

# Phonetic Ambiguities: Risks of Drug Name Confusion in Elderly Patient

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## Abstract

An aging population presents significant challenges in pharmacotherapy oversight, with elderly individuals often lacking comprehensive information about their medical conditions. This paper addresses medication errors in the elderly, highlighting a case study of a 68-year-old male who ingested Warfarin® instead of Famodin®, leading to a severe overdose. The incident underscores the risks of phonetic confusion in drug names and the necessity for robust safety protocols. Collaborative efforts among healthcare stakeholders are crucial to ensuring safe medication administration and reducing errors.

**Keywords:** Drugs&aging, geriatric pharmacotherapy, healthy aging, phonetic ambiguities, warfarin overdose

## Introduction

The demographic shift towards an aging population presents an increasingly formidable challenge, necessitating vigilant oversight and evaluation of their pharmacotherapy. Elderly individuals often encounter a dearth of comprehensive or precise information regarding their medical conditions and prescribed treatments, highlighting the critical need for enhanced communication and tailored educational initiatives within healthcare settings (1). A homophone, a fundamental linguistic concept, denotes words that share similar phonetic attributes while harboring distinct semantic or orthographic characteristics. Despite their phonetic resemblance, homophones maintain discrete lexical definitions and may occupy disparate syntactic roles (2). Within healthcare environments, medication errors arising from phonetic confusions in drug nomenclature present formidable obstacles. Of particular concern are the potential hazards engendered by phonetic ambiguities in Turkish medication terminology, which hold the propensity to precipitate significant lapses in medication administration within this susceptible demographic.

This paper aims to contribute to this imperative by presenting a compelling case study featuring a 68-year-old male who, devoid of any clinical indication for anticoagulation therapy, presented to our Emergency Department subsequent to an acute ingestion of warfarin.

## Case

The 68-year-old male patient presents with a three-day history of oral bleeding accompanied by abdominal discomfort, which he attributes to gastritis. He denies concurrent symptoms of diarrhea or vomiting and notes no discernible alterations in stool characteristics. Upon examination, vital signs indicate a blood pressure of 160/87 mmHg, a body temperature of 36.3°C, a heart rate of 74 beats per minute, a respiratory rate of 14 breaths per minute, and a blood oxygen saturation (sPO<sub>2</sub>) of 97%. Past medical history reveals a diagnosis of coronary artery disease, hypertension, and gastritis, necessitating ongoing pharmacotherapy. However, the patient's current medication list is unavailable, yet he mentions prior use of 40 mg Famotidine (brand name Famodin®), 100 mg Metoprolol succinate (brand name Saneloc®), and 100 mg acetylsalicylic acid (brand name Coraspin®).

The oropharyngeal examination reveals bleeding sites suggestive of gingival origin, while thoracic and abdominal examinations yield no notable findings. Rectal examination demonstrates normal feces. Laboratory analysis reveals a hemoglobin level of 12 g/dL, a white blood cell count of 8.8x10<sup>3</sup>/uL, and a platelet count of 245x10<sup>3</sup>/uL, alongside unremarkable renal and hepatic profiles, electrolyte levels, and an international normalized ratio (INR) of 21.3. Upon further inquiry, the patient confessed to substituting his prescribed medication with a phonetically similar one

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from his spouse's supply due to the depletion of Famodin® over the preceding week. Subsequent investigation into the wife's medication regimen revealed her prescription of warfarin, branded as Coumadin®, for the management of atrial fibrillation and stroke prevention. It became evident that the patient inadvertently ingested his wife's medication, Coumadin®, instead of his prescribed Famodin®.

