismp.org/msaarticles/whitepaper.html)).

Illegibility can be avoided with electronic prescription-entry devices and preprinted prescriptions. If these are unavailable, consider the prescription pad the therapeutic launchpad and dedicate the necessary time to make sure your plans are enacted correctly.

Here are some tips for preventing medication distortion errors in your practice:

**Keep it simple.** Limit each prescription to one medication, since multiple drugs and instructions may overlap and confuse the pharmacist.

**Regularly circle your preprinted name.** When using preprinted prescription pads that contain the names of all

the physicians in your group, circle your name so the pharmacist will know whom to contact for corrections or clarifications. Don't assume that one indecipherable signature is more remarkable than another.

**Approach medication names with caution.** An explosion of new drug releases and reformulations of those nearing the end of patent protection have flooded the marketplace. All vie for attention with look-alike neologisms and alliterative consonants.

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Distortion errors, which are often caused by illegibility, are some of the easiest prescribing errors to prevent.



Being aware of look-alike medication names and eliminating the use of drug abbreviations can prevent distortion errors.



Abbreviations can cause problems in drug and dosage information and medication directions and routes of administration.



Be sure that the number of pills prescribed matches the expected duration of treatment and necessary reassessment visits.

Collisions of meaning are occurring, and patients are receiving drugs with converging names yet diverging effects. In response to reports of unintended substitutions of medications, the U.S. Pharmacopeia has published a list of look-alike medications (see [www.usp.org/reporting/review/rev\\_066a.htm](http://www.usp.org/reporting/review/rev_066a.htm)). It's also important to eliminate drug abbreviations (e.g., TCN could mean triamcinolone or tetracycline). Despite attempts to standardize abbreviations, confusion and misapplication of effort continue to distort patient care. The ISMP has created a table of abbreviations that are consistently misunderstood (see [www.ismp.org/msaarticles/specialissuetable.html](http://www.ismp.org/msaarticles/specialissuetable.html)).

**Provide concise dosage information.**

Dose distortions result from the use of nonspecific abbreviations, antiquated measures and decimal placement confusion. The  $\mu$  symbol for units and micrograms is notorious for causing the multiplication of doses and provoking errant substitutions. Replace  $\mu$  with "units" to avoid corrupting prescriptions.

Apothecary and avoirdupois measures have largely gone the way of soda fountains. Drams, grains and minims mean little to modern care providers and are best relegated to museums. Today, metric measures are near universal and preferred by pharmacies and medication manufacturers. However, these measures may also contain seeds of errors in the placement of decimal points. Ten- and one-hundred-fold errors in drug strength and dosage have occurred with decimals due to the use of a trailing zero or the absence of a leading zero. To avoid this, include leading zeroes when using decimal expressions less than one (e.g., 0.05) and avoid using trailing zeroes after decimals (e.g., .50 resembles 50 and should not be used).

Also, consider adding the patient's age, especially in pediatric and geriatric populations, to promote drug and dose assurance. The patient's age (or weight) orients pharmacists during their checks of appropriate drug and dose. This step also helps avoid age-inappropriate prescriptions, such as quinolones for children.

**Distortions that occur when prescriptions are created or deciphered may generate severe errors.**

**Provide clear and specific directions.** Prescriptions such as "Coumadin 5 mg #100 Sig: as directed" are recipes for disaster. Writing only "Take as directed" begs the question "As directed by whom?" and invites misunderstandings and errors. Likewise, "prn" instructions are fertile ground for errors. Treat prn as one-third of a phrase in which a symptom and a specific dose pattern are the complementary components (e.g., "q 3 hours prn pain"). Most medications have narrow dosing regimens. Respect these, and accurately transfer them to prescriptions. Specifying directions reinforces care plans and prompts pharmacist counseling of patients. Error reduction relies upon these professional redundancies.

The use of abbreviations in medications' routes of administration are also common sources for medical errors. OD, OS, PR, AU and TIW may work if all your patients are Latin scholars, but these antiquated abbreviations confuse most others. If it's important to keep suppositories out of ears, write your directions in common English.

