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Webinar EVER Pharma

Neurorecovery in post-stroke complications – from emerging clinical evidence to patient centered benefits

April 21, 2026

Cerebrolysin®

Reconnecting Neurons.
Empowering for Life.

Webinar EVER Pharma (April 21, 2026)

Neurorecovery in post-stroke complications – from emerging clinical evidence to patient centered benefits

MODERATOR

Steven Zeiler
USA

EXPERTS

Sindi Mitrovic
Serbia

Claudio Soto
Chile

Marina Romano
Argentina

INTRODUCTION

This webinar was organized by EVER Pharma and brought together four clinicians: Steven Zeiler (USA), Sindi Mitrović (Serbia), Claudio Soto (Chile), and Marina Romano (Argentina). They shared real-world clinical experience with Cerebrolysin in the management of post-stroke complications, including upper-limb motor impairment, dysphagia and aphasia.

Opening and Introduction by Steven Zeiler

Dr. Zeiler opened the webinar by starting with the central clinical problem: modern acute stroke care has reduced mortality, but at least 80 % of survivors are left with post-stroke complications, and roughly 70 % of those have some degree of hemiparesis. Current standard physical and occupational therapy explains only about 5 % of the variance in motor outcome – within statistical noise. This creates an unmet need for adjunctive, pharmacologically active therapies delivered during the early, time-limited window of spontaneous recovery. Preclinical and clinical evidence positions Cerebrolysin – a neurotrophic peptide preparation shown to enhance dendritic complexity, synaptogenesis and anti-inflammatory signaling – as one such therapy, with recommendations in Canadian, Austrian, German and EAN guidelines.

Presentation by Sindi Mitrović: **Motor recovery after stroke**

Dr. Mitrović addressed upper-limb motor recovery, framing it as one of the greatest challenges in neurorehabilitation. Within the first six months post-stroke, the majority of patients still experience upper-limb impairment and almost half enter the chronic phase with persistent deficits. Unlike walking – which recovers in approximately two-thirds of survivors – arm and hand function is disproportionately impaired and far less likely to reach full recovery. *(Figure 1)*

She summarized the contemporary theoretical shift toward neuroplasticity- and motor-learning-driven rehabilitation, noting that motor recovery is now understood as the result of large-scale network reorganization rather than restoration of a single motor area.

She presented two case studies from her rehabilitation centre in Belgrade, together with data from her own randomized double-blind study.

CASE 1

55-year-old woman, ischemic stroke (left internal capsule) Baseline characteristics: Baseline scores indicated severe stroke (NIHSS 15; Fugl-Meyer UL 3/36; ARAT 0; Barthel 30). The corticospinal tract was partially preserved, and cognition was intact (MoCA 28). *(Figure 2)*

Treatment: Adjunctive Cerebrolysin was initiated at admission and administered once daily for 21 days. Admitted to rehabilitation on day 12 post-stroke after receiving intravenous thrombolysis.

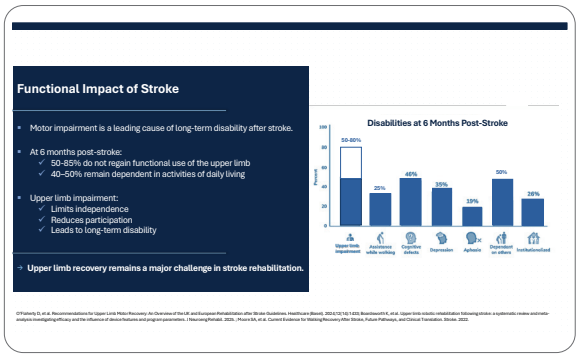

Figure 1

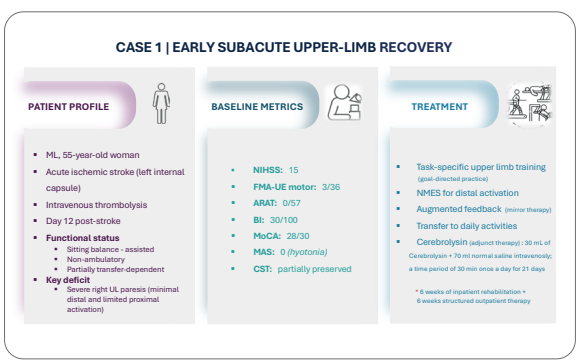

Figure 2

Outcome: Over 12 weeks of early subacute rehabilitation, the patient showed progressive improvement across all outcomes:

- Fugl-Meyer from 3 to 34
- ARAT from 0 to 50
- Barthel from 30 to 80

The steepest gains occurred within the first three weeks, consistent with the early subacute neuroplastic window. Muscle tone evolved from hypotonia to mild spasticity. *(Figure 3)*

CASE 2

65-year-old man, intracerebral hemorrhage

Baseline characteristics: Baseline Fugl-Meyer 8, ARAT 3.

Treatment: The same 21-day Cerebrolysin protocol was applied, beginning on day 15 (3 days later than Case 1). Admitted in the early subacute phase with preserved proximal but impaired distal upper-limb function. *(Figure 4)*

Outcome: The trajectory showed moderate, more gradual recovery: Fugl-Meyer improved from 8 to 28, ARAT from 3 to 35, Barthel from 20 to 60. Hand function remained only partially restored, likely reflecting limited distal selectivity despite partially preserved corticospinal integrity. Mild-to-moderate spasticity may also have constrained efficient functional use. *(Figure 5)*

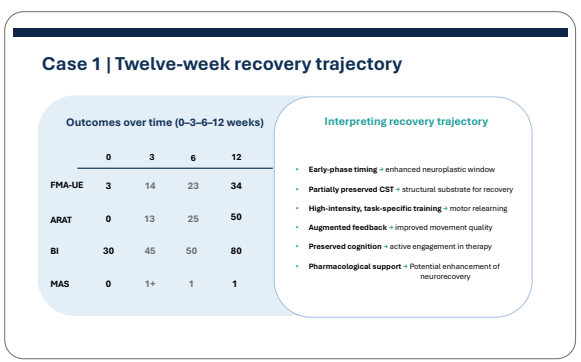

Figure 3

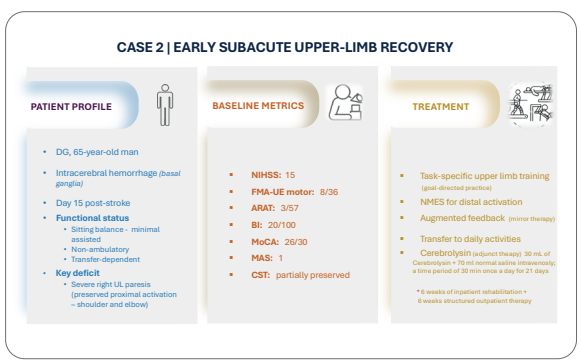

Figure 4

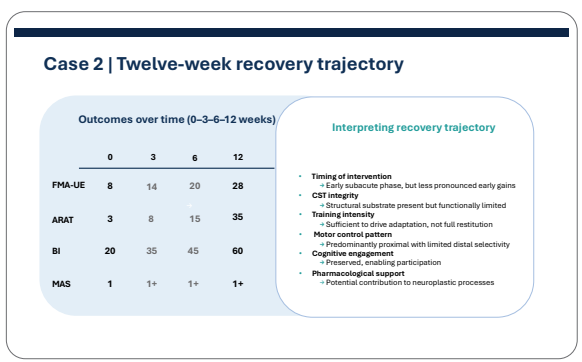

Figure 5

Controlled evidence and ongoing research

She referenced the CARS study (Muresanu et al.), which demonstrated that structured rehabilitation combined with adjunctive Cerebrolysinn therapy was associated with substantially greater improvement in upper-limb function – approximately a 24-point gain in ARAT. *(Figure 6)*

Her own randomized double-blind study in 60 patients with severe upper-limb impairment in the early subacute phase showed consistent improvement over time, with more pronounced effects in the Cerebrolysin group.