The patient underwent management according to the warfarin overdose protocol, wherein intravenous vitamin K at a dose of 10 mg was administered initially, followed by the administration of Prothrombin Complex Concentrate (Cofact®) at a volume of 60 ml. The patient's INR levels were monitored, revealing a value of 1.5 at the 3rd hour and 1.4 at the 6th hour. Additionally, the patient's hemoglobin level, assessed at the 6th hour, was recorded as 11.6 g/dL. Following the resolution of active bleeding symptoms and the absence of further decline in hemoglobin levels, the patient, who attained the target INR level during their stay in the Emergency Department, was discharged with personalized recommendations. Therapeutic adjustments were implemented accordingly.

## Discussion

Medication misuse is a significant concern, notably among two vulnerable populations: the elderly and preschool children. This misuse encompasses various errors, such as incorrect dosages, missed doses, medication mixing, and off-label use (3). Among the elderly, several factors contribute to medication errors, including polypharmacy, complex treatment regimens, limited awareness of medication schedules, cognitive and physical decline, reduced social acuity, and negative attitudes toward pharmacotherapy (4). Building on this literature, we believe that off-label drug use in advanced age is associated with declines in both social and cognitive faculties.

Medication errors due to phonetic confusions in drug names pose significant challenges in healthcare settings. Studies have shown that similarities in the pronunciation of medication names can lead to administration errors, resulting in adverse patient outcomes. For example, in a study conducted by Hoffman et al., it was found that phonetic similarities between the drugs Celebrex (celecoxib), Cerebyx (fosphenytoin), and Celexa (citalopram) led to medication errors in clinical practice, highlighting the importance of distinct drug nomenclature (5). Similarly, a study by Gentin demonstrated that medications with similar-sounding names, such as Zantac (ranitidine) and Xanax (alprazolam), were frequently confused by healthcare professionals, underscoring the need for heightened awareness and vigilance (6).

Errors in medication names that look alike or sound alike (LASA) pose a significant risk as they can be mistaken for each other, leading to potential harm to patients. For instance, medications like mercaptamine and mercaptopurine share similarities in their names, increasing

the likelihood of confusion. LASA errors often occur due to shared linguistic properties between medication names, such as phonetic or orthographic similarities. Moreover, factors like similar packaging, tablet appearance, strength, route of administration, or therapeutic indication further compound the risk of errors. Healthcare providers may inadvertently contribute to these errors through miscommunication or misinterpretation of drug names with similar phonetic characteristics. To address this issue, strategies like the use of Tall Man lettering have been proposed. This method involves capitalizing specific letters in drug names to emphasize their differences, thereby helping to mitigate medication errors related to phonetic confusions (7).

An imperative underscored, particularly in a prior investigation, is the necessity for vigilant monitoring of medication usage among elderly patients. Challenges in adhering to prescribed medication regimens were elucidated among elderly individuals post-hospital discharge (8). As exemplified in the preliminary patient history within our study, the adoption and augmentation of an electronic prescription framework, particularly tailored for individuals with compromised mental and social capabilities, are indispensable. Such systems should be readily accessible to healthcare providers through comprehensive databases to address the multifaceted health concerns associated with medication use among the elderly (9). Moreover, the prioritization of training for personnel involved in elderly care is paramount for the effective regulation of medication utilization among this demographic. Local authorities and healthcare administrators bear additional responsibilities in fostering an environment conducive to the safe and appropriate administration of medications in elderly patients (10).

## Conclusion

Proactive measures are urgently needed to address medication misuse among vulnerable populations, particularly the elderly. Implementing comprehensive strategies, such as electronic prescription systems and targeted personnel training, is crucial to mitigate the risks associated with medication errors in this demographic. Additionally, collaborative efforts involving healthcare stakeholders and policymakers are imperative to ensure the safe and effective delivery of pharmacotherapy to elderly patients while minimizing the occurrence of medication errors. Furthermore, phonetic confusions in drug names present a significant challenge in medication safety, especially among the elderly population. Healthcare providers must remain vigilant and adopt strategies to reduce the risk of medication errors stemming from phonetic similarities in drug names. Collaborative efforts between healthcare professionals, medication safety organizations, and regulatory agencies are essential to effectively address this issue and improve patient outcomes.

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