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Case-based vs lecture-based learning for ischemic stroke education: a randomized controlled trial in Argentine medical students

Submission date	**Recruitment status**	[X] Prospectively registered
31/07/2025	No longer recruiting	[X] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
01/09/2025	Completed	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
13/04/2026	Other	[X] Record updated in last year

Plain English summary of protocol

Background and study aims

Teaching medical students how to handle ischemic stroke—a serious condition where blood flow to the brain stops—is extremely important. Traditional lessons (called lecture-based learning or LBL) are common, but there is a different method called case-based learning (CBL) that uses real-life examples to help students learn. This study aims to compare CBL and LBL in medicine students to see how it improves their knowledge, practical skills, and enjoyment of learning about acute ischemic stroke. The goal is to find the best way to teach this important topic.

Who can participate?

Students in their 4th year of medical school at the Universidad Nacional del Nordeste (UNNE) in Argentina, aged 19-27, who are taking a neurology course and agree to join. Only volunteers who attend regular lectures can take part, and those retaking the course cannot join.

What does the study involve?

Students will be picked randomly into two groups of 45. One group will have two 45 minutes CBL sessions (90 minutes total), and the other will have a 90 minutes LBL session. We'll test their knowledge with a 50-items multiple-choice questionnaire (MCQ) before, right after, and 6 months later. We'll also check their clinical skills with an observed skills clinical examination (OSCE) after the class and ask them to fill out a short survey (5-point Likert scale) about their satisfaction with the learning method.

What are the possible benefits and risks of participating?

There's no big benefit right away for students other than increasing their knowledge about cerebrovascular disease, but the results can lead to changes in the teaching model for better learning outcomes for future students and greater stroke awareness. There are no serious risks; everything happens during regular university courses, and the tests don't affect their grades.

Where is the study run from?
The study is run by Rodrigo Agustín Palma Pérez, an independent researcher, and takes place partly at the Faculty of Medicine of niversidad Nacional del Nordeste (UNNE) and partly at the Hospital Escuela José Francisco de San Martín in Corrientes, Argentina.

When is the study starting and how long is it expected to run for?
The study will start in September 2025 and is expected to run until March 2026.

Who is funding the study?
The study is self-funded by the researcher, with no outside money

Who is the main contact?
Rodrigo Agustín Palma Pérez, agustin3456@gmail.com

Contact information

Type(s)
Public, Scientific, Principal investigator

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Additional identifiers

Study information

Scientific Title
Case-based vs lecture-based learning for ischemic stroke education: a randomized controlled trial in Argentine medical students

Acronym
CL-EDUCAT

Study objectives
Primary objective:
To test whether case-based learning (CBL) improves the acquisition of knowledge about acute ischemic stroke (AIS) compared to lecture-based learning (LBL) in fourth-year medical students, measured by multiple-choice questionnaire (MCQ) scores.

Secondary objectives:
1. To determine whether differences in the acquisition of theoretical knowledge about AIS persist in the long term in fourth-year medical students, assessed by MCQ scores at 6 months between CBL and LBL.
2. To evaluate whether there are differences in the development of clinical skills for AIS management in fourth-year medical students between CBL and LBL, measured by Objective Structured Clinical Examination (OSCE) scores.
3. To analyze whether there are differences in the satisfaction of fourth-year medical students with the AIS learning experience between CBL and LBL, assessed by scores on a 5-point Likert scale survey.

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 28/08/2025, UNNE/Hospital Escuela (Moreno 1250, Corrientes, 3400, Argentina; +54 (0)3794422290; cbi@med.unne.edu.ar), ref: 33/25

Primary study design
Interventional

Study design
Single-centre randomized single-blind controlled trial

Study type(s)
Other

Health condition(s) or problem(s) studied
Medical education

Interventions
Participants (90 4th-year medical students) are randomized into two groups (CBL and LBL, 45 per group) using a computer-generated random number sequence. Allocation is concealed using sealed envelopes opened by an independent coordinator not involved in the intervention or assessment.

CBL (Experimental): 90 minutes (total) interactive case-based learning sessions on ischemic stroke.
LBL (Active Comparator): 90 minutes (total) traditional lecture-based session on ischemic stroke.

Intervention Type
Other

Primary outcome(s)
Acquisition of knowledge measured using a 50-item multiple-choice questionnaire (MCQ) at 1 week post-intervention

Key secondary outcome(s)
1. Retention of knowledge measured using a 50-item multiple-choice questionnaire (MCQ) at 6 months
2. Development of clinical skills measured using Observed Skills Clinical Examination (OSCE) at 1

week post-intervention
3. Student satisfaction with teaching method measured using a 5-point Likert scale survey at 1 week post-intervention

Completion date
31/03/2026

Eligibility

Key inclusion criteria
1. 4th-year medical students at Universidad Nacional del Nordeste (UNNE)
2. Enrolled in Neurology
3. Willing to participate

Participant type(s)
Learner/student

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
19 Years

Upper age limit
27 Years

Sex
All

Total final enrolment
90

Key exclusion criteria
Students retaking the course

Date of first enrolment
23/09/2025

Date of final enrolment
30/09/2025

Locations

Countries of recruitment
Argentina

Study participating centre
Universidad Nacional del Nordeste (UNNE)
Moreno 1240
Corrientes
Argentina
3400

Study participating centre
Hospital Escuela José Francisco de San Martín
Rivadavia 1250
Corrientes
Argentina
3400

Sponsor information

Organisation
Hospital Escuela José Francisco de San Martín

Organisation
Universidad Nacional del Nordeste (UNNE)

Funder(s)

Funder type
Other

Funder Name
Investigator initiated and funded

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Data sharing statement to be made available at a later date

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Protocol file	version 1.2	15/06/2025	13/04/2026	No	No