

## Reflections

# Canadian Leader in Pediatric Neurology: Dr. O. Carter Snead III

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Dr. Snead was a distinguished pediatric neurologist and epileptologist with a BSc in Pharmacy and an MD from the West Virginia University School of Medicine. He completed his pediatrics training at Duke University Medical Center and Child Neurology at Yale University School of Medicine. Dr. Snead served in the United States Air Force at Keesler Air Force Base in Biloxi, MS, before holding academic positions at the University of Alabama in Birmingham and the University of Southern California, where he was Head of Child Neurology. From 1996 to 2012, Dr. Snead led the Division of Neurology at the Hospital for Sick Children (SickKids) in Toronto. He retired from SickKids on December 31, 2021, and is now Professor Emeritus at the University of Toronto and Scientist Emeritus at SickKids (Figure 1).

Dr. Snead's primary clinical and research focus is pediatric epilepsy. He pioneered the epilepsy surgery program at SickKids and has conducted groundbreaking research in the use of magnetoencephalography (MEG) for noninvasive diagnostics and the neurobiology of gamma-hydroxybutyric acid. He has developed animal models for various types of epilepsy and has significantly contributed to epilepsy care in Ontario through initiatives like the Ontario Epilepsy Network and Project ECHO.

In recognition of his contributions, Dr. Snead has been designated a Founder of Child Neurology by the Child Neurology Society and the International Child Neurology Association. He also received the 2022 Canadian Association of Child Neurology Henry Dunn – Lifetime Achievement Award.

## Interview

Mohammed AlQahtani (MQ): Dr. Snead, could you share with us what inspired you to specialize in pediatric neurology, particularly epilepsy?

O. Carter Snead III (CS): Well, it all began during my time in medical school at the West Virginia University. I was initially drawn to the field of clinical pharmacology, but a chance encounter with a pediatrics rotation completely changed the trajectory of my career. I just fell in love with pediatrics. It was the mentorship of Dr. Gwendolyn Hogan, a true force of nature in the field of child neurology, that really solidified my passion for this specialty. After my pediatrics training at Duke, I decided to pursue my specialty in pediatric neurology, and that's where I met Dr. Peter Huttenlocher. He was a major mentor to me and really taught me how to be a clinician-scientist, which was a relatively new concept at the time.

He got me interested in epilepsy research, and it was through his lab that I made a chance observation that would go on to define much of my career.

MQ: Looking back on your career, what do you consider your most significant milestones in the field of pediatric epilepsy?

CS: That's a great question. I've been fortunate to have made a number of significant contributions to the field of pediatric epilepsy, both in terms of basic science research and clinical practice. In the research realm, I'm particularly proud of my work in developing and standardizing animal models of both typical and atypical absence epilepsy, status epilepticus and infantile spasms. These models were critical for advancing our understanding of the underlying mechanisms of these devastating epileptic syndromes. On the clinical side, one of my most significant contributions was demonstrating that the anticonvulsant carbamazepine can actually worsen absence seizures. This finding had major implications for the management of these patients worldwide. I'm also proud of the 1983 publication on the use of high-dose adrenocorticotrophic hormone in the treatment of infantile spasms, which became a widely adopted protocol and positively impacted the lives of thousands of children. Ultimately, I believe my most lasting legacy will be in the field of pediatric epilepsy surgery. By collaborating with pioneering neurosurgeons like Dr. Sidney Goring and Dr. Jim Rutka, I was able to help establish comprehensive epilepsy surgery programs in various institutions, advancing the field and improving outcomes for countless patients. In this regard, our work at SickKids demonstrating the utility of MEG as a noninvasive modality in the selection of children with drug-resistant epilepsy for epilepsy surgery had a major impact on epilepsy surgery in children.