The work is now being extended to include both moderate and severe stroke patients, with MoCA-based cognitive profiling and planned investigation of spasticity as a modifier of functional recovery – to be assessed primarily via the Modified Ashworth Scale, supplemented by polyEMG recordings. *(Figure 7)*

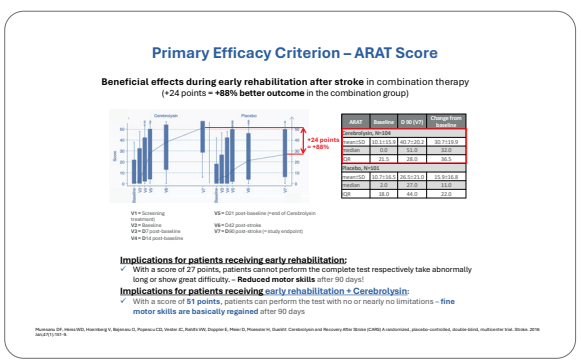

Figure 6

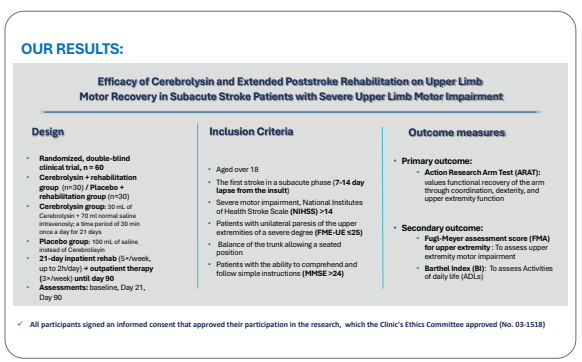

Figure 7

Presentation by Dr. Claudio Soto: **Post-stroke dysphagia**

Dr. Soto addressed post-stroke dysphagia, a highly prevalent complication with rates of approximately 40 to 50 % in systematic reviews (and up to 80 % depending on the evaluation method). Dysphagia increases the risk of pneumonia, dehydration, malnutrition, and urinary-tract infections, and is associated with prolonged hospitalization, poorer functional outcomes, and higher short- and long-term mortality. It is more frequent in hemorrhagic stroke and doubles in risk when brainstem structures are involved.

He reviewed the neurophysiology of swallowing – a complex sensorimotor network involving primary motor cortex, somatosensory cortex, thalamus, cerebellum and brainstem – and emphasized that recovery in the subacute and chronic phases correlates with increased representation and connectivity in the contralesional swallowing cortex. Preservation of white-matter pathways is a critical determinant.

CASE 1

40-year-old patient, severe ischemic stroke

Baseline characteristics: The patient suffered from a left carotid occlusion with complete occlusion of the left MCA and poor collateral circulation. Initial clinical picture: global aphasia, right hemiplegia, rapid decrease in consciousness requiring intubation. He was admitted to the ICU and received sedation and mechanical ventilation. Percutaneous tracheostomy was performed.

Treatment: Dr. Soto initiated the first cycle of Cerebrolysin (30 mL/day for 10 days) together with high-intensity swallowing rehabilitation after which the decannulation was removed. The patient progressed from enteral to mixed feeding (puree diet with honey-thick liquids), in accordance with the appropriate International Dysphagia Diet Standardization Initiative (IDDSI) consistency level for his degree of impairment. Subsequently, he was transferred to a rehabilitation facility and received a second Cerebrolysin cycle (30 mL/day for 10 days).

