CHAPTER 5  DOSAGE FORMS, ROUTES OF ADMINISTRATION AND DRUG CLASSIFICATIONS, DRUG ABBREVIATIONS, AND MEDICAL TERMINOLOGY

Medical terminology is a unique language that was derived mainly from Latin and Greek. As previously specified in Chapter 1, Hippocrates and his students, notably Galen, produced a large and diverse body of medical writings in Greek. Many of the anatomic, pathologic, and therapeutic terms found in those writings remain in use today, some with little or no change in meaning. Until the early modern era, the language of medicine consisted largely of Latin terms, many of them containing stems derived or adapted from Greek. The use of Latin and Greek has continued into the 21st century with little change; in the modern medical community of today, Latin and Greek still serve as the universal language that all medical personnel, including doctors, nurses, pharmacists, pharmacy technicians, can understand.

Learning a new language takes time and effort, and this is no different when learning the language of medicine. Of equal importance is learning the meanings of medical abbreviations, acronyms, and symbols used in medicine. They may be confusing, but in time you will gain familiarity and a deeper comprehension after working with them as a pharmacy technician. You will also learn that interpreting a prescription can be challenging, because many medical providers handwriting can be difficult to read. Attempting to interpret various providers’ handwriting can be frustrating and time-consuming. In addition, there are numerous abbreviations that have been associated with prescriptions and medical errors. These dangerous abbreviations should not be used in order to reduce the number of mistakes.

The Joint Commission issued a Sentinel Event Alert in 2001 on the subject of medical abbreviations, and just one year later, its Board of Commissioners approved a National Patient Safety Goal requiring accredited organizations to develop and implement a list of abbreviations not to use. The Joint Commission created its “do not use” list of abbreviations in 2004 as part of the requirements for meeting that goal. In 2010, NPSG.02.02.01 was integrated into the Information Management standards as elements of performance two and three under IM.02.02.01.

Click here to view the official version of The Joint Commission’s “Do Not Use” list.

Review the Institute for Safe medical Practices (ISMP) Error Prone Abbreviations, Symbols, and Dosage Designations on textbook pages 147-150.

Click here to check for periodic ISMP updates and special error alerts.

Remember that as a pharmacy technician you are an important part of a medical team, and continuing education will always be a part of your new chosen career.

CHAPTER 6  DRUG INFORMATION REFERENCES

As specified previously in the chapter reading, the first objective when utilizing references in the pharmacy is to determine why you need the reference, how you must use the reference, and understand the correct method to reference in your work as a pharmacy technician. Do you need to know the generic medication name, the drug interactions, classification, or maybe what the drug looks like? Keeping these points in mind can help you to communicate efficiently with your coworkers or patients who may need you to reference a drug quickly.

It is essential for each pharmacy to keep reference sources on hand, and most state board of pharmacies also require that the pharmacy keep references on hand at all times. Primary literature is divided into three types—primary, secondary and tertiary. Primary literature includes original reports of clinical trials published in professional journals. Secondary literature consists of reference works and search engines. Tertiary literature encompasses text books, based on primary literature.

Primary literature is a source of information for the development of secondary and tertiary resources. Primary literature is comprised of original research that is written in the author’s own words. It consists of research studies, case reports, editorials, and letters to the editor. Most primary literature contains a detailed description of the study design, methodology, and scientific results. The reader is able to critique and analyze the study in order to develop a conclusion. Examples of primary literature resources include

Secondary literature is compiled by indexing and abstracting services that can be used to systematically locate various types of published literature. The indexing system usually provides bibliographic information indexed by topic and will allow the user to view a brief description of the information within most citations. Examples of secondary literature databases are PubMed (Medline), Embase, National Library of Medicine Gateway, International Pharmacy Abstracts, Scopus, and Toxline. (Wooten, J., Sanders, S., & Steigerwalt, K., 2012)

