

Вестник Череповецкого государственного университета, 2026, № 4 (133), с. 7–15.
Cherepovets State University Bulletin, 2026, no. 4 (133), pp. 7–15.

Научная статья

УДК 303.732.4

<https://doi.org/10.23859/1994-0637-2026-4-133-1>

<https://elibrary.ru/xorrrw>

Abbreviation in the structure of medical prescriptions

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Abstract. This paper considers the abbreviation in the structure of medical prescriptions. The first systematization of abbreviated lexical units in prescription made it possible to identify seven main categories, the most common of which are abbreviations of dosage forms and plant parts. The analysis of original medical literature and English prescriptions made it possible to identify the most common errors in the structure of prescription in order to prevent errors in their decoding. Incorrect decoding of abbreviations can lead to an incorrect method of prescribing and taking drugs, causing a threat to the health and life of patients.

Keywords: abbreviation, prescription, analysis, medications, decoding

For citation: Barbasheva S. S. Abbreviation in the structure of medical prescriptions. *Cherepovets State University Bulletin*, 2026, no. 4 (133), pp. 7–15. (In Russ.) <https://doi.org/10.23859/1994-0637-2026-4-133-1>; EDN: XORRRW

Сокращения в структуре рецептов лекарственных препаратов

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Аннотация. Данная работа посвящена анализу сокращений в рецептах лекарственных препаратов, находящихся в свободном доступе. Впервые проведенная систематизация рецептурных сокращений позволила выделить семь основных категорий, самыми распространенными из которых являются сокращения, обозначающие лекарственные формы и части растений. Анализ англоязычных рецептов позволил выявить наиболее распространенные ошибки в структуре рецептов при назначении лекарственных препаратов с целью их предотвращения при расшифровке. Некорректный перевод может привести к неверному способу их назначения и приема, а также причинению угрозы здоровью и жизни пациентов.

Ключевые слова: сокращение, рецепт, анализ, лекарственные препараты, расшифровка

Для цитирования: Барбашёва С. С. Сокращения в структуре рецептов лекарственных препаратов. *Вестник Череповецкого государственного университета*, 2026, № 4 (133), с. 7–15. <https://doi.org/10.23859/1994-0637-2026-4-133-1>; EDN: XORRRW

Introduction

In scientific discourse, until recently, there was a widespread predominance of fully structured lexical units. However, at the moment, abbreviated vocabulary is increasingly becoming an integral part of the vocabulary of modern terminology, since most of the new terms are cumbersome and inconvenient to use. Information content is an important functional characteristic of terminological communication. The reduction of terminological units during acts of professional communication, caused by the need of specialists to optimize the processes of exchanging information with each other and linguistic economy, presupposes such use of speech means that leads or has the ability to lead to time savings and shortens the process of mutual understanding, without hindering it. One of the areas of science for which an adequate understanding of abbreviations is of utmost importance is medicine.

Medical abbreviations are quite widespread in the health care system, primarily as a way to save time and effort. Abbreviated lexical units are present in the oral speech of health workers, medical records, patient statements, referrals to specialists.

Clear communication is paramount to achieving the safest patient outcomes, maximizing time efficiency, and reducing physician burden. However, the use of abbreviations in medical records is effective only if they are understandable and familiar to all participants in communication¹. Particular attention is required to reduce the structure of the drug prescription, the misinterpretation of which may pose a potential threat to the life and safety of patients.

A medical prescription is a discursive product composed to solve specific professional problems in the course of professional communication, in which the use of abbreviated terms is becoming increasingly widespread due to both the nature of the abbreviated term itself and the specificity of the medical text. An abbreviated term makes it possible to express a maximum of information in a compressed form, while ensuring the required level of closedness of the medical text for the non-professional recipient. Consequently, for medical abbreviated terms, the nominative function is the main one, and the definitive function is reduced to a minimum, and in some cases, it is completely neutralized, since such lexemes are no longer intended to define the corresponding concept, but to refer the already prepared addressee to it as quickly as possible.