**Specify the therapeutic duration.** The number of prescribed pills should be matched to the expected duration of treatment and necessary reassessment visits. Keep therapeutic plans intact by writing for medicines in specific quantities (e.g., "dispense #90") rather than dispensing for time periods (e.g., "dispense for one year"). This especially applies when using bridging doses during active medication titration. Prescribing the specific number of doses necessary until reassessment compels patients to comply with follow-up appointments and prevents them from accumulating old medications. Similarly, match prescriptions for acute events to the total number of tablets needed to treat the single episode of care. For example, treat acute maxillary sinusitis one episode at a time. Adding extra tablets or refills for theoretic recurrences confuses the duration of therapy of the original illness.

Remain cognizant of lethal doses of medications. For example, tricyclic antidepressants should be prescribed in sublethal amounts with frequent reassessments, and



Writing the indication on the prescription is helpful not only to the pharmacist but also to the patient and other physicians.



Don't assume the pharmacist will always know to add additional warnings about side effects and precautions to take.



Reporting all errors or "near misses" closes the error loop and avoids dangerous repetitions.



No single error-reduction technique guarantees error-free prescribing, but together they create a net of safety.

warfarin should be prescribed on a monthly basis.

**Specify the indication.** Writing the indication on prescriptions is a frequently encouraged, yet seldom followed, practice. By noting the purpose, you confirm to the pharmacist the appropriate medication and remind the patient of the drug's purpose. This step facilitates professional pharmacist counseling, reinforces care plans and provides multiple opportunities for patient education. Also, one serendipitous effect is to improve physician-to-physician communication. The demise of the consultant's letter often leaves primary care doctors wondering just what is being treated when patients return from consultations with new prescriptions. For example, gabapentin and corticosteroids have a plethora of uses (ranging from beneficial to whimsical) and are frequently prescribed in abundance. A written indication on a pharmacy bottle may be the only documentation available to judge the effectiveness of these or other medications.

**Add supplemental instructions.** Prescriptions should also include additional warnings that guide patients and inhibit medication side effects (e.g., "Avoid sun exposure while using" for tetracyclines, "Do not use with any alcohol" for metronidazole and "Take with food" for steroids and NSAIDs). Don't count on the pharmacist to always know or add these warnings. Specific instructions to the pharmacist can also be added. For example, to assist patients who lack reading skills, write "Verbal counseling required."

**Report all errors.** This often overlooked duty closes the error loop and avoids dangerous repetitions. The failure to report a "near miss" (an error that did not reach the patient) allows someone else to fall into the same trap. Encourage all members of the health care team to identify and learn from errors.

### A net of safety

Prescribing medications represents family physicians' most common and consequential

## TIPS FOR PREVENTING MEDICATION ERRORS

- Limit each prescription to one medication.
- Circle your name when using preprinted prescription pads.
- Approach medication names with caution.
- Eliminate drug abbreviations.
- Use metric measures for dosages.
- Add the patient's age (or weight) to the prescription.
- Avoid writing "as directed."
- Eliminate abbreviations in routes of administration.
- Specify the therapeutic duration.
- Prescribe specific quantities rather than dispensing for time periods.
- Remain cognizant of lethal doses of medications.
- Specify the indication.
- Write additional instructions about side effects.
- Report all errors.

medical action. The dual pressures of increased numbers of patients receiving prescriptions and increased prescriptions per patient compound the opportunities for adverse drug interactions and medication errors. All the error-reduction techniques included in this article are designed to maximize communication for accurate

dispensing, patient education and care-plan reinforcement. Though no single component guarantees error-free prescribing, together they weave a net of safety and encourage understanding among physicians, pharmacists and patients. Clear and consistent prescription communication builds a bridge across the quality chasm. **FPM**

Send comments to [fpmedit@aafp.org](mailto:fpmedit@aafp.org).

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