CARRICK INSTITUTE
CLINICAL NEUROSCIENCE AND REHABILITATION™

Carrick Institute
May 4, 2023

Clinical Neuroscience Program - $8,980.00 USD, approx. $12,173.69 CAD
Program Hours - 300 Total Hours
Travel Cost - $0.00 (Online, No Travel)
Program Information - https://carrickinstitute.com/programs/clinical-neuroscience-program/

Clinical Neuroscience Program

The Future of Healthcare is Waiting for You.

There is no better time than now to join what is becoming the future of healthcare. The Carrick Institute's CNS program is designed to educate clinicians to work towards mastery in the application of Clinical Neuroscience in the health and human performance environments.

It is now recognized how important the nervous system is in controlling all aspects of health and performance. The clinician who is able to create an individualized neurophysiological approach for their patients will become the healthcare provider of the future.

The Carrick Institute CNS education program takes a novel approach to clinical applications of neuroscience. Our clinical scholars learn how to integrate evidence-based concepts into a patient based paradigm of healthcare. Utilizing a contemporary educational approach to problem-based learning, our CNS program is central to mastering the skills of clinical neuroscience and applying them to human function.

Explore the Breadth, Depth and Application of Clinical Neuroscience

The clinical neuroscience program (CNS) is a comprehensive, evidence-based series of modules which come together to teach the breadth, depth, and application of clinical neuroscience.

What is *Breadth*? Throughout the CNS program, scholars will be taught on subject material that is common to all healthcare professionals and needed for the diagnosis and recognition of neurological dysfunction. This includes the neuroanatomy, the physiology and the pathology of the nervous system and related systems.

What is *Depth*? Building upon the breadth of neuroscience, the depth of the CNS program allows practitioners clarity into the clinical thought process and neurophysiology as it relates to the scholar's specific profession. Our programs are taught at a depth that allows clinicians to be more specific in the assessment, diagnosis, integration, and recognition of the various systems that influence disorders of humankind.

What is *Application*?: Building upon the breadth and depth of the field of clinical neuroscience, the CNS program dives deep into the physical and functional neurorehabilitation strategies that are specific to the practitioner when applying a functional neurology paradigm of care.

Breadth, depth and application is what allows for clinical mastery.

The clinician of the future will develop individualized neurophysiological approaches of care for their patients.

What is Clinical Neuroscience?

Clinical Neuroscience is a branch of neuroscience that focuses on the scientific study of fundamental mechanisms that underlie diseases and disorders of the brain and central nervous system. It seeks to develop new ways of conceptualizing and diagnosing such disorders and developing novel applications to treat them.

The CNS Curriculum

CNS01 - Embryology & Physiology of the Nervous System

In embryology and physiology of the nervous system, you will learn the pertinent anatomy, physiology, and pathophysiology of the neuron as well the embryological development of the nervous system. You will learn techniques to allow you to appropriately assess and diagnosis the common conditions related to embryological development and neuronal stability. Clinical applications will be discussed for patients with these conditions. This course provides the foundational framework for the use of manual and brain-based therapies in the treatment of neurological disease.

This exciting module begins by focusing on the concepts in embryological development of the peripheral and central nervous systems. Emphasis will be placed on discussing the pros and cons of both the columnar and prosomeric models of cortical organization. Physiological function of nerves will be reviewed with an emphasis on the clinical scenarios seen with metabolic deregulation. The influence of early sensory input to the development of thalamo cortical projections preserved throughout adulthood will be discussed in relationship to the effects of sensory deprivation on neurological integrity through out life.

This module provides learners with the foundation needed for ongoing studies in our Clinical Neuroscience series.

CNS02 - The Proprioceptive & Neuromuscular System

Human movement is critical for survival. In this module we discuss the building blocks of the neuromuscular system by reviewing in detail muscular development and structure. We further discuss how muscles communicate with the CNS to provide a steady state of feedback allowing for fluid movement control. The most common primary myopathies and will be reviewed along with the most common neuromuscular disorders.

In this module you will learn pertinent anatomy, physiology, and pathophysiology as related to the neuromuscular system. You will learn the appropriate assessments as well as the information needed to make an appropriate diagnosis for the most common conditions related to the function of the neuromuscular system. A neurological and physical medicine approach to supporting patients with these conditions will be presented.

