Canadian Association of Child Neurology

Canadian Neurological Society

Canadian Neurosurgical Society

Canadian Society of Clinical Neurophysiologists

Canadian Neurological Sciences Federation

48th Annual Congress • Montreal, Quebec

June 12-14, 2013 • Pre-Congress June 11

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Welcome to the Congress

Dear Colleagues,

Welcome to the 48th Congress of the Canadian Neurological Sciences Federation. We believe this year's Program is one of the best ever; a truly made-in-Canada Congress developed by your colleagues…volunteers from the CNSF and the four Societies.

We hope you will take the opportunity to network with your colleagues, mentors and friends, to rejuvenate your practice with additional knowledge and skill and stimulate your thinking, as you earn your Section 1 MOC credits.

Please complete the Specific Course and Overall Congress evaluations; your comments do make a difference and result in the appropriate Congress content for next year (in Banff, by the way). And, as important, visit the exhibit hall and say hello to our sponsors and exhibitors and see the latest in diagnostics, treatments and technology.

Enjoy your week here in beautiful Montreal and most of all, thank you for attending.

Yours Truly,

J. Max Findlay
President, CNSF

R. Loch Macdonald
Chair, Scientific Program Committee

Welcome to Montreal

Montreal is a city that boasts a rich multi-cultural culinary heritage, including many influences from every corner of the planet. The most important influence of all however – and one that has been present the longest – is undoubtedly French cuisine…

La belle province's love affair with French cuisine is legendary. It has been rooted in tradition and technique for years. As early as three decades ago, mostly all restaurants in the city had French chefs at the helm serving classic French food. The arrival of Québécois chef Normand Laprise changed the game entirely. Laprise was instrumental in defining a cuisine that, although still rooted in French tradition, is very proper to Quebec. His insistence on working with Quebec producers and using their products to create a unique cuisine has been a role model for a whole generation of chefs.

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About the Congress

Meeting site

Convention Floor - Fairmont Queen Elizabeth Hotel
900 Rene Levesque Boulevard West, Montreal, Quebec, Phone: (514) 861-3511

Onsite Registration & Check-in Desk for Delegates and Exhibitors

Convention Floor - Fairmont Queen Elizabeth

- Monday, June 10 4 pm – 7 pm
- Tuesday, June 11 7 am – 6 pm
- Wednesday, June 12 7 am – 6 pm
- Thursday, June 13 7 am – 6 pm
- Friday, June 14 7 am – 2 pm

Delegate Badge Designations

Blue - CNSF Members
Red - CNSF Board Members
Bronze - CNSF Committee Members
Burgundy - Invited Guests
Yellow - Speakers
Black/Grey - Exhibitor/Sponsor
White - Non-Member
Clear - CNSF & Intertask Staff

Registration Details

Full Registration Includes:

- All sessions June 12-14
- Special Interest Group sessions and CNS/UCB Co-developed Epilepsy Symposium on June 11
- All official lunches and breaks
- Exhibitor's Reception
- Conference materials

One-day Registration Includes:

- Admission to all sessions the day of your registration (Wednesday, Thursday or Friday)
- Special Interest Group sessions and CNS/UCB Co-developed Epilepsy Symposium on June 11
- Exhibitor's Reception (must be registered to attend the Congress on Wednesday)
- Conference materials

Future Congress Sites Canadian Neurological Sciences Federation

2014 - Banff, Alberta - June 3 - 6 Fairmont Banff Springs Hotel
2015 - Toronto, Ontario - June 9 - 12 Fairmont Royal York Hotel

Questions ?

Canadian Neurological Sciences Federation

709 - 7015 Macleod Trail SW, Calgary, AB T2H 2K6
T: 403-229-9544 F: 403-229-1661
donna-irvin@cnsfederation.org

Intertask Conferences

275 rue Bay Street, Ottawa ON K1R 5Z5
T: 613-238-6600 F: 613-236-2727
cnsf@intertaskconferences.com

Daily Calendar at a Glance

TUESDAY

8:30 AM to 5:00 PM

Epilepsy Co-Developed Symposium
This is an Accredited Section 1 MOC learning activity

Optimizing Patient Care, from Diagnosis to Management — *Duluth Room*
Course Chairs: Martin del Campo, CNS, CSCN & Neelan Pillay, CNS, CSCN
See page 23

6:00 PM to 8:00 PM

Special Interest Groups (SIGs)
Please note delegates attending evening SIGs must be pre-registered as meals are ordered based on pre-attendance numbers.

Neurocritical Care: Brain Death SIG — *Gatineau Room*
Course Chairs: Jeanne Teitelbaum, CNS & Draga Jichici, CNS
See page 24

Movement Disorders SIG — *Richelieu Room*
Course Chairs: Martin Cloutier & Anne-Louise Lafontaine
See page 25

Epilepsy Videos SIG — *Bersimis Room*
Course Chair: Seyed Mirsattari, CNS, CSCN
See page 26

Headache SIG: Migraine and Friends — *Peribonka Room*
Course Chair: Elizabeth Leroux, CNS
See page 27

Neuromuscular SIG — *Saint Maurice Room*
Course Chairs: Mike Nicolle, CNS, CSCN & Kristine Chapman, CSCN
See page 28

WEDNESDAY

9:00 AM to 12:00 PM

Concurrent Courses

Stroke — *Mackenzie Room*
Course Chairs: Alex Poppe, CNS & Sylvain Lanthier
See page 29

Hot Topics in Child Neurology — *Saint Maurice Room*
Course Chair: Asif Doja, CACN
See page 30

Minimally Invasive Cranial Neurosurgery — *Saint Laurent Room*
Course Chair: Kesh Reddy, CNSS
See page 31

9:00 AM to 5:00 PM

Resident Review Courses

Movement Disorders & Parkinson's Disease — *Duluth Room*
Course Chairs: Pierre J. Blanchet, CNS, Nailyn Rasool, CNS Serena Orr, CACN
See pages 32, 33

Emergency Neurosurgery — *Hochelaga 5/6 Room*
Course Chairs: Max Findlay, CNSS & Roberto Diaz, CNSS
See pages 34, 35

Daily Calendar at a Glance

WEDNESDAY (cont)

12:15 PM to 1:45 PM

Learning Activities with Lunch
Please note delegates attending learning activities at lunch must pre-register as meals are ordered based on pre-attendance numbers.

A Practical Financial Road Map for Neurological/Neurosurgery Residents — *Marquette Room*
Course Chair: Michele Seaton-Gascon & Serena Orr, CACN
See page 36

Treatable Myopathies State of the Art in Diagnosis & Management — *Jolliet Room*
Course Chair: Tahseen Mozaffar
See page 37

2:00 PM to 5:00 PM

Concurrent Courses

Headache — *Gatineau Room*
Course Chairs: Sian Spacey, CNS
See page 38

Neuromuscular — *Saint Laurent Room*
Course Chairs: Mike Nicolle, CNS, CSCN & Kristine Chapman, CSCN
See page 39

Neurocritical Care — *Hochelaga 4 Room*
Course Chairs: Draga Jichici, CNS & Jeanne Teitelbaum, CNS
See page 40

5:00 PM to 7:00 PM

Exhibitor's Reception

Don't forget to attend the Exhibitor's Reception from 5:00 PM to 7:00 PM

THURSDAY

8:30 AM to 11:00 AM

Grand Plenary — *Marquette/Jolliet Rooms*
This is a multi-disciplinary guest lecture series. Each Society guest lecturer will update Congress Delegates within a 25 minute talk.
See page 41

CSCN Gloor Lecture - Eva Feldman
Intraspinal Stem Cell Transplantation in ALS

CACN Tibbles Lecture - Kate Bushby
Translating research for patient benefit: the story, so far, of bench to bedside in Neuromuscular Diseases

CANN Lecture - Sean Clarke
Enhancing Nurse-Physician Collaboration: Towards an Evidence-Informed Future

CNSS Penfield Lecture - Charles Branch
William Cone & Spine Surgery in North America: An Unheralded Legacy of the Montreal Neurological Institute

CNS Richardson Lecture - Donald F. Weaver
Drug Design: The Long Road to Disease Modification

11:15 AM to 5:00 PM

Child Neurology Day

Child Neurology Day Includes CACN Chairs Select Abstracts — *Hochelaga 5/6 Room*
Course Chairs: Michelle Demos, CACN & Craig Campbell, CACN, CSCN
See page 42

Daily Calendar at a Glance

THURSDAY (cont)

11:15 AM to 12:15 PM	**Concurrent Society Abstract Presentations**		
	CNS / CSCN Chairs Select Abstracts	*Mackenzie Room*	See pages 41, 109
	CNSS Chairs Select Abstracts	*Saint Laurent Room*	See pages 41, 110
12:15 PM to 1:45 PM	**Learning Activities with Lunch** Please note delegates attending learning activities at lunch must pre-register as meals are ordered based on pre-attendance numbers.		
	Applying the Canadian Guidelines on Parkinson's Disease to our Practice This is an unaccredited learning activity. Use learning to create a Section 2 PLP. Course Chair: Anne-Louise Lafontaine	*Duluth Room*	See page 43
2:00 PM to 5:00 PM	**Concurrent Courses**		
	Canadian Neurosurgical Innovations & Discoveries Course Chairs: Brian Toyota, CNSS & Ramesh Sahjpaul, CNSS	*Saint Maurice Room*	See page 44
	Epilepsy: From Diagnosis to Intervention Course Chair: Jorge G. Burneo, CNS, CSCN	*Mackenzie Room*	See page 45
	MASS: Minimal Access Spine Surgery - What's New and Exciting Course Chair: Eric Massicotte, CNSS	*Hochelaga 4 Room*	See page 46
	Promises of Stem Cells in the Neurosciences Course Chair: Peter Dirks, CNSS	*Saint Laurent Room*	See page 47
5:00 PM to 6:30 PM	**Digital Poster Author Standby Sessions**	*Hochelaga 2/3 & Foyer*	See pages 48, 133
	Don't forget to attend the Digital Poster Author Standby Sessions from 5:00 PM to 6:30 PM		

FRIDAY

8:00 AM to 11:00 AM	**Concurrent Platform Presentations**		See page 49, detailed listing - Abstracts begin on page 106
	Platform Session 1	*Harricana Room*	
	Platform Session 2	*Peribonka Room*	
	Platform Session 3	*Richelieu Room*	
	Platform Session 4	*Saint Maurice Room*	
	Platform Session 5	*Bersimis Room*	
	Platform Session 6	*Matapedia Room*	
	Platform Session 7	*Chaudiere Room*	

Daily Calendar at a Glance

FRIDAY (cont)

11:15 AM to 1:00 PM	**Grand Rounds** Join us for Grand Rounds where physicians and surgeons discuss possible diagnoses to challenging cases!	*Marquette/Jolliet Rooms*	See page 49
1:00 PM to 2:15 PM	**Lunch Time Activities**		
	Exhibit Hall		
	Digital Poster Author Standby Session	*Hochelaga 2/3 & Foyer*	See pages 50, 133
2:15 PM to 5:15 PM	**Concurrent Courses**		
	Multiple Sclerosis Course Chairs: Paul Giacomini, Catherine Larochelle	*Duluth Room*	See page 51
	Difficult Cases and Controversies in Neurosurgery (Cranial/Spinal) Course Chair: Joseph Megyesi, CNSS	*Mackenzie Room*	See page 52, 53
	Neurovascular & Interventional Neuroradiology Course Chair: Gary Redekop, CNSS	*Saint Maurice Room*	See page 54
	Genetics of Neurologic and Neurodegenerative Syndromes Course Chair: Matt Farrer	*Hochelaga 4 Room*	See page 55
	Neuro-ophthalmology Course Chair: Jason Barton, CNS	*Saint Laurent Room*	See page 56

Society Meetings

Canadian Association of Child Neurology

Canadian Neurological Society

Canadian Neurosurgical Society

Canadian Society of Clinical Neurophysiologists

Wednesday, June 12

Canadian Neurological Society Annual General Meeting	Room: Mackenzie	**7:00 p.m.**

Thursday, June 13

Canadian Association of Child Neurology Annual General Meeting	Room: Hochelaga 5/6	**5:00 p.m.**
Canadian Neurosurgical Society Annual General Meeting	Room: Duluth	**6:30 p.m.**

Friday, June 14

Canadian Society of Clinical Neurophysiologists Annual General Meeting	Room: Hochelaga 5	**7:00 a.m.**

Business Meetings

Tuesday, June 11

RCPSC – Specialty Committee in Neurology	Room: Hochelaga 4	**12:00 p.m.**
CNSF/NSFC Board Meeting	Room: Saint Laurent	**2:00 p.m.**

Wednesday, June 12

SPC/PDC Committee Meeting	Room: Hochelaga 4	**7:00 a.m.**
CNSF Affiliates, Advocacy, Clinical Practice Guidelines	Room: Richelieu	**7:00 a.m.**
Canadian Headache Society Annual General Meeting	Room: Matapedia	**9:00 a.m.**
Canadian Headache Society Guideline Meeting	Room: Matapedia	**10:00 a.m.**
Journal Editorial Board	Room: Richelieu	**12:15 p.m.**
Canadian Neurological Society Annual General Meeting	Room: Mackenzie	**7:00 p.m.**
CNS Past President's Reception		**8:00 p.m.**

Thursday, June 13

Canadian Neurocritical Care Society Meeting	Room: Terrebonne (executive level)	**7:30 a.m.**
CSCN EEG Section Meeting	Room: Matapedia	**7:30 a.m.**
AETC	Room: Gatineau	**8:00 a.m.**
Canadian Association of Child Neurology Annual General Meeting	Room: Hochelaga 5/6	**5:00 p.m.**
Canadian Neurosurgical Society Annual General Meeting	Room: Duluth	**6:30 p.m.**

Friday, June 14

Royal College Specialty Committee - Neurosurgery	Room: Saint Laurent	**7:00 a.m.**
Canadian Society of Clinical Neurophysiologists Annual General Meeting	Room: Hochelaga 5	**7:00 a.m.**
International Development Committee	Room: Hochelaga 6	**7:00 a.m.**
Canadian Pediatric Neuromuscular Group	Room: Terrebonne (executive level)	**7:00 a.m.**
Journal Editorial Board	Room: Hochelaga 4	**7:00 a.m.**
AETC	Room: Gatineau	**8:00 a.m.**
EMG/EEG Guideline Working Group Meeting	Room: Ramezay (executive level)	**1:00 p.m.**

CANADIAN NEUROLOGICAL SCIENCES FEDERATION
FÉDÉRATION DES SCIENCES NEUROLOGIQUES DU CANADA

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Maintenance of Certification

Section 1 MOC: This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification program of The Royal College of Physicians and Surgeons of Canada, and approved by the Canadian Neurological Society and the Canadian Neurosurgical Society.

AMA PRA Category 1 Credits™

AMA PRA Category 1 Credits™: Through an agreement between the Royal College of Physicians and Surgeons of Canada and the American Medical Association, physicians may convert Royal College MOC credits to AMA PRA Category 1 Credits™. Information on the process to convert Royal College MOC credit to AMA credit can be found at www.ama-assn.org/go/internationalcme.

Certificate of Attendance

Certificates of Attendance, to be completed by delegates, will be sent to Congress delegates in July 2013, upon the online Overall Congress Evaluation concluding. Questions? Please direct email to lisa-bicek@cnsfederation.org.

Tuesday, June 11, 2013		
Epilepsy Co-Developed Symposium – Optimizing Patient Care, from Diagnosis to Management	8.0	hours
Neurocritical Care: Brain Death SIG	2.0	hours
Movement Disorders SIG	2.0	hours
Epilepsy Videos SIG	2.0	hours
Headache SIG: Migraine and Friends	2.0	hours
Neuromuscular SIG	2.0	hours
Wednesday, June 12, 2013		
Stroke	3.0	hours
Hot Topics in Child Neurology	3.0	hours
Minimally Invasive Cranial Neurosurgery	3.0	hours
Neurology: Movement Disorders & Parkinson's Disease	8.0	hours
Neurosurgery: Emergency Neurosurgery	8.0	hours
Lunch 'n Learn: A Practical Financial Road Map	0.0	hours
Lunch 'n Learn: Treatable Myopathies State of the Art Diagnosis & Management	0.0	hours
Lunch 'n Learn activities are unaccredited. Use learning to create a Section 2 PLP		
Headache	3.0	hours
Neuromuscular	3.0	hours
Neurocritical Care	3.0	hours
Thursday, June 13, 2013		
Grand Plenary Lectures	2.5	hours
CSCN Gloor Lecture - Eva Feldman | CACN Tibbles Lecture - Kate Bushby |CANN Lecture - Sean Clarke		
CNSS Penfield Lecture - Charles Branch | CNS Richardson Lecture - Donald F. Weaver		
CACN Abstracts	1.0	hours
Child Neurology Neuromuscular Focus	3.0	hours
CNS/ CSCN Abstracts	1.0	hours
CNSS Abstracts	1.0	hours
Lunch 'n Learn: Applying the Canadian Guidelines on Parkinson's Disease to our Practice	0.0	hours
Lunch 'n Learn activities are unaccredited. Use learning to create a Section 2 PLP		
Canadian Neurosurgical Innovations & Discoveries	3.0	hours
Epilepsy: From Diagnosis to Intervention	3.0	hours
MASS: Minimal Access Spine Surgery – What's new and exciting!	3.0	hours
Promises of Stem Cells in the Neurosciences	3.0	hours
Digital Poster Author Standby Sessions	1.5	hours
Friday, June 14, 2013		
Platform Session 1 – 7	3.0	hours
Grand Rounds	1.5	hours
Digital Poster Author Standby Session	1.0	hours
Difficult Cases and Controversies in Neurosurgery	3.0	hours
Multiple Sclerosis	3.0	hours
Neurovascular & Interventional Neuroradiology	3.0	hours
Genetics of Neurologic and Neurodegenerative Syndromes	3.0	hours
Neuro-opthalmology	3.0	hours

Educational Objectives & Planning Committee

educational objectives for the 2013 congress:

by the end of the Congress, delegates will be able to:

- **Discuss advances in the management of acute and chronic neurological and neurosurgical disorders.**
- **Discuss new findings in neurological and neurosurgical disorders.**
- **Describe advances in neurological care and/or neurosurgical techniques.**
- **Identify areas where there are gaps in learning (unperceived needs) not realized before attending the Congress and extend this professional learning after the Congress to the enhanced care of patients.**

2013 Congress Planning Committee

The Canadian Neurological Sciences Federation (CNSF) is composed of 4 Societies:
Canadian Neurological Society (CNS)
Canadian Association of Child Neurology (CACN)
Canadian Neurosurgical Society (CNSS)
Canadian Society of Clinical Neurophysiologists (CSCN)

Members from each of the 4 Societies have representation on our Congress planning committee(s)
The Professional Development Committee (PDC) and the Scientific Program Committee (SPC).
This year's Planning Committee is comprized of:

Ron Pokrupa	PDC Chair (CNSS)	Jeanne Teitelbaum	CNSF Vice-President, SPC (CNS)
Bev Prieur	PDC Vice-Chair (CACN, CNS)	Joseph Megyesi	PDC (CNSS)
Robert Loch Macdonald	SPC Chair (CNSS)	Lawrence Korngut	SPC (CNS, CSCN)
Draga Jichici	SPC Vice-Chair (CNS)	Michael Hill	CNSF Board, SPC (CNS)
Asif Doja	PDC (CACN)	Michelle Demos	SPC (CACN)
Chris Wallace	CNSF Vice-President, PDC (CNSS)	Nailyn Rasool	SPC, PDC (CNS)
Craig Campbell	SPC (CACN)	Roberto Diaz	SPC, PDC (CNSS)
Danielle Andrade	SPC (CSCN)	Roger McKelvey	PDC (CNS)
Eric Massicotte	SPC (CNSS)	Rudolf Arts	PDC (CNS, CSCN)
Garth Bray	CNSF Vice-President, PDC (CNS)	Serena Orr	SPC, PDC (CACN)
J. Max Findlay	CNSF President, SPC (CNSS)	Seyed Mirsattari	SPC (CSCN)
James Perry	SPC (CNS)	Simon Walling	SPC (CNSS)

abbreviation guide

Annual General Meeting (AGM); Canadian Association of Child Neurology (CACN); Canadian Neurological Sciences Federation (CNSF); Canadian Journal of Neurological Sciences (Journal); Canadian Neurological Society (CNS); Canadian Neurosurgical Society (CNSS); Canadian Society of Clinical Neurophysiologists (CSCN); Neurological Sciences Foundation of Canada (NSFC); International Development Committee (IDC); Clinical Practice Guideline Committee (CPGC)

Grand Plenary Speakers

CSCN Gloor Lecture

Eva Feldman

University of Michigan Health System | Michigan, USA

Throughout her career, Dr. Eva Feldman has made it her mission to use scientific discoveries to understand and cure human diseases. In January 2008, Dr. Feldman was named the first Director of the A. Alfred Taubman Medical Research Institute, which was created to support fundamental research into a wide range of human diseases.

In her own work, Dr. Feldman is on the forefront of applying stem cell research to human disease. Most notably she is the Principal Investigator of the first clinical trial of intraspinal transplantation of stem cells in patients with ALS. She is the author of more than 220 articles, 50 book chapters and 2 books. She is the Principal Investigator of 4 major National Institutes of Health research grants, 3 private foundation grants and 5 clinical trials focused on understanding and treating neurological disorders, with an emphasis on ALS and diabetic neuropathy. She is President of the American Neurological Association and recent Past President of the Peripheral Nerve Society.

Dr. Feldman has received many honors including the Early Distinguished Career Award from the University of Michigan, several scientific achievement awards in the field of diabetes and in May of this year, was elected to the Johns Hopkins Society of Scholars. Additionally, she has been listed in Best Doctors in America for 10 consecutive years.

CACN Tibbles Lecture

Kate Bushby

Newcastle University | United Kingdom, Europe

Kate Bushby is a clinical academic with joint appointments between Newcastle University and the NHS.

She is a member of the Neuromuscular Research Group within the Institute of Genetic Medicine and plays a leading role in the National Commissioning Group service for rare neuromuscular diseases.

Together with Professor Straub, Professor Bushby co-ordinated the TREAT-NMD network (now TREAT-NMD Alliance) for accelerating therapy development in neuromuscular diseases and she is vice president of the EU Committee of Experts on Rare Diseases.