The first recipes (from the Latin verb *receptio*, *recepti*, *receptum*, *receptĕre* – take) arose with the advent of writing more than 5.5 thousand years ago. Initially, the prescription reflected the listing of the constituent components of the drug product. These were mostly plant parts, animal tissue or minerals. Subsequently, manuscripts appeared with a more detailed description of the quantity and quality of ingredients, the peculiarities of manufacture, storage, use, purpose. Indeed, the recommendations and appointments of ancient healers have been considered an obligatory attribute of medical everyday life. In all national traditions instructions having the form of prescription have become a special area of medical practice – pharmaceuticals.

¹ Barbasheva S. S., Rozhkova T. V. Abbreviations in medical records: arguments for and against. *Vestnik of Samara University. History, pedagogics, philology*, 2024, vol. 30, no. 1, pp. 186–191. <https://doi.org/10.18287/2542-0445-2024-30-1-186-191>; EDN: EVCVQK

Therefore, their genre successor – medical prescription – “along with instructions for use of medicinal products and monograph it can be attributed to prototypical texts”¹ pharmaceutical activity.

In the pragmalinguistic direction the prescription is considered to be a “special kind of discourse”² – pharmaceutical, within which an important pragmatic parameter of medical prescription designs. In communicative background it serves as an indication of the conditions for communication doctor and patient, which is indicated in the prescription formulas of Ancient Rome as *inscriptio* (address), suggesting the location of the patient and the doctor. It was intended to create an optimal environment for examining patients so that the doctor can adequately determine his condition, the degree of pain and disease, way of treatment. Already in the Ebers papyrus, the method is mentioned examination of the patient. Since ancient times, doctors take into account the age of the patient to select an effective method of treatment. In modern prescriptions we can see full name and date of prescription.

For good mastery of the method of prescribing medical prescriptions knowledge of the Latin language was also necessary, since Latin is as new verbally significant fund of professional pharmaceuticals, living in antiquity.

The modern recipe consists of the following parts.

1. *Inscriptio* is a stamp of a medical organization and its cipher.
 2. *Datum* – date. The date in the prescription helps pharmacists know when the medication was last dispensed if the prescription is being provided for reissue. In the case of addictive drugs, the date helps prevent the patient from abusing the drug.
 3. *Nomen aegroti* – patient name.
 4. *Aetas aegroti* – patient age.
 5. *Nomen medici* – last name, first name, patronymic of the doctor who wrote the prescription.
 6. *Praescriptio* – signature consists of *Invocatio* – a traditional doctor’s call to the pharmacist and begins with the abbreviation *Rp:* (*Recipe*) – take. In antiquity, it was believed that this symbol came from the sign of Jupiter, the god of healing. This symbol was used to ask God for a speedy recovery of the patient. The second part is *Designatio materialium* – this is the main part of the prescription, containing the names and number of prescribed medicines.
 7. *Subscriptio* – the signature contains instructions in Latin about the dosage form, the number of doses, the type of packaging, etc.
 8. *Signatura* is a designation. It is written as “*Sig*”. Instructions provided in the prescription should be listed on the container label for the patient to understand and follow. Instructions include the following: amount of drug taken; frequency and time of drug administration; method of application; special warnings.
 9. *Nomen et sigillum medici personale* – doctor’s signature and personal seal.
- The recipe is made in Latin, starting from the sixth part.

¹ Burova G. P., Burov A. A. Correlation of linguistic and extralinguistic factors in the development of the pharmaceutical discursive sphere: Socio-cultural, national-mental and historical aspects. *Modern approaches to the study of mentality: A collection of articles*; edited by Pimenova M. V. St Petersburg: SPbSU, 2011, pp. 148–158.

² Burdina O. B. *Modeling of terminological variability in pharmaceutical discourse*: Cand. Thesis in Philological Sciences. Perm, 2013. 218 p. EDN: SVABXB

Medical abbreviations are the focus of particular attention of linguists. Among them, we note the articles by L. Yu. Zubova¹, V. V. Katermina² studied the word-forming and linguocognitive features of the use of abbreviations in medical discourse. Structural and linguistic characteristics of recipes are considered in the works of O. Yu. Vasilyeva³, D. K. Kondratyev, K. V. Balinskaya⁴. Abbreviations in the structure of drug prescriptions that arose several centuries ago are an important part of medical terminology⁵, but their standardization has not yet been carried out.

The purpose of the study is classification analysis of abbreviations in drug prescriptions and identification of the most common errors in their decoding.