Tertiary literature is core knowledge established via primary literature or accepted as a standard of practice within the medical community. Drug information contained in the tertiary literature is generally well-established information that is approved and accepted by the FDA (i.e., a FDA labeled indication) or well-founded in the primary care literature (i.e., an unlabeled but well-documented use for an FDA approved drug). Tertiary references may be of textbooks on various drug or disease topics (e.g., Pharmacotherapy), compendia (a vast array of information about many drugs such as the Physician’s Desk Reference (PDR), or online, full-text databases. (Wooten, J., Sanders, S., & Steigerwalt, K., 2012)

The PDR is located in every pharmacy and doctor office and lists only FDA approved drugs that manufacturers chose to send for inclusion. See Table 6-2 on textbook page 187 for a breakdown of PDR sections. Drug Facts and Comparisons is one of the most utilized books by pharmacists. The book is usually unbound so that it may be updated frequently. See Table 6-1 on textbook page 187 for a breakdown of sections in Drug Facts and Comparisons. The Drug Topics Red Book has 10 sections (see textbook page 189, Table 6-3). The Red Book is used as a reference for average and wholesale drug costs and prices. The Orange Book lists approved drug products with therapeutic equivalence evaluations provided by the USDA, and can be accessed free online by clicking here. As with any tertiary reference, the information should be evaluated for bias.

The internet is inextricably woven into our culture as a tool for finding information. However, as when using any information resource, it is crucial to analyze whether the information is reliable, up-to-date, authoritative, and unbiased. In other words, research your sources—and never use Wikipedia for a reference! In the pharmacy setting, you may have limited access to the internet. Most retail pharmacies do not have full internet access, and may have only a direct link to the Drug Enforcement Administration (DEA), and a direct link to the State Board of Pharmacy. Therefore, internet access will be extremely limited and you should not become reliable upon it to locate your drug reference answers. See Table 6-6 on textbook page 198 for a comprehensive, reliable list of online websites and databases.

If your pharmacy allows the technician to use electronic referencing via Smartphone, one company that provides drug information in the form of a downloadable app (iPhone/iPad, or Android) is Epocrates Rx. Click here to download the free Epocrates Rx app to your Smartphone. This app allows you to review drug prescribing and safety information for thousands of brand, generic and OTC medicines, and identify pills by imprint code and physical characteristics. You can also check for potentially harmful drug-drug interactions among up to 30 drugs at a time. In addition, Epocrates Rx allows for you to search national and regional healthcare insurance formularies for drug coverage information. Remember to check with and obtain permission from your pharmacist or manager prior to using any electronic reference inside of the pharmacy.

Another way to access the most current drug information is to join a pharmacy association. Pharmacy associations provide a plethora of continuing education for pharmacy technicians, which is required to maintain licensure or registration at the national and state board of pharmacy levels. Pharmacy associations are also a good resource for ordering reference books, often at reduced membership rates. A few associations include the following:

- National Pharmacy Technicians Association (NPTA)
- American Association of Pharmacy Technicians (AAPT)
- American Society of Health System Pharmacists (ASHP)
- American Pharmacists Association (APhA)
CHAPTER 7  PRESCRIPTION PROCESSING

Processing and filling a prescription is the most common duty performed by the pharmacy technician. Filling the prescription will vary, depending on the type of facility where you are working as a pharmacy technician. For example, institutional pharmacies do not follow the same steps or method for filling prescriptions as a retail or closed-door pharmacy setting. Additionally, each pharmacy setting will have a process specific to the setting in which you are working, and be specific to the individual institution, community, or closed pharmacy location. All employees normally receive training as part of the new-hire orientation. On-the-job training can vary, again depending on the organization or company. However, the steps for filling a prescription in each pharmacy location is fairly simple and usually the same for each type of pharmacy setting.