Professor Bushby has a long-standing interest in the molecular genetics of the limb-girdle muscular dystrophies and related disorders and is interested in the best possible development and implementation of care guidelines as well as clinical trials.

Her team has developed an extensive programme of research in NMD from basic molecular pathology to clinical studies.

Grand Plenary Speakers

CNS Richardson Lecture

Donald Weaver

Dalhousie University | Halifax, Nova Scotia, Canada

Dr. Donald F. Weaver's research is focused on three disease states: protein misfolding disorders (Alzheimer's, Parkinson's), epilepsy and peripheral neuropathy.

As part of their drug design targeting protein misfolding, Dr. Weaver's group initially addressed Alzheimer's disease and identified a new receptor, BBXB, which is found in both β-amyloid and tau proteins, and is central to their aggregation process. Using this model, their recent work has identified a compound, NCE 217, which has simultaneous activity against the misfolding of both the β-amyloid and tau proteins. This discovery is being labelled a major breakthrough in Alzheimer's disease and was awarded the American Health Foundation Centennial Award in 2007 and the Prix Galien Canada Award in 2009.

His epilepsy drug-design program has designed and developed 390 beta-alanine analogues that have been screened for antiepileptogenic activity. No such drugs are currently available. His laboratory has patented one agent with promising antiepileptogenic activity, which is now in preclinical development. His peripheral neuropathy program focuses on natural products active against sodium channels.

Dr. Weaver's work has been recognized internationally.

CNSS Penfield Lecture

Charles Branch

Brain Tumor Center of Excellence, Childress Institute, Pediatrics Childress Institute | North Carolina, USA

Doctor Branch is the Professor and Chairman, Department of Neurosurgery at Wake Forest University School of Medicine. A renowned international lecturer, Dr. Branch also has published 20 book chapters and over 40 manuscripts in peer reviewed journals. He has served on the editorial board of the Journal of Radiosurgery, Neurosurgical Focus, and Journal of Spinal Disorders. He recently completed his tenure as Editor-in-Chief of The Spine Journal, the official journal of the North American Spine Society. In addition, Dr. Branch has served as the Chair of Wake Forest University Physicians and serves as a member of Governing Board of the School of Biomedical Engineering of Wake Forest University and Virginia Polytechnic Institute.

Dr. Branch's interests have focused on the treatment of spinal diseases and injuries, and brain tumors. He is also a pioneer in the development of spinal fusion techniques and technologies that are recognized and used by spinal surgeons worldwide. He has been awarded 13 patents recognizing these unique fusion techniques and minimally invasive technology.

In November 2009, Dr. Branch completed his service as President of the North American Spine Society, the largest multidisciplinary spine society in the world. He served as the Chair of the American Board of Neurological Surgery from May 2010 through 2011. Most recently he received the Meritorious Service Award from the Joint Section on Disorders of the Spine and Peripheral Nerves of the AANS and CNS.

Grand Plenary Speakers

CANN Guest Lecture

Sean Clarke

RBC Chair in Cardiovascular Nursing Research | Toronto, Ontario, Canada

Sean Clarke, RN, PhD, FAAN, is a health services researcher and nurse educator specializing in health policy and hospital safety issues. He was named the inaugural Susan E. French Chair in Nursing Research and Innovative Practice and the Director of the McGill Nursing Collaborative for Education and Innovation in Patient and Family Centred Care, effective July 1, 2012.

The McGill Collaborative is a unique initiative designed to increase synergies between practice, research and teaching between the School of Nursing and McGill-affiliated hospitals and to build new local, national and international collaborations that capitalize on the rich and unique opportunities for clinicians, researchers and leaders in nursing in Montréal and Québec. After completing his master's and PhD education at McGill and advanced clinical and research training at the University of Pennsylvania, he taught and managed research groups at both the University of Pennsylvania and University of Toronto for over a decade.

From 2008 to mid-2012, he held a research chair in cardiovascular nursing endowed by the RBC Foundation that involved a joint appointment between the Bloomberg Faculty of Nursing at the University of Toronto and the University Health Network system of teaching hospitals. He is currently active in scientific journal editing in nursing and health services research and in the peer review of grants for national competitions in Canada, the U.S. and beyond and holds affiliate appointments at the Université de Montréal and the University of Hong Kong.

Congress Social Events

If more information is required on the events listed below, please stop by the registration desk or the member services desk.

Tuesday, June 11, 2013

Resident Career Networking Social / Wine and Cheese Event **8:00 pm - 10:00 pm**
Free Admission for Registered delegates

Join us for a career/fellowship planning session. We will have a Neurologist, Neurosurgeon and Pediatric Neurologist each informally discuss their career paths, followed by the wine and cheese social.

Wednesday, June 12, 2013

Exhibitor's Reception Free Admission for Registered delegates **5:00 pm - 7:00 pm**

Join your colleagues in the Exhibit Hall for a welcome reception for our sponsors and exhibitors. This is an excellent opportunity to network with colleagues while checking out the latest developments regarding medical devices, pharmaceuticals and new opportunities and achievements within the neuroscience field.

Wednesday, June 12, 2013

CACN Dinner - GLOBE Restaurant 3455 boul. St-Laurent, Montréal **8:00 pm**
Tickets must be purchased at least 72 hours in advance of event

Transportation is not provided

Thursday, June 13, 2013

Montreal Neurological Institute Tour and Dinner at McGill Faculty Club **7:00 pm**
3801 University Street, Montréal. Tickets must be purchased at least 72 hours in advance of event.

Join your nurse and physician colleagues for a social evening that starts with a tour of the various departments of the MNI, followed by a cocktail reception and dinner at the historic McGill faculty Club.

Founded in 1934, the Montreal Neurological Institute and Hospital is a unique academic medical centre dedicated to neuroscience, where multidisciplinary teams of basic and clinical scientists generate fundamental information about the nervous system and apply that knowledge to understanding and treating neurological diseases.

The Faculty Club serves as the social centre for McGill's University faculty and staff community. In 1886, Baron Alfred Baumgarten, a wealthy German sugar tycoon who generously donated to Montreal museums and hospitals built the mansion on McTavish Street. McGill University purchased it in 1926 as a residence for Sir Arthur Currie, who had just become principal of McGill. In 1935, the house was renovated to become the McGill Faculty Club. The structure, and the other details in the interior have been preserved, and the aura of another century still pervades.

During a delicious 4 course meal, your colleague Elizabeth Leroux, a renowned jazz singer and pianist, has agreed to play for us, and there are others who may be joining her.

Transportation is not provided

2013 Exhibitors Reception

Wednesday, June 12th 2013 – 5:00 p.m. to 7:00 p.m.

Join us in the Grand Salon, Convention Floor, the evening of Wednesday June 12th, for the CNSF's premiere networking event at the Congress. The Exhibitors' Reception is the perfect place to renew friendships, and to meet representatives from industry; who support the CNSF in so many ways.

It is very important for Congress delegates to make their best efforts to attend the Exhibit Hall, not only for the Exhibitors' Reception, but throughout the week. Our industry partners gauge the value of their future corporate support primarily by the interest shown by delegates and in the relationships they build and maintain in the Exhibit Hall. Without your interest, their support will disappear; resulting in a much more expensive Congress.

Please show your appreciation and support by introducing yourself, and thanking, as many of our sponsors and exhibitors as you are able over the course of the Congress.

Exhibit Hall

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Covidien	200
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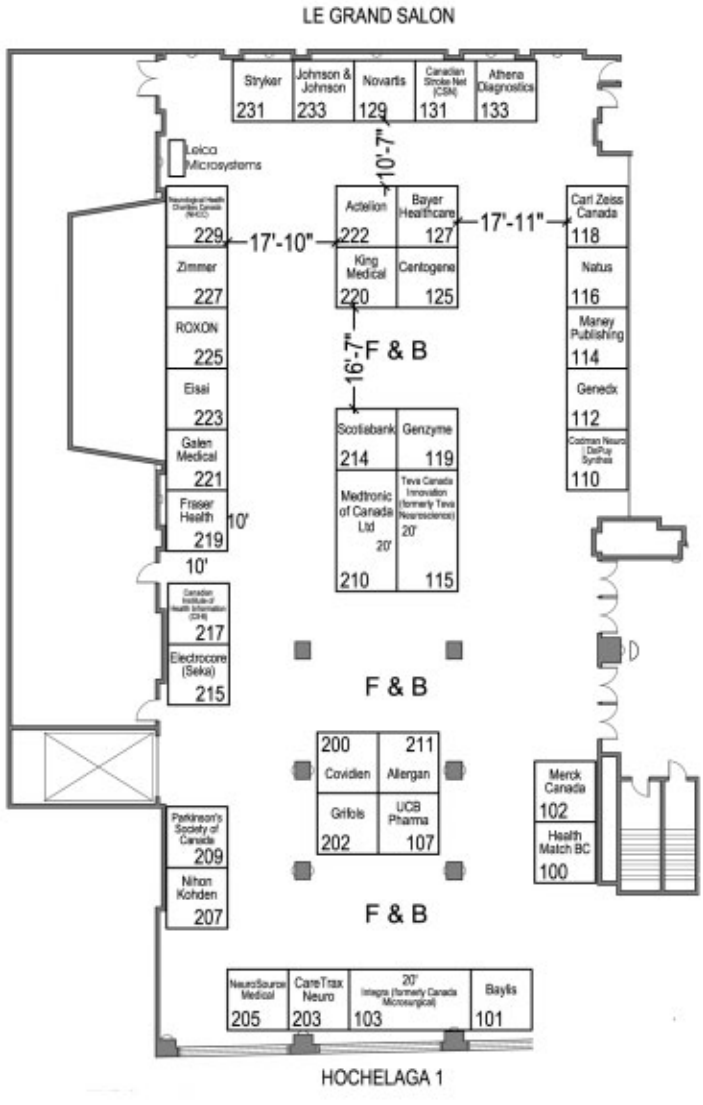


Poster Author Sessions

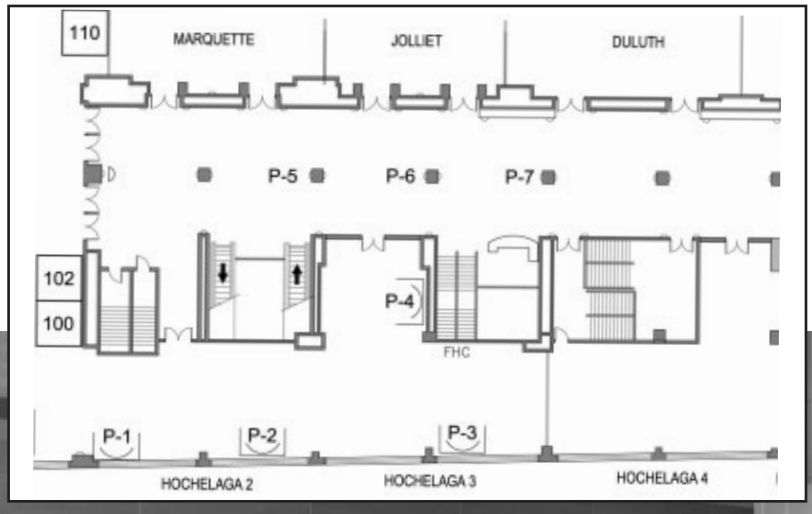
Poster Author Standby Tours

The CNSF works very hard to improve the Digital Posters' process and on site presentations at each year's Congress. Your patience over the years has been appreciated, as we constantly strive for improvement.

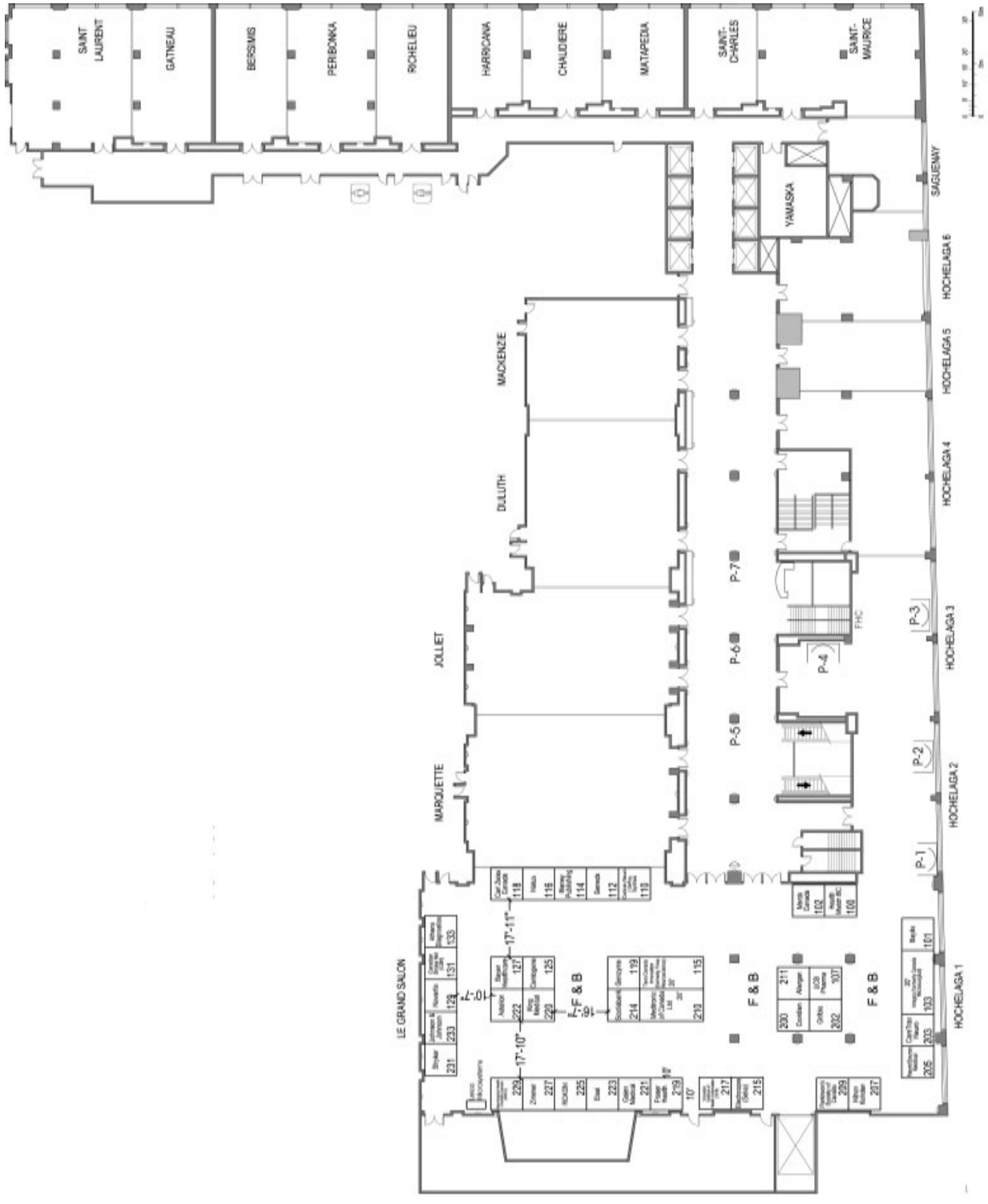
This year, we have scheduled two Poster Author Standby sessions, and have ensured that all presenters receive at least six minutes to discuss their work.

The first session occurs on Thursday June 13th from 5:00pm-6:30pm. A cash bar will be available.

The second session occurs on Friday June 14th from 1:00pm-2:15pm. Those of you not attending the poster sessions should take this opportunity to have lunch and visit/thank our exhibitors.



Congress Floor Plan



Thank You

The Canadian Neurological Sciences Federation would like to graciously acknowledge and thank the following for their commitment and participation in this year's 48th Annual Congress

Course Chairs

Alexandre Y. Poppe
Anne-Louise Lafontaine
Asif Doja
Brian Toyota
Catherine Larochelle
Craig Campbell
Draga Jichici
Elizabeth Leroux
Eric Massicotte
Gary Redekop
Jason Barton
Jeanne Teitelbaum
Jorge Burneo
Joseph Megyesi
Kesh Reddy
Kristine Chapman
Martin Cloutier
Martin del Campo
Matthew Farrer
Max Findlay
Michele Seaton-Gascon
Michelle Demos
Mike Nicolle
Nailyn Rasool
Neelan Pillay
Paul Giacomini
Peter Dirks
Pierre J. Blanchet
Ramesh Sahjpaul
Roberto Diaz
Serena Orr
Seyed Mirsattari
Sian Spacey
Sylvain Lanthier
Tahseen Mozaffar

Course Speakers

Alain Weill
Alexandre Poppe
Alexis Turgeon
Allan Cook
Amin Kassam
Andrew Parrent
Ann Yeh
Anne-Louise Lafontaine
Bernd Pohmann-Eden
Brian Toyota
Carles Vilarino-Guell
Catherine Lorochelle
Cecil Hahn
Celine Jobin
Charles Branch
Charles Haw
Chris Wallace
Daniel Shedid
Danielle Andrade
Daryl Fourney
David Clarke
David Fortin
David Steven
Doug Munoz
Draga Jichici
Edward Fon
Elaine Kobayashi
Elizabeth Donner
Elizabeth LeRoux
Eric Massicotte
Ester Bui
Eva Feldman
Farnaz Amoozegar
Francois Evoy
Francois Grand'Maison
Fred Gentili
Genevieve Bernard
Genevieve Milot
Gord Gubitz
Ismail Mohamed
James Sharpe
Jason Barton
Jean Raymond
Jeanne Teitelbaum
Jeffrey Hall
Jeffrey Minuk
Joe Sivaggio
John Hurlbert
John Kestle
John Wong
Jonathan Gladstone
Jorge Burneo
Kate Bushby
Kesh Reddy
Kristine Chapman
Lawrence Korngut
Lili-Naz Hazrati
Line Jacques
Lionel Carmant
Loch Macdonald
Louis Crevier
Mandar Jog
Mark Hamilton
Mark Sadler
Martin Cloutier
Martin del Campo
Martin Savard
Mayank Goyal
Michael Hill
Michelle Demos
Mike Tymianski
Neelan Pillay
Nicolas Dupre
Nizam Ahmed
Patrick Arache
Paul Cooper
Paul Giacomini
Philippe Major
Pierre Blanchet
Pierre Duquette
Pierre Mayer
Reda Ibrahim
Richard Desbiens
Rob Brownstone
Robert Chen
Rolando Del Maestro
Sean Christie
Seyed Mirsattari
Susan Creighton
Susanne Benseler
Tim Doherty
Toshifumi Yokota
Vivek Mehta
Warren Blume
Wendy Stewart
William Fletcher

Platform Moderators

Brian Toyota
Cecil Hahn
Celine Odier
David Steven
Eric Massicotte
Loch Macdonald
Sharon Whiting

Poster Moderators

Danielle Andrade
Draga Jichici
Jeanne Teitelbaum
Joseph Megyesi
Roberto Diaz
Roger McKelvey
Ron Pokrupa
Rudolf Arts
Simon Walling

Grand Rounds Chairs

Alex Poppe
Chantal Poulin
Judith Marcoux

Chairs Select Abstract Moderators

Ian Fleetwood
Jason Barton
Narayan Prasad

Plenary Speakers

Charles Branch
Donald Weaver
Eva Feldman
Kate Bushby
Sean Clarke

2014 CNSF Congress in Beautiful Banff Alberta

Once again we have secured an outstanding hotel property as our Congress venue and host hotel. We will be at the **Fairmont Banff Springs Hotel – June 3 to June 6, 2014!**

Few hotels in the world rival the majesty, hospitality and grandeur of The Fairmont Banff Springs resort, located in the heart of Banff National Park, a UNESCO World Heritage Site. This hotel was styled after a Scottish Baronial Castle and when it opened in 1888, it marked the birthplace of tourism in the Canadian Rockies.

The Fairmont Banff Springs hotel, a National Historical Site of Canada, provides unparalleled options and unique experiences to guests, from inclusive onsite getaways to days of adventure exploring the Rockies.

For the convenience of our Congress delegates, the CNSF has reserved transportation from the Calgary International Airport directly to Banff, through Brewster Corporate Event and Management. The fee is $40.50 per person, about the same as a taxi fare from the airport to a downtown Calgary Hotel. Enjoy the ride and enjoy the scenery.

During your stay in our Rocky Mountains, we invite you to join your colleagues for a truly Western barbeque experience amid the majestic mountain peaks.

Just minutes from Banff at Brewster's Mountainview location we will gather 'round the indoor central bonfire for an evening of entertainment and feasting.

Transportation to and from the venue is provided.

Then, looking forward to 2015! The CNSF 50th Annual Congress!
Hope to see you all at the Fairmont Royal York Hotel in Toronto, June 9 to June 12, 2015.

Medtronic

Transforming Medical Technology To Change Lives

At Medtronic, through global advocacy and strengthening healthcare systems, we are committed to breaking down barriers to positively address the world's rising chronic disease healthcare challenge.

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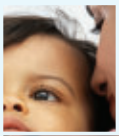

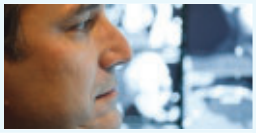

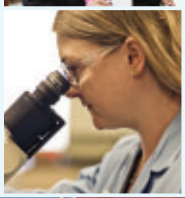






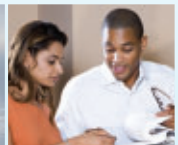





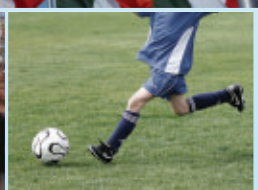

Innovating for life.

