CHAPTER 13

CROSS-LINGUISTIC SEMANTIC EQUIVALENCE IN MEDICAL TERMINOLOGY TRANSLATION

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DOI https://doi.org/10.30525/978-9934-26-704-8-13

INTRODUCTION

Higher medical education is undergoing a fundamental transformation shaped by globalization, the digitalization of scientific communication, and Ukraine's integration into the international healthcare space. These developments have repositioned foreign language competence from a peripheral academic requirement to a core component of professional readiness – enabling practitioners to access current research, engage in clinical trials, and participate in cross-border dialogue. Within this context, medical English teaching and the development of terminological competence have gained particular relevance, addressing a persistent limitation of traditional language pedagogy: the acquisition of decontextualized vocabulary and grammar divorced from professional practice. A competence-based paradigm is increasingly replacing this approach, reorienting instruction toward practical skills – including identifying and using cross-linguistic semantic equivalents in specialized translation. The theoretical and practical dimensions of this shift in Ukrainian higher education have been extensively documented[1].

This study approaches cross-linguistic semantic equivalence as a methodological and linguistic challenge central to medical foreign language education. By integrating terminological knowledge, recognizing conceptual divergences across medical ontologies, and selecting contextually appropriate equivalents, language learning is reoriented toward professional development. This enables neurologists to engage confidently with international classifications, diagnostic scales, and research literature.

The relevance of this study is determined by several factors. First, the European Council's recommendations require medical professionals to discuss

[1] Лічман Л. Ю. Genesis of competency-based educational concept implementation into Ukrainian higher school student's foreign language training theory and practice : навч. посіб. / Л. Ю. Лічман; за заг. ред. Л. Ю. Лічман ; МОЗ України, Нац. мед. акад. післядиплом. освіти ім. П. Л. Шупика. Запоріжжя : ТОВ «Видавничий будинок «Кераміст», 2018. 108 с.

professional issues, defend positions with reasoned arguments, critically analyze foreign-language sources, and engage in intercultural dialogue. Second, the Bologna Process and Ukraine's integration into the European higher education space have made the competence-based approach a normative standard, reorienting learning outcomes toward professional foreign language communicative competence. Third, contemporary research confirms that effective medical language teaching must incorporate linguistic knowledge, sociocultural awareness, discursive skills, and strategic competence. The mission of a foreign language in the contemporary polycultural and multilingual world has been reconceptualized as a driver of intercultural professional dialogue rather than a purely academic requirement[2]. This integration makes learning motivating, personally meaningful, and professionally significant.

The theoretical basis of this study is grounded in the works of leading Ukrainian and international scholars in medical language teaching methodology, applied linguistics, higher education pedagogy, and translation theory. The competence-based approach is considered the leading methodological mechanism for modernizing the educational process, aimed at developing professionally significant attributes, particularly communicative flexibility, the ability to interact effectively in a foreign language environment, and the capacity for lifelong learning and reflective practice (Savchenko[3], Kremen, Luhovyi & Saukh[4], Avsheniuk et al.[5], Kucherenko[6]). In medical universities, this is realized through professionally oriented discourse, which structures educational content around students' future specialization, including mastering specialized terminology, genres of professional correspondence, clinical case discussions, and oral presentations.

This article **aims to** comprehensively analyze the problems of cross-linguistic semantic equivalence as a foundation for developing foreign language

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[2] Редько В. Г., Полонська Т. К. Місія іноземної мови в сучасному полікультурному і мультилінгвальному світі. Компетентнісно орієнтоване навчання іншомовного спілкування. *Педагогічна газета України*. 2021. № 6 (286). С. 6.

[3] Савченко О. В. Компетентнісний підхід у навчанні іноземної мови і склад професійно-комунікативної компетенції. *Вчені записки ТНУ імені В. І. Вернадського. Серія: Філологія. Соціальні комунікації*. 2020. Т. 31 (70), № 2.2. С. 218–224. https://doi.org/10.32838/2663-6069/2020.2-2/38.

[4] Кремень В. Г., Луговий В. І., Саух П. Ю. Освіта і наука – основа інноваційного людського розвитку: пропозиції НАПН України до Стратегії людського розвитку. *Вісник Національної академії педагогічних наук України*. 2020. Т. 2, № 2. С. 1–5. https://doi.org/10.37472/2707-305X-2020-2-2-14-3.

