

Pediatric Neurotrauma and Critical Care Conferences, Medellín, Colombia, May 2025)

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On May 28, 2025, Medellín played host to a landmark educational event in pediatric neurotrauma: the Global Neuro Course on Pediatric Neurotrauma, held in conjunction with the XV Congreso Internacional de la Asociación Colombiana de Medicina Crítica y Cuidados Intensivos (AMCI). Organized by the Global Neuro Foundation—a Swiss-based nonprofit dedicated to global neurosurgical education—this one-day intensive course drew a multinational faculty and an engaged cohort of medical professionals to advance their knowledge in the treatment of traumatic brain injuries (TBI) and spinal cord injuries (SCI) in children. The Global Neuro Pediatric Neurotrauma Course was organized by Global Neuro in partnership with WFNS. This one-day event brought together a diverse, international cohort of 50 clinicians, educators, and researchers united by a common cause: improving outcomes in pediatric TBI and SCI (Fig 1).



Figure 1. Global Neuro Pediatric Neurotrauma Course. Dr Juan D Roa (Colombia), Dr Jennifer Muñoz Pareja (USA), and Dr Andrew Reisner (USA) presenting key lectures to the participants.

The course was led by Dr Andrés M Rubiano (Universidad El Bosque, Bogotá) and Dr Jennifer Muñoz Pareja (Miller School of Medicine, University of Miami, USA). The international and national experts included: Dr Andrew Reisner (Pediatric Neurosurgeon, Children's Healthcare of Atlanta, USA), Dr Adrián Zapata (Neurosurgeon, Clínica La María, Medellín), Dr Juan D Ciro (Anesthesiology and Intensivist, Clínica Las Americas, Medellín), Dr Juan D Roa (Pediatric Intensivist, Fundación Hospital La Misericordia, Bogotá), Dr Juan E Salas (Pediatric Neurosurgeon, Clínica El Rosario, Medellín) and Dr Milton Molano (Pediatric Intensivist, Clínica Cali, Cali). Dr Andrés Rubiano and Dr Jennifer Muñoz Pareja shared the educational mission of Global Neuro and WFNS. The day was organized into 3 didactic lecture modules and then a hands-on training practical station (Fig 2).



Figure 2. Drs Andrew Reisner (Neurosurgeon), Andrés Rubiano (Neurosurgeon), Juan Ciro (Anesthesiologist), Jorge Mejía (Intensivist), Juan D. Roa (Pediatric Neurologist), Jennifer Muñoz Pareja (Pediatric Intensivist) and Fermín Naranjo (Neurologist), during the Global Neuro Pediatric Neurotrauma Course in Medellín, Colombia.

The course content included Module 1: Initial Approach to Pediatric Neurotrauma, moderated by Dr Rubiano. Dr Rubiano discussed prehospital care for pediatric TBI, followed by Dr Ciro on advanced airway and ventilation strategies in children. Dr Muñoz Pareja offered an in-depth look at the Brain Trauma Foundation (BTF) guidelines for initial trauma evaluation, while Dr Reisner delivered an update on pediatric surgical guidelines, drawing on evidence-based global best practices. Module 2: Advanced Monitoring and Treatment Protocols was moderated by Dr Muñoz Pareja; this module delved deeper into clinical monitoring and management. Dr Reisner opened with biomarkers in pediatric neurotrauma, emphasizing their emerging role in prognosis and stratification. Dr Juan D Roa and Dr Rubiano provided perspectives on both non-invasive (e.g., pupillometry, transcranial ultrasound) and invasive (ICP, PtiO₂) monitoring. Talks by Dr Muñoz Pareja and Dr Reisner explored abusive head trauma and spinal neurotrauma management, while Dr Rubiano presented a comprehensive algorithm for stratified care across clinical settings—from emergency departments to neurocritical care units. Module 3: Clinical Cases and Skills Stations was moderated by Dr Milton Molano and Dr Juan D Roa, who offered practical application of the earlier didactics. Cases addressed pediatric coagulopathy in TBI (Dr Molano), penetrating trauma (Dr Rubiano), and cranioplasty in children (Dr Juan Salas). The hands-on training stations included: Non-invasive monitoring (Infrascanner, pupillometry, B4C sensors) (Fig 3), invasive ICP monitoring with expert guidance from Drs Reisner Salas, mechanical ventilation techniques in pediatric TBI (led by Drs Ciro Molano), neurosonology using transcranial Doppler and ocular ultrasound (Drs Roa Zapata). The course concluded with a final session open to participating in reflections and faculty discussion.

The Global Neuro course was a deep dive into the complexities of pediatric neurotrauma; Congreso AMCI 2025 felt like a wide-angle lens—expansive, multidisciplinary, and global in spirit. Hosted by the Asociación Colombiana de Medicina Crítica y Cuidado Intensivo (AMCI) in Medellín May 28-30, this conference brought together physicians, nurses, therapists,

researchers, and educators from across Latin America and beyond. It was a forum for knowledge-sharing and a reflection of how far the field of critical care has come—and how far we still must go. There were over 2000 participants, not including many national and international firms from a variety of pharmaceutical and medical industries. The AMCI Congress was impressively broad: sessions included adult and pediatric intensive care, emergency response, neurocritical care, sedation, ventilation, sepsis management, nutrition, rehabilitation, and nursing leadership.



Figure 3. Hands-on station on Automated Pupillometry for diagnosing patients with risk of high ICP. Drs Rubiano and Muñoz Pareja guided participants in the use of the non-invasive systems.

The AMCI Congress was uniquely collaborative. It was not uncommon to see panels of neurologists, intensivists, neurosurgeons, pediatricians, nurses, and even prehospital providers. This interdisciplinary model, rather than siloed lectures by specialty, provided a more complete view of patient care for complex, time-sensitive conditions like traumatic brain injury or septic shock.

Some of the most engaging sessions included:

- A panel on sedation strategies in pediatric critical care, where protocols were discussed in terms of both pharmacology resource availability and local guidelines.
- A symposium on the use of AI and predictive analytics in the ICU, with discussion of data equity, training gaps, and bias in modeling—themes close to my ongoing research.
- A special session on women in critical care, highlighting equity, mentorship, and the systemic challenges faced by female clinicians across Latin America. Stories of persistence and leadership in resource-challenged systems were both moving and motivating.

One of the most inspiring takeaways from the AMCI Congress was witnessing the emergence of Latin American voices as leaders in global critical care. Whether it was through innovative ICU protocols developed in Colombia, data presented from multicenter studies across the region, or reflections on training programs built from the ground up, the Congress affirmed that excellence in critical care is not exclusive to high-income countries. It would be remiss to not acknowledge the spirit of Medellín itself. A city once known for its challenges has become a model of resilience and reinvention. Walking through its vibrant streets, riding the metro cable up to hillside neighborhoods, and connecting with local clinicians brought a deep emotional parallel to the work we do in trauma care: to restore, to rebuild, to imagine better outcomes (Fig 4).

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Figure 4. Panoramic view of Medellin City in Colombia.