Tuesday Scientific Program

Co-developed Epilepsy Symposium - Optimizing Patient Care, from Diagnosis to Management

Chairs: Martin del Campo, CNS, CSCN & Neelan Pillay, CNS, CSCN ***8:30 - 5:00 Duluth Room***

By the end of this symposium, participants will be able to:

- Assess the patient with epilepsy by documenting the clinical history of the disorder
- Interpret results of diagnostic tests – magnetic resonance imaging and electroencephalogram – and discuss their clinical implications
- Review first- and second-line pharmacotherapies to manage epilepsy, as well as the potential role of alternative therapies
- Describe the ideal candidate for surgery for epilepsy
- Discuss special considerations for management of epilepsy in pregnant patients
- Recognize clinical characteristics of psychogenic non-epileptic seizures

Target Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon
Learning Formats: Lecture/plenary method | Case presentations | Forum/ panel, Q&A
Learner Level: Intermediate
CanMED Roles: Medical Expert

Agenda

08:30 - 09:10	How to Take a Clinical History of Epilepsy	Martin del Campo
09:10 - 09:50	MRI in Epilepsy: What Sequences and What to Look For	Elaine Kobayashi
09:50 - 10:30	Ordering EEGs: What Do Spikes and Slow Waves Mean?	Warren Blume
10:30 - 10:50	*Coffee Break*	
10:50 - 11:20	Pharmacotherapy: First- and Second-line Choices	Bernd Pohlmann-Eden
11:20 - 12:00	Alternative Therapies for Epilepsy: From Diets to Devices	Lionel Carmant
12:00 - 12:20	Pre-lunch break	
12:20 - 13:20	*Lunch* and Video Cases	Seyed Mirsattari
13:20 - 13:50	Surgery for Epilepsy: Who is a candidate?	Neelan Pillay
13:50 - 14:50	*Keynote Lecture* – Evidence-based Neurosurgery for Epilepsy 50 Years' Experience at the MNI:	Jeffery Hall
14:50 - 15:10	*Coffee Break*	
15:10 - 15:40	Management of Epilepsy During Pregnancy	Esther Bui
15:40 - 16:20	Psychogenic Non-Epileptic Seizures (a video session)	Mark Sadler
16:20 - 17:00	Round-table Discussion and Course Evaluation	Faculty

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL
http://www.surveymonkey.com/s/13codev1

Neurocritical Care: Brain Death Special Interest Group

Chairs: Jeanne Teitelbaim, CNS & Draga Jichici, CNS ***6:00 - 8:00 Gatineau Room***

During this course there will be a 20 minute lecture on the concept and determination of brain death. This is followed by a simulation center where the participant is asked to determine if the simulation patient meets the criteria of brain death. After reviewing the history, the imaging and the laboratory data, the participant goes through the steps of the clinical determination of brain death on a model patient. This is a 15 minute station, followed by immediate feedback. While waiting for their turn, participants will have a presentation of several case histories with discussion.

By the end of this course participants will be able to:

- Understand the concept of brain death
- Diagnose brain death in adults and children
- Properly examine the comatose patient

Target Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Resident | Internist – Emergency physician - Intensivist

Learning Formats: Lecture/plenary method | Case presentations | Simulation with hands-on demonstration

Learner Level: Basic

CanMED Roles: Medical Expert | Communicator | Scholar | Professional

This course is offered in English only.
Simulation component will be offered in French and English.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13sig2

Tuesday Scientific Program

Movement Disorders Special Interest Group

Chairs: Martin Cloutier & Anne-Louise Lafontaine ***6:00 - 8:00 Richelieu Room***

Participants of this video course will have an opportunity to review the classical clinical features of typical and atypical parkinsonian disorders along with other movement disorders. This session will be case-based and highly interactive.

By the end of this course participants will be able to:

- Describe basic and more complex characteristics of a variety of movement disorders
- Identify clinical hallmarks of typical and a typical parkinsonian disorders

Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Resident

Learning Level: Basic | Intermediate

Learning Styles: Videos/ Case Studies | Discussion | Group/ peer exchange

CanMED Roles: Medical Expert

Agenda

6:00 pm – 6:05 pm	Introductions and Review of Course Learning Objectives	Martin Cloutier & Anne-Louise Lafontaine
6:05 pm – 7:55 pm	Video Presentation	
7:55 pm – 8:00 pm	Wrap Up and Evaluation	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13sig3

Epilepsy Video Special Interest Group

Chair: Seyed Mirsattari, CNS, CSCN ***6:00 - 8:00 Bersimis Room***

By the end of this course participants will be able to:

- Identify semiology of some epileptic seizures
- Make a correlation between clinical features and anatomical localization of epileptic seizures
- Identify interictal and ictal EEG patterns in the presented cases
- Make an appropriate differential diagnosis for each case
- Provide a treatment plan

Audience: Neurologist – Adult | Neurologist – Child | Neurophysiologist

Learning Level: Advanced

Learning Styles: Case studies | Discussion

CanMED Roles: Medical Expert

Agenda

6:00 pm - 6:05 pm	Introduction	Seyed Mirsattari
6:05 pm - 6:30 pm	Case 1	Neelan Pillay
6:30 pm - 7:00 pm	Case 2	Ismail Mohamed
7:00 pm - 7:30 pm	Case 3	Elizabeth Donner
7:30 pm - 7:55 pm	Case 4	Seyed Mirsattari
7:55 pm – 8:00 pm	Wrap Up & Evaluation	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13sig4

Tuesday Scientific Program

Headache Special Interest Group: Migraine and Friends

Chair: Elizabeth Leroux, CNS ***6:00 - 8:00 Peribonka Room***

Migraine is a complex disease associated with many symptoms and comorbid with other diseases. Borderline situations involving other specialties are difficult for neurologists. This SIG will focus on clinical situations frequent in practice and for which clear answers are not always available. Cases will open the discussion.

By the end of this course participants will be able to:

- Elaborate a differential diagnosis of migraine and vertigo
- Investigate and treat neck pain associated with migraine
- Diagnose a temporo-mandibular joint disorder associated with migraine
- Manage insomnia in the migraineur
- Suspect and investigate sleep apnea in the chronic headache sufferer

Audience: Neurologist – Adult | Neurologist – Child | Resident | Nurses interested in headache

Learning Level: Advanced

Learning Styles: Case studies | Discussion | Q&A | Lecture/plenary method

CanMED Roles: Medical Expert **|** Communicator **|** Scholar **|** Professional

Agenda

6:00 pm - 6:05 pm	Introductions and Review of Course Learning Objectives	Elizabeth Leroux
6:05pm – 7:55 pm	Migraine and Vertigo	Jonathan Gladstone
	Migraine and the Jaw	Patrick Arache
	Sleep and Headache	Pierre Mayer
7:55 pm – 8:00 pm	Wrap Up and Evaluation	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13sig5

Tuesday Scientific Program

Neuromuscular

Chairs: Mike Nicolle, CNS, CSCN & Kristine Chapman, CSCN ***6:00 - 8:00 Saint Maurice Room***

The Canadian Neuromuscular Group (CNMG) SIG consists of brief case presentations for a lively and informal discussion. In addition to interesting/complex clinical cases (whether the diagnosis is known or remains uncertain but input from other colleagues is desired), short academic/research presentations on topics of widespread interest (research proposals, clinical trials etc.) are welcomed. Presentations by trainees at all levels are strongly encouraged. For clinical cases the format is generally a 5-minute presentation followed by a discussion amongst the audience, and then if appropriate a brief (1 or 2 slides) didactic presentation (total 15 minutes per case).

By the end of this course participants will be able to:

- Discuss advances in the management of acute and chronic neurological and neurosurgical disorders
- Discuss new findings in neurological and neurosurgical disorders
- Describe advances in neurological care and/or neurosurgical techniques
- Identify areas where there are gaps in learning (unperceived needs) not realized before attending the Congress and extend this professional learning after the Congress to the enhanced care of patients

Audience: Neurologist – Adult | Neurologist – Child | Neurophysiologist/EMGer | Resident | Neuromuscular Fellow | Medical student | EMG technologist
Learning Level: Basic | Intermediate | Advanced | All – depending on case material
Learning Styles: Case studies | Discussion | Q&A | Group/peer Exchange
CanMED Roles: Medical Expert | Communicator | Collaborator | Manager | Health Advocate | Scholar | Professional

Agenda

6:00 pm - 6:05 pm	Introductions and Review of Course Learning Objectives	Mike Nicolle & Kristine Chapman
6:05pm - 7:55 pm	Case Presentations From House Staff and Neurology or Physiatrist Consultants	TBD
7:55 pm - 8:00 pm	Wrap Up and Evaluation	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13sig6

Wednesday Scientific Program

Stroke

Chairs: Alexandre Y. Poppe, CNS & Sylvian Lanthier ***9:00 - 12:00 Mackenzie Room***

This course will provide neurology residents, neurologists, neurosurgeons and interventional neuroradiologists with an update of selected topics in acute stroke treatment and secondary stroke prevention that have undergone particular developments in the past year.

Stroke neurologists, cardiologists and neuroradiologists will discuss the management of patent foramen ovale in cryptogenic stroke, the role of endovascular therapy in acute ischaemic stroke, difficult decision-making in thrombolysis cases and strategies to improve door-to-needle times.

By the end of this course participants will be able to:

- Manage patent foramen ovale in patients with cryptogenic ischaemic stroke
- Understand the role of endovascular therapy in acute ischaemic stroke and the recent evidence informing its use
- Identify indications / contraindications to intravenous thrombolysis in selected challenging situations
- Implement practical strategies to improve door-to-needle time for thrombolysis in acute stroke

Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Resident | Interventional neuroradiologist
Learning Level: Intermediate
Learning Styles: Case studies | Discussion | Group/ peer exchange/ user groups | Forum/panels Q&A | Lecture/plenary method
CanMED Roles: Medical Expert | Collaborator | Health Advocate | Scholar | Professional

Agenda

9:00 am - 9:05 am	Introduction	Alexandre Poppe & Sylvain Lanthier
9:05 am - 9:40 am	Patent Foramen Ovale and Cryptogenic Stroke: Causality and Optimal Management	Jeffrey Minuk
9:40 am - 10:15 am	Role of Endovascular Therapy in Acute Stroke Management: Current Evidence and Practice	Jean Raymond
10:15 am - 10:35 am	Break	Break
10:35 am - 11:10 am	Tough Decisions in Acute Stroke Management: When Guidelines Aren't Enough	Michael Hill
11:10 am - 11:45 am	How to Improve Door-to-Needle Times in Acute Stroke Treatment	Gord Gubitz
11:45 am - 11:55 am	Discussion	All Speakers
11:55 am - 12:00 pm	Evaluation	Evaluation

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con1

Wednesday Scientific Program

Hot Topics in Child Neurology

Chairs: Asif Doja, CACN ***9:00 - 12:00 Saint Maurice Room***

The intent of this course is to provide health care practitioners with an update on the latest information concerning various aspects of pediatric neurology. Specifically, this course will focus on new developments in neuroinflammation, including the use of immunomodulatory drugs; tuberous sclerosis complex and clinical teaching in child neurology.

By the end of this course participants will be able to:

- Describe the mechanisms of action immunomodulatory drugs on the nervous system
- Discuss the diagnosis and management of central nervous system vasculitis
- Understand the use of everolimus in the treatment of patients with tuberous sclerosis complex
- Reflect on the role of technology in neurology education

Audience: Child Neurologist | Resident

Learning Level: Advanced

Learning Styles: Case Studies | Discussions | Questions and Answer Period

CanMED Roles: Medical Expert | Scholar | Communicator

Agenda

9:00 am - 9:05 am	Introduction	Asif Doja
9:05 am - 9:30 am	Hot Topics in Neuroimmunology: Immunomodulatory Drugs Used in CNS Disease	Ann Yeh
9:30 am - 9:40 am	Discussion	
9:40 am - 10:10 am	An Update on Central Nervous System Vasculitis	Susanne Benseler
10:10 am - 10:20 am	Discussion	
10:20 am - 10:40 am	Break	
10:40 am - 11:10 am	Hot Topics in Tuberous Sclerosis Complex: Everolimus Therapy	Philippe Major
11:10 am - 11:20 am	Discussion	
11:20 am - 11:45 am	There's an App for that! Utilizing Mobile Technology in Neurological Education	Wendy Stewart
11:45 am - 11:55 am	Discussion	
11:55 am - 12:00 pm	Discussion & Evaluation	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con2

Wednesday Scientific Program

Minimally Invasive Cranial Neurosurgery

Chair: Kesh Reddy, CNSS ***9:00 - 12:00 Saint Laurent Room***

Minimally Invasive Cranial Neurosurgery will highlight all aspects of cranial neurosurgery. The Course will begin with reviewing the history of endoscopy in neurosurgery and providing an overview of existing technology. A presentation on the use of endoscopy in the ventricular system will follow and then a discussion of the endonasal, expanded endonasal and related approaches. Concluding with an overview summarizing the utility of endoscopy in cranial neurosurgery overall and covering any gaps that may have been left by the previous speakers. A panel discussion involving all participants and speakers with case discussion of selected cases brought by participants as well as the presenters will round out the class. During the break it is anticipated that interested participants will be able to try out a simulator using the available endoscope-relevant modules.

If you will be attending this session and have a Case Study you believe would be of benefit to sharing with your colleagues, please bring it with you on a USB stick and provide to the Course Chair at the front of the room.

By the end of this course participants will be able to:

- Identify the general principles of endoscopy
- Demonstrate the applicability of endoscopy in neurosurgery and spine
- Recognize the indications for endoscopic approaches in neurosurgery and spine
- Recognize the limitations of endoscopic approaches
- Identify potential future applications of this technology in the near future

Audience: Neurosurgeon | Resident | Nurses

Learning Level: Basic | Intermediate

Learning Styles: Case Studies | Discussions | Questions and Answer Period | Simulation | Lecture | Forum/Panels

CanMED Roles: Medical Expert | Collaborator | Communicator

Agenda

9:00 am - 9:05 am	Introduction	Kesh Reddy
9:05 am - 9:25 am	Review of History and Current Technology of MIS in the Brain	Louis Crevier
9:25 am - 9:45 am	Current Practice of Ventriculoscopy	Mark Hamilton
9:45 am - 10:00 am	Break	
10:00 am - 10:20 am	Overview of Transnasal Approaches to the Skull Base	Fred Gentili
10:20 am - 10:40 am	Overview of Cranial Endoscopy	Kesh Reddy
10:40 am - 11:40 am	Panel Discussion and Case Review	All Faculty
11:40 am - 12:00 pm	Wrap Up and Evaluations	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con3

Neurology - Movement Disorders and Parkinson's Disease: Resident Review

Chairs: Pierre J. Blanchet, CNS, Nailyn Rasool, CNS, & Serena Orr, CACN ***9:00 - 5:00 Duluth Room***

Movement disorders are common and come to the attention of all neurologists. They constitute a clinical challenge in many respects, as one type of abnormal involuntary movement may result from a wide range of neurological and systemic disease entities, and one particular disease may present with a variety of abnormal involuntary movements. The intricacies of the neuronal networks of the basal ganglia, extending to sensorimotor, limbic, and cognitive domains, also add to the complexity of case management.

Movement disorders are divided in hypokinetic and hyperkinetic categories, and the course program was designed accordingly. Hypokinetic disorders, also referred to as Parkinsonism, cover themes such as akinesia, bradykinesia, and rigidity. A summary of the pathology, clinical approach, and treatment of Parkinson's disease and less common forms of parkinsonism, will be provided during the morning talks. In the afternoon, a series of hyperkinetic movement disorders, characterized by an excess of movements, occurring either spontaneously or in response to a volitional movement or stimulus, will be briefly presented to familiarize the audience with each type, as proper recognition is of key importance to the right diagnosis and therapy.

At the end of the program, participants will be able to test their ability to recognize different movement disorders with a potpourri of video cases discussed by a specialist in the field.

By the end of the course participants will be able to:

- Distinguish typical from atypical parkinsonian presentations
- Better use antiparkinsonian medications in selected patients
- Recognize the main hyperkinetic movement disorders
- Know the main approaches used to deal with hyperkinetic movement disorders

Audience: Neurologists | Residents

Learning Level: Basic

Learning Styles: Seminars | Video Presentations | Group discussions

CanMED Roles: Medical Expert

Wednesday Scientific Program

Neurology - Movement Disorders and Parkinson's Disease: Resident Review (continued)

Agenda

9:00 am – 9:40 am	Overview of movement disorders Hypokinetic Movement Disorders (30 min + 10 min Q&A)	Martin Cloutier
9:40 am – 10:20 am	Neuropathology of Parkinsonian Syndromes	Lili-Naz Hazrati
10:20 am – 10:40 am	Break	
10:40 am – 11:20 am	Diagnostic Approach to Parkinson's Disease	Anne-Louise Lafontaine
11:20 am – 12:00 pm	Therapeutics in Parkinson's Disease: Early and Late	Mandar Jog
12:00 pm – 1:45 pm	Evaluations – Lunch	
1:45 pm – 2:10 pm	Dystonia & Camptocormia	Anne-Louise Lafontaine
2:10 pm – 2:35 pm	Approach to Chorea: Diagnostic & Therapeutic Considerations	Mandar Jog
2:35 pm – 3:00 pm	Drug-Induced Movement Disorders	Pierre Blanchet
3:00 pm - 3:15 pm	Break	
3:15 pm – 3:40 pm	Myoclonus	Robert Chen
3:40 pm – 4:05 pm	Tic Disorders	Genevieve Bernard
4:05 pm – 4:30 pm	Tremors	Robert Chen
4:30 pm – 4:55 pm	Video Potpourri	Martin Cloutier
4:55 pm – 5:00 pm	Wrap Up and Evaluations	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13rr-neuro

Wednesday Scientific Program

Emergency Neurosurgery: Resident Review

Chairs: Max Findlay, CNSS & Roberto Diaz, CNSS ***9:00 - 5:00 Hochelaga 5/6 Room***

The 'Emergency Neurosurgery' course is a comprehensive topic based review course focusing on the diagnosis and management of conditions that result in acute or rapidly progressive neurological deficit for which neurosurgical evaluation and intervention is indicated. The topics covered include injury to the central and peripheral nervous system, neurovascular conditions, intra-cerebral hemorrhage, neoplasms, hydrocephalus, and pediatric neurosurgical emergencies. While the course is primarily designed as a review for neurosurgical residents it is evidence-based and neurosurgeons in practice may find it a useful review as well.

By the end of this course participants will be able to:

- Demonstrate the ability to recognize neurosurgical emergencies, while understanding and utilizing the body of evidence concerning intensive care and surgical intervention in neurosurgical emergencies
- Understand the epidemiology, pathophysiology, surgical management, and early and delayed complications in the setting of neurosurgical emergencies
- Recognize the importance of CanMEDs Roles with referring physician and other health staff in the management of a neurosurgical emergency
- Develop tools and ways of working with colleagues, staff and patients and their families as related to CanMED Roles

Audience: Neurosurgeon | Resident

Learning Level: Basic

Learning Styles: Case studies | Group/ peer exchange/ user groups | Lecture/plenary method | Oral exam format

CanMED Roles: Medical Expert | Communicator | Collaborator | Manager | Health Advocate | Scholar | Professional

Wednesday Scientific Program

Emergency Neurosurgery: Resident Review (continued)

Agenda

9:00am - 9:05am	Introductions and Review of Course Learning Objectives	
9:05am - 9:25am	Acute Intervertebral Disc Herniation	Daryl Fourney
9:25am - 9:45am	Spinal Cord Injuries	John Hurlbert
9:45am - 10:15am	Spinal Column Injuries	Eric Massicotte
10:15am - 10:25am	Break	
10:25am - 11:45am	Pediatric Emergencies	Vivek Mehta
11:45am - 12:15pm	Severe Adult Head Injury	David Steven
12:15pm - 1:45pm	Lunch	
1:45pm - 2:10pm	Adult Brain Tumour Emergencies	Brian Toyota
2:10pm - 2:35pm	Aneurysm Rupture	John Wong
2:35pm - 3:05pm	Ischemic Stroke & Malignant Cerebral Infarction	Loch Macdonald
3:05pm - 3:20pm	Non-aneurysmal ICH	Joe Silvaggio
3:20pm - 3:35pm	Break	
3:35pm - 4:00pm	Extracranial Neurovascular Emergencies	Geneviève Milot
4:00pm - 4:15pm	Peripheral Nerve Injuries	Line Jacques
4:15pm - 5:00pm	Exam Style Questions Wrap Up and Evaluation	Findlay, Steven, Mehta, Wallace

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13rr-ns

A Practical Financial Road Map for Neurological/Neurosurgery Residents

Chair: Serena Orr, CACN, Michele Seaton-Gascon ***12:15 - 1:45 Marquette Room***

This course will focus on teaching residents about basics of debt repayment, starting a practice and planning for a healthy financial future. The three topics will be presented separately, with a brief presentation from financial experts to begin, followed by a panel discussion between staff physicians, financial experts and the audience.

By the end of this course participants will be able to:

- Have the skills to develop a debt repayment plan
- Learn how to balance debt repayment with savings & investment
- Understand how to plan for the future beyond investments & debt repayment (wills, disability insurance, life insurance, RRSPs, RESPs, etc)
- Understand the financial side of starting a practice

Target Audience: Residents

Learning Formats: Discussion | Forum/panels Q&A | Lecture/plenary method

Learner Level: Basic

CanMED Roles: Manager | Professional

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13lnl1

Treatable Myopathies State of the Art in Diagnosis & Management

Chair: Tahseen Mozaffar ***12:15 - 1:45 Jolliet Room***

The goal of the presentation is to guide the audience through some of the diagnostic steps to identify treatable Myopathies. An emphasis will be given on the newer diagnostic methodologies.

By the end of this course participants will be able to:

- Understand diagnostic steps to identify treatable Myopathies
- Be aware of the newer diagnostic tests and tools to differentiate treatable Myopathies

Target Audience: Neurologists, Child Neurologists, Residents, Allied Health Workers

Learning Formats: Lecture/plenary method | Case studies

Learner Level: Basic | Intermediate | Advanced

CanMED Roles: Medical Expert

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13lnl2

Wednesday Scientific Program

Headache

Chair: Sian Spacey, CNS ***2:00 - 5:00 Gatineau Room***

This course addresses some of the challenges in identifying the causes of chronic headache. It addresses in detail the investigation and management of chronic headache related to CSF Leak, Idiopathic Intracranial Hypertension, and New Daily Persistent Headache.