CNS03 - Peripheral Nervous System

Proper function of the peripheral nervous system (PNS) is critical to optimum human expression. This module reviews the clinically important structural layout of the PNS and discusses the most common clinical scenarios affecting the peripheral nervous system. Topics range for simple compressive mono-neuropathies to more complex metabolic and inflammatory conditions. Diagnostic and treatment protocols with be emphasized throughout.

CNS04 - Spinal Cord

The spinal cord is the main conduit that connects the brain to the rest of the body. Being encased within the vertebral column can act as a double edge sword. On one hand it provides protection and on the other hand it can expose the spinal cord to damage through a myriad of degenerative and traumatic conditions. This module we review the structure/function of the spinal cord and those degenerative, traumatic, inflammatory, and vascular conditions that impair its function.

CNS05 - Cranial Nerves

12 pairs of cranial nerves act and the final common pathways that allow direct access of the brain to its environment while allowing the brain direct control of systems vital to its survival. This module reviews the structure and function of each of the cranial nerves focusing on diagnostic testing and interpretations. Common clinical entities will be discussed both from a diagnostic and management point of view.

CNS06 - Autonomic Nervous System

The autonomic nervous system (ANS), formerly known as the vegetative nervous system, is a division of the nervous system that supplies smooth muscle and glands, and as a result influences the function of internal organs. Called the ANS for its unconscious regulation bodily functions it is critical in delivering fuel and nutrients throughout the nervous system. This module discusses the central and peripheral components that make up the ANS and how breakdown in these systems lead to the development of various dysautonomia. Diagnostic, examination, and treatment applications will be explored when appropriate.

CNS07 - Intracranial and Vascular Disorders

The brain being incased within the bony cranium as surrounded by various structures that protect and support its function. This module discusses those structures ranging from the skull's sutures, meninges, vascular system, CSF, and supportive glial cells. Clinical disorders of these structures will be discussed with an emphasis on diagnostic and treatment applications.

CNS08 - Cerebellum
Leonardo da Vinci while making wax castings of the human brain back in 1504 was the first to and coin the term “cerebellum” (Latin for “little brain”) after identifying two small brain hemispheres tucked neatly under the relatively humongous left-right hemispheres of the “cerebrum” (Latin for “brain”). This module explores the integrated structure and function of the cerebellum from its classical view in coordinating movement to its more progressive functional role in higher cognitive processing. Common clinical disorders will be discussed emphasizing diagnostic and treatment applications.

CNS09 - The Ocular Motor System
The ocular motor system is that part of the CNS, which functions mainly in maintaining visual stability and controlling eye movements. It is made up of many brain areas that cooperate to stabilize images of interest on the high-acuity part of the retina. All these systems must funnel through the same final common pathway through the brainstem. This module discusses the structures of the brain and brainstem that produce various eye movements with focus on their central connectivity. Ocular examination techniques along with their diagnostic interpretations will be reviewed. The goal is to create individualized ocular rehabilitative strategies for each clinical entity observed.

CNS10 - The Vestibular System
The vestibular system is one of the leading contributors to one’s sense of balance and spatial orientation for the purpose of coordinating movement with balance. It is responsible for providing our brain with information about motion, head position, and spatial orientation. This module reviews in detail the structural components, central functional connectivity of the vestibular system. Assessment and management of the most common vestibular disorders will be discussed with emphasis focusing on non-pharmaceutical strategies.

CNS11 - Frontal & Parietal Lobes
Broca was first to describe the existence of a “great cerebral system” (Broca1) that encircled the limbus (or edge) of the hemisphere and thus, defined this area as the limbic lobe. From that time forward the lobular sequentialization of the brain has been commonly used to define its structure. In this module we explore the frontal and parietal lobes of the brain focusing on structure, function, and the common clinical condition seen with each lobe’s dysfunction.

CNS12 - Temporal & Limbic Lobes
Broca was first to describe the existence of a “great cerebral system” (Broca1) that encircled the limbus (or edge) of the hemisphere and thus, defined this area as the limbic lobe. From that time forward the lobular sequentialization of the brain has been commonly used to define its structure. In this module we explore the Temporal and Limbic lobes of the brain focusing on structure, function, and the common clinical condition seen with each lobe’s dysfunction.

