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## CENTRAL ASIAN UNIVERSITY RESIDENCY TRAINING PROGRAM

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### ABSTRACT

The establishment of the first English-language neurology residency program in Uzbekistan by the Central Asian University (CAU) marks a historic milestone in the nation's medical education. Developed in collaboration with the Cleveland Clinic (USA) and the Asan Medical Center (Republic of Korea), the program integrates European competency-based frameworks to train neurologists capable of meeting European Board of Neurology (EBN) certification criteria. This article outlines the motivation, structure, and early experience of the four-year CAU Neurology Residency Program, emphasizing the need for internationally aligned training in a rapidly modernizing Central Asian healthcare system.

**Keywords:** Neurology Residency, Medical Education, Uzbekistan, Competency-Based Training, Cleveland Clinic, Asan Medical Center, European Board of Neurology

### АННОТАЦИЯ

Создание первой англоязычной резидентуры по неврологии в Узбекистане Центрально-Азиатским университетом (CAU) стало историческим шагом в развитии медицинского образования страны. Программа, разработанная в сотрудничестве с Кливлендской клиникой (США) и медицинским центром Асан (Республика Корея), основана на европейских компетентностных стандартах и направлена на подготовку неврологов, соответствующих критериям сертификации Европейского совета по неврологии (EBN). В статье представлены цели, структура и первые результаты реализации четырёхлетней программы ординатуры CAU по неврологии, а также подчёркивается значимость международно ориентированной подготовки специалистов в условиях стремительной модернизации системы здравоохранения Центральной Азии.

**Ключевые слова:** ординатура по неврологии, медицинское образование, Узбекистан, компетентностный подход, Кливлендская клиника, медицинский центр Асан, Европейский совет по неврологии

### ANNOTATSIYA

Central Asian

University (CAU) tomonidan O‘zbekistonda birinchi ingliz tilidagi nevrologiyarezidentura dasturining tashkil etilishi mamlakat tibbiyot ta’limi tarixida muhim bosqich bo‘ldi. Dastur AQShning **Cleveland Clinic** hamda Koreya Respublikasining **Asan Medical**

Center bilan hamkorlikda ishlab chiqilgan bo‘lib, Yevropa kompetensiyaga asoslangan standartlarigata yanadi.

U Yevropa Nevrologiya Kengashi (EBN) sertifikatsiya talablariga javob bera oladiganmutaxassislarni tayyorlashni maqsad qiladi. Ushbu maqolada CAU ning to‘rt yillik nevrologiyarezidentura dasturining maqsadi, tuzilmasi va dastlabki tajribasi yoritilib, Markaziy Osiyoda tezsur‘atlar bilan rivojlanayotgan sog‘liqni saqlash tizimi uchun xalqaro darajadagi ta’limningahamiyati ta’kidlanadi.

**Kalit so‘zlar:** nevrologiya rezidenturasi, tibbiyot ta’limi, O‘zbekiston, kompetensiyaga asoslangan yon dashuv, Cleveland Clinic, Asan Medical Center, Yevropa Nevrologiya Kengashi

### Introduction

Over the past decade, Uzbekistan has made significant progress in healthcare reform, with an increasing demand for physicians trained in specialized disciplines such as neurology. The burden of neurological disorders—including stroke, epilepsy, dementia, and peripheral neuropathies—has risen sharply, paralleling global trends where neurological disorders represent the leading cause of disability worldwide. Despite this, Central Asia has faced a shortage of neurologists meeting international standards.

Historically, medical education in Uzbekistan has followed the post-Soviet model, emphasizing theoretical instruction over structured residency training aligned with competency-based outcomes. Recognizing this gap, the Central Asian University (CAU) in Tashkent launched the country's first four-year English-medium neurology residency program in 2024, integrating frameworks from the European Union of Medical Specialists (UEMS) and the American Academy of Neurology (AAN).

## Methods

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### The Rationale: Why Uzbekistan Needs a New Neurology Residency Model

#### 1. Growing Neurological Disease Burden

According to recent WHO and European Academy of Neurology (EAN) reports, neurological disorders account for more disability-adjusted life years (DALYs) than cardiovascular or oncological diseases. In Uzbekistan, increasing life expectancy and the prevalence of non-communicable diseases have created an urgent need for advanced neurological care.

#### 2. Deficit of Trained Neurologists

Uzbekistan, like many low- and middle-income countries, has fewer than one neurologist per 100,000 people—far below the European average of 9.2 per 100,000. The lack of standardized residency programs has resulted in varied training quality. A new program modeled on European and North American systems aims to fill this gap.

#### 3. International Alignment and Competency-Based Education

The UEMS–EAN European Training Requirements in Neurology (ETRN 2022) define a five-year, competency-based framework emphasizing general neurology, subspecialty exposure, and supervised clinical independence. The CAU program adapts these competencies into a four-year modular

curriculum, maintaining alignment with European standards while addressing Uzbekistan's healthcare realities.