The research material is abbreviated lexical units used in the structure of the prescription of drugs, which are freely available. Prescription abbreviations have undergone structural and semantic analysis.

Main part

The first Latin abbreviations in the structure of the recipe appeared in the 15th century, since then their number has been steadily growing. The results of the study showed that the main part of the abbreviations in the recipes is the Signatura section. The presence of a significant number of Latin abbreviations is explained by the fact that this section is actually focused on the pharmacist.

Prescription abbreviations are divided into the categories presented in tab. 1.

Table 1

Categories of prescription abbreviations

No.	Category	Examples
1	Dosage forms	but. – butyrum – oil (solid); inf. – infusum; extr. – extractum – extract, extract; pulv. – pulvis – powder; sir. – sirupus – syrup; sol. – solutio – solution; supp. – suppositorium, candle; tabl. – tab (u) letta – tablet, etc.

¹ Zubova L. Iu. On the peculiarities and difficulties of translating English medical abbreviations. *Proceedings of Voronezh State University. Series: Linguistics and Intercultural Communication*, 2005, no. 2, pp. 113–116. EDN: JWWTLL

² Katermina V. V., Vorobieva I. V. Linguistic and stylistic features of the neologisms-abbreviations in the English discourse. *Izvestia of the Volgograd State Pedagogical University*, 2019, no. 9 (142), pp. 206–210. EDN: ZRVOED

³ Vasilieva O. Iu. Medical prescription formula: structural and linguistic standardization. *Scientific dialogue*, 2021, no. 5, pp. 25–39. <https://doi.org/10.24224/2227-1295-2021-5-25-39>; EDN: ZBQDSN

⁴ Kondratyev D. K., Balinskaia K. V. Specific features of prescription writing in the Latin language in the world medical practice. *Journal of Grodno State Medical University*, 2015, no. 4, pp. 123–126. EDN: VHEKGB

⁵ Barbasheva S. S. Classification analysis of modern English dental abbreviations. *Vestnik of Mari State University*, 2019, vol. 15, no. 1, pp. 66–71. <https://doi.org/10.30914/2072-6783-2021-15-1-66-71>; EDN: XLVVTQ

No.	Category	Examples
2	Plant parts	cort. – cortex; fl. – flos, floris – flower (flowers); fol. – folium sheet; fr. – fructus – fruit; gem. – gemma, kidney; hb. – herba. – grass; rad. – radix – root; rhiz. – hizoma – rhizome; sem. – semen – seeds
3	Dosage	aa – ana – as per, equal; q. s. – quantum satis – how much you need, how much you need
4	Instructions to pharmacist	Rp. – Recepte – take; M. – Misce, Misceatur – mix; Rep. – Repete, Repetatur – repeat
5	Ways to prescribe and take	PO – per os – orally; PR – per rectum – rectally; PV – per vagina – vaginally, etc.
6	Names of drugs	MSO ₄ – morphine sulphate – morphine sulphate; MgSO ₄ – magnesium sulphate – magnesium sulphate
7	Condition	dil. – dilutes – diluted, ppt.; praec. – praecipitatus – precipitated; rectif. – rectificatus – purified

The first classification analysis of abbreviations in the structure of drug prescriptions made it possible to identify 7 main categories, of which the most common are abbreviations denoting dosage forms and parts of plants. Analysis of English-language prescriptions made it possible to identify the most common so-called “dangerous” abbreviations leading to treatment errors¹. Since the English alphabet is the same as the Latin alphabet, this leads to inadequate decoding of the abbreviated term.

Using Latin abbreviations in prescriptions allows for more accurate transmission of information, facilitates the communication process and saves the doctor’s time, which does not need to write information about administration drugs in detail – he only needs to write out the prescription scheme using generally accepted abbreviations.

Latin abbreviations in prescriptions are a familiar, convenient system embedded in the structure of the prescription and used for many centuries. However, the time and cost of writing abbreviations are reduced only if they are understandable and familiar to all participants in the communication. Misunderstandings between members of the medical community often lead to incorrect interpretation of abbreviations.

One of the most important findings of this study is the high prevalence of prescribing errors associated with misinterpretation of abbreviations². Several key abbreviations that are often misunderstood are presented in tab. 2.