CNS13 - Neurophysiology of The Respiratory/Digestive & Reproductive Systems
According to the latest data from the CDC (2020) heart disease continues as the leading cause of death for men, women, and people of most racial and ethnic groups in the United States accounting for about 647,000 deaths each year—that’s 1 in every 4 deaths. Understanding the contributors to heart disease is critical to its prevention. In this module you will learn about the anatomy and physiology of both the respiratory and cardiovascular systems. Emphasis will be placed on the central neurological structure governing these systems and how pathophysiology in those systems act as a comorbidity to the presence of respiratory and cardiovascular disease. Examination and diagnostic techniques specific to these systems will be discussed and demonstrated as to develop better non pharmaceutical treatment and management strategies.

The National Institute of Health (2020) estimates 60 to 70 million people are affected by chronic digestive disease per year in the United states. It is also estimated that 43% of individuals suffer from intermittent digestive disorders. Also, according to the NIH (2020) about 9% of men and about 11% of women of reproductive age in the United States have experienced fertility problems. In this module you will learn the clinically important anatomy and physiology that is foundational to the understanding of the most common gastric and reproductive disorders. Further the anatomy and physiology of the Brain-Gut Axis will be discussed from a gastric/reproductive disease centric point of view allowing clinicians a better understating of this very intimate relationship. Examination techniques specific to these areas will be discussed and demonstrated to allow for the development of improved non-pharmaceutical management of these conditions

CNS14 - Neurology of Movement

There are seven basic movements the human body can perform, and all other movements are merely variations of these seven: Pull, Push, Squat, Lunge, Hinge, Rotation and Gait. The creation of these seven basic movements is critical to human function and performance. This module discusses the neurological mechanisms involved in the creation and coordination of movement. You will learn about the main central structures involved in the creation of movement and how these seemingly independent nodes are significantly integrated together. This module provides the foundational framework necessary for you to understand the pathologies involving the motor system.

Approximately 28% of the US population including both men and women aged 50-89 suffer from some type of movement disorder. Of that 15-20% are a result of the secondary effects of pharmaceutical management resulting in Tardive Dyskinesia. Thus, there is a substantial need for a better understanding of the pathophysiology involved in the development and maintenance of some of the most common movement disorders affecting humankind. In this module you will learn the anatomy and physiology of the main neurological structures involved in the pathogenesis inherent to all movement disorders. You will also learn examination history taking and examination techniques to allow you to correctly define the movement disorder

CNS15 - Neurology of Pain

The prevalence of chronic pain and high-impact chronic pain in the United States, as analyzed by the CDC in 2016 is estimated to affect 20.4% (50.0 million) of U.S. adults for chronic pain and 8.0% of U.S. adults (19.6 million) for high-impact chronic pain. It has been estimated that 1 in 6 American suffer from chronic headaches. There appears to be a significant need for better treatment and management strategies. In this module you will learn the foundational neurological structures and pathways responsible for producing pain and those brain areas/structures that are critical in reducing the pain experience. You will learn specific examination techniques that will allow you to assess the integrity of the brain's pain modulatory centers. With that knowledge you will be shown specific treatment techniques to address the dysfunctional brain regions promoting one's chronic pain.

CNS16 - Headaches & Face Pain

The prevalence of chronic pain and high-impact chronic pain in the United States, as analyzed by the CDC in 2016 is estimated to affect 20.4% (50.0 million) of U.S. adults for chronic pain and 8.0% of U.S. adults (19.6 million) for high-impact chronic pain. It has been estimated that 1 in 6 American suffer from chronic headaches. There appears to be a significant need for better treatment and management strategies. In this module you will learn the foundational neurological structures and pathways responsible for producing pain and those brain areas/structures that are critical in reducing the pain experience. You will learn specific examination techniques that will allow you to assess the

integrity of the brain's pain modulatory centers. With that knowledge you will be shown specific treatment techniques to address the dysfunctional brain regions promoting one's chronic pain

CNS17 - Neurochemistry & The Endocrine System
Clinical Disorders

1. Hyperprolactinemia (Associated conditions)
2. Pituitary tumors
3. Hypothalamus
4. Sarcoidosis
5. Craniopharyngiomas
6. Cranial irradiation
7. Empty Sella syndrome
8. Other diseases
9. Pituitary or TSH induced hyperthyroidism
10. Causes of excess Cortisol:
11. ACTH Deficiency:
12. Deficiency of Vasopressin (Diabetes Insipidus)
13. Syndrome of Inappropriate AVP Secretion (SIADH):
14. Thyroid Disorders
15. Diseases of the Adrenal Cortex
16. Congenital adrenal hyperplasia.
17. Pheochromocytoma
18. Diabetes Mellitus
19. Abnormalities of Testicular Function
20. Hypothalamic/Pituitary
21. Testicular
22. Abnormalities of the Ovaries
23. Disorders affecting Multiple Endocrine Systems