- Community Pharmacy setting—Five basic steps for filling a prescription:
  1. Taking in the prescription—Prescriptions arrive in a variety of ways, depending on the type of medication and the specifics of the prescription. Interpreting prescriptions can be frustrating at first, but in time you will become accustomed to reading and interpreting prescriptions with ease. Additionally, many pharmacies are moving to electronic Rx delivery systems. E-Prescribing systems are growing in popularity because of the increasing focus on preventing errors. E-Prescribing, however, does not allow controlled substances to be submitted or filled by this method. Therefore, your pharmacy will receive a hand-delivered prescription directly from the patient or customer.
  2. Translating the prescription—The pharmacy technician must attempt to interpret the information on the prescription (written, fax, etc.). If you cannot read the prescription, NEVER guess; always ask the pharmacist to interpret the prescription.
  3. Entering information in database—Community pharmacies often use an electronic database to store patient, prescriber, and medication information. The database will often be different per pharmacy. For example, some community chain/retail pharmacies have developed a computer database specific to the organization. Therefore, when training on a new job, you will often be oriented to different computerized database systems.
  4. Filling the script—When filling the prescription, there are 10 important steps to follow to avoid errors:
     - Verify the prescription
     - Pull the correct medication
     - Count the medication
     - Fill the medication
     - Choose the appropriate safety lid for the type of medication
     - Apply the label to the prescription container
     - Initial the prescription
     - Apply the prescription auxiliary label to the container
     - Place the medication and the stock bottle on top of the original prescription
     - Pass the original prescription, the filled medication container, and the medication stock bottle from which you filled the medication to the pharmacist from final inspection

NOTE: Filling one prescription at a time is crucial to avoiding errors.
5. Patient consultation—The first four steps in filling a prescription in a community pharmacy setting are the usual responsibilities of the pharmacy technician. The last step, patient consultation, must be done only by a registered pharmacist or pharmacy intern (student pharmacist); OBRA ’90 requires consultation with patients. The pharmacy technician NEVER performs patient consultations.

- Institutional pharmacy: Uses a variety of medication dispensing systems.
  - Outpatient dispensing systems
  - Inpatient dispensing systems
    - Hospitals have a larger variety of medications compared to a retail/community pharmacy. Hospitals also need more medications around the clock; in-patient hospital pharmacies are usually open 24-hours a day, 7-day a week. Both inpatient and outpatient dispensing systems can usually be security-programmed to protect and monitor narcotics inventories. The computerized dispensing system reduces staffing needs and provides both nurses and doctors access to the medications necessary to treat patients.

When institutional healthcare providers dispense medications, there are basic rules and guidelines that must be followed, known as the 5 rights of medication administration.

**5 Rights of Medication Administration:**

1. **Right Patient**
   - Ask the patient to identify themselves, and check for matching identification. Check the name on the medication order to ensure it matches the patient’s identification.

2. **Right Medication**
   - Check the medication order and check the label to ensure you have the correct medication for the prescription.

3. **Right Dose**
   - Check the order, including confirmation of the correct dose for the medication. Use a drug reference, and always ask if you are unsure. Confirm the correct calculation for the dosage so that it is appropriate for the medication and for the patient. Always ask the pharmacist if you are unsure of medication dosages.

4. **Right Route**
   - Check the route of medication (e.g., inhaler, drops, tablet, capsule, tablet, etc.). Confirm that the patient can actually take the medication by the route prescribed by the provider.

5. **Right Time**
   - Check the frequency of the medication on the prescription to ensure the correct time of dosage is appropriate per the medication.

NOTE: The five rights of medication safety pertain to everyone involved in delivery of medications.

- Closed pharmacy—A closed door pharmacy is exactly as the name implies; the pharmacy may not be accessed by the public, patients, or providers.

- Long term care pharmacy—Long-term care pharmacy facilities provide services such as pharmacy, infusion, education, consulting, and related services for a specific patient population (e.g., geriatric patient populations and patients receiving palliative care). There are several pharmacy settings in the practice of long-term care; for example, institutionally owned skilled nursing care facilities, nursing homes, rehabilitation facilities, and IV infusion pharmacies.

- Large mail-order companies—The mail order pharmacy is a large distribution center that processes both new prescriptions, and refills and mails the processed prescription directly to the patient.
As previously specified in the chapter reading, the state board of pharmacy will regulate the duties of a pharmacy technician. Therefore, pharmacy technicians must always review their state regulations to fully understand the specific limitations when processing and filling prescriptions in the pharmacy. Safety is paramount above all, and along with the pharmacist, the pharmacy technician is held accountable for prescription processing and dispensing drugs. This responsibility should never be taken lightly and requires continuing education in all areas of the pharmacy practice.