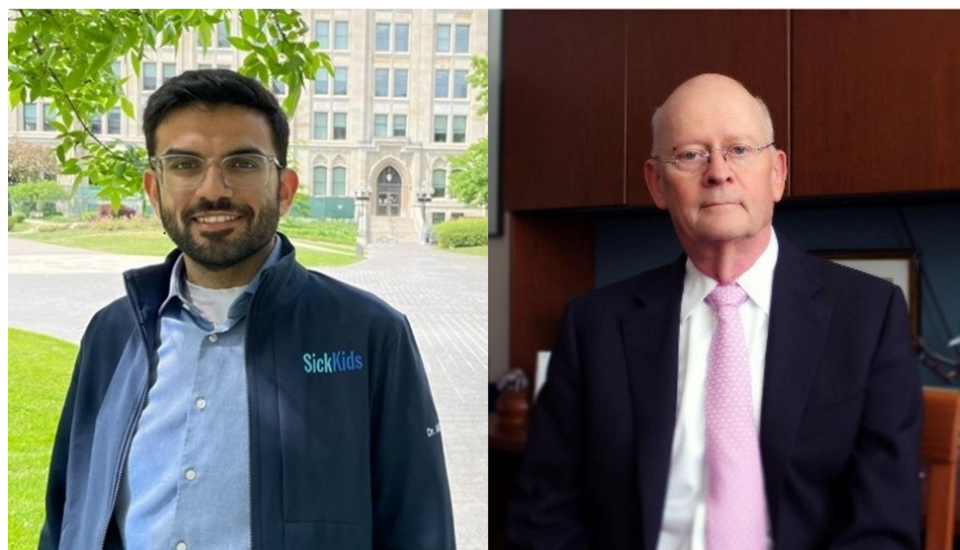
MQ: Can you walk us through the origins of the Epilepsy Implementation Task Force and its contributions to patient care?

CS: The origins of the Epilepsy Implementation Task Force really stemmed from a presentation I made to a group called OHTAC, the Ontario Health Technology Advisory Committee. I had been going to the Ministry of Health year after year, asking for funding to maintain our MEG machine at SickKids, and they finally got tired of me nagging them and asked me to come and present on the value of imaging in epilepsy. During that presentation, I highlighted the stark disparity between the number of epilepsy cases in adults and children in Ontario and the relatively small number of patients actually receiving epilepsy surgery. This caught the attention of the OHTAC committee, and

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**Figure 1.** Dr. Mohammed Azib AlQahtani (left) and Dr. O. Carter Snead III (right).

they asked us to come back with a proposal to address the issue of access to epilepsy surgery across the province. That's really what led to the creation of the Epilepsy Implementation Task Force. Our goal was to develop a comprehensive system of regional and district epilepsy centers that could provide high-quality care to all Ontarians, not just children but adults as well. We were charged by the Ontario Ministry of Health (MOH) with the mandate to establish consensus guidelines regarding epilepsy and its medical and surgical treatment, the establishment of Regional and Provincial Epilepsy Monitoring Unit (EMU)-based District Epilepsy Centres and Regional Epilepsy Surgery Centres of Excellence, and to develop a program of knowledge translation regarding epilepsy and epilepsy surgery for primary care providers throughout Ontario. The Ontario MOH goal for all this was ultimately to increase access to life-changing epilepsy surgery throughout the province.

MQ: With many priorities competing for your attention, what drove you to dedicate time and resources to this task force's creation and success?

CS: The creation of this provincial epilepsy strategy was something that I felt incredibly passionate about. I recognized that epilepsy is a lifelong condition and that to truly make a difference, we needed to take a comprehensive approach to epilepsy across the lifespan. Too often, I had seen patients with epilepsy fall through the cracks, wandering in the "wilderness" without access to the proper care and treatment. Further, this whole project brought home the importance of our pediatric patients with severe epilepsy continuing to get good epilepsy care after they turn 18 and transition to adult care. By bringing together stakeholders from across the spectrum of adult and pediatric care, we had the opportunity to build a truly integrated system that could address the needs of all Ontarians living with epilepsy, regardless of age. That sense of purpose, of wanting to create meaningful change, is what drove me to dedicate so much time and energy to this initiative.

MQ: How did you navigate the challenges of establishing such a comprehensive program?