CNS18 - Principles of Neuroradiology
The neurological examination and its understanding are foundational to the success of any applied patient treatment. Being able to correctly navigate a patient's history and overlay that history to an examination specific to a patient needs years of clinical study and practice. This module is designed to provide you with the foundation necessary to build upon your skills to become an exceptional clinical interviewer and examiner. This module will further teach you the skills necessary to navigate and interpret some of the most common advanced testing techniques utilized by practitioners incorporating a functional neurology paradigm in their practices.

CNS19 - Principles of Neurological Examination
The neurological examination and its understanding are foundational to the success of any applied patient treatment. Being able to correctly navigate a patient's history and overlay that history to an examination specific to a patient needs years of clinical study and practice. This module is designed to provide you with the foundation necessary to build upon your skills to become an exceptional clinical interviewer and examiner. This module will further teach you the skills necessary to navigate and interpret some of the most common advanced testing techniques utilized by practitioners incorporating a functional neurology paradigm in their practices.

CNS20 - Principles of Neurorehabilitation
Neurological rehabilitation is the term used to describe the treatment that patients receive after they have had a neurological injury, illness, or diagnosis of a long-term neurological condition. The World Health Organization's definition of rehabilitation states "a set of measures that assist individuals, who experience or are likely to experience disability, to achieve and maintain optimum functioning in interaction with their environments" (WHO, 2011). The module teaches you the core foundational

principles in establishing a successful rehabilitation program addressing your patient's specific needs. You will learn specific techniques to address specific areas of the nervous system and learn how to develop frequency and intensity strategies based upon an individual's own metabolic capacity.

A combination of written case presentations and live case videos will be utilized to encompass the various neurological systems covered throughout the 800 series. This is an interactive module that encourages participation in the form of questioning and ongoing critical discussion of the cases present. The goal of this module is for each practitioner to feel comfortable and knowledgeable in the application of their own specific technique to the neurological condition/diagnosis presented.

Why Choose the Carrick Institute for Your Educational Needs?

The Carrick Institute has a 45-year history of providing evidence-based clinical education in Clinical Neuroscience and Functional Neurology.

Our dedication to making all we teach as simple and practical as possible promotes lifelong learning and inspires our global alums to continue developing new and exciting clinical applications. We specialize in translating complex information into easily understandable formats. This allows for accelerated learning and the development of novel applications that may be applied in various circumstances spanning the healthcare and athletic performance fields.

Thus, those who desire to learn from leaders in the field and become part of a community that focuses on support and encouragement will find a home at Carrick Institute. We invite you to join our team and learn with us.

Who Can Attend

- This program is for those who desire to expand their knowledge and work towards clinical excellence in their perspective fields.
- Scholars who typically attend our programs include: MD, DC, DO, PT, DPT, LAc, ATCs, RN, NP, OT, strength coaches, and personal trainers. If you have any questions about your eligibility for our program, feel free to contact us.
- Participants are solely responsible for ensuring that they remain within the scope of practice defined by the legislation governing their license.

15-Hour Modules Delivered Via Online Self-Paced Learning

The information is presented in 15-hour modules and is available via online self-paced learning. Each module has a combination of a didactic lecture as well as hands-on applications to allow for immediate integration into your model of care.

Preparation for Diplomate & Fellowship Examinations

This program is designed to aid scholars in the preparation for neurology fellowship and diplomate board examinations. Carrick Institute scholars who have completed the Clinical Neuroscience Program have demonstrated tremendous success on these examinations. To learn more about these examinations, visit ACFN.org (cross-disciplinary) or ACNB.org (chiropractic).

Tuition

General Tuition: $8,980.00 (USD)

Your Tuition Upon Achieving Certification Status Includes the following:

1. 300 Neurology Hours (15 Hours Per Module - 20 Modules)
2. All-Access to the digital recording of the class
3. Receive any future updates to the course videos or other materials
4. Re-attendance – Retake the class onsite, via Livestream, or online, self-paced learning as many times as you'd like as an audit. *
5. All access to the flipped classroom material and online videos, including updates. The clinical applications will be organized and updated so you can easily find them, review them, and implement them in practice.
6. A workbook to help you better organize and retain the material taught.
7. Three months of unlimited access to Medline