By the end of this course participants will be able to:

- Identify some of the causes of chronic headache
- Identify which populations are at risk of developing chronic headache
- Discuss the investigations and management of chronic headache

Audience: Neurologist – Adult | Neurologist – Child | Resident | Nurses interested in Headache

Learning Level: Basic | Intermediate| Advanced

Learning Styles: Lecture | Case studies| Discussion

CanMED Roles: Medical Expert | Communicator | Collaborator | Manager | Health Advocate | Scholar | Professional

Agenda

2:00 pm - 2:10 pm	Introduction	Sian Spacey
2:10 pm - 2:50 pm	New Daily Persistent Headache	TBA
2:50 pm - 3:00 pm	Q&A	
3:00 pm - 3:20 pm	Break	
3:20 pm - 3:55 pm	Chronic Headache Secondary to CSF Leaks	Farnaz Amoozegar
3:55 pm - 4:05 pm	Q&A	
4:05 pm - 4:40 pm	Chronic Headache Secondary to Idiopathic Intracranial Hypertension	Elizabeth LeRoux
4:40 pm - 4:50pm	Q&A	
4:50 pm - 5:00 pm	Wrap up and Evaluation	Sian Spacey

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con4

Wednesday Scientific Program

Neuromuscular

Chairs: Kristine Chapman, CSCN & Mike Nicolle, CNS, CSCN ***2:00 - 5:00 Saint Laurent Room***

The Neuromuscular course is lecture format with time for questions and discussion. The course will be of interest to residents, neurologists, physiatrists and pediatric neuromuscular specialists. Both sub-specialties and general practitioners who do EMG will find relevant course material.

By the end of this course participants will be able to:

- Understand the pathophysiology and diagnosis of diabetic neuropathy
- Describe common paraneoplastic disorders of the peripheral nervous system
- Discuss advances in our understanding of limbgirdle muscular dystrophies
- Be aware of important developments in neuromuscular disease

Audience: Neurologist – Adult | Neurologist – Child | Neurophysiologist | Resident

Learning Level: Basic | Intermediate | Advanced

Learning Styles: Discussion | Lecture/plenary method

CanMED Roles: Medical Expert | Scholar

Agenda

2:00 pm – 2:05 pm	Introduction	Kristine Chapman
2:05 pm – 2:35 pm	Limbgirdle Muscular Dystrophies: Advances in our Understanding	Kate Bushby
2:35 pm – 3:05 pm	Evidence-based Approach to Radiolopathy	Tim Doherty
3:05 pm – 3:45 pm	Diabetic Neuropathy: One Disease or Two ?	Eva Feldman
3:45 pm – 4:00 pm	Break	
4:00 pm – 4:30 pm	Paraneoplastic Disorders of the Peripheral Nervous System	Kristine Chapman
4:30 pm – 5:00 pm	Discussion & Evaluation	All Speakers

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con5

Wednesday Scientific Program

Neurocritical Care

Chairs: Draga Jichici, CNS & Jeanne Teitelbaum, CNS ***2:00 - 5:00 Hochelaga 4 Room***

Through the use of case histories the participants will learn how to prognosticate outcome after cardiac arrest and traumatic brain injury, have an understanding of the newest guidelines for the management of ICH and SAH, have a better understanding of EEG monitoring in ICU and learn about neuromuscular weakness in ICU.

By the end of the course participants will be able to:

- Prognosticate outcome following traumatic brain injury
- Prognosticate outcome following cardiac arrest
- Know how to manage refractory status epilepticus
- Know practical aspects of management of intracranial hemorrhage
- Learn how to approach a patient with neuromuscular weakness in ICU

Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Neurophysiologist | Resident | Critical Care Physicians | Nurses

Learning Level: Intermediate

Learning Styles: Case Histories | Videos | Audience Participation | Didactic Presentations

CanMED Roles: Medical Expert | Communicator | Collaborator | Manager | Health Advocate | Scholar | Professional

Agenda

2:00 pm - 2:05 pm	Introductions and Review of Course Learning Objectives	Draga Jichici/Jeanne Teitelbaum
2:05 pm - 2:25 pm	Prognostication following Traumatic Brain Injury	Alexis Turgeon
2:25 pm - 2:55 pm	Prognostication after Cardiac Arrest	Draga Jichici
2:55 pm - 3:15 pm	Break	
3:15 pm - 3:45 pm	Refractory Status Epilepticus	Cecil Hahn
3:45 pm - 4:15 pm	Update in Subarachnoid and Intracranial Hemorrhage	Jeanne Teitelbaum
4:15 pm - 4:55 pm	Neuromuscular Weakness in ICU	Martin Savard
4 :55 pm - 5:00 pm	Evaluation and Discussion	Draga Jichici/Jeanne Teitelbaum

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con6

Thursday Scientific Program

Grand Plenary

8:30 - 11:00 Marquette / Jolliet Room

This is a multi-disciplinary guest lecture series. Each Society guest lecturer will update Congress Delegates within a 25 minute talk. See speaker BIOs on page 12-14.

As a result of attending the Grand Plenary, delegates will gain knowledge about:

- Intraspinal stem cell transplantation in ALS
- Translating research for patients with neuromuscular disease
- Nurse-physician collaboration
- Legacy of spinal surgery at the Montreal Neurological Institute
- Drug design and disease modification

8:30 am **CSCN Gloor Lecture - Eva Feldman** Intraspinal Stem Cell Transplantation in ALS

9:00 am **CACN Tibbles Lecture - Kate Bushby** Translating Research for Patient Benefit: The Story, So Far, of Bench to Bedside in Neuromuscular Diseases

9:30 am **CANN Guest Lecture - Sean Clarke**
Enhancing Nurse-Physician Collaboration: Towards an Evidence-Informed Future

10:00 am **CNSS Penfield Lecture - Charles Branch** William Cone and Spine Surgery in North America: An Unheralded Legacy of the Montreal Neurological Institute

10:30 am **CNS Richardson Lecture - Donald F. Weaver**
Drug Design: The Long Road to Disease Modification

Society Chair's Select Platform Presentations

11:15 - 12:15

CNS / CSCN Chair's Select Abstract Presentations.....*Mackenzie Room* **See page 109**
Moderator: Jason Barton

A01 11:15 Lysine Restricted Diet as Novel Therapy for Pyridoxine Dependent Epilepsy
A02 11:30 Magnetic resonance guided focused ultrasound (MRgFUS) for thalamotomy in treatment-refractory essential tremor
A03 11:45 Titin founder mutation is a common cause of myofibrillar myopathy with early respiratory failure
A04 12:00 Synchrotron imaging of photothrombotic stroke model in mice

CNSS Chair's Select Abstract Presentations.....*Saint Laurent Room* **See page 110**
Moderator: Ian Fleetwood

B01 11:15 Diffusion weighted imaging in the prognostication of Glioblastoma Multiforme
B02 11:30 Phase I trial of deep brain stimulation of the subcallosal cingulum for treatment-refractory anorexia nervosa
B03 11:45 Independent Risk Factors and Risk Factor Selection Modeling for the Recurrence of Chronic Subdural Hematomas
B04 12:00 Visualizing Plasticity in the Injured Human Spinal Cord with fMRI

CACN Chair's Select Abstract Presentations .....*Hochelaga 5/6 Room* **See page 111**
Moderator: Narayan Prasad

C01 11:15 Predictors of seizure outcomes in children with tuberous sclerosis and intractable epilepsy undergoing esective epilepsy surgery: An individual participant data meta-analysis
C02 11:30 Ipsilateral Corticomotor Projections in Perinatal Stroke: Effects of rTMS
C03 11:45 Mutations in ATP1A3 Cause Cerebellar ataxia, areflexia, pes cavus, optic atrophy, and sensorineural hearing loss (CAPOS) syndrome
C04 12:00 Race, ethnicity and geographic distribution of pediatric chronic ataxia in Manitoba

Thursday Scientific Program

Child Neurology Day

Chairs: Michelle Demos, CACN & Craig Campbell, CACN, CSCN ***11:15 - 5:00 Hochelaga 5/6 Room***

The course will focus on pediatric neuromuscular disease. The first session will be given by Dr. K. Bushby and review the other less common muscular dystrophies (Dr. Bushby will be talking about Duchenne MD during the Tibbles lecture) seen in childhood. The second session by Dr. Yokota will examine anti-sense oligonucleotides and their role as a new therapeutic avenue in pediatric NM disease. Finally, Dr. Korngut will describe the Canadian Neuromuscular Disease Registry, and outline the advantages of rare disease registry for fostering research and improving clinical care for such disorders. Highlighting the sessions will be case presentations by child neurology trainees from across Canada.

By the end of this course participants will be able to:

- Discuss the less common pediatric muscle disorders
- Understand the emerging class of therapeutics of anti-sense oligonucleotides and their potential use in pediatric neuromuscular disorders
- Become familiar with the value of rare disease registries, with a focus on the Canadian Neuromuscular Disease Registry
- Apply neuro-localization and diagnositics to new and challenging neuromuscular clinical cases

Audience: Neurologist – Child | Neurophysiologist | Resident
Learning Level: Intermediate
Learning Styles: Case studies | Discussion | Lecture/plenary method
CanMED Roles: Medical Expert **|** Collaborator **|** Health Advocate **|** Scholar **|** Professional

Agenda

Chairs Select Abstract Presentations - See pages 41, 111

11:15 am - 12:15 pm	Chairs Select Abstract Presentations	Michelle Demos, Craig Campbell
2:00 pm - 2:10 pm	Introduction	Michelle Demos, Craig Campbell
2:10 pm - 2:40 pm	Rare Muscle Disease in Pediatrics: Beyond Duchenne Muscular Dystrophy	Kate Bushby
2:40 pm - 2:50 pm	Discussion	
2:50 pm - 3:20 pm	Understanding Antisense Oligonucleotide as an Emerging Therapy for Neuromuscular Disease	Toshifumi Yokota
3:20 pm - 3:30 pm	Discussion	
3:30 pm - 3:45 pm	Break	
3:45 pm - 4:05 pm	Rare Disease Registries: The Canadian Neuromuscular Disease Registry	Lawrence Korngut
4:05 pm - 4:15 pm	Discussion	
4:15 pm - 4:55 pm	Resident Case Presentations (2 X10 min cases with approx. 10 min discussion)	
4:55 pm - 5:00 pm	Conclusions and Discussions	
	Wrap Up and Evaluations	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13cnd1

Applying the Canadian Guidelines on Parkinson's Disease to our Practice

Chair: Anne-Louise LaFontaine ***12:15 - 1:45 Duluth Room***

This is an unaccredited learning activity. Use learning to create a Section 2 PLP.

Parkinson Society Canada published the Canadian Guidelines on Parkinson's Disease in 2012 endorsed by CNSF. At this session, participants will learn about the recommendations to manage motor and non-motor symptoms in their PD patients pre- and post-diagnosis. Participants will have an opportunity to discuss how the guidelines impact their practice and provide feedback for future updates.

By the end of this course participants will be able to:

- Provide evidence based strategies to diagnosis and manage Parkinson's Disease symptoms
- Provide evidence based strategies to identify and manage non-motor features of Parkinson's Disease
- Provide best practice evidence for involvement of an inter-disciplinary team

Target Audience: Neurologists | Residents

Learning Formats: Case studies | Discussion | Q&A | Workshop / hands-on demonstration | Other (feedback on current practice in using guidelines)

Learner Level: Advanced

CanMED Roles: Medical Expert

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13lnl3l

This course is offered in English only.

Thursday Scientific Program

Canadian Neurosurgical Innovations & Discoveries

Chairs: Brian Toyota, CNSS & Ramesh Sahjpaul, CNSS ***2:00 - 5:00 Saint Maurice Room***

By the end of this course you will be able to list major and current contributions made to the Neurosurgical field in the realms of: (1) Basic Science, (2) Education- Simulation training, (3) Clinical neuro-oncology, and (4) Pediatric hydrocephalus.

Canadians have long made major contributions to the field of Neurosurgery. In every facet of the specialty, Canadians have played a significant role in advancement. This Course will highlight current high-profile contributions to the field of neurosurgery made by Canadian Neurosurgeons. We will highlight work that has made an impact on the international stage and showcase the fact that Canada retains a robust environment for **Neurosurgical Innovation and Discovery**. In the field of **Education** the current cutting-edge frontier is simulation training. With the horizon of limited work hours for our residents- hands on experience will be at a premium. Computer simulation training is quickly becoming a ubiquitous tool for the technical education of the developing neurosurgeon. Canadian Neurosurgeons along with the National Research Council have been pivotal in the development of this technology. This course will highlight the Neuro-simulator with an opportunity to experience Neurotouch first hand. Canadian endeavors in the Neurosurgical **Basic Sciences** have always been robust. Investigated fields run the gamut from neuro-oncology, neural architecture, spinal repair, and endovascular repair. Some of the greatest contributions to the basic science realm have come from spinal cord research. Canadians have been pioneers in this field, a major player in the ongoing search for a cure for spinal paralysis. This course will show you how and what Canadian neurosurgeons have unraveled in the field of spinal cord physiology and repair.

Canadian Neurosurgery has always been proud of its thorough clinical and operative proficiencies. As a result **Clinical Research and Technical Advancement** is commonplace. We will highlight some of the clinical expertise developed and refined in Canada with regards to safer operations using MR Tractography, active disruption of the blood-brain barrier for the purposes of chemotherapy and neurosurgery-specific quality of life assessments as functional research endpoints. **Collaborative Networks** may represent the most powerful method by which sub-specialty groups can advance their knowledge base. The Hydrocephalus Clinical Research Network is a prime example of how a coalition of many forces can exponentially amplify the results. The creation of such an ambitious project is a lesson in organization, persistence and diplomacy. Attending this course will provide the attendee not only with a comprehensive knowledge of "what's new in neurosurgery" but also a deep sense pride in the Canadian Neurosurgical Community as a whole.

Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Neurophysiologist | Resident
Learning Level: Basic | Intermediate | Advanced
Learning Styles: Case studies | Discussion | Group/ peer exchange/ user groups | Forum/panels Q&A | Lecture/plenary method | Simulation
CanMED Roles: Medical Expert | Communicator | Collaborator | Manager | Health Advocate | Scholar | Professional

Agenda

2:00 pm – 2:05 pm	Introductions and Review of Course Learning Objectives	Brian Toyota, Ramesh Sahjpaul
2:05 pm – 2:35 pm	Innovation and Discovery in Clinical Neurosurgery	David Fortin
2:35 pm – 2:45 pm	Discussion	
2:45 pm – 3:15 pm	Hydrocephalus Clinical Research Network	John Kestle
3:15 pm – 3:25 pm	Discussion	
3:25 pm – 3:40 pm	Break	
3:40 pm – 4:10 pm	Computer Simulation- Neurotouch	Rolando Del Maestro
4:10 pm – 4:20 pm	Discussion	
4:20 pm – 4:50 pm	Spinal Cord Repair and Physiology	Rob Brownstone
4:50 pm – 5:00 pm	Evaluation and Discussion	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL
http://www.surveymonkey.com/s/13con7

This Course will showcase the high-profile contributions Canadian Neurosurgeons have made to the field of neurosurgery around the world!

Thursday Scientific Program

Epilepsy: From Diagnosis to Intervention

Chair: Jorge G. Burneo, CNS, CSCN ***2:00 - 5:00 Mackenzie Room***

A case will be presented, and the speakers will lecture about diagnosis, treatment of seizures and psychiatric co-morbidities. There will also be a debate on how to start treatment for a newly-diagnosed epilepsy patient, with a focus on "older" versus "newer" antiepileptic drugs. Finally, a lecture on neuromodulation and the new techniques available for the treatment of epilepsy.

By the end of this course participants will be able to:

- Have a better understanding of the tools used to diagnose epilepsy
- Have a better knowledge of the "older" and "newer" antiepileptic drugs
- Have a better knowledge of the imaging techniques used for the assessment of patients with epilepsy
- Diagnose and treat psychiatric co-morbidities in patients with epilepsy
- Have a better knowledge of the use of the different techniques on neuromodulation for the treatment of epilepsy

Audience: Adult and Child Neurologist | Neurosurgeon | Residents | Fellows | Medical Students | Allied Health Professionals

Learning Level: Intermediate

Learning Styles: Lectures | Debate | Case Study | Q&A

CanMED Roles: Medical Expert | Health Advocate | Scholar | Professional

Agenda

This course is offered in English only.

2:00 pm – 2:05 pm	Introduction and Case Presentation: Miss B	Jorge Burneo
2:05 pm – 2:25 pm	Diagnosing Epilepsy: Genetic Vs. Unknown	Danielle Andrade
2:25 pm – 3:00 pm	Debate: Starting Treatment: "Older" vs. "Newer" AEDs	Warren Blume and Mark Sadler
3:00 pm – 3:30 pm	Imaging the Brain with Epilepsy: When to Use Imaging Modalities Different than MRI? What are Those?	Elaine Kobayashi
3:30 pm – 3:45 pm	Break	
3:45 pm – 3:50 pm	Is Miss B Depressed?	Jorge Burneo
3:50 pm – 4:20 pm	Psychiatric Co-Morbidities in Epilepsy: How to Treat Them? (Emphasis on Depression and Anxiety)	Allan Cook
4:20 pm – 4:30 pm	Miss B is not Getting Better: What to do Next?	Jorge Burneo
4:30 pm – 4:50 pm	Alternative Treatments: Neuromodulation in Epilepsy	Andrew Parrent
4:50 pm – 4:55 pm	What Happened to Miss B?	Jorge Burneo
4:55 pm – 5:00 pm	Discussion & Evaluation	All

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con8

MASS: Minimal Access Spine Surgery - What's New and Exciting!

Chair: Eric Massicotte, CNSS ***2:00 - 5:00 Hochelaga 4 Room***

The spine course on Minimal Access Spine Surgery (MASS) will cover the different pathologies that can be treated with this new and advanced technique. MASS in the setting of Degenerative spine disease will be covered by local faculty Dr. Daniel Shedid. This very common problem will allow for very interactive discussion. Trauma an expanding field for MASS will be reviewed by Dr. Sean Chritie from Halifax. This presentation will include some advances in technique and technology. Neoplastic pathology and MASS will be covered by the chair, Dr. Eric Massicotte from Toronto. This part of the course will include case presentations which illustrate the challenges faced with tumors of the spinal axis. A special lecture will also be provided by the invited speaker, Dr. Charles Branch. Participants will hear from this world renown lecturer on the topic of MASS and spine surgery. The schedule will allow for plenty of interactive discussion between the experienced panel and all participants.

By the end of this course participants will be able to:

- Understand the role of MASS in the setting of degenerative spine
- Understand the role of MASS in the setting of traumatic spine
- Understand the role of MASS in the setting of neoplastic spine

Target Audience: Neurosurgeon | Resident | Neurologist | Allied Health worker
Learning Formats: Case studies | Discussion
Learner Level: Basic | Intermediate
CanMED Roles: Medical Expert

Agenda

2:00 pm - 2:15 pm	Introductions and Review of Course Learning Objectives	Eric Massicotte
2:15 pm - 2:45 pm	MASS for Degenerative spine	Daniel Shedid
2:45 pm - 3:30 pm	MASS for Traumatic spine	Sean Christie
3:30 pm - 3:45 pm	Break	
3:45 pm - 4:15 pm	MASS for Neoplastic Spine	Eric Massicotte
4:15 pm - 4:55 pm	Special Topic	Charles Branch
4:55 pm - 5:00 pm	Evaluation & Wrap Up	Evaluation
5:00 pm	Session Ends	Session Ends

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13CON17

Promises of Stem Cells in the Neurosciences

Chair: Peter Dirks ***2:00 - 5:00 Saint Laurent Room***

The human brain contains populations of neural stem cells that contribute to brain homeostasis. These cells are exquisitely responsive to local and systemic changes brought on by physiologic changes or disease processes leading to alteration of their fates by proliferation or differentiation. There is increasing appreciation that these populations can be manipulated to effect CNS repair and that these cells are targeted by human brain diseases. This course will cover the latest insights into neural stem cell dynamics in health and disease. Strategies to manipulate these populations to attenuate effects of CNS aging and injury will be discussed. The critical link that neural stem cells have with human brain cancer will also be highlighted.

The focus of the course will be on fundamentals of neural stem cell biology as they translate to clinical applications to treating human brain disease.

By the end of the course the participants will be able to:

- Understand the dynamic role of neural stem cells in brain homeostasis with physiologic changes, aging, and disease
- Understand the potential for neural stem cells to respond to brain injury to induce CNS repair
- Understand therapeutic strategies that can be used to manipulate and recruit endogenous neural stem cells to improve CNS repair
- Understand the role of neural stem cells in the pathogenesis of human brain tumours and how this insight is translating to novel therapies

Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Resident

Learning Level: Basic | Intermediate

Learning Styles: Q&A | Lecture/plenary method

CanMED Roles: Medical Expert

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con10

Thursday Scientific Program

Digital Poster - Author Standby Stations

5:00 - 6:30 pm
Hochelaga 2/3 and the main Foyer

Digital Poster – Author Standby Sessions offers medical students, residents, researchers and seasoned physicians the opportunity to dialog with Congress delegates about their latest work presented in their poster. This is also an opportunity for delegates to achieve a better understanding of current works and pose questions to the authors for further investigations.

All Abstracts available for viewing at the Congress were selected based on: scientific merit, originality, interest for CNSF members and clarity of expression.

By the end of the digital poster – author standby sessions, participants will be aware of current research and advances in the neurosciences.

Audience: All Congress Delegates

Learning Level: Basic | Intermediate | Advanced

Learning Style: Digital Poster

CanMeds: Medical Expert

Epilepsy	Station 1	Moderator: Danielle Andrade
Pediatrics	Station 2	Moderator: Simon Walling
Stroke	Station 3	Moderator: Jeanne Teitelbaum
Trauma, Critical Care	Station 4	Moderator: Draga Jichici
General Neurology	Station 5	Moderator: Rudolf Arts
Neurosurgery/Neuroradiology	Station 6	Moderator: Roberto Diaz
Neuro-oncology	Station 7	Moderator: Joseph Megyesi

Detailed Poster station listing pages 133 to 136

All poster abstracts begin on page 137

Friday Scientific Program

Platform Presentations

08:00 am - 11:00 am
See page 106 for detailed listing
Abstracts begin on page 109

Stroke	*Harricana Room*	Moderator: Celine Odier
Spine	*Peribonka Room*	Moderator: Eric Massicotte
Trauma & General Neurosurgery	*Richelieu Room*	Moderator: David Steven
Neuro-oncology & Education	*Saint Maurice Room*	Moderator: Brian Toyota
Epilepsy	*Bersimis Room*	Moderator: Cecil Hahn
Aneurysms & Subarachnoid Hemorrhage	*Matapedia Room*	Moderator: Loch Macdonald
Pediatrics	*Chaudiere Room*	Moderator: Sharon Whiting

Grand Rounds

11:15 - 1:00 Marquette / Jolliett Rooms

By the end of this session, participants will be able to:

- Discuss challenging case studies in general neurology, neurosurgery and child neurology
- Analyze / diagnose challenging case studies in general neurology neurosurgery and child neurology

Target Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Neurophysiologist | Resident | Fellows
Learning Formats: Case Studies, Q&A
Learner Level: Basic | Intermediate | Advanced
CanMEDs Roles: Medical Expert, Communicator, Collaborator, Manager Health Advocate, Scholar & Professional

CNS / CSCN Case
Chair: Alex Poppe
Resident Presenter: Ariel Levy

CNSS Case
Chair: Judith Marcoux
Resident Presenter: Katherine Poon

CACN Case
Chair: Chantal Poulin
Resident Presenter: Elana Pinchefsky

Friday Scientific Program

Digital Poster - Author Standby Stations

1:00 - 2:15 pm
Hochelaga 2/3 and the main Foyer

Digital Poster – Author Standby Sessions offers medical students, residents, researchers and seasoned physicians the opportunity to dialog with Congress delegates about their latest work presented in their poster. This is also an opportunity for delegates to achieve a better understanding of current works and pose questions to the authors for further investigations.