¹ Barbasheva S. S., Avramenko A. A. Translation of abbreviations in English medical texts and research of cardiology terminology. *Izvestia of Samara Scientific Center of the Russian Academy of Sciences*, 2011, vol. 13, no. 2 (40) (4), pp. 911–916. EDN: PFLFNP

² Hamiel U., Hecht I., Nemet A., Peer L., Man V., Hilely A., Achiron A. Frequency, comprehension and attitudes of physicians towards abbreviations in the medical record. *Postgraduate Medical Journal*, 2018, no. 94 (1111), pp. 254–258.

Table 2

Most common errors in prescriptions

No.	Abbreviation	Correct interpretation	Error
1	QD	quaque in die – once a day	quarter in die – four times a day
2	IU	International unit	IV – intravenous
3	QHS	quaque hora somni – at night, before bed	every hour
4	MSO4	magnesium sulfate	MS – morphine sulfate
5	U	Unit	0

According to current recommendations, one should not use Latin abbreviations such as b. i. d. (bis in die – twice daily), t. i. d. (ter in die – three times a day), h. s. (hora somni – before bed), p. c. (post cibum – after meals), a. c. (ante cibum – before meals). It is recommended to write in recipes: every 12 hours, every 8 hours, at bedtime, after eating, and before eating a meal, respectively. However, not all doctors follow these recommendations.

Incorrect decoding of abbreviations can lead to a dangerous overdose or insufficient dosage of the drug, the wrong way of prescribing and taking drugs, causing a threat to the health and life of patients.

To solve the problem of errors associated with abbreviations in recipes, you can implement several solutions.

1. Standardization of abbreviations. National and international organizations should work together to create standardized lists of abbreviations that will be universally recognized and used in all health care settings. Standardization should also cover their use, in both written and electronic prescriptions.

2. Electronic prescribing systems. The implementation of electronic prescribing systems (electronic prescribing) should be prioritized in both the public and private health sectors. These systems can provide standardization of medical abbreviations, reduce the human factor and improve patient safety.

3. Training programs for health professionals. Health care facilities should implement continuing education programs aimed at safely using abbreviations in prescriptions. Such programs should emphasize not only understanding the abbreviations, but also recognizing the risks of misinterpretation and the role of clear communication in preventing medical errors.

4. Public awareness campaigns. There is also a need to raise public awareness of the importance of correct interpretation of information in prescriptions. Educational campaigns can help patients understand abbreviations in prescriptions and encourage them to ask questions if something is not clear.

Conclusion

Information exchange is becoming faster and more intensive due to the development of communication technologies, and communication is expanding in response to an increase in workload. The number of referrals between specialist doctors and general practitioners is growing. The use of abbreviations in clinical communication is growing and can lead to misunderstandings, increased workload and worse treatment outcomes.

Medical prescriptions have included abbreviations for several centuries to improve efficiency, speed and brevity. The cuts could help healthcare providers reduce paperwork

time, especially in busy clinical settings. However, the prevalence of incomprehensible or ambiguous abbreviations in prescriptions has led to widespread concern about patient safety.

The first systematization of abbreviations in the structure of drug prescriptions made it possible to distinguish 7 main categories: dosage forms, parts of plants, dosage, instructions to the pharmacist, methods of prescription and administration, names of drugs, state of the substance. The most common are abbreviations for dosage forms and parts of plants.

Analysis of the original literature and English-language prescriptions, which are freely available, made it possible to identify the most common errors in the structure of prescriptions when prescribing drugs in order to prevent errors in their interpretation. The most common errors include the use of the following abbreviations: Q. D., Qhs, U, IU, MS04. Misinterpreted prescription cuts can lead to medication errors that can have serious side effects for patients.

Prescription errors caused by misinterpretation of abbreviations pose significant risks to patient safety worldwide. Addressing this requires a comprehensive approach involving standardizing abbreviations, implementing e-prescriptions, increasing the education and training of health professionals, and raising public awareness. Through these measures, the medical community can reduce errors associated with reductions, ultimately improving treatment outcomes and patient safety.

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Статья поступила в редакцию 18.09.2025; одобрена после рецензирования 28.12.2025;
принята к публикации 27.01.2026.

The article was submitted 18.09.2025; Approved after reviewing 28.12.2025; Accepted for publication 27.01.2026.