

# International child neurology association: current role and future perspectives

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The International Child Neurology Association (ICNA) was founded on the 12th of September 1973, at the 10th Congress of the World Federation of Neurology in Barcelona (Spain), by a small group of child neurologists who shared the need to establish a worldwide forum for physicians interested in the care of children with neurological conditions. There are only a few national and regional societies, which are older than ICNA. Among them are the Japanese Society of Child Neurology, which was set up in 1961, the Federation of European Child Neurology Societies, founded in 1970, and the Child Neurology Society of the USA, established in 1972.

ICNA arose from a common aspiration to accomplish a great mission: to develop dramatically the quality of care for children suffering neurological diseases, to encourage high training qualifications for an increasing base of child neurologists, and to promote research and international cooperation worldwide. The goals of our organization have been pursued thanks to the remarkable efforts and generous contribution of the many people who, throughout the years, have dedicated their time, energy and passion to voluntarily serve the best interest of our association [1] (Table 1). Since its foundation, the organization has developed and expanded year on year growing into the dynamic and exciting association it is today.

## 1. Education

In 1992, ICNA has established the International Education Committee, with the primary purpose to facilitate the training of child neurologists, explore opportunities for international cooperation in research activities, and to establish standards for the designation of individuals as child neurologists

worldwide. This committee thus worked to enhance cultural and research links across international boundaries, operating as a bridge between the departments of child neurology around the world which were willing to provide training positions, and those who sought such opportunities.

More recently, a traveling faculty of senior trainees planned educational programs and training modules in developing countries, aiming to advance education by addressing the neurological issues and topics most appropriate to the geographic context. The ICNA Education Committee organized numerous programs aiming to improve the participants' knowledge and attitude and to promote research interest in the field of child neurology. The events have always enjoyed considerable success, having a very positive impact on the regions they took place in (Table 2).

Furthermore, ICNA has offered since 1982 the International Review of Child Neurology series, a collection of monographs covering an extensive range of topics, which aim to present the best in child neurology, wherever that may be found. This publication, which has differentiated ICNA from all regional societies throughout the years, has allowed our organization to spread education worldwide, benefiting particularly those countries that were traditionally under-served. 17 volumes have been published up to now (Table 3). Each book is written by an authoritative child neurologist, covers a specific topic thoroughly, is peer reviewed and sent to all ICNA members as part of their annual dues. A rich variety of topics, including stroke in children, pediatric neurophysiology and autistic spectrum disorders, are currently in the publishing stage and will soon be available.

I feel that favoring the circulation of scientific ideas is in fact the most relevant function of an international society, particularly in countries where our specialty is still emerging and where physicians are not exposed to the benefits of regional societies [2]. Our work in this regard has proven very successful, and as a consequence ICNA had a significant impact on the development of regional child

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Table 1  
ICNA officers

Date	President	Secretary-General	Treasurer
1973–1975	John Stobo Prichard (Canada)	Sabine Pelc (Belgium)	Wilhelm Mortier (Germany)
1975–1979	Niels Low (USA)	Ingrid Gamstorp (Sweden)	Wilhelm Mortier (Germany)
1979–1982	Ritske LeCoultre (The Netherlands)	Isabelle Rapin (USA)	Wilhelm Mortier (Germany)
1982–1986	Yukio Fukuyama (Japan)	Paul Casaer (Belgium)	Werner Isler (Switzerland)
1986–1990	Paul Casaer (Belgium)	William Logan (Canada)	Yoshiyuki Suzuki (Japan)
1990–1994	Jean Aicardi (France)	Yoshiyuki Suzuki (Japan)	Donald Appleton (Australia)
1994–1998	Yoshiyuki Suzuki (Japan)	Shaul Harel (Israel)	Lloyd Shield (Australia)
1998–2002	Shaul Harel (Israel)	Paolo Curatolo (Italy)	Lloyd Shield (Australia)
2002–	Paolo Curatolo (Italy)	David Stumpf (USA)	Orvar Eeg-Olofsson (Sweden)

neurology associations, laying the foundations for the progressive creation of a number of regional child neurology societies in Asia (Kazakhstan, India), Africa (Egypt, South Africa) Europe (Albania), and in the Middle East (Pan Arab Child Neurology Association).

The international spirit of ICNA in the field of education has been well applied in the Mediterranean area, where an interesting mix between developed and emerging countries is present. Mediterranean Meetings of child neurology are famous for being full of educational interest as well as sunshine. These meetings are usually a great success from both the scientific and the social point of view, and a good chance to meet with delegates from Middle East, North Africa and Southern Europe and to promote ICNA activities in the Mediterranean area. This group meets once a year in a beautiful resort setting, the purpose of the meeting being scientific, professional and personal ‘tune-up’, where one could attend scientific sessions, enjoy visits with colleagues and friends, and have fun.