CS: Establishing the Ontario Epilepsy Implementation Task Force was certainly not without its challenges. As you can imagine, coordinating a province-wide initiative of this scale required

navigating a complex web of bureaucracy, securing funding and aligning the diverse priorities of multiple stakeholders. One key factor that really helped us was the existing infrastructure that we were able to leverage. The province already had systems in place, like the Provincial Neurosurgery Ontario network and Critical Care Ontario, which provided a solid foundation for the epilepsy program. We were able to build on those existing frameworks that made the logistical challenges a bit more manageable. Equally important was our commitment to true collaboration and interdisciplinary engagement. From the very beginning, we made a concerted effort to bring together neurologists, nurses, Electroencephalographic (EEG) technicians, social workers, lay epilepsy groups in Ontario, hospital administrators and other key players across the province. By recognizing the unique strengths and expertise that each discipline brought to the table, we were able to create a cohesive, multifaceted approach to epilepsy care. Of course, there were still hurdles to overcome, like securing sustainable funding and aligning the priorities of various regional and district centers. But by maintaining that collaborative spirit and staying laser-focused on our mission to increase the number of EMUs across the province, improve attitudes and awareness about the value of epilepsy surgery in children and adults with epilepsy and thus improve patient outcomes in all Ontarians with epilepsy, we were ultimately able to establish a comprehensive epilepsy care system that is still making a difference in the lives of Ontarians today. I also should mention that the Regional Epilepsy Care system, with its knowledge translation component that we helped to develop in Ontario in partnership with the MOH, is unique in all the world.

MQ: What inspired the establishment of Project ECHO Epilepsy?

CS: The establishment of Project ECHO Epilepsy in Ontario was actually a bit serendipitous. As we were working to develop the provincial epilepsy strategy and the network of regional and district epilepsy centers, someone on the committee overseeing this initiative asked me if I would be interested in exploring the possibility of implementing an ECHO program for epilepsy. At the time, I had no idea what they were talking about, but I said I would be interested in learning more. So I went to Albuquerque, where the ECHO model was pioneered by Dr. Sanjeev Arora, to see it in

action. I was absolutely blown away by the potential of this telementoring approach (i.e., Zoom) to build capacity and improve access to specialized care, particularly in underserved areas. Bringing that model back to Ontario, we were able to secure funding and get Project ECHO Epilepsy off the ground. This epilepsy knowledge translation project was a critical piece of the puzzle, as it allowed us to extend the reach of our epilepsy expertise beyond the regional centers and into communities across the province, something we initially failed at in our epilepsy comprehensive program. This was a neat piece of puzzle fitting exactly where it should have.

MQ: How does Project ECHO address the unique challenges of managing epilepsy at the provincial and national level?

CS: Project ECHO Epilepsy has been instrumental in addressing some of the key challenges we face in managing epilepsy across a large, geographically diverse province like Ontario. One of the biggest barriers has traditionally been access to specialized care, especially for patients living in rural or remote areas. With the ECHO model, we're able to leverage technology to connect community providers with our team of epilepsy experts, providing mentorship, case-based learning and guidance on best practices. This not only helps to build capacity and confidence among primary care providers, but it also ensures that patients can receive high-quality, evidence-based care closer to home, without having to travel long distances to the regional centers. Additionally, the ECHO approach fosters a sense of community and collaboration among providers. By bringing together neurologists, nurses, EEG technicians and other stakeholders from across the province, we're able to share knowledge, discuss challenging cases and develop a more cohesive, integrated approach to epilepsy management. Ultimately, I believe Project ECHO Epilepsy has been a game changer in our efforts to deliver comprehensive, lifespan-based epilepsy care to all Ontarians. It's a model that could certainly be replicated in other provinces and even at the national level, helping to address the unique challenges of managing a complex, chronic condition like epilepsy across large geographic regions.

MQ: As a visionary leader, what core principles have shaped your leadership style and project management?

CS: I think the core principles that have guided my approach to leadership really boil down to a few key elements. First and foremost, I've always been driven by a deep sense of purpose and a commitment to making an impact in the lives of patients. Whether it was establishing comprehensive epilepsy surgery programs, developing the provincial epilepsy strategy in Ontario or spearheading the ECHO initiative, my north star has always been improving outcomes and expanding access to high-quality care. That sense of purpose has been essential in keeping me focused and motivated, even in the face of significant challenges. Equally important has been my belief in the power of collaboration. I've never been one to work in silos or to try to tackle complex problems alone. Instead, I've always sought to surround myself with a diverse team of experts, each bringing their own unique strengths and perspectives to the table. This collaborative mindset has been crucial, whether I was working with neurosurgeons to advance epilepsy surgery or bringing together stakeholders from across the province to build the Ontario epilepsy strategy. By recognizing and leveraging the collective expertise of my colleagues, we have been able to achieve far more than I ever could have on my own. Finally, I'd say that a willingness to challenge the status quo and explore unconventional approaches has been a hallmark of my leadership style. I've never been one to simply accept the way things have