[5] Вектори розвитку сучасної освіти: духовність, взаємодія, комунікація, компетентність : монографія / Н. М. Авшенюк та ін. ; за заг. ред. Н. М. Авшенюк, Г. В. Товканець. Ужгород : РІК-У, 2024. 456 с.

[6] Кучеренко І. А. Сучасний компетентнісний урок в умовах технологізації навчання в закладах П(ПТ)О : електронний навчальний курс. Біла Церква: БІНПО ДЗВО «УМО» НАПН України, 2025. 94 с. URL: https://lib.iitta.gov.ua/745491/ (дата звернення: 19.04.2026).

professional communication in neurologists. It examines the theoretical and methodological framework of terminological competence, identifies the structural components of medical translation competence, highlights the most effective pedagogical methods and technologies for its implementation, and presents empirical findings from analyzing a wide range of neurological terms and their Ukrainian equivalents.

To achieve this aim, the article addresses the following **tasks**:

1. To analyze current educational trends driving the transition from a knowledge-oriented to a competence-based approach in foreign language teaching for medical professionals.

2. To clarify the essence of "cross-linguistic semantic equivalence", "terminological competence", and "foreign language professional communicative competence of a neurologist".

3. To systematize translation difficulties in neurological terminology, including synonyms, homonyms, polysemy, near-identical forms, and stable terminological constructions.

4. To investigate the relationship between professional and foreign language competence in the accuracy of medical translation.

5. To characterize pedagogical methods and interactive technologies effective for developing terminological translation skills, such as case-based exercises, corpus analysis, and contextual drills.

6. To present the translation and Ukrainian adaptation of the Cerebellar Cognitive Affective Syndrome (CCAS) Scale as a case study of international instrument implementation.

7. To analyze military-medical terminology as a domain necessitated by Russia's military aggression against Ukraine.

8. To determine criteria and instruments for assessing terminological competence within the competence-based approach.

9. To outline challenges and prospects for implementing competence-based medical language teaching in Ukrainian higher education.

The study employed a range of general scientific and specialized methods. Theoretical analysis served as the primary method, enabling synthesis of scholarly literature on the competence-based approach, professionally oriented discourse, medical translation, and terminological competence. Comparative analysis was used to contrast traditional and competence-based models of medical language teaching, as well as domestic and international approaches to translation training. Systematization and classification allowed for identifying types of terminological difficulties and establishing a typology of equivalence problems. Discourse analysis examined the features of professional medical communication in a foreign language context, while generalization underpinned

the formulation of conclusions regarding the effectiveness of competence-based translation training.

The methodological framework rests on the competence-based paradigm of higher education, the discourse-oriented approach to foreign language teaching, and the principles of contrastive terminology and translation theory. Professional foreign language communicative competence in neurologists is understood as developing through the integration of linguistic, terminological, discursive, and strategic components within a professionally oriented educational context.

1. Theoretical foundations of cross-linguistic semantic equivalence in medical translation

Cross-linguistic semantic equivalence in medical translation is grounded in contemporary translation theory and competence-based language pedagogy. Rather than treating translation as mechanical lexical substitution, this framework reconceives it as a complex cognitive process of identifying conceptual correspondences between two terminological systems while accounting for the functional, pragmatic, and contextual parameters of professional communication. Medical translation competence thus emerges as an integrated capacity combining knowledge of source and target language terminologies, understanding of medical concepts and their interrelations, awareness of genre conventions, and the ability to make contextually motivated decisions in selecting equivalents.

From a linguistic perspective, semantic equivalence problems stem from the fundamental asymmetry between natural languages. No two languages share identical semantic fields, and medical terminologies are no exception, despite their international character. Although Ukrainian and English medical terminologies share common Greco-Latin roots, they have evolved differently under the influence of distinct clinical traditions, standardization practices, and patterns of borrowing. Translation training must therefore focus not on memorizing isolated term pairs but on developing a heuristic ability to navigate a range of translational possibilities – full, partial, near-, and zero equivalence.