All Abstracts available for viewing at the Congress were selected based on: scientific merit, originality, interest for CNSF members and clarity of expression.

By the end of the digital poster – author standby sessions, participants will be aware of current research and advances in the neurosciences.

Audience: All Congress Delegates

Learning Level: Basic | Intermediate | Advanced

Learning Style: Digital Poster

CanMeds: Medical Expert

Movement Disorders/Neuromuscular	Station 1	Moderator: TBA
Pediatrics	Station 2	Moderator: TBA
Stroke	Station 3	Moderator: Draga Jichici
MS / Dementia	Station 4	Moderator: Roger McKelvey
History / Education	Station 5	Moderator: Joseph Megyesi
Neurosurgery / Spine	Station 6	Moderator: Ron Pokrupa

Detailed Poster station listing pages 133 to 136

All poster abstracts begin on page 137

Friday Scientific Program

Multiple Sclerosis

Chairs: Paul Giacomini, Catherine Larochelle ***2:15 - 5:15 Duluth Room***

Multiple Sclerosis (MS) is a rapidly evolving field, with several new therapies likely to be available in the coming years. Our rapidly expanding understanding of MS pathophysiology has led to more potential therapeutic targets being identified in MS and related disorders, such as Neuro-myelitis Optica (NMO). Recent Canadian treatment optimization recommendations reflect the trend towards earlier therapy, with a lower threshold to move to second line agents. Lastly, newer agents and concepts have also contributed to advances in symptom management.

By the end of this course participants will be able to:

- Identify current concepts of MS pathophysiology
- Gain a comprehensive approach to diagnosis and management of spinal cord demyelinating disorders, including MS and NMO
- Identify current concepts of symptomatic management in MS
- Have up-to-date knowledge of emerging disease modifying therapies
- Distinguish the newest treatment optimization recommendations in MS

Audience: Neurologist – Adult | Neurologist – Child | Resident | Nurses and MS Researchers

Learning Level: Basic

Learning Styles: Lecture | Question and Answer period

CanMED Roles: Medical Expert | Communicator | Collaborator | Health Advocate | Scholar | Professional

Agenda

2:15 pm - 2:20 pm	Introduction	Paul Giacomini & Catherine Larochelle
2:20 pm - 2:45 pm	Update on MS Pathophysiology	Catherine Larochelle
2:45 pm - 2:50 pm	Questions and Discussion	
2:50 pm - 3:15 pm	Spinal Cord Disease and MS	Paul Giacomini
3:15 pm - 3:20 pm	Questions and Discussion	
3:20 pm - 3:45 pm	Emerging MS Therapies	Francois Grand'Maison
3:45 pm - 4:00 pm	Questions & Discussion & BREAK	
4:00 pm - 4:25 pm	Symptomatic MS Therapies	Celine Jobin
4:25 pm - 4:30 pm	Questions and Discussion	
4:30 pm - 4:55 pm	Treatment Optimizations	Pierre Duquette
4:55 pm - 5:00 pm	Questions and Discussion	
5:00 pm - 5:15 pm	Closing Remarks and Evaluation	Paul Giacomini & Catherine Larochelle

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con12

Friday Scientific Program

Difficult Cases and Controversies in Neurosurgery (Cranial/Spinal)

Chair: Joseph Megyesi, CNSS ***2:15 - 5:15 Mackenzie Room***

This course reviews difficult cases and controversies in neurosurgery. It covers a breadth of neurosurgical topics, both cranial and spinal. These include:

1. **Cerebral aneurysms**. What is the current evidence for the role of surgical aneurysm clipping in the era where endovascular treatment has become more prevalent? Should the "average" neurosurgeon be clipping aneurysms, or is it becoming the domain of sub-specialists? How is the shift from clipping to coiling impacting resident training?
2. **Intra-axial brain tumours**. What is the current evidence that extent of tumour resection has an impact on patient survival / progression free survival (in both low and high grade tumours)? What techniques are available to optimize extent of brain tumour resection and/or to improve targeting in cases of brain tumour biopsy? How important is the amount of tissue given by the neurosurgeon to the neuropathologist (i.e. how are tumour genetics impacting patient treatment)?
3. **Extra-axial brain tumours (including skull base tumours).** What is the current evidence that endoscopic surgery for extra-axial brain tumours (including those of the skull base) has an advantage over open surgery? What techniques (including, but not limited to endoscopy) are available to optimize extent of extra-axial brain tumour resection? When is extra-axial brain tumour resection not indicated (e.g. meningioma, pituitary tumour, etc.)?
4. **Decompressive craniectomy in head trauma and stroke.** What is the evidence for the role of decompressive craniectomy in the patient with a severe closed head injury? What is the evidence for the role of decompressive craniectomy in the patient with stroke? What is the optimal timing of this surgery? How does decompressive craniectomy impact intracranial pressure and what techniques can be used to monitor this?
5. **Laminectomy/discectomy and minimally invasive spinal surgery.** What is the current evidence that fusion is necessary for spinal laminectomy and/or discectomy operations? When is spinal instrumentation necessary and/or helpful? What is the current evidence that minimally invasive spinal surgery has an advantage over classical open surgery? What is the learning curve to perform minimally invasive spinal surgery?

Speakers have particular expertise in the topic that they are reviewing but have been asked to provide a balanced approach, providing "both sides" to the various questions. Speakers have been asked to present actual cases that might be deemed "difficult and/or controversial" and to engage the audience for input/opinion on how the cases might be managed.

By the end of this course participants will be able to:

1. Discuss the role of surgical cerebral aneurysm clipping in the era where endovascular treatment has become more prevalent
2. Discuss the current evidence that the extent of intra-axial brain tumour resection has an impact on patient survival/progression free survival
3. Discuss the role of endoscopic surgery for extra-axial brain tumours, including those of the skull base, and how it compares to open surgery
4. Discuss the role of decompressive craniectomy in the patient with a severe closed head injury and in the patient with stroke
5. Discuss the evidence that fusion is helpful for spinal laminectomy and/or discectomy and discuss the role of minimally invasive spinal surgery, comparing it to open surgery

Difficult Cases and Controversies in Neurosurgery (Cranial/Spinal) (continued)

Audience: Neurosurgeon | Neurologist – Adult | Resident

Learning Level: Basic | Intermediate | Advanced

Learning Styles: Case studies | Discussion | Group/ peer exchange/ user groups | Q&A | Lecture/plenary method

CanMED Roles: Medical Expert | Collaborator | Scholar

Agenda

2:15 pm - 2:20 pm	Introductions and Review of Course Learning Objectives	Joseph Megyesi
2:20 pm - 2:45 pm	Cerebral Aneurysms: To Clip or Not to Clip ? – That is the Question	Chris Wallace
2:45 pm - 3:15 pm	Intra-axial Brain Tumours: To Resect or Not to Resect ? – That is the Question	David Fortin
3:15 pm - 3:45 pm	Extra-axial Brain Tumours (including skull base): To Use an Endoscope or Not to Use an Endoscope ? – That is the Question	Amin Kassam
3:45 pm - 4:00 pm	Break	
4:00 pm - 4:30 pm	Decompressive Craniectomy in Head Trauma and Stroke: To Perform or Not to Perform? – That is The Question	David Clarke
4:30 pm - 5:10 pm	Laminectomy/discectomy: To Fuse or Not to Fuse?; Minimally Invasive Spinal Surgery: To Use it or Not to Use it? – These are the Questions	Daryl Fourney
5:10 pm – 5:15 pm	Evaluation & Wrap Up	
5:15 pm	Session Ends	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL
http://www.surveymonkey.com/s/13con11

Friday Scientific Program

Neurovascular and Interventional Neuroradiology

Chair: Gary Redekop, CNSS ***2:15 - 5:15 Saint Maurice Room***

The focus of this course is on stroke management and prevention. Experts in their field will present on the topics of acute stroke imaging, interventions for acute stroke, and surgery for ischemic and hemorrhagic stroke. There will also be presentations on the role of cerebral revascularization surgery, and the ethical considerations involved with implementation of new technology and techniques in cerebrovascular surgery and interventional neuroradiology. There will be an emphasis on audience participation through questions and discussion.

By the end of this course participants will be able to:

- Describe the ethical considerations involved with implementation of new technology and techniques
- Be familiar with current imaging modalities for acute stroke
- Be familiar with the role of endovascular interventions for acute stroke
- Describe the role of surgical interventions for acute stroke
- Describe the indications for cerebral revascularization surgery

Audience: Neurologist – Adult | Resident | Neurosurgeon | Neuroradiologist
Learning Level: Advanced | Intermediate
Learning Styles: Case Studies | Discussions | Group/peer exchange | forum panels | lecture method | Questions and Answer Period
CanMED Roles: Medical Expert | Scholar | Communicator | Collaborator | Manager | Health Advocate | Professional

Agenda

2:15 pm - 2:20 pm	Introductions and Review of Course Learning Objectives	Gary Redekop
2:20 pm - 2:45 pm	Ethical Considerations in Cerebrovascular Surgery / Interventional Neuroradiology	Jean Raymond
2:45pm - 2:55 pm	Discussion	
2:55 pm - 3:20 pm	Imaging of Acute Stroke	Mayank Goyal
3:20 pm - 3:30 pm	Discussion	
3:30 pm - 4:00 pm	Break	
4:00 pm - 4:18 pm	Interventions for Acute Stroke	Alain Weill
4:18 pm - 4:26 pm	Discussion	
4:26 pm - 4:44 pm	Surgery for Acute Stroke	Charles Haw
4:44 pm - 4:52 pm	Discussion	
4:52 pm - 5:10 pm	Indications for Revascularization Surgery	Mike Tymianski
5:10 pm - 5:15 pm	Evaluation & Wrap Up	Evaluation

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con13

Friday Scientific Program

Genetics of Neurologic & Neurodegenerative Syndromes

Chair: Matt Farrer ***2:15 - 5:15 Hochelaga 4 Room***

In the past 20 years there has been a technological revolution in genetic analysis of brain disorders. Techniques such as genomic association and/or linkage, to next-generation re-sequencing have become common place, and with them concepts such as disease penetrance, expressivity and relative risk. Almost 50% of genetic testing is performed for neurologic disease, and increasingly patients are looking to their neurologists to explain their genomic findings. Direct-to-consumer companies are also offering individual analysis of personal genomes. The promise is that genetic knowledge will inform prognosis, a diagnosis and/or treatment. This course will provide some practical guidelines for genetic counseling and genetic testing in Canada for neurologic disorders. This year we will illustrate recent genetic advances in ataxias, epilepsy and parkinsonism; what genetic testing can offer in extrapolating from technological advances in next-generation sequencing, there will be a glimpse of what the future may have in store for the Canadian health care system.

By the end of this course participants will be able to:

- Understand the differences between genetic testing and genetic research, from first principles to practice
- Cite resources available for genetic counseling and subsequent testing in Canada
- Appreciate recent genetic advances in ataxias, epilepsy and parkinsonism
- Provide examples of linage, associations and next generation sequencing applied to brain disorders, and describe some of the limitations/caveats
- Illustrate the future therapeutic potential of genetic analysis in neurologic/neurodegenerative disorders

Audience: Neurologist – Adult | Neurologist – Child | Resident | Genetic counselors/geneticists
Learning Level: Basic | Intermediate
Learning Styles: Lecture/plenary method | Forum/Panels Q&A
CanMED Roles: Medical Expert

Agenda

2:15 pm - 2:20 pm	Introduction	Seyed Mirsattari
2:20 pm - 2:45 pm	Genetic Counseling	Susan Creighton
2:45 pm - 3:15 pm	Diagnosis of Hereditary Ataxias and Spastic Parapareses	Nicolas Dupre
3:15 pm - 3:30 pm	Break	
3:30 pm - 4:00 pm	Advances in Pediatric Epilepsy	Michelle Demos
4:00 pm - 4:30 pm	Parkinson's Disease: Genes and Function	Edward Fon
4:30 pm - 5:00 pm	The Next-Generation Sequencing Frontier	Carles Vilarino-Guell
5:00 pm - 5:15pm	Q&A Evaluations and Wrap up	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con14

Friday Scientific Program

Neuro-Ophthalmology

Chair: Jason Barton, CNS ***2:15 - 5:15 Saint Laurent Room***

This course is focused on disorders of eye movements. It will begin with a rational approach to history and examination for diplopia. Moving then to reviewing myopathic and neuromuscular diseases that affect the eyes, followed by a discussion about ocular motor syndromes of the brain stem and cerebellum. Our research presentation reviews how eye movements reveal aspects of cognitive dysfunction in neurologic disorders. Finally we present an algorithm for nystagmus, emphasizing the diagnostic implications.

By the end of this course participants will be able to:

- Assess diplopia expertly by history and examination
- Diagnose myopathies and disorders of the neuromuscular junction that affect the eyes
- Diagnose brainstem disorders of eye movements
- Discuss the use of antisaccades to study a variety of neurologic and psychiatric problems
- Differentiate between types of nystagmus and know their etiologic implications

Audience: Neurologist – Adult | Neurologist – Child | Neurosurgeon | Resident
Learning Level: Basic | Intermediate
Learning Styles: Case studies | Discussion | Forum/panels | Lecture/plenary method
CanMED Roles: Medical Expert | Scholar | Professional

Agenda

2:15 pm - 2:20 pm	Introduction	Jason Barton
2:20 pm - 2:45 pm	Assessing Diplopia	William Fletcher
2:45 pm - 2:50 pm	Questions	
2:50 pm - 3:15 pm	Ocular Aspects of Myopathies and Neuromuscular Junction Disorders	François Evoy
3:15 pm - 3:20 pm	Questions	
3:20 pm - 3:45 pm	Ocular Motor Syndromes of the Brainstem and Cerebellum	James Sharpe
3:45 pm - 3:50 pm	Questions	
3:50 pm - 4:00 pm	Break	
4:00 pm - 4:30 pm	Using Antisaccades to Study Neurologic Disorders	Doug Munoz
4:30 pm - 4:35 pm	Questions	
4:35 pm - 5:00 pm	Nystagmus: A Rational Approach	Jason Barton
5:00 pm - 5:10 pm	Questions	Panel
5:10 pm - 5:15 pm	Evaluation and Wrap Up	

This course is offered in English only.

Access the online evaluation for this course via QR Code or URL

http://www.surveymonkey.com/s/13con15

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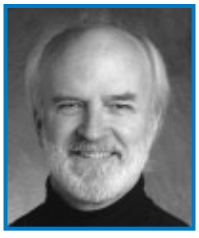

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Bienvenue au Congrès

Chers collègues,

Bienvenue au 48e congrès de la Fédération des sciences neurologiques du Canada. Nous croyons que le programme de cette année est l'un des meilleurs jamais, un Congrès vraiment made-in-Canada développé par vos collègues ... bénévoles de la FSNC et les quatre sociétés.

Nous espérons que vous aurez l'occasion d'échanger avec vos collègues, mentors et amis, pour rajeunir votre pratique des connaissances et des compétences you gain supplémentaires et de stimuler votre réflexion, que vous gagnez votre crédits MDC de la Section 1.

Veuillez compléter le cours spécifiques et des évaluations globales du Congrès; vos commentaires ne font une différence et le résultat dans le contenu pour le Congrès appropriée l'année prochaine (à Banff, en passant). Et, tout aussi important, visiter la salle d'exposition et dire bonjour à nos sponsors et les exposants et voir les derniers diagnostics, traitements et technologies.

Profitez de votre semaine dans cette belle ville de Montréal et, surtout, je vous remercie de votre présence.

J. Max Findlay
Président, comité de la FSNC

R. Loch Macdonald
Président, programme scientifique

Bienvenue à Montréal

Montreal est une ville possédant une riche tradition culinaire multiculturelle, dont les influences proviennent de tous les coins de la planète. Cependant, la plus grande influence de toutes, et celle qui est présente depuis le plus longtemps, et sans aucun doute la cuisine française.

L'histoire d'amour de la Belle Province avec la cuisine française est légendaire. Elle trouve ses racines dans la tradition et la technique depuis nombre d'années. Il y a trois décennies, presque tous les restaurants de la ville employaient des chefs français qui servaient de la nourriture classique française. L'arrivée du chef québécois Normand Laprise a complètement transformé le paysage. Laprise joua un rôle clé dans la création d'une cuisine qui, bien que toujours ancrée dans la tradition française, s'avère propre au Québec. Son insistance à collaborer avec les producteurs du Québec et à utiliser leurs produits afin de créer une cuisine unique a pavé la voie à toute une génération de chefs.

Table des matieres

table des matieres

À propos du Congrès

Lieu de rencontre

Étage des congrès – Hôtel Fairmont Le Reine Elizabeth
900 Boul. René-Levesque Ouest, Montréal, Québec, téléphone : (514) 861-3511

Inscription sur place et réception pour les délégués et exposants

Étage des congrès – Hôtel Fairmont Le Reine Elizabeth

- Lundi 10 juin 16 h – 19 h
- Mardi 11 juin 7 h – 18 h
- Mercredi 12 juin 7 h – 18 h
- Jeudi 13 juin 7 h – 18 h
- Vendredi 14 juin 7 h – 14 h

Désignations des délégués badge

Bleu - Membres du FSNC
Rouge - FSNC membres du comité
Bronze - Membres du Comité du FSNC
Bourgogne - Invités
Jaunes - Haut-parleurs
Noir / Gris - Exposant / Sponsor
Blanc - Non-membres
Claire - FSNC et personnel de Intertask

Détails sur l'inscription

L'inscription complète comprend :

- Toutes les séances du 12 au 14 juin
- Séances des groupes d'intérêts spéciaux et symposium sur l'épilepsie co-développé par CNS/UCB le 11 juin
- Toutes les pauses et tous les dîners officiels
- Réception des exposants
- Matériel de la conférence

L'inscription d'un jour comprend :

- Admission à toutes les séances le jour de l'inscription (mercredi, jeudi ou vendredi)
- Séances des groupes d'intérêts spéciaux et symposium sur l'épilepsie co-développé par CNS/UCB le 11 juin
- Réception des exposants (doit être inscrit pour assister au Congrès le mercredi)
- Matériel de la conférence

Futurs lieux du Congrès de la Fédération des sciences neurologiques du Canada

2014	- Banff, Alberta – 3-6 juin	Fairmont Banff Springs Hotel
2015	- Toronto, Ontario – 9-12 juin	Fairmont Royal York Hotel

Des questions?

Federation des sciences neurologiques du Canada
709 - 7015 Macleod Trail SW, Calgary, AB T2H 2K6
Tél. : 403-229-9544 Téléc. : 403-229-1661
donna-irvin@cnsfederation.org

Intertask Conferences
275 rue Bay, Ottawa ON K1R 5Z5
Tél. : 613-238-6600 Téléc. : 613-236-2727
cnsf@intertaskconferences.com

Programme des activités

MARDI

8h30 - 17h00

Colloque co-développé sur l'épilepsie
Ceci est une accredited section 1 MOC activité d'apprentissage

Optimisant les soins au patient, du diagnostic à la gestion — *Salle Duluth*
Présidents : Martin del Campo, SCN, SCNC et Neelan Pillay, SCN SCNC
Voir page 69

18h00 - 20h00

Groupe d'intérêt social (GIS)
Veuillez noter délégués présents GIS en soirée doivent s'inscrire au préalable que les repas sont commandés en fonction des numéros pré-présence.

Soins intensifs neurologiques : GIS sur la mort cérébrale — *Salle Gatineau*
Présidents : Jeanne Teitelbaum, SCN et Draga Jichici, SCN
Voir page 70

Pôle d'intérêt commun : troubles neurologiques du mouvement — *Salle Richelieu*
Présidents : Martin Cloutier et Anne-Louise Lafontaine
Voir page 71

Pôle d'intérêt commun : vidéo sur l'épilepsie — *Salle Bersimis*
Présidents : Seyed Mirsattari, SCN, SCNC
Voir page 72

Groupe d'intérêt social sur le mal de tête : migraine et maux semblables — *Salle Peribonka*
Président : Elizabeth Leroux, SCN
Voir page 73

Pôle d'intérêt commun : neuromusculaire — *Salle Saint Maurice*
Présidents : Mike Nicolle, SCN, SCNC et Kristine Chapman, SCNC
Voir page 74

MERCREDI

9h00 - 12h00

Cours simultanés

Accident vasculaire cérébral (AVC) — *Salle Mackenzie*
Présidents : Alex Poppe, SCN & Sylvain Lanthier
Voir page 75

Sujets d'intérêt en neurologie pédiatrique — *Salle Saint Maurice*
Président : Asif Doja, ACNP
Voir page 76

Neurochirurgie crânienne avec effraction minimale — *Salle Saint Laurent*
Président : Kesh Reddy, SCNCH
Voir page 77

9h00 - 17h00

Cours de révision pour les résidents

Troubles du mouvement et maladie de Parkinson — *Salle Duluth*
Présidents : Pierre J. Blanchet, SCN, Nailyn Rasool, SCN, Serena Orr, ACNP
Voir pages 78, 79

Neurochirurgie d'urgence — *Salle Hochelaga 5/6*
Présidents : Max Findlay, SCNCH et Roberto Diaz, SCNCH
Voir pages 80, 81

Programme des activités

MERCREDI (continué)

12h15 - 13h45

Dîners d'apprentissage
Veuillez prendre note que les délégués qui assistent aux dîners d'apprentissage doivent s'inscrire à l'avance, car les repas sont commandés en fonction du nombre d'inscriptions.