Outcome: Normal oral nutrition intake was achieved and he was discharged from the dysphagia programme, comprising two speech-and-language therapy sessions per

day from Monday to Saturday. Two months later he was discharged to a home-based rehabilitation programme. Total time to full swallowing recovery: approximately three months. *(Figure 8)*

Summary

- **Stroke → Airway → Dysphagia → Recovery**
- Severe stroke → intubation → tracheostomy
- Dysphagia → enteral nutrition → mixed → normal diet
- Rehabilitation + **Cerebrolysin (2 cycles)**
- **Full swallowing recovery at ~3 months**

Figure 8

CASE 2

31-year-old man, severe traumatic brain injury

Baseline characteristics: The patient suffered an assault resulting in a subdural hematoma and subarachnoid hemorrhage, requiring decompressive craniotomy, tracheostomy and jejunostomy, a surgical procedure in which a feeding tube is inserted directly into the jejunum, which is the middle part of the small intestine. Upon admission to Dr. Soto's centre, the patient demonstrated no consistent visual tracking, no intentional communication and was assessed at Rancho Los Amigos Level II. Structured swallowing assessment identified moderate-to-severe dysphagia (DOSS 2), with continued dependence on tracheostomy and jejunostomy tube feeding.

Treatment: Within six months, the patient underwent three cycles of Cerebrolysin therapy (30 mL/day for 10 days) combined with intensive swallowing rehabilitation and comprehensive multidisciplinary care. During rehabilitation, the patient progressed from exclusive enteral feeding to therapeutic oral intake, initially tolerating IDDSI Level 4 (pureed foods) and IDDSI Level 3 (thickened liquids under supervision). Decannulation was successfully achieved during this period. As recovery progressed, the therapeutic focus shifted toward social reintegration, including participation in family Christmas and New Year's dinners.

Outcome: Functional oral feeding was ultimately achieved with meaningful social reintegration. The patient progressed to full oral intake, including medications, with supervision required only for thickened liquids due to residual safety concerns. The jejunostomy tube was subsequently removed. *(Figure 9)*

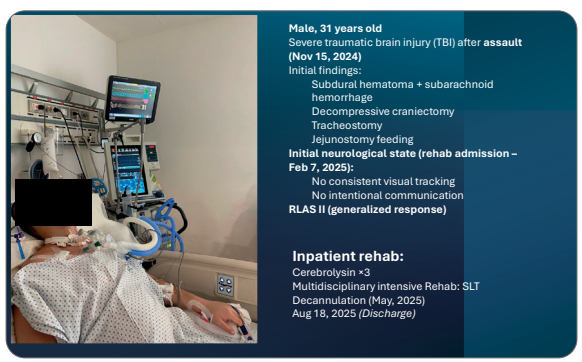

Figure 9

Evidence base and own cohort

Dr. Soto reviewed the mechanistic basis for Cerebrolysin in sensorimotor disorders: support for new circuit formation, enhanced sensorimotor connectivity, brain remodeling via neurogenesis, oligodendrogenesis and axonal remodeling, combined with downregulation of pro-inflammatory cytokines and upregulation of anti-inflammatory cytokines.

He cited German Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften e. V. (AWMF) guidelines on rehabilitation of sensorimotor disorders, which record a 100% consensus for the use of Cerebrolysin to improve disability and motor function in stroke patients. This recommendation is also reflected in the Deutsche Gesellschaft für Neurorehabilitation (DGNR) Guideline, which states that Cerebrolysin can be used to improve the degree of disability and motor function after stroke.

He also presented a retrospective cohort from his own centre (2012–2022) covering 123 patients – 33 treated with Cerebrolysin versus 90 controls – showing a trend toward faster recovery of oral feeding and decannulation in the treatment arm. *(Figure 10)*