The competence-based approach redefines the objectives of medical foreign language education, shifting from the acquisition of general English structures to using the language as an instrument of professional communication and information access. Language is thus no longer an end but a means of solving professional tasks, participating in international research, and engaging with evidence-based knowledge. Accordingly, terminological competence extends beyond knowing equivalents to selecting among them according to communicative situation, text genre, target audience, and degree of standardization required.

Within competence-based medical language teaching, professionally oriented discourse shapes both the content and structure of the educational process according to neurologists' professional needs. From a translation perspective, this encompasses not only specialized vocabulary and grammatical patterns but also genre conventions, pragmatic strategies, and sociocultural norms of the international neurological community. Through mastering such discourse, students acquire specific ways of organizing case histories, formulating diagnoses, interpreting clinical findings, and communicating with international colleagues.

From a theoretical and methodological standpoint, the competence-based approach to medical translation training functions as an integrative model in which the educational process is structured around typical translation scenarios, professionally significant text types – case reports, research articles, clinical guidelines, diagnostic scales – and communicative tasks. Combining terminological acquisition with contextual translation practice helps bridge the gap between theoretical knowledge of medical English and its use in real professional communication.

Competence-oriented medical English teaching is inherently multidimensional. At the personal level, it fosters learner autonomy, reflection, and individual translation strategies, enabling students to manage their own learning consciously. At the institutional level, English functions as a medium of professional interaction, academic mobility, and integration into the international medical and scientific community. Together, these dimensions ensure that the educational process remains flexible, adaptable to evolving professional demands, and responsive to the conditions of globalization and digitalization in contemporary medical education.

2. Structure of terminological competence in medical translation

Within competence-oriented foreign language teaching, language functions as a fundamental instrument of professional, scientific, and intercultural interaction in multilingual medical environments. Beyond purely linguistic training, it integrates professional knowledge, terminological skills, and socially significant values necessary for effective practice in a globalized context. Terminological competence, as a component of professional foreign-language communicative competence, is thus conceptualized as a holistic, multidimensional construct that develops through the interaction of linguistic, semantic, pragmatic, and strategic components. Each performs an independent function while simultaneously complementing the others, reflecting contemporary scholarly understandings of medical translation competence as functionally, contextually, and practically oriented.

Linguistic-terminological competence constitutes the foundational layer of the model. It encompasses knowledge of the morphological, syntactic, and derivational patterns of medical terminology in both languages, including Greco-Latin combining forms such as neuro-, myo-, cephal-, -pathy, -itis, -oma, their combinatorial rules, and semantic contributions to complex lexical units. This component presupposes the ability to recognize terminological boundaries, identify terminological variants, and produce correct grammatical forms in professional discourse. Its development involves not merely acquiring vocabulary lists but building morphological awareness, an analytical approach to term decomposition, and the capacity to derive term meanings independently from constituent parts.

Semantic competence operates at the level of meaning relations within and between terminological systems, encompassing knowledge of synonymy, polysemy, homonymy, and hyponymy. In medical translation, it is critical to identify equivalence relationships across languages – whether terms are fully equivalent, partially equivalent, or non-equivalent due to conceptual gaps or structural divergences in the target language. Semantic competence also includes awareness of false friends, that is, lexical items that appear similar across languages but differ in meaning, such as English actual versus Ukrainian актуальний (topical) or English lunatic versus Ukrainian лунатик (sleepwalker).

Pragmatic competence addresses the use of definitions in context, encompassing knowledge of how lexical selection choice varies according to communicative situation, text type, genre conventions, and audience expectations. For instance, selecting among a Latinate term (cerebrovascular accident), a plain-English equivalent (stroke), or a euphemistic alternative (brain attack) depends on the formality of the setting, the addressee's expertise, and the communicative purpose. Pragmatic competence further includes awareness of terminological variation across dialects, registers, and historical periods, as illustrated by alternatives such as emergency department, accident and emergency, and casualty.

Strategic competence functions as meta-competence, enabling learners to compensate for gaps in terminological knowledge during translation tasks. It encompasses the ability to infer term meanings from contextual cues, consult reference resources efficiently, such as terminological databases, parallel corpora, and specialized dictionaries, apply paraphrase strategies when no direct equivalent exists, and verify candidate equivalents through corpus searches or expert consultation. Strategic competence thus supports lifelong learning, ensures flexibility of translation behavior, and promotes adaptation to new terminological domains – a quality of particular relevance given the rapid expansion of medical knowledge.