Among the training opportunities and educational initiatives taking place in that geographic area under the guidance of ICNA, the Child Neurology Section of the International School of Neurological Sciences has organized since 1990 an annual meeting in San Servolo-Venice (Italy). Ten scholarships to ICNA members from emerging countries have been granted every year to cover the attendance-related expenses of this meeting. The location of the School in Venice seems appropriate to play an important role in the continuing education of child neurologists from Central and Eastern Europe, the Balkans, the Middle East and North Africa. However, attending conferences for neuropediatricians from developing countries is rather expensive. ICNA is working on a system of continuing education throughout up-gradable learning material to provide a solution to the problem, taking on the responsibility of working for the development of e-learning courses.

In the last three decades, ICNA attempted several different strategies to promote world-wide education, placing a particular focus on the areas of the world

characterized by both a large population of children and a lack of qualified child neurologists. The association has recently identified a number of major priorities that will form the basis of its future course of action. These include

- (i) The need to determine the neurological needs of children in different areas of the world, with particular focus on the underserved countries, such as the African nations.
- (ii) The development of strategies to protect and strengthen growth in the developing brain, by encouraging maternal health, supporting the worldwide need for proper nutrition, sanitary conditions, early education, and thoughtful parental supervision and guidance, to maximize the opportunity of the developing child to achieve full neurological potential.
- (iii) The development of common criteria for the definition of a child neurologist worldwide. ICNA emphasized that a minimum amount of 5 years of training was needed before one can be defined a child neurologist, suggesting as a possible division of that time 5 years of Pediatrics, Child Development, Cognition and Behavior; 6 months to 1 year of Adult Neurology/Neurosciences, and from 2 to 2½ years of Child Neurology. ICNA has clearly played a major role in bringing child neurology as a distinct specialty to the forefront worldwide, causing many countries to adopt formal training standards. Although the details of these differ, all countries accept the need, in addition to general

Table 2  
ICNA teaching seminars

Number	Date	Venue	Local organizer
1	May 14–16, 1998	Tartu	T. Talvik
2	May 21–23, 1999	Montevideo	R. Ruggia
3	November 17–19, 2000	New Delhi	V. Kalra
4	April 28–29, 2001	Nairobi	C. Newton
5	February 27–28, 2003	Cairo	A. Raouf
6	November 8–9, 2004	Moscow	A. Petroukhin

Table 3  
International review of child neurology series

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1	Rapin I. Children with brain dysfunction: neurology, cognition, language, and behavior. New York: Raven Press; 1982
2	Gamstorp I, Sarnat HB, editors. Progressive spinal muscular atrophies. New York: Raven Press; 1984
3	Cohen ME, Duffner PK. Brain tumors in children. New York: Raven Press; 1984
4	Aicardi J. Epilepsy in children. New York: Raven Press; 1986
5	Hill A, Volpe JJ, editors. Fetal neurology. New York: Raven Press; 1989
6	Pascual Castroviejo I. Spinal tumors in children and adolescents. New York: Raven Press; 1990
7	Ouvrier R, McLeod JG, Pollard J. Peripheral neuropathy in childhood. New York: Raven Press; 1990
8	Steinberg A, Frank Y. Neurological manifestations of systemic diseases in children. New York: Raven Press; 1993
9	Aicardi J. Epilepsy in children. 2nd ed. New York: Raven Press; 1994
10	Cohen ME, Duffner PK. Brain tumors in children: principles of diagnosis and treatment. 2nd ed. New York: Raven Press; 1994
11	Andermann F, Aicardi J, Vigeveno F. Alternating hemiplegia of childhood. New York: Raven Press; 1995
12	North K. Neurofibromatosis type 1 in childhood. London: Mac Keith Press; 1995
13	Ouvrier R. Peripheral neuropathy in childhood. London: Mac Keith Press; 1999
14	Aicardi F, Fernander Alvarez E. Movements disorders in children. London: Mac Keith Press; 2001
15	Baxter P. Vitamins responsive conditions in pediatric neurology. London: Mac Keith Press; 2001
16	Barth P. Disorders of neuronal migration. London: Mac Keith Press; 2002
17	Curatolo P. Tuberous sclerosis complex: from basic science to clinical phenotypes. London: Mac Keith Press; 2003

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pediatric training, for training in classical neurological syndromes of children and in the use of modern clinical tools of neurological investigation, and the requirement of familiarity with functional brain maturation and with the developmental disorders of cognition and behavior.

## 2. Research

ICNA has a unique role in improving international cooperation and promoting clinical and scientific research, by providing a medium through which physicians can exchange opinions at an international level for the advancement of pediatric neurosciences. ICNA benefits from an international network of highly qualified child neurologists, and is therefore well equipped to meet the challenges set by the 21st century. The association can play an important role in launching international multicenter studies and worldwide research, and is set to be the leader of the global campaign for the prevention of both the causes and consequences of cerebral damage.

In 2002, my administration established research as one of the top prerogatives of our society [3]. Building research capacity in emerging countries is urgently needed. ICNA is utilizing its worldwide network of experts to establish centers of excellence, providing training in child neurology and developmental disabilities, and nurturing young investigators in qualified laboratories or clinical research units. The cooperative international studies are an example of the sort of direct influence that the association can exert in the advancement of pediatric neurology. Led by ICNA, collaborative international studies such as the International

Consortium on Subacute Sclerosing Panencephalitis have enjoyed great success.