always been done. Instead, I've constantly pushed myself and my teams to think creatively, to question assumptions and to be open to new and innovative solutions. It's that combination of purpose, collaboration and innovation that has really defined my approach to leadership and project management over the course of my career. Along these same lines, I have always viewed my mission as an academic physician involved in research, clinical care and teaching to create and disseminate knowledge through cutting-edge clinical care, research and teaching. I implemented this same philosophy in leading the Division of Neurology at SickKids, which I always viewed as a community of scholars where everyone, regardless of discipline – doctors, nurses, social workers, psychologists, scientists, EEG technologists, etc. – made equally valued contributions to this mission.

MQ: One key theme that is clear in your successful path is your special interest in meaningful collaborations both within and across institutions. Can you please talk to us about what collaboration means to you?

CS: Collaboration has been absolutely essential to my work, both in the clinical and research realms. I firmly believe that the most impactful and sustainable solutions come not from individual efforts but from the synergy of diverse perspectives and skill sets. Whether I was working with neurosurgeons to develop epilepsy surgery programs or bringing together stakeholders from across the province to build the Ontario epilepsy strategy, I've always placed a premium on fostering true, meaningful collaboration. For me, that means creating an environment where everyone feels empowered to share their ideas, challenge one another and work together toward a common goal. It's not always easy, of course. Egos can get in the way, and there can be natural tensions between different disciplines or institutions. But I've found that when you're able to set those aside and focus on the greater good, the results can be truly transformative. A great example of this was the way we approached epilepsy surgery in Toronto. By bringing together neurologists, neurosurgeons, neuropsychologists, nurses and other key stakeholders, we were able to create a truly multidisciplinary program that leveraged the unique strengths of each discipline. There was no room for ego or territoriality – it was all about doing what was best for the patient. The result was seamless, world-class epilepsy care. And that collaborative spirit extended beyond the walls of our institution. We worked closely with colleagues across the province, sharing knowledge, resources and best practices. It was that network of collaboration that ultimately enabled us to build a comprehensive, province-wide system of epilepsy care. Fundamentally, I believe that collaboration is about more than just working together. It's about a mindset of openness, humility and a genuine commitment to collective progress. When you can foster that kind of environment, the results can be truly remarkable.

MQ: How has mentorship played a role in your career, and how do you approach mentoring others?

CS: Mentorship has been absolutely crucial throughout my career. From the very beginning, I've been fortunate to have incredible mentors who have guided me, challenged me and helped me grow as a clinician, researcher and leader. It started with Dr. Gwendolyn Hogan and Dr. Peter Huttenlocher, who were instrumental in shaping my early path in pediatric neurology and epilepsy research. They taught me how to be a clinician-scientist, and they instilled in me a deep fascination with the field of epilepsy. But the mentorship didn't stop there. As I moved to different institutions, I had the privilege of learning from seasoned

administrators and leaders, like the head of neurology in Los Angeles, who taught me how to be an effective manager and navigate the complexities of running a department. And when I came to Toronto, Dr. Manuel Buchwald, the head of the research institute, mentored me in the art of scientific administration. He helped me understand the nuances of securing funding, fostering interdisciplinary collaboration and leading a large research program. In terms of my own approach to mentorship, I've always tried to create an environment where people feel empowered to share their ideas, challenge the status quo and pursue their passions. I firmly believe that recognizing and nurturing the unique strengths of each individual is key to fostering the next generation of leaders. Whether it was the pediatric residents I supervised in Birmingham, the epilepsy fellows I trained in Toronto or the young basic scientists I trained and collaborated with, I've always made a concerted effort to guide, support and empower those around me. It's a responsibility I take incredibly seriously because I know firsthand the profound impact that a great mentor can have.