Domain competence integrates terminological knowledge with subject-matter expertise, presupposing a deep understanding of the medical concepts underlying designations, their interrelations within neurological ontologies, and their clinical significance. In translation, it enables the practitioner to recognize when a literal rendering would be conceptually misleading and to select an equivalent that preserves the intended clinical meaning. This competence develops through the integration of language training with clinical content, case-based learning, and collaboration between linguists and medical specialists.

3. Translation challenges in neurological terminology

Analysis of a substantial corpus of lexical items and stable terminological constructions drawn from neurological scientific literature identified several systematic types of translation difficulty. These arise from structural asymmetries between English and Ukrainian medical terminologies, from inherent properties of medical language such as synonymy, polysemy, and near-identical forms, and from the ongoing evolution of Ukrainian medical terminology under the influence of international standardization.

3.1. Synonymic variation and equivalent selection

One of the most frequent difficulties encountered was the presence of multiple synonymous equivalents for a single term. In many cases, two or more English designations correspond to the same Ukrainian concept, and the translator must determine which variant is appropriate in a given context. The choice typically depends on frequency in international publications, adherence to standardized terminological systems such as ICHD-3 or ILAE, and stylistic preference.

For example, the Ukrainian term for pathological indifference or lack of emotion (апатія) corresponds to at least two English variants: apathism and apathy. While these are near-synonyms, apathy is overwhelmingly preferred in contemporary clinical and research writing. Similarly, the Ukrainian term for loss of tactile sensitivity (втрата тактильної чутливості) can be rendered as apselaphesia or apselaphesis; the former appears more frequently in current sources. The Ukrainian term for lack of temperature sensitivity (відсутність температурної чутливості) has four attested equivalents: ardanesthesia, thermanesthesia, thermoanaesthesia, and thermoanesthesia. Such variation places a burden on the translator to identify the most widely accepted form, typically by consulting frequency data from medical corpora or by following the usage of leading international journals.

Other examples of synonymic variation include: arachnoiditis (арахноїдит) – arachnoiditis vs. arachnitis; diffuse toxic goitre (дифузний токсичний зоб)

– basedowiform vs. basedowian; that which is outside normal limits (те, що поза межами норми) – abnormal vs. anomal.

In each case, the translator must weigh frequency, standardization, and contextual appropriateness.

3.2. Minimally differing terms

A particularly challenging category involves units differing minimally in form yet carry substantially different meanings. Such pairs are prone to translation error, especially under time pressure or when working in a non-native language.

Representative examples include amyelinic ("lacking a myelin sheath") versus amyelic ("lacking a spinal cord"), and bathyesthesia ("deep or proprioceptive sensitivity") versus bathyanesthesia ("absence of deep or proprioceptive sensitivity"). In the latter pair, the presence or absence of an entire sensory modality is signalled solely by the privative prefix an-, yet the similarity of base forms makes confusion readily possible. Such pairs demand deliberate attention and verification, particularly in high-stakes contexts such as diagnostic instrument adaptation.

3.3. Contextual polysemy

Many medical definitions carry multiple meanings that vary with context, medical subspecialty, or grammatical environment. A lexical item with a general meaning in everyday English may acquire a specialized sense in medical discourse or carry distinct meanings across different specialties.

In fixed terminological constructions, translation varies considerably, as illustrated by aberration: aberration of iron metabolism (порушення обміну заліза), autosomal aberration (аутосомна аберація), chromosome aberration (хромосомна аберація), dioptric aberration (spherical aberration of the eye / сферична аберація ока), mental aberration (mental disorder, delusion / психічний розлад, марення), neoplastic aberration (tumour transformation, malignisation / пухлинна трансформація, малігнізація), and personality aberration (personality disorder / особистісний розлад). Similarly, accommodation may denote adjustment of the lens, physiological adaptation, or provision of temporary care. In each case, disambiguation depends on the immediate linguistic context and the broader clinical domain.