Guide pratique financier pour les résidents en neurologie/neurochirurgie — *Salle Marquette*
Président : Michele Seaton-Gascon et Serena Orr, ACNP
Voir page 82

Myopathies traitables : diagnostic et gestion de pointe — *Salle Jolliet*
Président : Tahseen Mozaffer
Voir page 83

14h00 - 17h00

Cours donnés simultanément

Mal de tête — *Salle Gatineau*
Présidents : Sian Spacey, SCN
Voir page 84

Neuromusculaire — *Salle Saint Laurent*
Présidents : Mike Nicolle, SCN, SCNC et Kristine Chapman, SCNC
Voir page 85

Soins intensifs neurologiques — *Salle Hochelaga 4*
Présidents : Draga Jichici, SCN et Jeanne Teitelbaum, SCN
Voir page 86

17h00 - 19h00

Réception des exposants

Ne pas oublier la réception de l'exposant 17h00-19h00

JEUDI

8h30 - 11h00

Séance plénière — *Salle Marquette/Jolliet*
Voir page 87
Ceci est une série de cours magistraux multidisciplinaires donnés par un conférencier invité. Chaque conférencier invité d'une société présentera une mise à jour de 25 minutes aux délégués du congrès.

Cours magistral Gloor SCNC - Eva Feldman
Transplantation de cellules souches intra-médullaires en SLA

Cours magistral Tibbles ACNP - Kate Bushby
Transformer la recherche en pratique pour le bénéfice des patients : l'histoire, jusqu'à présent, du banc au chevet du lit dans les maladies neuromusculaires

Cours magistral CANN - Sean Clarke
Amélioration de la collaboration infirmière-médecin : évolution vers un avenir éclairé par les preuves

Cours magistral Penfield SCNCH - Charles Branch
William Cone et la chirurgie à la colonne vertébrale en Amérique du Nord : la contribution discrète de l'Institut neurologique de Montréal

Cours magistral Richardson SCN - Donald F. Weaver
Conception de médicaments : un long cheminement vers la modification des maladies

11h15 0 17h00

Jour de la neurologie pédiatrique

Jour de la neurologie pédiatrique et les présentations de résumés analytiques choises par les présidents — *Salle Hochelaga 5/6*
Présidents : Michelle Demos, ACNP et Craig Campbell, ACNP
Voir page 88

Programme des activités

JEUDI (continué)

11h15 - 12h15	**Présentations simultanées de résumés de la Société**	
	SCN / SCNC résumés choisis par les présidents	*Salle Mackenzie* Voir pages 87, 109
	SCNCH résumés choisis par les présidents	*Salle Saint Laurent* Voir pages 87, 110
12h15 - 13h45	**Dîners d'apprentissage** — Président : Anne-Louise Lafontaine Veuillez prendre note que les délégués qui assistent aux dîners d'apprentissage doivent s'inscrire à l'avance, car les repas sont commandés en fonction du nombre d'inscriptions.	
	Application des Lignes directrices canadiennes sur la maladie de Parkinson à notre pratique — Président : Anne-Louise Lafontaine Ceci est une activité d'apprentissage non accréditée. Utilisez l'apprentissage pour créer une section 2 PLP.	*Salle Duluth* Voir page 89
14h00 - 17h00	**Cours donnés simultanément**	
	Innovations et découvertes en neurochirurgie au Canada Présidents : Brian Toyota, SCNCH et Ramesh Sahjpaul, SCNCH	*Salle Saint Maurice* Voir page 90
	Épilepsie : Du diagnostic à l'intervention Président : Jorge G. Burneo, SCN, SCNC	*Salle Mackenzie* Voir page 91
	MASS : Chirurgie endoscopique à la colonne vertébrale – Nouveautés emballantes! Président : Eric Massicotte, SCNCH	*Salle Hochelaga 4* Voir page 92
	Promesses des cellules souches dans les sciences neurologiques Président : Peter Dirks, SCNCH	*Salle Saint Laurent* Voir page 93
17h00 - 18h30	**Séances d'attente avec auteur de l'affiche numérique**	Voir pages 94, 133
	N'oubliez pas d'assister aux séances d'attente avec auteur de l'affiche numérique de 17h00 à 18h30	

VENDREDI

8h00 - 11h00	**Sessions simultanées de plate-forme**	Voir pages 95, 106
	séance de plate-forme 1	*Salle Harricana*
	séance de plate-forme 2	*Salle Peribonka*
	séance de plate-forme 3	*Salle Richelieu*
	séance de plate-forme 4	*Salle Saint Maurice*
	séance de plate-forme 5	*Salle Bersimis*
	séance de plate-forme 6	*Salle Matapedia*
	séance de plate-forme 7	*Salle Chaudiere*

Programme des activités

VENDREDI (continué)

11h15 - 13h00	**Tables rondes** Joignez-vous aux séances scientifiques où les médecins et chirurgiens discutent des diagnostics possibles pour les cas complexes!	*Salle Marquette/Jolliet* Voir page 95
13h00 - 14h15	**Activités dejeuner**	
	Hall d'exposition	
	Séances d'attente avec auteur de l'affiche numérique	Voir page 96, 133
14h15 - 17h15	**Cours donnés simultanément**	
	Sclérose en plaques Présidents : Paul Giacomini, Catherine Larochelle	*Salle Duluth* Voir page 97
	Cas complexes et controverses en matière de neurochirurgie (crânienne/de la colonne vertébrale) Président : Joseph Megyesi, SCNCH	*Salle Mackenzie* Voir pages 98, 99
	Neurovasculaire et neuroradiologie interventionnelle Président : Gary Redekop, SCNCH	*Salle Saint Maurice* Voir page 100
	Génétique des syndromes neurologiques et neurodégénératifs Président : Matt Farrer	*Salle Hochelaga 4* Voir page 101
	Neuroophtalmologie Président : Jason Barton, CNS	*Salle Saint Laurent* Voir page 102

Société réunions

Canadian Association of Child Neurology

Canadian Neurological Society

Canadian Neurosurgical Society

Canadian Society of Clinical Neurophysiologists

Mercredi, 12 juin

Assemblée générale annuelle de la Société canadienne de neurologie	Salle: Mackenzie	**19h00**

Jeudi, 13 juin

Assemblée générale annuelle de l'Association canadienne de neurologie pédiatrique	Salle: Hochelaga 5/6	**17h00**
Assemblée générale annuelle de la Société canadienne de neurochirurgie	Salle: Duluth	**18h30**

Vendredi, 14 juin

Assemblée générale annuelle de la Société canadienne de neurophysiologie clinique	Salle: Hochelaga 5	**7h00**

Maintien du certificat

Section 1 MDC : Cet événement est une activité d'apprentissage collectif accréditée (section 1), selon la définition du programme de Maintien du certificat du Collège royal des médecins et chirurgiens du Canada, et approuvée par la Société canadienne de neurologie et la Société canadienne de neurochirurgie.

Crédits AMA PRA de catégorie 1™

Crédits AMA PRA de catégorie 1™ : Grâce à une entente avec le Collège royal des médecins et chirurgiens du Canada et l'American Medical Association, les médecins peuvent convertir les crédits MDC du Collège royal en crédits AMA PRA de catégorie 1™. Pour connaître le processus de conversion des crédits MDC du Collège royal en crédits AMA, visitez le www.ama-assn.org/go/internationalcme.

Certificat de présence

Les certificats de présence, qui doivent être remplis par les délégués, seront envoyés aux délégués du Congrès en juillet 2013, suite à l'évaluation globale en ligne du Congrès. Vous avez des questions? Veuillez écrire à lisa-bicek@cnsfederation.org.

Mardi 11 juin 2013

Symposium sur l'épilepsie co-développé – Optimisation des soins au patient, du diagnostic à la gestion	8,0 heures
Soins neurointensifs : Mort cérébrale GIS	2,0 heures
Troubles du mouvement GIS	2,0 heures
Vidéos sur l'épilepsie GIS	2,0 heures
Maux de tête GIS : Migraine et semblables	2,0 heures
Neuromusculaire GIS	2,0 heures

Mercredi 12 juin 2013

AVC	3,0 heures
Sujets brûlants sur la neurologie pédiatrique	3,0 heures
Neurochirurgie crânienne avec effraction minimale	3,0 heures
Neurologie : Troubles du mouvement et maladie de Parkinson	8,0 heures
Neurochirurgie : Neurochirurgie d'urgence	8,0 heures
Dîner d'apprentissage : Guide pratique sur les finances	0,0 heures
Dîner d'apprentissage : Myopathies traitables : diagnostic et gestion de pointe	0,0 heures

Activités non accréditées. Utilisez l'apprentissage pour créer une section 2 PLP

Maux de tête	3,0 heures
Neuromusculaire	3,0 heures
Neurointensif	3,0 heures

Jeudi 13 juin 2013

Séances plénières	2,5 heures

Cours magistral Gloor CSCN - Eva Feldman | Cours magistral Tibbles CACN - Kate Bushby | Cours magistral CANN - Sean Clarke.
Cours magistral Penfield CNSS - Charles Branch | Cours magistral Richardson CNS - Donald F. Weaver

Résumés ACNP	1,0 heures
Neurologie pédiatrique – neuromusculaire	3,0 heures
Résumés SCN/SCNC	1,0 heures
Résumés SCNCH	1,0 heures
Dîner d'apprentissage : Mise en pratique des lignes directrices sur la maladie de Parkinson	0,0 heures

Activités non accréditées. Utilisez l'apprentissage pour créer une section 2 PLP.

Innovations et découvertes en neurochirurgie au Canada	3,0 heures
Épilepsie : Du diagnostic à l'intervention	3,0 heures
MASS : Chirurgie endoscopique à la colonne vertébrale – Nouveautés!	3,0 heures
Promesses des cellules souches en science neurologique	3,0 heures
Auteur de l'affiche numérique Séances en attente	1,5 heures

Vendredi 14 juin 2013

Séance de plate-forme 1 – 7	3,0 heures
Séance scientifique	1,5 heures
Auteur de l'affiche numérique Séances en attente	1,0 heures
Cas difficiles et controverses en neurochirurgie	3,0 heures
Sclérose en plaques	3,0 heures
Neuroradiologie interventionnelle et neurovasculaire	3,0 heures
Génétique des syndromes neurologiques et neurodégénératifs	3,0 heures
Neuro-Ophtalmologie	3,0 heures

Objectifs éducatifs et le comité de planification

objectifs éducatifs pour le Congrès 2013 :

à la fin du Congrès, les délégués pourront :

- **Discuter des progrès réalisés dans la gestion des troubles neurochirurgicaux et neurologiques aigus et chroniques.**
- **Discuter des nouvelles découvertes en matière de troubles neurologiques et neurochirurgicaux.**
- **Décrire les progrès réalisés dans les techniques neurochirurgicales et/ou soins neurologiques.**
- **Identifier les éléments qui n'ont pas été enseignés (besoins non perçus) avant d'assister au Congrès, et utiliser cette apprentissage professionnel après le Congrès pour mieux traiter les patients.**

Comité de planification du Congrès 2013

La Fédération des sciences neurologiques du Canada (FSNC) est composée de 4 sociétés :
Société canadienne de neurologie (SCN)
Association canadienne de neurologie pédiatrique (ACNP)
Société canadienne de neurochirurgie (SCNCH)
Société canadienne de neurophysiologie clinique (SCNC)

Des membres de chacune des 4 sociétés siègent sur le(s) comité(s) de planification du Congrès.
Le comité de développement professionnel (CDP) et le comité du programme scientifique (CPS).
Cette année, le comité de planification est composé de :

Ron Pokrupa	PDC Chair (SCNCH)	Jeanne Teitelbaum	CNSF Vice-President, SPC (SCN)
Bev Prieur	PDC Vice-Chair (ACNP, SCN)	Joseph Megyesi	PDC (SCNCH)
Robert Loch Macdonald	SPC Chair(SCNCH)	Lawrence Korngut	SPC (SCN, SCNC)
Draga Jichici	SPC Vice-Chair (SCN)	Michael Hill	CNSF Board, SPC (SCN)
Asif Doja	PDC (ACNP)	Michelle Demos	SPC (ACNP)
Chris Wallace	CNSF Vice-President (SCNCH)	Nailyn Rasool	SPC, PDC (SCN)
Craig Campbell	SPC (ACNP)	Roberto Diaz	SPC, PDC (SCNCH)
Danielle Andrade	SPC (SCNC)	Roger McKelvey	PDC (SCN)
Eric Massicotte	SPC (SCNCH)	Rudolf Arts	PDC (SCN, SCNC)
Garth Bray	CNSF Vice-President, PDC (SCN)	Serena Orr	SPC, PDC (ACNP)
J. Max Findlay	CNSF President, SPC (SCNCH)	Seyed Mirsattari	SPC (SCNC)
James Perry	SPC (SCN)	Simon Walling	SPC (SCNCH)

guide des abréviations

Assemblée générale annuelle (AGA); Association canadienne de neurologie pédiatrique (ACNP); Fédération des sciences neurologiques du Canada (FSNC); Journal des sciences neurologiques du Canada (Journal); Société canadienne de neurologie (SCN); Société canadienne de neurochirurgie (SCNCH); Société canadienne de neurophysiologie clinique (SCNC); Fondation Neuro Canada (FNC); Comité du développement international (CDI); Comité des lignes directrices de pratique clinique (CLDPC)

québecoriginal

Programme scientifique mardi

Colloque co-développé sur l'épilepsie optimisant les soins au patient, du diagnostic à la gestion

Présidents : Martin del Campo, SCN, SCNC, et Neelan Pillay, SCN, SCNC ***8h30 - 17h00 Salle Duluth***

À la fin de ce colloque, les participants pourront :

- Évaluer le patient atteint d'épilepsie en documentant les antécédents cliniques du trouble
- Interpréter les résultats des tests diagnostiques – imagerie par résonance magnétique et électroencéphalogramme – et discuter de leurs implications cliniques
- Analyser les pharmacothérapies de première et deuxième lignes pour gérer l'épilepsie, ainsi que le rôle potentiel des thérapies alternatives
- Décrire le candidat idéal d'une chirurgie pour l'épilepsie
- Discuter des considérations spéciales pour la gestion de l'épilepsie chez les patientes enceintes
- Reconnaître les caractéristiques cliniques des crises non épileptiques psychogéniques

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Neurochirurgien
Formats d'apprentissage : Cours magistral/séance plénière | Présentations de cas | Tribune/panel, séance de questions et réponses
Niveau de l'apprenant : Intermédiaire
Rôles de CanMED : Expert médical

Ordre du jour

8 h 30 - 9 h 10	Comment déterminer les antécédents cliniques d'épilepsie	Martin del Campo
9 h 10 - 9 h 50	IRM en épilepsie : séquences et quoi rechercher	Elaine Kobayashi
9 h 50 - 10 h 30	Commander des EEG : que signifient pointes et ondes lentes?	Warren Blume
10 h 30 - 10 h 50	*Pause-café*	
10 h 50 - 11 h 20	Pharmacothérapie : choix de première et deuxième lignes	Bernd Pohlmann-Eden
11 h 20 - 12 h 00	Thérapies alternatives pour l'épilepsie : des régimes alimentaires aux dispositifs	Lionel Carmant
12 h 00 - 12 h 20	Pause avant le dîner	
12 h 20 - 13 h 20	*Dîner* et cas présentés sur vidéo	Seyed Mirsattari
13 h 20 - 13 h 50	Chirurgie pour l'épilepsie : qui est un candidat?	Neelan Pillay
13 h 50 - 14 h 50	*Cours magistral sur le thème central* – neurochirurgie fondée sur des données probantes pour l'épilepsie, 50 ans d'expérience à l'INM :	Jeffery Hall
14 h 50 - 15 h 10	*Pause-café*	
15 h 10 - 15 h 40	Gestion de l'épilepsie durant la grossesse	Esther Bui
15 h 40 - 16 h 20	Crises non épileptiques psychogéniques (séance vidéo)	Mark Sadler
16 h 20 - 17 h 00	Table ronde et évaluation du cours	Faculté

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13codev1

Soins intensifs neurologiques : Groupe d'intérêt social sur la mort cérébrale

Présidentes : Jeanne Teitelbaum, SCN et Draga Jichici, SCN ***18h00 - 20h00 Salle Gatineau***

Ce cours comporte un cours magistral de 20 minutes sur le concept et la détermination de la mort cérébrale, qui sera suivi d'une simulation où l'on demande au participant de déterminer si le patient faisant l'objet de la simulation répond aux critères de la mort cérébrale. Après avoir analysé les antécédents, l'imagerie et les données du laboratoire, le participant met en pratique les étapes de la détermination clinique de la mort cérébrale sur un faux patient. Cela dure quinze minutes, et la rétroaction s'ensuit immédiatement. En attendant leur tour, les participants écouteront une présentation de divers cas avec discussion.

À la fin de ce cours, les participants pourront :

- Comprendre le concept de la mort cérébrale
- Diagnostiquer la mort cérébrale chez les adultes et les enfants
- Examiner correctement le patient comateux

Auditoire : Neurologue – adulte | Neurologue – enfant | Neurochirurgien | Résident | Interniste – Urgentologue – Intensiviste

Formats d'apprentissage : Cours magistral/séance plénière | Présentations de cas | Simulation avec démonstration pratique

Niveau d'apprentissage : Débutant

Rôles de CanMED : Expert médical | Communicateur | Universitaire | Professionnel

Ce cours est offert en anglais seulement.
Composante de simulation sera offert en français et en anglais.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13sig2

Programme scientifique mardi

Pôle d'intérêt commun : troubles neurologiques du mouvement

Présidents : Martin Cloutier et Anne-Louise Lafontaine ***18h00 - 20h00 Salle Richelieu***

Les participants à ce cours vidéo passeront en revue les symptômes cliniques classiques des troubles parkinsoniens typiques et atypiques, ainsi que d'autres troubles neurologiques du mouvement. Cette séance sera très interactive et sera axée sur les cas.

À la fin de ce cours, les participants pourront :

- Décrire les caractéristiques fondamentales et plus complexes d'une variété de troubles neurologiques du mouvement
- Identifier les principales caractéristiques des troubles parkinsoniens typiques et atypiques

Auditoire cible : Neurologue – adulte | Neurologue – enfant | Neurochirurgien | Résident

Niveau d'apprentissage : Débutant | Intermédiaire

Styles d'apprentissage : Vidéos/études de cas | Discussion | Échange en groupe/entre pairs

Rôles de CanMED : Expert médical

Ordre du jour

18 h 00 – 18 h 05	Présentations et plan de cours Objectifs d'apprentissage	Martin Cloutier et Anne-Louise Lafontaine
18 h 05 – 19 h 55	Présentation de la vidéo	
19 h 55 – 20 h 00	Conclusion et évaluation	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13sig3

Programme scientifique mardi

Pôle d'intérêt commun : vidéo sur l'épilepsie

Président : Seyed Mirsattari, SCN, SCNC ***18h00 - 20h00 Salle Bersimis***

À la fin de ce cours, les participants pourront :

- Identifier la sémiologie de certaines crises d'épilepsie
- Faire la corrélation entre les symptômes cliniques et la localisation anatomique des crises d'épilepsie
- Identifier les types d'EEG ictal et interictal dans les cas soumis
- Procéder à un diagnostic différentiel approprié pour chaque cas
- Proposer un plan de traitement

Auditoire cible : Neurologue – adulte | Neurologue – enfant | Neurophysiologiste

Niveau d'apprentissage : Avancé

Niveau de l'apprenant : Études de cas | Discussion

Rôles de CanMED : Expert médical

Ordre du jour

18 h 00 - 18 h 05	Introduction	Seyed Mirsattari
18 h 05 - 18 h 30	Cas 1	Neelan Pillay
18 h 30 - 19 h 00	Cas 2	Ismail Mohamed
19 h 00 - 19 h 30	Cas 3	Elizabeth Donner
19 h 30 - 19 h 55	Cas 4	Seyed Mirsattari
19 h 55 - 20 h 00	Conclusion et évaluation	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13sig4

Programme scientifique mardi

Groupe d'intérêt social sur le mal de tête : migraine et maux semblables

Président : Elizabeth Leroux, SCN ***18h00 - 20h00 Salle Peribonka***

La migraine est une maladie complexe liée à plusieurs symptômes, et comorbide avec d'autres maladies. Les situations à la limite impliquant d'autres spécialités sont difficiles à évaluer par les neurologues. Ce GIS met l'accent sur les situations cliniques fréquentes dans la pratique, et pour lesquelles des réponses précises ne sont pas toujours disponibles. Les cas seront ouverts à la discussion.

À la fin de ce cours, les participants pourront :

- Élaborer un diagnostic différentiel sur la migraine et le vertige
- Enquêter et traiter les maux de cou liés à la migraine
- Diagnostiquer un trouble de l'articulation temporomandibulaire lié à la migraine
- Gérer l'insomnie du migraineux
- Soupçonner et enquêter sur l'apnée du sommeil chez une personne souffrant de maux de tête chroniques

Auditoire : Neurologue – adulte | Neurologue – enfant | Résident | Infirmières intéressées par le mal de tête

Niveau d'apprentissage : Avancé

Styles d'apprentissage : Études de cas | Discussion | Séance de questions et réponses | Cours magistral/séance plénière

Rôles de CanMED : Expert médical | Communicateur | Universitaire | Professionnel

Ordre du jour

18 h 00 - 18 h 05	Présentations et survol des objectifs d'apprentissage du cours	Elizabeth Leroux
18 h 05 - 19 h 55	Migraine et vertige	Jonathan Gladstone
	Migraine et mâchoire	Patrick Arache
	Sommeil et mal de tête	Pierre Mayer
19 h 55 - 20 h 00	Conclusion et évaluation	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con4

Programme scientifique mardi

Neuromusculaire

Présidents : Mike Nicolle, SCN, SCNC, et Kristine Chapman, SCNC 18h00 - 20h00 Salle Saint Maurice

Le GIS du Canadian Neuromuscular Group (CNMG) consiste en une brève présentation de cas visant à stimuler une discussion informelle. En plus des cas cliniques intéressants/complexes (que le diagnostic soit connu ou demeure incertain, mais que la contribution d'autres collègues est souhaitée), de brèves présentations académiques/de recherche sur des sujets d'intérêt général (propositions de recherche, essais cliniques, etc.) sont les bienvenues. Les présentations par des stagiaires de tous les échelons sont vivement encouragées. Pour les cas cliniques, le format consiste généralement en une présentation de 5 minutes, suivie d'une discussion avec l'auditoire, et s'il y a lieu, une brève (une ou deux diapositives) présentation didactique (total de 15 minutes par cas).

