

PRESCRIPTIONS AND DRUGS

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**ARTICLE
INFORMATION**

ABSTRACT:

ARTICLE HISTORY:

Received: 21.04.2026

Revised: 22.04.2026

Accepted: 23.04.2026

KEYWORDS:

Prescriptions and drugs form one of the most essential components of modern medical care. A prescription represents a scientific, legal, and clinical document that directs the safe and effective use of pharmaceutical agents. In medical practice, accurate prescribing ensures that the patient receives the right drug, in the right dose, through the correct route, and for an appropriate duration. The process of prescribing involves several clinical decisions. First, the physician must correctly diagnose the patient's condition. Second, the most effective and safe medication must be selected. This selection requires knowledge of pharmacodynamics, pharmacokinetics, drug interactions, contraindications, and possible side effects. Third, the prescriber must consider the patient's individual characteristics, including age, weight, kidney and liver function, pregnancy status, and history of allergies. Prescription drugs are categorized into several major classes: antibiotics, analgesics, antihypertensives, antidiabetics, psychotropic drugs, cardiovascular medications, and many others. Each class contains numerous agents, each with specific mechanisms of action and clinical uses. For example, antibiotics inhibit bacterial growth or kill bacteria directly; antihypertensive drugs reduce blood pressure through mechanisms such as vasodilation or modulation of fluid balance; and psychotropic medications influence neurotransmitter levels within the brain. A

critical concept in prescribing is rational drug use. According to the World Health Organization, rational use of medicines requires that patients receive medications appropriate to their clinical needs, in doses that meet their requirements, for an adequate duration, and at the lowest cost to them and the community. Irrational drug use—such as the overuse of antibiotics, improper self-medication, or polypharmacy—contributes to serious global health issues including antimicrobial resistance, drug toxicity, and increased healthcare costs. Another important aspect is the structure of a prescription. A standard medical prescription contains several parts: the superscription (patient information), inscription (name and dose of the drug), subscription (instructions to the pharmacist), and signa (instructions for the patient). Clear communication in this document is vital to avoid medication errors. Poor handwriting, incomplete instructions, and ambiguous abbreviations have historically contributed to preventable medical mistakes. Today, the introduction of electronic prescribing systems has significantly reduced such risks by ensuring clarity and reducing the likelihood of human error. Drug safety is a cornerstone of clinical pharmacology. Adverse drug reactions (ADRs) may range from mild symptoms such as nausea or dizziness to severe and life-threatening complications including anaphylaxis, organ failure, or arrhythmias. Monitoring patients after initiating therapy is essential to detect ADRs early. Pharmacovigilance systems around the world collect data on drug safety to identify previously unrecognized risks and improve prescribing practices. In addition, drug interactions must always be considered. Interactions may occur between two or more drugs, between drugs and certain foods, or between drugs and diseases. For example, combining certain anticoagulants with nonsteroidal anti-inflammatory drugs increases the risk of bleeding. Grapefruit juice is known to inhibit specific liver enzymes, increasing the blood concentration of several medications and thus potentially causing toxicity. Another key concept is patient adherence. Even the most effective prescription is useless if the patient does not take the medication correctly. Factors affecting adherence include the complexity of the regimen, side effects, cost, and the patient’s understanding of their illness. Healthcare providers must educate patients and ensure that they fully understand how and why to take their prescribed drugs. The development of new drugs is a long and complex process involving multiple phases of clinical trials. These trials evaluate safety, efficacy, and optimal dosing. Only after demonstrating favorable results can a drug be approved for clinical use. Post-marketing surveillance continues to monitor safety once the drug is widely used. Personalized medicine is an emerging field that aims to tailor drug therapy to the genetic profile of each individual. Genetic differences can influence drug metabolism and response. For example, pharmacogenomic testing can identify patients who

metabolize certain drugs too quickly or too slowly, allowing clinicians to adjust doses and avoid toxicity. In conclusion, prescriptions and drugs are vital tools in modern healthcare, but they require careful knowledge, judgment, and responsibility. Safe prescribing improves patient outcomes, reduces complications, and contributes to the overall quality of medical care. As medical science continues to advance, the future of prescribing will likely include more personalized, precise, and technology-driven approaches. Prescriptions and drugs form one of the most essential components of modern medical care. A prescription represents a scientific, legal, and clinical document that directs the safe and effective use of pharmaceutical agents. In medical practice, accurate prescribing ensures that the patient receives the right drug, in the right dose, through the correct route, and for an appropriate duration. The process of prescribing involves several clinical decisions. First, the physician must correctly diagnose the patient's condition. Second, the most effective and safe medication must be selected. This selection requires knowledge of pharmacodynamics, pharmacokinetics, drug interactions, contraindications, and possible side effects. Third, the prescriber must consider the patient's individual characteristics, including age, weight, kidney and liver function, pregnancy status, and history of allergies. Prescription drugs are categorized into several major classes: antibiotics, analgesics, antihypertensives, antidiabetics, psychotropic drugs, cardiovascular medications, and many others. Each class contains numerous agents, each with specific mechanisms of action and clinical uses. For example, antibiotics inhibit bacterial growth or kill bacteria directly; antihypertensive drugs reduce blood pressure through mechanisms such as vasodilation or modulation of fluid balance; and psychotropic medications influence neurotransmitter levels within the brain. A critical concept in prescribing is rational drug use. According to the World Health Organization, rational use of medicines requires that patients receive medications appropriate to their clinical needs, in doses that meet their requirements, for an adequate duration, and at the lowest cost to them and the community. Irrational drug use—such as the overuse of antibiotics, improper self-medication, or polypharmacy—contributes to serious global health issues including antimicrobial resistance, drug toxicity, and increased healthcare costs. Another important aspect is the structure of a prescription. A standard medical prescription contains several parts: the superscription (patient information), inscription (name and dose of the drug), subscription (instructions to the pharmacist), and signa (instructions for the patient). Clear communication in this document is vital to avoid medication errors. Poor handwriting, incomplete instructions, and ambiguous abbreviations have historically contributed to preventable medical mistakes. Today, the introduction of electronic prescribing systems has

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