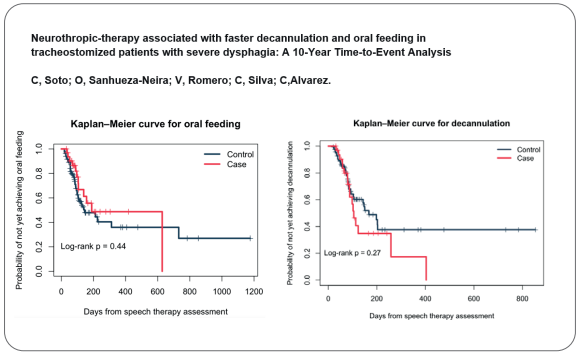

Figure 10

Presentation by Dr. Marina Romano: **Post-stroke Aphasia**

Dr. Romano introduced aphasia as a language disorder resulting from brain damage that impairs speaking, understanding, reading and writing – while typically leaving intelligence intact. Approximately 30 to 40 % of stroke patients are left with aphasia, with a substantial proportion progressing to chronic aphasia. The consequences span communication, quality of life, return to work, depression, and an increased family and caregiver burden. *(Figure 11)*

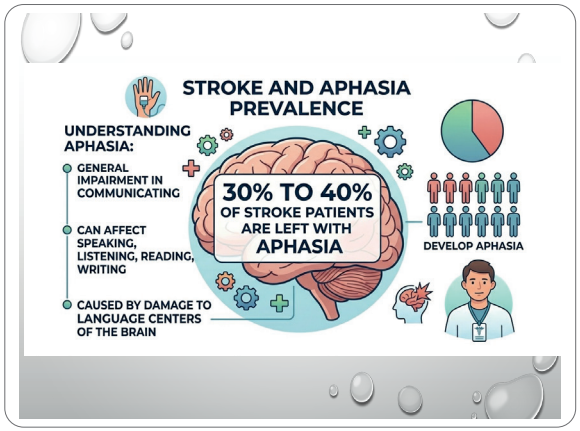

Figure 11

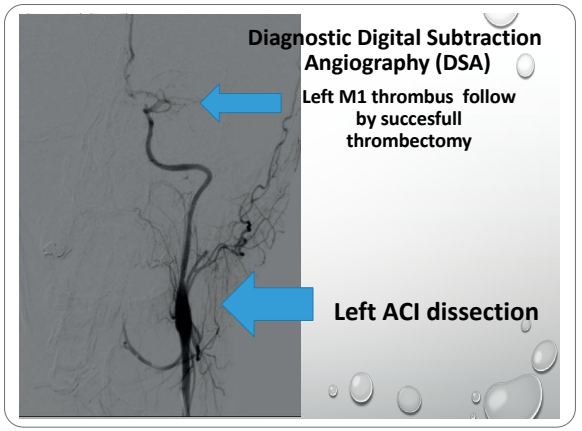

Figure 12

CASE

38-year-old female lawyer, Wernicke's aphasia

Baseline characteristics: The patient had no significant past medical history and presented with sudden onset of Wernicke's (fluent receptive) aphasia and severe right-sided hemiparesis. She was admitted to the emergency department within two hours of symptom onset. Baseline NIHSS was 21, with a pre-stroke modified Rankin Scale (mRS) score of 0. MRI demonstrated a large left basal ganglia lesion positive on DWI/ADC, as well as a cortical lesion involving the left temporal lobe (Wernicke area). Time-of-flight magnetic resonance angiography showed absence of flow in the left internal carotid artery (ICA) and M1 segment. *(Figure 12,13)*