## Program Overview

### 1. Institutional Collaboration

The CAU residency program was established in partnership with the Cleveland Clinic Neurological Institute (USA) and Asan Medical Center (Seoul, Korea). Through these collaborations, residents gain exposure to advanced neuroimaging, electrophysiology, and clinical research methodologies via hybrid teaching, visiting faculty exchanges, and elective rotations abroad.

### 2. Language and Accessibility

The program is conducted entirely in English—the first of its kind in Uzbekistan—to promote global academic integration and facilitate preparation for the European Board of Neurology (EBN) certification.

### 3. Duration and Structure

Year	Main Focus	Key Components
Year 1	Neuroanatomy & Basic Neurosciences	Foundational courses in neuroanatomy, neurophysiology, neuropathology; rotations in internal medicine and emergency care; cadaveric dissection labs; introduction to patient care and ethics.
Year 2	Neuroimaging & Diagnostic Methods	MRI, CT, and functional imaging interpretation; EEG, EMG, and evoked potentials; neuroradiology; research methodology; short rotations in psychiatry and neurosurgery.
Year 3	Clinical Neurology & International Electives	Inpatient and outpatient neurology; exposure to stroke units, epilepsy monitoring, and neurocritical care; two-month international elective at Cleveland Clinic or Asan Medical Center.
Year 4	Chief Residency & Board Preparation	Clinical leadership, teaching of junior residents, independent case management, and structured preparation for the European Board of Neurology exam.

This staged approach reflects the UEMS three-phase model: general neurology → subspecialty training → advanced clinical/research leadership.

### 4. Academic Curriculum

On regular basis during all 4 program years our residents will participate in the following academic and practical activities:

1. Advanced simulation day at the [CAU Center for Medical Simulation](#), skills workshops, and case-based discussions.
2. Special individual mentor month with 2 staff members assigned to each resident to work one-to-one with resident for 2 weeks at a time.
3. Grand Rounds are presented by the faculty from Akfa Medline University hospital, other CAU-affiliated hospitals, as well as national and international leading experts.
4. Case Conference monthly hour is designed for residents to learn from clinical cases.
5. Bi-monthly Journal Club provides evidence-based practice with critical appraisal of the current literature regarding modern neurology practice

## Pedagogical Framework

## 1. Competency Domains

Following the ACGME-inspired model in global neurology education, CAU residents are evaluated across six domains:

1. Patient care
2. Medical knowledge
3. Practice-based learning and improvement
4. Interpersonal and communication skills
5. Professionalism
6. Systems-based practice

## 2. Assessment Tools

- Direct observation and mini-CEX (Clinical Evaluation Exercises)
- Objective Structured Clinical Examinations (OSCEs)
- Portfolio and case log reviews
- Mock oral board simulations based on the American Board of Psychiatry and Neurology (ABPN) model

## 3. Research and Academic Activities

Each resident completes at least one research project suitable for publication, mentored jointly by CAU and Cleveland Clinic faculty. Monthly journal clubs and regional neurology grand rounds foster evidence-based discussion and critical thinking.

### Discussions

### Challenges and Early Outcomes

#### 1. Transition from Soviet to Competency-Based Education

Faculty initially experienced difficulty adapting to outcome-driven assessment and electronic case logging—barriers commonly noted in similar transitions globally. Faculty development workshops were held to harmonize evaluation with international standards.

#### 2. Resource Limitations

Like other LMICs, Uzbekistan faces limited access to advanced imaging and simulation facilities. Partnerships with international centers helped mitigate these challenges through tele-education and periodic visiting faculty programs.

#### 3. Cultural and Linguistic Barriers

English-language instruction improved access to global knowledge but posed early comprehension challenges. In response, supplementary medical English courses were introduced for both residents and faculty.

#### 4. Toward European Board Certification

Preparation for the European Board Examination in Neurology (EBN) is integrated throughout the curriculum, culminating in the fourth year. Mock exams, clinical reasoning seminars, and review sessions are modeled after EBN blueprints. By aligning with UEMS 2022 standards, graduates will be positioned for European Board eligibility, ensuring parity with peers across Europe.

#### 5. Broader Impact and Future Directions

The CAU Neurology Residency Program symbolizes a transformative shift in Uzbekistan's postgraduate medical education. Beyond producing board-eligible neurologists, the program aims to:

- Establish a national neurology residency accreditation framework aligned with UEMS criteria
- Develop subspecialty fellowships in stroke, epilepsy, and neuroimmunology

- Promote international research collaborations linking Central Asia with global neuroscience networks
- Inspire similar reform in other medical specialties through competency-based training models

Ongoing tracking of graduate performance, board outcomes, and research productivity will guide continuous improvement and sustainability.

## Conclusion

The four-year English-language neurology residency program at CAU represents Uzbekistan's commitment to international medical education reform. Through partnerships with world-renowned institutions and adherence to European and American competency-based frameworks, Uzbekistan is building a generation of neurologists equipped for both international excellence and regional leadership in neuroscience.

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