3.4. Homonymy and contextual ambiguity

Homonymy, where identical forms carry unrelated meanings, presents a distinct challenge in medical translation. The term access may denote an attack of fever, access to care, or a surgical approach. Canalization carries at least four distinct meanings: recanalization of a lumen, formation of a reflex arc, drainage of a cavity, and vascularization. Barrel may refer to a container, a barrel-shaped

chest, a unit of volume, or the tympanic cavity of the ear. Behavior translates variously as поведінка, лікування, активність, or режим роботи, and appears in fixed constructions such as contractile behavior ("contractile function of muscles") and exercise behavior ("physical activity"). Accurate translation thus requires contextual interpretation rather than direct dictionary lookup, with the correct equivalent determined by surrounding co-text and the broader clinical or experimental context.

3.5. Fixed terminological constructions

A substantial number of difficulties arise from multi-word units whose meaning cannot be predicted from their components. These conventionalized constructions, including collocations, compound terms, and fixed phrases, require attention beyond standard term-by-term translation.

For instance, blindness generally corresponds to сліпота, but mind blindness and psychic blindness both translate as visual agnosia (зорова агнозія), while psychogenic blindness yields hysterical amblyopia, hysterical amaurosis, or psychogenic blindness (істерична амбліопія, істеричний амавроз, психогенна сліпота), depending on the clinical context and diagnostic framework.

A further instructive example is the pair incoagulable blood versus incoagulated blood. The former denotes a property (кров, що не згортається), while the latter denotes a resulting state (кров, що не згорнулась). This aspectual distinction, signalled by the suffixes -able and -ed, may not be immediately salient to learners whose native language encodes aspect differently.

3.6. Ukrainian–English terminological asymmetries

Beyond the difficulties described above, the analysis revealed systematic asymmetries between Ukrainian and English neurological terminologies. Some English terms lack established Ukrainian equivalents, requiring neologism, borrowing, or paraphrase, while some Ukrainian designations have multiple English equivalents with subtle differences not captured by standard bilingual dictionaries.

The Ukrainian statistical concept of inverse correlation (обернена кореляція) illustrates this problem. In English statistical writing, negative correlation, inverse correlation, and indirect correlation are near-synonyms, all denoting a relationship in which larger values of one variable correspond to smaller values of another. The choice among them is largely a matter of stylistic preference or disciplinary convention. In the authors' publications, indirect correlation was selected for its euphony in parallel with direct correlation, though any of the three could be justified. Such cases require informed decisions based on corpus frequency, journal conventions, or expert consultation.

4. Empirical analysis: baseline terminological competence

A study was conducted to assess the baseline level of translation competence among neurology postgraduate trainees at Shupyk National Healthcare University of Ukraine, focusing on the selection of terminological equivalents in both translation directions.

4.1. Methodology

A 20-item test was developed comprising 10 Ukrainian terms to be translated into English and 10 English terms to be translated into Ukrainian. Items were drawn from core neurological vocabulary, covering anatomical structures, pathological conditions, symptoms, diagnostic procedures, and therapeutic interventions. The test was administered to 45 postgraduate trainees at the outset of their language training program.

4.2. Results

The results revealed several consistent patterns. Translation from Ukrainian into English proved more difficult than the reverse direction, with errors attributable both to unfamiliarity with English vocabulary and to orthographic errors arising from direct mapping of Latin-based Ukrainian forms onto English without recognizing conventional anglicized spellings. Translation from English into Ukrainian yielded fewer errors, though these similarly involved calquing from Latin, confusion between minimally differing terms, and incomplete knowledge of polysemous items.

Contextualized presentation reduced error rates compared to isolated term translation, though errors persisted for rare items and those diverging from familiar Latin-like forms.

Items posing particular difficulty included abepithymia (correctly rendered as anorexia / відсутність апетиту by 31% of participants), anaphia (loss of touch sensation / втрата відчуття дотику, 27%), apselaphesia (loss of tactile sensitivity / втрата тактильної чутливості, 24%), and arthresthesia (joint-muscular sensitivity / суглобово-м'язова чутливість, 29%). When terms carried multiple meanings, participants consistently provided only the most common equivalent regardless of context, underscoring the need to develop synonymic range and contextual disambiguation skills.