À la fin du cours, les participants pourront :

- Discuter des progrès réalisés dans la gestion des troubles neurologiques et neurochirurgicaux aigus et chroniques
- Discuter des nouvelles conclusions en matière de troubles neurologiques et neurochirurgicaux
- Décrire les progrès réalisés dans les soins neurologiques et/ou les techniques neurochirurgicales
- Identifier les aspects où l'apprentissage doit être amélioré (besoins non perçus) avant d'assister au Congrès, et étendre cet apprentissage professionnel après le Congrès aux soins améliorés des patients

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Neurophysiologue/EMG | Résident | Boursier neuromusculaire | Étudiant en médecine | Technicien-spécialiste EMG
Niveau d'apprentissage : Intermédiaire | Avancé | Tous – selon la matière du cas
Styles d'apprentissage : Études de cas | Discussion | Séance de questions et réponses | Échange avec le groupe/les pairs
Rôles de CanMED : Expert médical | Communicateur | Collaborateur | Directeur | Promoteur de la santé Universitaire | Professionnel

Ordre du jour

18 h 00 - 18 h 05	Présentations et survol des objectifs d'apprentissage du cours	Mike Nicolle et Kristine Chapman
18 h 05 - 19 h 55	Présentation de cas par le personnel interne et des consultants en neurologie ou physiatrie	À déterminer
19 h 55 - 20 h 00	Conclusion et évaluation	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13sig6

Programme scientifique mercredi

Accident vasculaire cérébral (AVC)

Présidents : Alexandre Y. Poppe, SCN et Sylvain Lanthier ***9h00 - 12h00 Salle Mackenzie***

Ce cours propose aux résidents en neurologie, neurologues, neurochirurgiens et neuroradiologues d'intervention une mise à jour sur certains sujets relatifs au traitement d'un AVC aigu, et à la prévention d'un deuxième AVC, qui ont fait l'objet de développements particuliers depuis un an.

Des neurologues, cardiologues et neuroradiologues spécialisés en AVC discuteront de la gestion du foramen ovale perméable dans un AVC cryptogénique, le rôle de la thérapie dans un AVC ischémique aigu, la prise de décisions difficiles dans les cas de thrombolyse, et les stratégies pour améliorer le délai entre l'arrivée et l'injection.

À la fin de ce cours, les participants pourront :

- Gérer le foramen ovale perméable chez les patients ayant un AVC ischémique cryptogénique
- Comprendre le rôle de la thérapie endovasculaire dans le cas d'un AVC ischémique aigu et les preuves récentes guidant son utilisation
- Identifier les indications/contre-indications de la thrombolyse intraveineuse dans certaines situations difficiles
- Mettre en œuvre des stratégies pour améliorer le délai entre l'arrivée et l'injection pour la thrombolyse en cas d'AVC aigu

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Neurochirurgien | Résident | Neuroradiologue d'intervention

Niveau d'apprentissage : Intermédiaire

Styles d'apprentissage : Études de cas | Discussion | Échange avec le groupe/les pairs/groupes d'utilisateurs | Trubune/panels séances de questions et réponses | Cours magistral/séance plénière

Rôles de CanMED : Expert médical | Collaborateur | Promoteur de la santé | Universitaire | Professionnel

Ordre du jour

9 h 00 - 9 h 05	Présentation	Alexandre Poppe et Sylvain Lanthier
9 h 05 - 9 h 40	Foramen ovale perméable et AVC cryptogénique : causalité et gestion optimale	Jeffrey Minuk
9 h 40 - 10 h 15	Rôle de la thérapie endovasculaire dans la gestion d'un AVC aigu : preuves récentes et pratiques	Jean Raymond
10 h 15 - 10 h 35	Pause	Pause
10 h 35 - 11 h 10	Décisions difficiles dans la gestion d'un AVC : lorsque les lignes directrices ne sont pas suffisantes	Michael Hill
11 h 10 - 11 h 45	Comment améliorer les délais entre l'arrivée et l'injection dans le traitement d'un AVC aigu	Gord Gubitz
11 h 45 - 11 h 55	Discussion	Tous les conférenciers
11 h 55 - 12 h 00	Évaluation	Évaluation

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con1

Programme scientifique mercredi

Sujets d'intérêt en neurologie pédiatrique

Présidents : Asif Doja, ACNP ***9h00 - 12h00 Salle Saint Maurice***

Le but de ce cours consiste à fournir aux professionnels de la santé une mise à jour sur les plus récentes informations concernant divers aspects de la neurologie pédiatrique. Ce cours met l'accent sur les nouveaux développements en neuroinflammation, notamment l'usage de médicaments immunodulatoires, la sclérose tubéreuse et l'enseignement clinique en neurologie pédiatrique.

À la fin du cours, les participants pourront :

- Décrire les mécanismes d'action des médicaments immunomodulatoires sur le système nerveux
- Discuter du diagnostic et de la gestion de la vascularité du système nerveux central
- Comprendre l'utilisation de l'everolimus dans le traitement des patients atteints de sclérose tubéreuse
- Réfléchir au rôle de la technologie dans l'éducation sur la neurologie

Auditoire : Neurologue – Enfant | Résident

Niveau d'apprentissage : Avancé

Styles d'apprentissage : Études de cas | Discussion | Séance de questions et réponses

Rôles de CanMED : Expert médical | Universitaire | Communicateur

Ordre du jour

9 h 00 - 9 h 05	Présentation	Asif Doja
9 h 05 - 9 h 30	Sujets d'intérêt en neuroimmunologie : médicaments immunomodulatoires utilisés pour les maladies du SNC	Ann Yeh
9 h 30 - 9 h 40	Discussion	
9 h 40 - 10 h 10	Mise à jour sur la vascularite du système nerveux central	Susanne Benseler
10 h 10 - 10 h 20	Discussion	
10 h 20 - 10 h 40	Pause	
10 h 40 - 11 h 10	Sujets d'intérêt sur la sclérose tubéreuse : thérapie à l'everolimus	Philippe Major
11 h 10 - 11 h 20	Discussion	
11 h 20 - 11 h 45	Il existe une application pour cela! Utilisation de la technologie mobile dans l'éducation sur la neurologie	Wendy Stewart
11 h 45 - 11 h 55	Discussion	
11 h 55 - 12 h 00	Discussion et évaluation	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con2

Programme scientifique mercredi

Neurochirurgie crânienne avec effraction minimale

Président : Kesh Reddy, SCNCH ***9h00 - 12h00 Salle Saint Laurent***

La neurochirurgie crânienne avec effraction minimale met en valeur tous les aspects de la neurochirurgie crânienne. Le cours débutera par l'historique de l'endoscopie en neurochirurgie, et présentera un survol de la technologie actuelle. Une présentation de l'utilisation de l'endoscopie dans le système ventriculaire suivra, avec une discussion sur la méthode endonasale, endonasale évoluée, et d'autres méthodes connexes. Le tout se conclura par un résumé de l'utilité de l'endoscopie dans la neurochirurgie crânienne, et on abordera les sujets qui ont pu être omis par les conférenciers précédents. Une discussion impliquant les participants et les conférenciers concernant certains cas choisis par les participants et les présentateurs mettra fin au cours. Durant la pause, les participants intéressés pourront essayer le simulateur à l'aide des modules pertinents à l'endoscopie disponibles.

Si vous assistez à cette séance et que vous aimeriez partager une étude de cas susceptible d'intéresser vos collègues, veuillez la sauvegarder sur une clé USB et la remettre au président à l'avant de la salle.

À la fin de ce cours, les participants pourront :

- Identifier les principes généraux d'une endoscopie
- Démontrer l'applicabilité de l'endoscopie en neurochirurgie et dans la colonne vertébrale
- Reconnaître les indications pour les méthodes endoscopiques en neurochirurgie et dans la colonne vertébrale
- Reconnaître les limites des méthodes endoscopiques
- Déterminer les applications potentielles de cette technologie dans un avenir rapproché

Auditoire : Neurochirurgien | Résident | Infirmières

Niveau d'apprentissage : Débutant | Intermédiaire

Styles d'apprentissage : Études de cas | Discussion | Période de questions et réponses | Simulation | Cours magistral | Tribune/panels

Rôles de CanMED : Expert médical | Collaborateur | Communicateur

Ordre du jour

9 h 00 - 9 h 05	Présentation	Kesh Reddy
9 h 05 - 9 h 25	Historique et technologie actuelle de la chirurgie avec effraction minimale dans le cerveau	Louis Crevier
9 h 25 - 9 h 45	Pratique actuelle de la ventriculoscopie	Mark Hamilton
9 h 45 - 10 h 00	Pause	
10 h 00 - 10 h 20	Survol des méthodes transnasales à la base du crâne	Fred Gentili
10 h 20 - 10 h 40	Survol de l'endoscopie crânienne	Kesh Reddy
10 h 40 - 11 h 40	Discussion avec le panel et études de cas	Toute la faculté
11 h 40 - 12 h 00	Conclusion et évaluations	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con3

Programme scientifique mercredi

Neurologie : Troubles du mouvement et maladie de Parkinson : Révision pour résident

9h00 - 17h00 Salle Duluth

Présidents : Pierre J. Blanchet, SCN, Nailyn Rasool, SCN, et Serena Orr, ACNP

Les troubles du mouvement sont courants, et tous les neurologues y sont confrontés. Ils constituent un défi clinique à plusieurs égards, car un type de mouvement involontaire anormal peut être causé par un vaste éventail d'entités morbides systémiques et neurologiques, et une maladie en particulier peut comporté divers mouvements involontaires anormaux. Les subtilités des réseaux neuronaux des noyaux gris centraux, s'étendant aux domaines sensorimoteurs, limbiques et cognitifs, rendent la gestion de cas plus complexe.

Les troubles du mouvement sont divisés en catégories hypocinétiques et hypercinétiques, et le cours fut élaboré en conséquence. Les troubles hypocinétiques, également appelés parkinsonisme, englobent des thèmes tels que l'akinésie, la bradykinésie et la rigidité. Un sommaire de la pathologie, de l'approche clinique et du traitement de la maladie de Parkinson et des formes moins courantes de parkinsonisme sera présenté dans la matinée. L'après-midi, une série de troubles du mouvement hypercinétiques, caractérisée par un excès de mouvements, survenant spontanément ou en réaction à un mouvement volontaire ou un stimulus, sera brièvement présentée afin de familiariser l'auditoire avec chaque type, car la reconnaissance est très importante afin de formuler un diagnostic précis et prescrire la thérapie appropriée.

À la fin du programme, les participants pourront mettre leurs connaissances à l'épreuve afin de reconnaître les différents troubles du mouvement avec un pot-pourri de cas visuels expliqués par un spécialiste du domaine.

À la fin de ce cours, les participants :

- Distingueront les présentations parkinsoniennes typiques et atypiques
- Feront un meilleur usage des médicaments antiparkinsoniens chez les patients sélectionnés
- Reconnaîtront les principaux troubles du mouvement hypercinétiques
- Connaîtront les principales méthodes utilisées pour traiter les troubles du mouvement hypercinétiques

Auditoire : Neurologues | Résidents

Niveau d'apprentissage : Débutant

Styles d'apprentissage : Séminaires | Présentations vidéo | Discussions de groupe

Rôles de CanMED : Expert médical

Programme scientifique mercredi

Neurologie : Troubles du mouvement et maladie de Parkinson : Révision pour résident (continué)

Ordre du jour

9 h 00 - 9 h 40	Aperçu des troubles du mouvement Troubles du mouvement hypocinétiques (30 min. + 10 de questions et réponses)	Martin Cloutier
9 h 40 - 10 h 20	Neuropathologie des syndromes parkinsoniens	Lili-Naz Hazrati
10 h 20 - 10 h 40	Pause	
10 h 40 - 11 h 20	Approche diagnostique de la maladie de Parkinson	Anne-Louise Lafontaine
11 h 20 - 12 h 00	Thérapeutiques dans la maladie de Parkinson : hâtives et tardives	Mandar Jog
12 h 00 - 13 h 45	Évaluations – Dîner	
13 h 45 - 14 h 10	Dystonie et camptocormie	Anne-Louise Lafontaine
14 h 10 - 14 h 35	Approche pour la chorée : considérations diagnostiques et thérapeutiques	Mandar Jog
14 h 35 - 15 h 00	Troubles du mouvement d'origine médicamenteuse	Pierre Blanchet
15 h 00 - 15 h 15	Pause	
15 h 15 - 15 h 40	Myoclonie	Robert Chen
15 h 40 - 16 h 05	Tics	Genevieve Bernard
16 h 05 - 16 h 30	Tremblements	Robert Chen
16 h 30 - 16 h 55	Pot-pourri visuel	Martin Cloutier
16 h 55 - 17 h 00	Conclusion et évaluations	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13rr-neuro

Neurochirurgie d'urgence : Révision pour résident

Présidents : Max Findlay, SCNCH et Roberto Diaz, SCNCH ***9h00 - 17h00 Salle Hochelaga 5/6***

Le cours de « neurochirurgie d'urgence » est un cours de révision approfondi axé sur le diagnostic et la gestion des conditions qui entraînent un déficit neurologique progressif ou aigu, pour lequel une intervention et une évaluation neurochirurgicales sont indiquées. Les sujets traités sont, entre autres, les blessures au système nerveux central et périphérique, les conditions neurovasculaires, l'hémorragie intracérébrale, les néoplasmes, l'hydrocéphalie, et les urgences neurochirurgicales pédiatriques. Bien que le cours soit principalement conçu comme une révision pour résidents en neurochirurgie, il est fondé sur des données probantes, et les neurochirurgiens peuvent également le trouver utile à titre de révision.

À la fin du cours, les participants pourront :

- Démontrer leur capacité de reconnaître les urgences neurochirurgicales, tout en comprenant et en utilisant les preuves concernant les soins intensifs et les interventions chirurgicales dans le cadre d'une urgence en neurochirurgie
- Comprendre l'épidémiologie, la pathophysiologie, la gestion chirurgicale et les complications hâtives et tardives dans le contexte d'une urgence neurochirurgicale
- Reconnaître l'importance des rôles de CanMED auprès du médecin traitant et du personnel des soins de santé dans la gestion d'une urgence neurochirurgicale
- Élaborer des outils et des méthodes de travail avec les collègues, le personnel et les patients, ainsi que leurs familles, relativement aux rôles de CanMED

Auditoire : Neurochirurgien | Résident

Niveau d'apprentissage : Débutant

Styles d'apprentissage : Études de cas | Échange avec le groupe/les pairs/groupes d'utilisateurs | Cours magistral/séance plénière | Examen oral

Rôles de CanMED : Expert médical | Communicateur | Collaborateur | Directeur | Promoteur de la santé | Universitaire | Professionnel

Programme scientifique mercredi

Neurochirurgie d'urgence : Révision pour résident (continué)

Ordre du jour

9 h 00 - 9 h 05	Présentations et survol des objectifs d'apprentissage du cours	
9 h 05 - 9 h 25	Hernie discale invertébrale aigüe	Daryl Fourney
9 h 25 - 9 h 45	Blessures à la moelle épinière	John Hurlbert
9 h 45 - 10 h 15	Blessures à la colonne vertébrale	Eric Massicotte
10 h 15 - 10 h 25	Pause	
10 h 25 - 11 h 45	Urgences pédiatriques	Vivek Mehta
11 h 45 - 12 h 15	Grave blessure à la tête chez un adulte	David Steven
12 h 15 - 13 h 45	Dîner	
13 h 45 - 14 h 10	Urgences relatives à une tumeur au cerveau chez un adulte	Brian Toyota
14 h 10 - 14 h 35	Rupture d'anévrysme	John Wong
14 h 35 - 15 h 05	Accident ischémique cérébral et infarcissement cérébral malin	Loch Macdonald
15 h 05 - 15 h 20	HIC sans anévrysme	Joe Silvaggio
15 h 20 - 15 h 35	Pause	
15 h 35 - 16 h 00	Urgences neurovasculaires extracrâniennes	Geneviève Milot
16 h 00 - 16 h 15	Blessures au nerf périphérique	Line Jacques
16 h 15 - 17 h 00	Questions de type examen Conclusion et évaluation	Findlay, Steven, Mehta, Wallace

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13rr-ns

Programme scientifique mercredi

Guide pratique financier pour les résidents en neurologie/ neurochirurgie

Présidente : Serena Orr, ACNP et Michele Seaton-Gascon ***12h15 - 13h45 Salle Marquette***

Ce cours enseigne aux résidents les éléments fondamentaux du remboursement d'une dette, du démarrage d'un cabinet, et de la planification financière. Ces trois sujets seront abordés séparément, avec une brève présentation des experts financiers, suivie d'une discussion entre médecins membres du personnel, experts financiers et l'auditoire.

À la fin de ce cours, les participants :

- Auront acquis les compétences nécessaires pour élaborer un plan de remboursement d'une dette
- Sauront comment équilibrer le remboursement d'une dette avec l'épargne et l'investissement
- Comprendront comment planifier leur avenir au-delà des investissements et du remboursement de la dette (testament, assurance-invalidité, assurance-vie, REER, REEP, etc.)
- Comprendront l'aspect financier du démarrage d'une clinique

Auditoire cible : Résidents

Formats d'apprentissage : Discussion | Tribune/panel séance de questions et réponses | Cours magistral/séance plénière

Niveau de l'apprenant : Débutant

Rôles de CanMED : Directeur | Professionnel

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13lnl1

Myopathies traitables : diagnostic et gestion de pointe

Président : Tahseen Mozaffar ***12h15 - 13h45 Salle Jolliet***

La présentation a pour objet de guider l'auditoire tout au long de certaines étapes du diagnostic afin d'identifier les myopathies traitables. L'accent sera mis sur les plus récentes méthodologies de diagnostic.

À la fin de ce cours, les participants :

- Comprendront les étapes du diagnostic pour identifier les myopathies traitables
- Connaîtront les plus récents tests et outils de diagnostic pour différencier les myopathies traitables

Auditoire cible : Neurologues, neurologues pédiatriques, résidents, professionnels paramédicaux

Formats d'apprentissage : Cours magistral/séance plénière | Études de cas

Niveau de l'apprenant : Débutant | Intermédiaire | Avancé

Rôles de CanMED : Expert médical

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13lnl2

Programme scientifique mercredi

Mal de tête

Président : Sian Spacey, SCN ***14h00 - 17h00 Salle Gatineau***

Ce cours aborde quelques énigmes dans l'identification des causes d'un mal de tête chronique. Il aborde en détail l'enquête et la gestion des maux de tête chroniques liés à la fuite de LCR, l'hypertension intracrânienne idiopathique, et le nouveau mal de tête quotidien persistant.

À la fin de ce cours, les participants pourront :

- Identifier quelques-unes des causes du mal de tête chronique
- Identifier les populations à risque de développer le mal de tête chronique
- Discuter des enquêtes et de la gestion du mal de tête chronique

Auditoire : Neurologue – adulte | Neurologue – enfant | Résident | Infirmières intéressées par le mal de tête

Niveau d'apprentissage : Débutant | Intermédiaire | Avancé

Styles d'apprentissage : Cours magistraux | Études de cas | Discussion

Rôles de CanMED : Expert médical | Communicateur | Collaborateur | Directeur | Promoteur de la santé | Universitaire | Professionnel

Ordre du jour

14 h 00 - 14 h 10	Présentation	Sian Spacey
14 h 10 - 14 h 50	Nouveau mal de tête quotidien persistant	À déterminer
14 h 50 - 15 h 00	Séance de questions et réponses	
15 h 00 - 15 h 20	Pause	
15 h 20 - 15 h 55	Mal de tête chronique complémentaire aux fuites de LCR	Farnaz Amoozegar
15 h 55 - 16 h 05	Séance de questions et réponses	
16 h 05 - 16 h 40	Mal de tête chronique complémentaire à l'hypertension intracrânienne idiopathique	Elizabeth LeRoux
16 h 40 - 16 h 50	Séance de questions et réponses	
16 h 50 - 17 h 00	Conclusion et évaluation	Sian Spacey

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con4

Programme scientifique mercredi

Neuromusculaire

Présidents : Kristine Chapman, SCNC et Mike Nicolle, SCN, SCNC 14h00 - 17h00 Salle Saint Laurent

Le cours sur les maladies neuromusculaires est un cours magistral favorisant les questions et la discussion. Le cours intéressera particulièrement les résidents, neurologues, physiatres et spécialistes des maladies neuromusculaires pédiatriques. Autant les omnipraticiens que les sous-spécialistes qui pratiquent l'EMG trouveront ce cours pertinent.

À la fin de ce cours, les participants :

- Comprendront la pathophysiologie et le diagnostic de la neuropathie diabétique
- Décriront les troubles paranéoplasiques courants du système nerveux périphérique
- Discuteront des progrès réalisés dans la compréhension des dystrophies musculaires des ceintures
- Connaîtront les développements importants relativement aux maladies neuromusculaires

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Neurophysiologiste | Résident

Niveau d'apprentissage : Débutant | Intermédiaire | Avancé

Styles d'apprentissage : Discussion | Cours magistral/séance plénière

Rôles de CanMED : Expert médical | Universitaire

Ordre du jour

14 h 00 – 14 h 05	Présentation	Kristine Chapman
14 h 05 – 14 h 35	Dystrophies musculaires des ceintures : progrès dans la compréhension	Kate Bushby
14 h 35 – 15 h 05	Approche de la radiolopathie fondée sur des données probantes	Tim Doherty
15 h 05 – 15 h 45	Neuropathie diabétique : une maladie ou deux?	Eva Feldman
15 h 45 – 16 h 00	Pause	
16 h 00 – 16 h 30	Troubles paranéoplasiques du système nerveux périphérique	Kristine Chapman
16 h 30 – 17 h 00	Discussion et évaluation	Tous les conférenciers

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con5

Programme scientifique mercredi

Soins intensifs neurologiques

Présidents : Draga Jichici, SCN, et Jeanne Teitelbaum, SCN ***14h00 - 17h00 Salle Hochelaga 4***

À l'aide de cas antérieurs, les participants apprendront comment pronostiquer les résultats suite à un arrêt cardiaque et une blessure traumatique au cerveau, comprendront les nouvelles lignes directrices sur la gestion des HIC et HSA, maîtriseront davantage la surveillance EEG aux soins intensifs, et apprendront les principes de la faiblesse neuromusculaire aux soins intensifs.