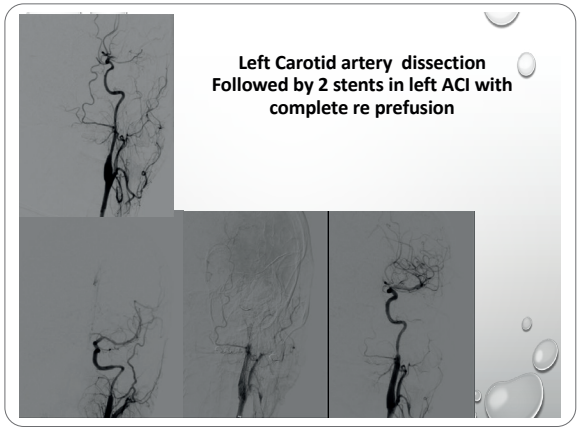

Figure 13

Treatment: It consisted of intravenous rtPA followed by emergency mechanical thrombectomy. Due to carotid dissection, two stents were placed in the left internal carotid artery. Successful recanalization was achieved (TICI 2c). The patient subsequently developed hemorrhagic transformation and required mechanical ventilation for five days. Following extubation, mild residual aphasia and dysphagia persisted. Neurological assessment showed NIHSS 17, mRS 2, Western Aphasia Battery (WAB) score 35, consistent with severe aphasia, and Barthel Index 35.

She was transferred to a rehabilitation centre and treated with a Cerebrolysin dose of 30 mL for 10 days, combined with comprehensive multidisciplinary rehabilitation, including physical therapy, swallowing therapy, occupational therapy, speech-language therapy, and psychological support. Pharmacological co-treatment included sertraline and memantine.

Outcome: At discharge from the rehabilitation centre, aphasia had partially improved, the nasogastric tube had been removed, and the patient had been successfully decannulated. She was able to walk a few steps independently. Neurological assessment showed NIHSS 14 and mRS 2. At three-month follow-up, the patient had achieved independent ambulation, with only minimal residual aphasia and mild hypophonia, characterized by reduced vocal intensity. Dysphagia had completely resolved. Clinical scores further improved to NIHSS 6, WAB 69, and Barthel Index 79, enabling her return to work.

Evidence base – ESCAS trial and Argentinian review

Dr. Romano presented the ESCAS trial (published in Stroke, 2025), which evaluated Cerebrolysin plus speech-language therapy versus placebo plus speech-language therapy in patients with non-fluent aphasia following ischemic MCA-territory stroke. Enrolment occurred between day 3 and day 5 post-stroke, with approximately 120 patients per arm. The WAB results showed significantly better scores in the Cerebrolysin arm at 30, 60, and 90 days, with many patients moving from severe aphasia (WAB < 30) to near-independent communication (WAB ≈ 80) at day 90. NIHSS decreased and Barthel Index increased consistently in the Cerebrolysin arm.

She also presented findings from an Argentinian systematic review on pharmacotherapy in early rehabilitation following ischemic stroke, for which the three prioritized outcomes were aphasia, motor recovery and dependence. Of the drugs reviewed, **Cerebrolysin showed the strongest evidence for motor recovery.** She noted that this review predates the ESCAS trial and will need an update. *(Figure 14, 15)*

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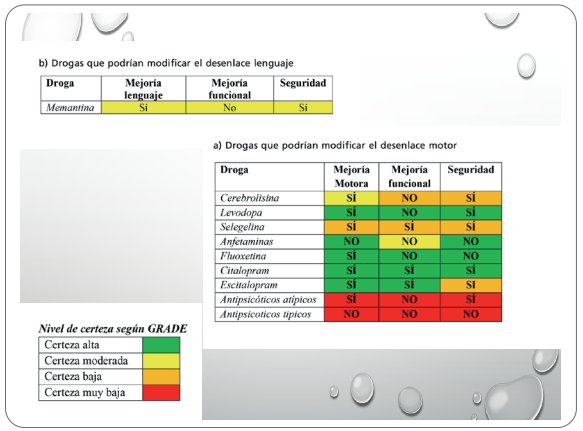
FARMACOTERAPIA EN REHABILITACIÓN TEMPRANA POSTERIOR AL ACCIDENTE CEREBROVASCULAR ISQUÉMICO

SANTIAGO G. PIGRETTI[1,*], CRISTIAN ISAAC[2,*], CLARISA CEA[3,*], MARÍA M. ESNAOLA[4,*], MARIANA RIVEROS[5,*], VIRGINIA TEJADA JACOB[6,*], MIRIAM WEINBERG[7,*], MARIA L. POSADAS MARTINEZ[8,*], DELFINA CIRELLI[9], MARIANA A. BURGOS[9], MÁXIMO ZIMERMAN[9], MARINA ROMANO[7,*]