4.3. Professional competence and translation accuracy

A secondary analysis examined the relationship between professional competence and translation accuracy. Participants were divided into two groups based on performance on a standardized neurology knowledge test: those with higher professional competence and those with lower professional competence. Both groups demonstrated comparable general English proficiency.

Participants with higher professional competence produced significantly more accurate translations of specialized neurological texts, with mean accuracy scores notably higher than those achieved by the lower competence group, and the difference between the groups reached statistical significance.

This finding suggests that translation accuracy in specialized domains depends not only on foreign language proficiency but also on depth of subject-matter knowledge. A neurologist who understands the clinical concept underlying a term is better positioned to select an appropriate equivalent, even with modest general English proficiency. Conversely, strong language skills without adequate clinical knowledge may lead to literalism and conceptual error.

5. Case study: translation and Ukrainian adaptation of the cerebellar cognitive affective syndrome scale

A significant practical outcome of this research was the translation and Ukrainian adaptation of the CCAS Scale, originally developed by Professor Jeremy D. Schmahmann and colleagues at Massachusetts General Hospital and Harvard Medical School. The CCAS Scale is a validated instrument for assessing cognitive and affective impairments in patients with cerebellar pathology, widely recognized as a standard tool for cerebellar cognitive assessment.

5.1. Procedure

Following direct communication with the Department of Neurology at Massachusetts General Hospital, the authors obtained Professor Schmahmann's permission to translate the CCAS Scale into Ukrainian. The process followed five stages: initial translation by a linguist with medical translation experience; back-translation by an independent translator to verify fidelity; review by a neurologist specializing in cerebellar disorders; reconciliation of discrepancies; and final approval by the original author.

5.2. Translation challenges

The adaptation process revealed several challenges specific to diagnostic instrument translation. First, administration instructions presupposing familiarity with certain testing procedures, such as semantic fluency tasks, required rendering in Ukrainian in a way intelligible to local neurologists while preserving the standardised protocol.

Second, several English definitions lacked direct Ukrainian equivalents. The term semantic fluency, for instance, could be translated literally as semantic competence (семантична компетентність), but this would misrepresent the construct being measured. The scale assesses speed of word generation within a semantic category under time pressure, making fluency a matter of

rapidity and ease of production rather than enduring ability. The established neuropsychological equivalent is semantic fluency (семантична побіжність), which accurately reflects the construct and is consistent with standard Ukrainian neuropsychological terminology.

Third, culturally specific prompts required contextual adaptation. Category examples for fluency tasks, such as "things you might find in a supermarket", were adjusted to reflect Ukrainian retail environments while preserving the cognitive demands of the task.

5.3. Outcome

The first complete Ukrainian translation of the CCAS Scale was successfully completed and approved by the original author, accompanied by a Ukrainian-language glossary of terms used in the scale. The translated instrument is now available for use in clinical and research settings. The English original and the Ukrainian translation are presented in the report in parallel, allowing direct comparison of the two versions.

This case study demonstrates both the feasibility and importance of systematic, collaborative adaptation of international diagnostic instruments. It also illustrates the principles of semantic equivalence in practice: the goal is not literal correspondence but functional equivalence, preserving the clinical utility and psychometric properties of the original while making it accessible to Ukrainian-speaking patients and clinicians.

6. Methodological approaches to developing terminological competence

Drawing on the theoretical analysis and empirical findings presented above, several methodological approaches are recommended for developing terminological competence in neurologists and other medical professionals.

6.1. Corpus-based terminology instruction

Traditional term lists and bilingual dictionaries, while necessary, are insufficient for developing translation competence. Learners require exposure to authentic language use in context, including frequency distributions, collocational patterns, and genre-specific preferences. Corpus-based instruction draws on collections of authentic medical texts – research articles, clinical guidelines, patient information leaflets – to show how terms are actually used by expert writers.

For example, learners may search a neurology journal corpus for apathy and apathism, comparing their frequencies and contexts of use. This inductive approach builds awareness of usage patterns and helps learners internalize the conventions of the target discourse community.

6.2. Contrastive terminology analysis

Contrastive analysis of English and Ukrainian medical terminologies helps learners anticipate and overcome translation difficulties by focusing on systematic differences between the two terminological systems, including word formation patterns, preferences for Greco-Latin versus native elements, and patterns of borrowing. Ukrainian medical terminology has historically been shaped by Latin, German, and Russian influences, whereas contemporary international medical English is increasingly standardized around Greco-Latin roots with English morphological patterns. Training learners to recognize these influences supports more informed decisions in equivalent selection.