Ever since it first started operating, one of the ICNA's most important activities has been to organize an international conference in a different region of the world every 4 years. These meetings, which were often held in conjunction with local or regional associations, have always been very special events gathering delegates from all continents. They represented an excellent forum for pediatric neurosciences, allowing child neurologists to exchange opinions and knowledge with colleagues with very different backgrounds and experience. ICNA congresses have often been the place where advances in child neurology were first recorded. However, the value of our meetings reaches beyond their scientific contribution. Our conferences are also social events, which express the importance we give to being members of a same group and to the feeling of belonging to a unique international community (Fig. 1). The last International Child Neurology Congress was held in Beijing, China, on September 20–25th, 2002 in conjunction with the Seventh Asian and Oceanian Congress of Child Neurology.

In the next years ICNA should play an important role in launching global research, in particular with respect to international therapeutic trials and prevention measures. The association could also suggest problems to be investigated, delineate standards, discuss ways of managing neurological diseases in children. ICNA has set as its top research priority the worldwide definition of the causes of neurological handicaps in children in various geographic areas of the world, in order to accelerate the learning and understanding of the techniques of prevention and treatment in relation to the region's specific needs.



Fig. 1. Three ICNA Presidents relaxing during the Official Social Dinner at the Ninth ICNA Congress in Beijing (left to right). The current ICNA President Paolo Curatolo (Italy); Yukio Fukuyama (Japan), former ICNA President 1982–1986; Xi Ru Wu (China), President of the Beijing Congress and Yoshiyuki Suzuki (Japan), former ICNA President 1994–1998.

### 3. Future perspectives

In the last 10 years, child neurology has experienced a significant progress, especially in the fields of genetics, molecular neurobiology and neuroimaging diagnostic techniques [4]. These advances are continuing at a rapid and ever-accelerating pace. At present, communication technology allows the scientific community to interact quickly and easily. An effective way for child neurologists to keep up-to-date with the new developments in the field is to become a member of a scientific society and attend annual scientific meetings where new ideas are discussed. Currently, there are regional and continental child neurology societies in almost every area of the world. However, ICNA is the only association where different cultures from every part of the world are integrated to develop an international perspective, allowing members to gain a global view of child neurology.

It is a thrilling moment in the history of ICNA. We are living a time of transition, which I am proud to be part of. The organization is currently carrying out several important activities, and has many undertakings planned for the future. It is also an exciting time to be a child neurologist. Our discipline is young and rapidly expanding, and will continue to grow even faster in the future. Child neurology will make dramatic progress in the next years and will evolve from a luxury specialty to a necessity. The expanding field of child neurology will

include the care of children with neurodevelopmental disabilities as well as disorders of high cognitive functions. Unprecedented developments in pediatric neurosciences are increasingly blurring the traditional boundaries between neurology and psychiatry [5]. Since child psychiatry has returned to experimental and evidence-based medicine, the divide between child psychiatry and child neurology will be progressively closed. Recent advances in the study of molecular genetics, neuroimaging, neuroinfectious diseases and early intervention are greatly increasing our capacity to identify the causes of neurological disorders, and prevent and treat neurological handicaps in children. These advances are currently applied with great effectiveness in developed countries, but they have not been used, up to now, for the benefit of the much larger number of children in emerging countries. I believe ICNA is uniquely qualified and well positioned to remedy this deficit by reducing the gap and increasing the level of child neurology care all around the world. Advances in the characterization of behavioral phenotypes and neuropsychiatric manifestations of neurological diseases complement progress in understanding the molecular biology of these disorders, allowing a gradual recognition of the genotype–proteotype–phenotype relationships. In the near future, molecular neuropsychiatry is likely to have diagnostic implications and eventually may lead to novel and rational therapies. Such a great expansion in the field will present new fascinating challenges which, to be met, require a joint international effort that will lead to

even greater achievements in the clinical care of children with neurological disorders.

The driving story of an organization is never just the story of the founding fathers, but it requires the enthusiasm, commitment and passion of a vast number of people. The original vision of few inspired leaders has to become a collective activity. Just like Rome was not built in a day, ICNA will need the continuous involvement and positive attitude of all of us to succeed in its mission and to achieve the goals set by its founders.

## References

- [1] Rapin I. The International Child Neurology Association: the first 25 years. *Brain Dev* 1999;21:3–15.
- [2] Curatolo P. The International Child Neurology Association: personal view. *J Child Neurol* 2003;18:786–886.
- [3] Curatolo P. Child Neurology: the role of the International Association. *Dev Med Child Neurol* 2004;46:147.
- [4] Ashwal S, Rust R. Child Neurology in the 20th century. *Pediatr Res* 2003;53:345–436.
- [5] Bax M. Neurology or psychiatry? *Dev Med Child Neurol* 2002; 11:291.