[1]Hospital Central de Mendoza, [2]Clínica Modelo Lanús, Buenos Aires, [3]Hospital Provincial del Centenario, Rosario, Santa Fe, [4]Hospital Dr. César Milstein, Buenos Aires, [5]Hospital Dr. G. Rawson, San Juan, [6]Instituto de Neurología Cognitiva (INECO), Neurociencias Oroño, Rosario, Santa Fe, [7]Centro de Educación Médica e Investigación Clínica Norberto Quirno (CEMIC), Buenos Aires, [8]Área de Investigación no patrocinada, Departamento de Investigación, Hospital Italiano de Buenos Aires, [9]Instituto de Neurología Cognitiva (CITES INECO), Buenos Aires, Argentina
*Miembro Sociedad Neurológica Argentina, *Miembro Sociedad Argentina de Medicina Física y Rehabilitación, *Miembro Sociedad Argentina de Investigación Clínica

Dirección postal: Santiago Pigretti, Hospital Central de Mendoza, L. N. Alem 450, 5500 Mendoza, Argentina
E-mail: spigretti@gmail.com

Figure 14



b) Drogas que podrían modificar el desenlace lenguaje

Droga	Mejoría lenguaje	Mejoría funcional	Seguridad
Memantina	Sí	No	Sí

a) Drogas que podrían modificar el desenlace motor

Droga	Mejoría Motora	Mejoría funcional	Seguridad
Cerebrolisina	SÍ	NO	SÍ
Levodopa	SÍ	NO	SÍ
Selegelina	SÍ	SÍ	SÍ
Anfetaminas	NO	NO	NO
Fluoxetina	SÍ	NO	NO
Citalopram	SÍ	SÍ	SÍ
Escitalopram	SÍ	SÍ	SÍ
Antipsicóticos atípicos	SÍ	NO	SÍ
Antipsicoticos típicos	NO	NO	NO

Nivel de certeza según GRADE

Certeza alta	
Certeza moderada	
Certeza baja	
Certeza muy baja	

Figure 15

Summary

The webinar addressed the ongoing clinical challenge that, despite advances in acute stroke care, a large proportion of survivors experience persistent functional impairments. Against this background, the discussion highlighted the potential role of adjunctive, pharmacologically active therapies such as Cerebrolysin, particularly when administered during the early recovery phase and in combination with structured rehabilitation.

Through a series of case-based presentations supported by clinical evidence and guideline inclusions, the speakers illustrated how Cerebrolysin improves functional outcomes across different domains of post-stroke recovery.

ABBREVIATED PRESCRIBING INFORMATION. Name of the medicinal product: Cerebrolysin - Solution for injection. Qualitative and quantitative composition: One ml contains 215.2 mg of Cerebrolysin concentrate in aqueous solution. List of excipients: Sodium hydroxide and water for injection. Therapeutic indications: For treatment of cerebrovascular disorders. Especially in the following indications: Senile dementia of Alzheimer's type. Vascular dementia. Stroke. Craniocerebral trauma (commotio and contusio). Contraindications: Hypersensitivity to one of the components of the drug, epilepsy, severe renal impairment. Marketing Authorisation Holder: EVER Neuro Pharma GmbH, A-4866 Unterach. Only available on prescription and in pharmacies. More information about pharmaceutical form, posology and method of administration, special warnings and precautions for use, interaction with other medicinal products and other forms of interaction, fertility, pregnancy and lactation, effects on ability to drive and use machines, undesirable effects, overdose, pharmacodynamics properties, pharmacokinetic properties, preclinical safety data, incompatibilities, shelf life, special precautions for storage, nature and contents of the container and special precautions for disposal is available in the summary of product characteristics.

EVER Neuro Pharma GmbH
Oberburgau 3
4866 Unterach
Austria
www.everpharma.com

www.cerebrolysin.com

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