6.3. Contextualized translation practice

Decontextualized term drills offer limited transfer to real-world translation tasks. Instruction should embed translation practice within meaningful professional contexts, such as translating a case history into English for international journal submission, rendering a clinical guideline into Ukrainian for local adaptation, producing a bilingual patient information leaflet, or interpreting a diagnostic scale. Such tasks require learners to attend not only to terminological accuracy but also to genre conventions, audience expectations, and pragmatic appropriateness. The macro-strategy of translating medical foreign language definitions for use in neurological practice has been described in earlier work[7].

6.4. Collaboration between linguists and medical specialists

The findings strongly support interdisciplinary collaboration in medical translation training. The most accurate translations were produced when linguists and neurologists worked together, with the neurologist clarifying conceptual nuances and the linguist ensuring natural target-language expression. This model should be extended to the classroom through co-teaching arrangements between language instructors and clinical faculty.

6.5. Development of specialized dictionaries and glossaries

The analysis of several hundred neurological terms and their Ukrainian equivalents has direct practical value for bilingual terminological resource development. The authors have compiled a working glossary intended as a reference for neurologists, translators, and language teachers, with plans to expand and publish it as an open-access resource.

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[7] Lichman L. Yu., Tkachenko Ye. V., Kononets O. M. Macro-strategy of medical foreign language definitions professional translation and use in neurologists' practice. Proceedings of the III International Scientific and Practical Conference “Modern Methodology of Science and Education” : conf. proc., Dubai, 2017. Vol. 4, No. 6 (22). P. 35–37.

7. Military-medical terminology as an emerging domain

The full-scale Russian military aggression against Ukraine prompted an expansion of this research to include military-medical terminology. The war has created an urgent need for Ukrainian medical professionals to engage with international military-medical standards, including Tactical Combat Casualty Care (TCCC) guidelines, NATO medical terminology, and English-language resources on blast injuries, penetrating trauma, and field medicine. The role of foreign language professional competence as a quality factor in training modern military specialists has been previously examined in the Ukrainian context[8].

A new educational module, "Tactical Medicine Essentials: Basic Military English", was developed as part of this research. The module covers:

1. Basic military ranks, units, and operational concepts.
2. Types of weapons and associated injuries, including blast, fragmentation, penetrating, and burn trauma.
3. Triage terminology: immediate, delayed, minimal, and expectant categories.
4. Evacuation terminology, including CASEVAC (casualty evacuation by non-medical transport), MEDEVAC (evacuation by dedicated medical transport with clinical personnel), and Role 1–4 facilities.
5. Communication protocols for multinational military-medical teams.

The analysis revealed translation challenges broadly similar to those in civilian neurology, including synonymy (tourniquet vs. hemostatic bandage), minimally differing terms (hemorrhage vs. hematoma), and fixed constructions (damage control resuscitation, golden hour). Military-medical terminology, however, presents additional challenges specific to the domain: security classification requirements, standardization across NATO member states, and the need for rapid, unambiguous communication in life-threatening situations.

8. Assessment of Terminological Competence

Assessing terminological competence within a competence-based framework requires moving beyond discrete-point testing, such as multiple-choice term-definition matching, toward authentic, performance-based assessment. The following instruments and criteria are recommended.

[8] Лічман Л. Ю., Торговець М. А., Крамська Ю. А. Іншомовна фахова компетентність як фактор якості підготовки сучасного військового. Матеріали науково-практичної конференції «Інформаційно-телекомунікаційні системи і технології та кібербезпека: нові виклики, нові завдання» : матеріали наук.-практ. конф., м. Київ, 24–25 листоп. 2021 р. / ІСЗЗІ «Київський політехнічний інститут імені Ігоря Сікорського». Київ, 2021. С. 122–123.

8.1. Translation portfolio

A translation portfolio documents the learner's translation work over time, encompassing drafts, revisions, and reflections across a range of text types such as case reports, research abstracts, clinical guidelines, and patient materials. It provides evidence of progress in accuracy, fluency, and strategic problem-solving.