**MQ:** Since retiring, what reflections have you had about your time at SickKids and in Canada?

**CS:** Reflecting back on my time in Toronto, I have a deep sense of pride and gratitude for the opportunity to have been part of an incredible institution and team. The work we were able to accomplish in advancing pediatric epilepsy care and research was truly remarkable, and I'm honored to have played a role in that. One of the things I miss most is the daily interaction with the young residents, fellows and researchers who kept me on my toes and challenged me to think in new and innovative ways. The intellectual stimulation of collaborating with such a diverse and talented group of clinicians and scientists was endlessly rewarding. At the same time, I do not miss the relentless demands of clinical practice and the constant pressure to secure research funding. It was an incredibly intense and all-consuming path, and I recognize now that I may have sacrificed too much of my personal life in pursuit of those professional goals. But when I look back on the tangible impact we were able to have – the lives we improved, the knowledge we advanced, the systems we built – I know that it was all worth it. SickKids will always hold a special place in my heart, and I'm grateful to have been part of such a remarkable legacy.

**MQ:** How do you balance the demands of such a high-stakes specialty with personal well-being?

**CS:** To be honest, Mohammed, this is an area where I do not think I've always struck the right balance over the course of my career. The reality is that being a clinician-scientist is an incredibly demanding path, and it requires an unwavering commitment to your work. Throughout my career, I've had to make difficult choices, often prioritizing my research and clinical responsibilities over my personal life. And I have to credit my wife for her unwavering support – without her, I do not think I would have been able to achieve what I have. At the same time, I recognize that this single-minded focus on my work has come at a cost. I wish I had been able to devote more time and attention to my family and personal well-being. It's a trade-off that I grapple with, and it's something I would encourage the next generation of clinician-scientists to think carefully about. The advice I would give is to give careful attention to and to be proactive and intentional about carving out time for yourself and your loved ones, even when the demands of the job feel all-consuming. Learn to set boundaries, to say no and to protect that precious personal time. It's not easy, but

it's essential for maintaining your own well-being. I would also encourage young clinicians and researchers to build a strong support system, both personally and professionally. Seek out mentors who can guide you. Cultivate a network of friends and colleagues who can challenge and inspire you. Do not try to go it alone – leverage the power of collaboration to lighten the load. Ultimately, it's about finding that delicate balance between your professional passions and your personal needs. It's a constant juggling act, to be sure, but if you can get it right, the rewards of being a clinician-scientist are truly unparalleled; for those of us who have been successful clinician-scientists, our clinical observations drive our science no matter how basic the latter might be. That is the reward: to see long-term clinical rewards that may arise from very basic research. The opportunity to make a tangible difference in the lives of patients while also advancing the frontiers of scientific knowledge: that's what kept me going even in the face of adversity. But I recognize now that I may have taken that too far at times, and I hope the next generation can learn from my experience.

**MQ:** Finally, what advice would you offer to current trainees and future leaders in neurology to continue advancing the field?

**CS:** My advice to the next generation of neurologists and neuroscientists would be threefold. First and foremost, find your passion and your niche. Identify the specific area of neurology or epilepsy research that truly excites you, and dive into it with unwavering focus. Become the expert in that domain, and let that passion drive your work. Second, do not be afraid to challenge the status quo. Some of the most impactful breakthroughs in this field have come from individuals who were willing to question conventional wisdom and explore unconventional approaches. Be curious, be creative and be willing to take calculated risks. And finally, cultivate a strong network of mentors and collaborators. The most successful clinician-scientists I've known have been those who have surrounded themselves with a diverse team of experts, each bringing their own unique perspectives and skill sets to the table. Embrace the power of interdisciplinary collaboration, and do not be afraid to seek out guidance from those who have walked this path before you. Above all, remember to stay grounded in the human element of this work. Yes, the science and the research are critically important, but at the end of the day, we're in this field to make a tangible difference in the lives of our patients and their families. Never lose sight of that sense of purpose, and let it fuel your passion and drive, even in the face of setbacks and challenges. This is a noble and rewarding path, but it's also a demanding one. Be prepared to make sacrifices, to work tirelessly and to confront your own limitations. But if you can find that balance, if you can nurture your curiosity and your empathy in equal measure, then I have no doubt that you will make an indelible mark on this field.

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