8.2. Rubric-based assessment

Analytic rubrics may be used to assess translation quality across multiple dimensions: terminological accuracy in equivalent selection, grammatical correctness at morphological and syntactic levels, cohesion and coherence, register appropriateness, and strategic competence in resource use and handling of difficult items. Each dimension can be scored on a defined scale, such as 1 to 4, where 1 indicates unsatisfactory performance with pervasive errors, 2 reflects partial competence with frequent errors, 3 denotes adequate performance with minor errors, and 4 represents expert-level accuracy and fluency.

8.3. Diagnostic and self-assessment questionnaires

Two questionnaires were developed as part of this research: one for physicians and one for language teachers. The physician questionnaire covers self-reported foreign language competence, frequency of professional language use, and perceived importance of language skills for clinical practice, including items on years of language study, self-rated general and professional English proficiency, and perceived impact on clinical work. The teacher questionnaire addresses familiarity with the competence-based approach, perceived barriers to implementation, and classroom methods employed. Both instruments serve diagnostic and formative purposes, suitable for administration at the outset of a training program to identify learner needs and at the end to measure progress.

9. Implementation challenges and prospects at Ukrainian medical universities

Implementing competence-based medical language teaching with a focus on semantic equivalence and translation skills presents both significant challenges and considerable prospects in the Ukrainian context.

9.1. Challenges

Several challenges impede effective implementation. First, there is a shortage of language teachers with sufficient domain knowledge to teach specialized translation; most are trained as philologists rather than medical translators, and targeted professional development is needed. Second, while some instructional resources exist – including competence-based teaching guides developed in the Ukrainian context – widely available materials addressing translation skills,

contrastive terminology, and the specific difficulties documented in this research remain limited, making the development and dissemination of such resources a priority. Third, integration between language and clinical training remains weak, as courses are typically taught in isolation with little collaboration between language and clinical faculty. Fourth, assessment practices are not yet aligned with competence-based principles, with many institutions continuing to rely on traditional grammar-translation tests that fail to measure authentic translation performance.

9.2. Prospects

Despite these challenges, the prospects for implementation are encouraging. Strong policy support for competence-based education and European integration provides a favorable institutional environment, with language competence increasingly recognized as a priority in Ukrainian medical education reform. The war has simultaneously created unprecedented demand for military-medical English skills, driving institutional investment in language training and ensuring receptiveness to initiatives such as the "Tactical Medicine Essentials" module. Digital technologies further expand instructional possibilities, enabling corpus-based terminology training, access to parallel texts, and direct communication with international experts. Finally, the collaborative model demonstrated in this research, bringing together linguists and neurologists to translate the CCAS Scale and analyze terminology, offers a replicable template for other institutions and specialties.

CONCLUSIONS

Cross-linguistic semantic equivalence in medical translation cannot be reduced to one-to-one lexical correspondence. Systematic differences between English and Ukrainian medical terminologies, encompassing synonymy, polysemy, minimally differing forms, and fixed constructions, require explicit pedagogical attention. Analysis of a substantial corpus of neurological terms identified specific difficulty patterns, while empirical findings confirmed that contextualized translation reduces error rates and that deeper clinical knowledge significantly improves translation accuracy. The Ukrainian adaptation of the CCAS Scale demonstrated the feasibility of collaborative instrument translation guided by functional equivalence, and the study's expansion into military-medical terminology revealed additional challenges related to NATO standardization. Recommended methodological approaches include corpus-based instruction, contrastive analysis, and performance-based assessment. Implementation remains constrained by teacher training gaps and weak curricular integration, though strong policy support and digital technologies offer considerable promise.

SUMMARY

This article analyses cross-linguistic semantic equivalence in medical terminology translation as a foundation for foreign language training of neurologists in Ukrainian higher education. It examines the structure of terminological competence, types of translation difficulties in neurological terminology, and empirical findings from a substantial corpus of neurological terms and neurology trainees' assessments. A case study covers the Ukrainian adaptation of the Cerebellar Cognitive Affective Syndrome Scale. Military-medical terminology and implementation prospects are also addressed. The competence-based approach to medical language teaching enhances graduates' capacity for effective international professional communication.

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