À la fin de ce cours, les participants pourront :

- Pronostiquer les résultats suite à une blessure traumatique au cerveau
- Pronostiquer les résultats suite à un arrêt cardiaque
- Gérer l'état de mal épileptique réfractaire
- Maîtriser les aspects pratiques de la gestion d'une hémorragie intracrânienne
- Aborder un patient ayant une faiblesse neuromusculaire aux soins intensifs

Auditoire cible : Neurologue – adulte | Neurologue – enfant | Neurochirurgien | Neurophysiologiste | Résident | Médecins de soins intensifs | Infirmières

Niveau d'apprentissage : Intermédiaire

Styles d'apprentissage : Cas antérieurs | Vidéos | Participation de l'auditoire | Présentations didactiques

Rôles de CanMED : Expert médical | Communicateur | Collaborateur | Directeur | Promoteur de la santé | Universitaire | Professionnel

Ordre du jour

14 h 00 - 14 h 05	Présentations et survol des objectifs d'apprentissage du cours	Draga Jichici/Jeanne Teitelbaum
14 h 05 - 14 h 25	Pronostication suite à une blessure traumatique au cerveau	Alexis Turgeon
14 h 25 - 14 h 55	Pronostication suite à un arrêt cardiaque	Draga Jichici
14 h 55 - 15 h 15	Pause	
15 h 15 - 15 h 45	État de mal épileptique réfractaire	Cecil Hahn
15 h 45 - 16 h 15	Mise à jour sur l'hémorragie sous-arachnoïdienne et l'hémorragie intracrânienne	Jeanne Teitelbaum
16 h 15 - 16 h 55	Faiblesse neuromusculaire aux soins intensifs	Martin Savard
16 h 55 - 17 h 00	Évaluation et discussion	Draga Jichici/Jeanne Teitelbaum

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con6

Programme scientifique jeudi

Séance plénière

8h30 - 11h00 Salle Marquette / Jolliet

Ceci est une série de cours magistraux multidisciplinaires donnés par un conférencier invité. Chaque conférencier invité d'une société présentera une mise à jour de 25 minutes aux délégués du congrès. Voir les BIOs sur page 12-14.

Suite à la séance plénière, les délégués auront parfait leurs connaissances en :

- Transplantation de cellules souches intra-médullaires en SLA
- Transformer la recherche en pratique pour les patients ayant une maladie neuromusculaire
- Collaboration infirmière-médecin
- Contribution de la chirurgie à la colonne vertébrale à l'Institut neurologique de Montréal
- Conception de médicaments et modification des maladies

8 h 30 **Cours magistral Gloor CSCN - Eva Feldman**
Transplantation de cellules souches intra-médullaires en SLA

9 h 00 **Cours magistral Tibbles CACN - Kate Bushby**
Transformer la recherche en pratique pour le bénéfice des patients : l'histoire, jusqu'à présent, du banc au chevet du lit dans les maladies neuromusculaires

9 h 30 **Cours magistral CANN - Sean Clarke**
Amélioration de la collaboration infirmière-médecin : évolution vers un avenir éclairé par les preuves

10 h 00 **Cours magistral Penfield CNSS - Charles Branch**
William Cone et la chirurgie à la colonne vertébrale en Amérique du Nord : la contribution discrète de l'Institut neurologique de Montréal

10 h 30 **Cours magistral Richardson CNS - Donald F. Weaver**
Conception de médicaments : un long cheminement vers la modification des maladies

Présentations de résumés de la Société

11h15 - 12h15

SCN/SCNC présentations de résumés analytiques choisis par les présidents.....***Salle Mackenzie*** **Voir page 109**
Modérateur: Jason Barton

A01 11h15 Lysine Restricted Diet as Novel Therapy for Pyridoxine Dependent Epilepsy
A02 11h30 Magnetic resonance guided focused ultrasound (MRgFUS) for thalamotomy in treatment refractory essential tremor
A03 11h45 Titin founder mutation is a common cause of myofibrillar myopathy with early respiratory failure
A04 12h00 Synchrotron imaging of photothrombotic stroke model in mice

SCNCH présentations de résumés analytiques choisis par les présidents ***Salle Saint Laurent*** **Voir page 110**
Modérateur: Ian Fleetwood

B01 11h15 Diffusion weighted imaging in the prognostication of Glioblastoma Multiforme
B02 11h30 Phase I trial of deep brain stimulation of the subcallosal cingulum for treatment-refractory anorexia nervosa
B03 11h45 Independent Risk Factors and Risk Factor Selection Modeling for the Recurrence of Chronic Subdural Hematomas
B04 12h00 Visualizing Plasticity in the Injured Human Spinal Cord with fMRI

ACNP présentations de résumés analytiques choisis par les présidents ***Salle Hochelaga 5/6*** **Voir page 111**
Modérateur: Narayan Prasad

C01 11h15 Predictors of seizure outcomes in children with tuberous sclerosis and intractable epilepsy undergoing resective epilepsy surgery: An individual participant data meta-analysis
C02 11h30 Ipsilateral Corticomotor Projections in Perinatal Stroke: Effects of rTMS
C03 11h45 Mutations in ATP1A3 Cause Cerebellar ataxia, areflexia, pes cavus, optic atrophy, and sensorineural hearing loss (CAPOS) syndrome
C04 12h00 Race, ethnicity and geographic distribution of pediatric chronic ataxia in Manitoba

Programme scientifique jeudi

Jour de la neurologie pédiatrique

11h15 - 17h00 Salle Hochelaga 5/6

Présidents : Michelle Demos, ACNP, et Craig Campbell, ACNP, SCNS

Le cours est axé sur la maladie neuromusculaire pédiatrique. La première séance, animée par le D^r^ K. Bushby, traitera des autres dystrophies musculaires moins courantes (D^r^ Bushby discutera de la myopathie de Duchenne durant le cours de Tibbles) à l'enfance. La deuxième séance, animée par le D^r^ Yokota, examinera les oligonucléotides antisens et leur rôle en tant que méthode thérapeutique pour le traitement de la maladie neuromusculaire pédiatrique. Enfin, le D^r^ Korngut décrira le registre canadien des maladies neuromusculaires, et expliquera les avantages d'un registre de maladies rares pour favoriser la recherche et améliorer les soins cliniques pour ces troubles. Les séances comporteront des présentations de cas par stagiaires en neurologie pédiatrique d'un océan à l'autre.

À la fin de ce cours, les participants :

- Discuteront des troubles musculaires pédiatriques moins courants
- Comprendront la catégorie émergente de thérapeutiques d'oligonucléotides antisens et leur utilisation potentielle dans le traitement des maladies neuromusculaires pédiatriques
- Se familiariseront avec l'importance des registres de maladies rares, particulièrement le registre canadien des maladies neuromusculaires
- Appliqueront la neurolocalisation et les diagnostics aux nouveaux cas cliniques complexes neuromusculaires.

Auditoire : Neurologue – Enfant | Neurophysiologiste | Résident
Niveau d'apprentissage : Intermédiaire
Styles d'apprentissage : Études de cas | Discussion | Cours magistral/séance plénière
Rôles de CanMED : Expert médical | Collaborateur | Promoteur de la santé | Universitaire | Professionnel

Ordre du jour

Pour les présentations de résumés analytiques - Voir page 87, 111

11 h 15 - 12 h 15	Présentations de résumés analytiques choisis par les présidents	Michelle Demos, Craig Campbell
14 h 00 - 14 h 10	Présentation	Michelle Demos, Craig Campbell
14 h 10 - 14 h 40	Maladie musculaire rare en pédiatrie : au-delà ce la myopathie de Duchenne	Kate Bushby
14 h 40 - 14 h 50	Discussion	
14 h 50 - 15 h 20	Comprendre les oligonucléotides antisens en tant que thérapie émergente pour la maladie neuromusculaire	Toshifumi Yokota
15 h 20 - 15 h 30	Discussion	
15 h 30 - 15 h 45	Pause	
15 h 45 - 16 h 05	Registres des maladies rares : le registre canadien des maladies neuromusculaires	Lawrence Korngut
16 h 05 - 16 h 15	Discussion	
16 h 15 - 16 h 55	Présentations des cas aux résidents (2 cas de 10 min. chacun avec une discussion d'environ 10 min.)	
16 h 55 - 17 h 00	Conclusions et discussions	
	Conclusion et évaluations	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13cnd1

Application des Lignes directrices canadiennes sur la maladie de Parkinson à notre pratique

Président : Anne-Louise LaFontaine ***12h15 - 13h45 Salle Duluth***

Ceci est une activité d'apprentissage non accréditée. Utilisez l'apprentissage pour créer une section 2 PLP.

La Société Parkinson Canada a publié les Lignes directrices canadiennes sur la maladie de Parkinson en 2012, et celles-ci furent endossées par la FSNC. Durant cette séance, les participants apprendront les recommandations sur la gestion des symptômes moteurs et non moteurs pour le diagnostic pré-symptomatique et post-symptomatique de leurs patients atteints de la maladie de Parkinson. Les participants auront l'occasion de discuter de l'impact des lignes directrices sur leur pratique et de faire part de leurs observations pour des mises à jour futures.

À la fin de ce cours, les participants pourront :

- Énoncer des stratégies fondées sur les preuves afin de diagnostiquer et gérer les symptômes de la maladie de Parkinson
- Énoncer des stratégies fondées sur les preuves afin d'identifier et gérer les symptômes non moteurs de la maladie de Parkinson
- Fournir la preuve des pratiques d'excellence pour l'implication d'une équipe interdisciplinaire

Auditoire cible : Neurologues | Résidents

Formats d'apprentissage : Études de cas | Discussion | Séance de questions et réponses | Atelier/démonstration pratique | Autre (rétroaction sur la pratique actuelle à l'aide des lignes directrices)

Niveau de l'apprenant : Avancé

Rôles de CanMED : Expert médical

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13lnl3l

Ce cours est offert en anglais seulement.

Programme scientifique jeudi

Innovations et découvertes en neurochirurgie au Canada

Présidents : Brian Toyota, SCNCH, et Ramesh Sahjpaul, SCNCH 14h00 - 17:00 Salle Saint Maurice

À la fin de ce cours, vous pourrez énumérer les contributions actuelles et importantes dans le domaine de la neurochirurgie : (1) science fondamentale, (2) éducation – formation par simulation, (3) neuro-oncologie, et (4) hydrocéphalie pédiatrique.

Les Canadiens contribuent depuis longtemps et de façon importante au domaine de la neurochirurgie. Dans chaque facette de la spécialité, les Canadiens ont joué un rôle important dans cet avancement. Ce cours met en valeur les contributions importantes des neurochirurgiens canadiens dans le domaine de la neurochirurgie. Nous soulignerons le travail qui a eu un impact à l'échelle internationale, et mettrons en évidence le fait que le Canada constitue toujours un lieu de prédilection pour **l'innovation et la découverte en neurochirurgie**. Dans le domaine de l'**éducation**, la solution de pointe est la formation par simulation. Comme nos résidents ont un nombre limité d'heures de travail, une expérience pratique s'avère très importante. La formation par simulation informatique devient un outil de plus en plus universel pour la formation technique du neurochirurgien en devenir. Les neurochirurgiens canadiens, ainsi que le National Research Council, ont joué un rôle clé dans le développement de cette technologie. Ce cours met en relief le neuro-simulateur qui donne l'occasion d'essayer Neurotouch. Les projets canadiens en matière de **sciences fondamentales** neurologiques ont toujours été très développés. Les champs d'expertise ayant fait l'objet de recherches sont la neuro-oncologie, l'architecture neurale, la réparation de la colonne vertébrale et la réparation endovasculaire. Les Canadiens sont des pionniers du domaine, et jouent un rôle important dans la recherche continue pour guérir la paralysie de la colonne vertébrale. Ce cours vous démontrera comment les neurochirurgiens canadiens ont évolué dans le domaine de la réparation et la physiologie de la colonne vertébrale.

La neurochirurgie canadienne a toujours été fière de ses compétences cliniques et chirurgicales. Par conséquent, les **progrès techniques et dans la recherche clinique sont courants**. Nous soulignerons quelques éléments de l'expertise clinique développée et raffinée au Canada relativement aux opérations plus sécuritaires à l'aide de la tractographie MR, une perturbation active de la barrière hémato-encéphalique aux fins de chimiothérapie, et d'évaluations de la qualité de vie propres à la neurochirurgie en tant qu'indicateurs de résultats de la recherche fonctionnelle. Les **réseaux de collaboration** représentent la méthode la plus puissante permettant aux groupes de sous-spécialité de parfaire leurs connaissances. Le Réseau de recherche clinique d'hydrocéphalie constitue un excellent exemple de la façon dont une coalition de plusieurs forces peut amplifier les résultats de manière exponentielle. La création d'un projet aussi ambitieux est une leçon d'organisation, de persistance et de diplomatie. En assistant à ce cours, le participant apprendra non seulement de manière approfondie « les nouveautés en matière de neurochirurgie », mais il développera également une grande fierté par rapport à la communauté neurochirurgicale canadienne.

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Neurochirurgien | Neurophysiologiste | Résident
Niveau d'apprentissage : Débutant | Intermédiaire | Avancé
Styles d'apprentissage : Études de cas | Discussion | Échange avec le groupe/les pairs/groupes d'utilisateurs | Tribune/panels séances de questions et réponses | Cours magistral/séance plénière | Simulation
Rôles de CanMED : Expert médical | Communicateur | Collaborateur | Directeur | Promoteur de la santé | Universitaire | Professionnel

Ordre du jour

14 h 00 – 14 h 05	Présentations et survol des objectifs d'apprentissage du cours	Brian Toyota, Ramesh Sahjpaul
14 h 05 – 14 h 35	Innovation et découverte en neurochirurgie clinique	David Fortin
14 h 35 – 14 h 45	Discussion	
14 h 45 – 15 h 15	Réseau de recherche clinique en hydrocéphalie	John Kestle
15 h 15 – 15 h 25	Discussion	
15 h 25 – 15 h 40	Pause	
15 h 40 – 16 h 10	Simulation par ordinateur - Neurotouch	Rolando Del Maestro
16 h 10 – 16 h 20	Discussion	
16 h 20 – 16 h 50	Réparation de la colonne vertébrale et physiologie	Rob Brownstone
16 h 50 – 17 h 00	Évaluation et discussion	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con7

Ce cours mettra en valeur les contributions de grande envergure neurochirurgiens canadiens ont apportées au domaine de la neurochirurgie dans le monde entier!

Programme scientifique jeudi

Épilepsie : Du diagnostic à l'intervention

Président : Jorge G. Burneo, SCN, SCNC ***14h00 - 17h00 Salle Mackenzie***

Un cas sera soumis, et les conférenciers donneront un cours magistral sur le diagnostic, le traitement des crises épileptiques et les comorbidités psychiatriques. Il y aura également un débat sur la façon d'entreprendre un traitement pour un patient nouvellement diagnostiqué épileptique, en mettant l'accent sur des « vieux » médicaments contre l'épilepsie plutôt que sur les « nouveaux ». Enfin, un cours magistral sur la neuromodulation et les nouvelles techniques de traitement de l'épilepsie sera donné.

À la fin de ce cours, les participants pourront :

- Mieux comprendre les outils utilisés pour diagnostiquer l'épilepsie
- Mieux comprendre les « vieux » et les « nouveaux » médicaments contre l'épilepsie
- Mieux comprendre les techniques d'imagerie utilisées pour l'évaluation des patients épileptiques
- Diagnostiquer et traiter les comorbidités psychiatriques chez les patients épileptiques
- Mieux comprendre l'utilisation des différentes techniques de neuromodulation pour le traitement de l'épilepsie

Auditoire cible : Neurologue pour adultes et enfants | Neurochirurgien | Résidents | Boursiers | Étudiants en médecine | Professionnels paramédicaux

Niveau d'apprentissage : Intermédiaire

Styles d'apprentissage : Cours magistraux | Débat | Étude de cas | Séance de questions et réponses

Rôles de CanMED : Expert médical | Promoteur de la santé | Universitaire | Professionnel

Ordre du jour

14 h 00 – 14 h 05	Introduction et présentation des cas : Mlle B	Jorge Burneo
14 h 05 – 14 h 25	Diagnostiquer l'épilepsie : génétique vs inconnu	D. Andrade
14 h 25 – 15 h 00	Débat : début du traitement : « vieux » vs « nouveaux » médicaments contre l'épilepsie	Warren Blume et Mark Sadler
15 h 00 – 15 h 30	Imagerie du cerveau atteint d'épilepsie : quand utiliser les modalités d'imagerie différentes de l'IRM? Quelles sont-elles?	Elaine Kobayashi
15 h 30 – 15 h 45	Pause	
15 h 45 – 15 h 50	Mlle B est-elle dépressive?	Jorge Burneo
15 h 50 – 16 h 20	Comorbidités psychiatriques en épilepsie : comment les traiter? (Accent sur la dépression et l'anxiété)	Allan Cook
16 h 20 – 16 h 30	Mlle B ne va pas mieux : que faire?	Jorge Burneo
16 h 30 – 16 h 50	Traitements alternatifs : neuromodulation en épilepsie	Andrew Parrent
16 h 50 – 16 h 55	Qu'est-il arrivé à Mlle B?	Jorge Burneo
16 h 55 – 17 h 00	Discussion et évaluation	Tous

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con8

Programme scientifique jeudi

MASS : Chirurgie endoscopique à la colonne vertébrale – Nouveautés emballantes!

Président : Eric Massicotte, SCNCH ***14h00 - 17h00 Salle Hochelaga 4***

Le cours sur la chirurgie endoscopique à la colonne vertébrale (MASS) aborde les différentes pathologies pouvant être traitées avec cette nouvelle technique évoluée. La MASS dans le contexte d'une maladie dégénérative de la colonne vertébrale sera abordée par le Dr Daniel Shedid, de la faculté locale. Ce problème très courant favorisera une discussion interactive. La MASS dans un contexte de trauma sera commentée par le Dr Sean Christie de Halifax. Cette présentation comportera certains avancements dans la technique et la technologie. La pathologie néoplasique et la MASS seront abordées par le président, Dr Éric Massicotte de Toronto. Cet aspect du cours comprend des présentations de cas qui illustrent les défis causés par les tumeurs de l'axe de la colonne vertébrale. Un cours magistral particulier sera donné par le conférencier invité, Dr Charles Branch. Ce conférencier de renommée internationale abordera le sujet de la MASS et de la chirurgie à la colonne vertébrale. L'horaire permettra une discussion interactive entre le panel chevronné et tous les participants.

À la fin de ce cours, les participants :

- Comprendront le rôle de la MAAS dans le contexte de la colonne vertébrale dégénérative
- Comprendront le rôle de la MAAS dans le contexte de la colonne vertébrale traumatique
- Comprendront le rôle de la MAAS dans le contexte de la colonne vertébrale néoplasique

Auditoire cible : Neurochirurgien | Résident | Neurologue | Professionnels paramédicaux
Formats d'apprentissage : Études de cas | Discussion
Niveau de l'apprenant : Débutant | Intermédiaire
Rôles de CanMED : Expert médical

Ordre du jour

14 h 00 - 14 h 15	Présentations et survol des objectifs d'apprentissage du cours	Eric Massicotte
14 h 15 - 14 h 45	MASS pour colonne vertébrale dégénérative	Daniel Shedid
14 h 45 - 15 h 30	MASS pour colonne vertébrale traumatique	Sean Christie
15 h 30 - 15 h 45	Pause	
15 h 45 - 16 h 15	MASS pour colonne vertébrale néoplasique	Eric Massicotte
16 h 15 - 16 h 55	Sujet particulier	Charles Branch
16 h 55 - 17 h 00	Évaluation et conclusion	Évaluation
17 h 00	Fin de la séance	Fin de la séance

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13CON17

Programme scientifique jeudi

Promesses des cellules souches dans les sciences neurologiques

Président : Peter Dirks ***14h00 - 1700 Salle Saint Laurent***

Le cerveau humain renferme des populations de cellules souches neurales qui contribuent à l'homéostase du cerveau. Ces cellules sont exquisément réceptives aux changements locaux et systémiques provoqués par les changements physiologiques ou les processus de maladie entraînant la modification de leur sort par la prolifération ou la différentiation. On croit de plus en plus que ces populations peuvent être manipulées de manière à réparer le SNC, et que ces cellules sont visées par les maladies du cerveau humain. Ce cours traitera des plus récentes découvertes sur la dynamique des cellules souches neurales dans la santé et la maladie. On abordera les stratégies de manipulation de ces populations pour atténuer les conséquences du vieillissement du SNC et des blessures. Le lien critique entre les cellules souches neurales et le cancer du cerveau humain sera également mis en évidence.

Ce cours est principalement axé sur les éléments fondamentaux de la biologie des cellules souches neurales, car ils se transforment en applications cliniques permettant le traitement des maladies du cerveau humain.

À la fin de ce cours, les participants :

- Comprendront le rôle dynamique des cellules souches neurales dans l'homéostase du cerveau avec les changements physiologiques, le vieillissement et la maladie
- Comprendront le potentiel des cellules souches neurales à réagir à une blessure au cerveau afin de favoriser la réparation du SNC
- Comprendront les stratégies thérapeutiques pouvant être utilisées pour manipuler et recruter des cellules souches neurales endogènes pour améliorer la réparation du SNC
- Comprendront le rôle des cellules souches neurales dans la pathogénie des tumeurs au cerveau humain, et comment cela peut se traduire par des théories innovatrices

Auditoire : Neurologue – adulte | Neurologue – enfant | Neurochirurgien | Résident |

Niveau d'apprentissage : Débutant | Intermédiaire

Styles d'apprentissage : Séance de questions et réponses | Cours magistral/séance plénière

Rôles de CanMED : Expert médical

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con10

Programme scientifique jeudi

Seances d'attente avec auteur de l'affiche numerique

17:h00 - 18h30 pm
Hochelaga 2/3 et le Foyer

Affiche numérique – auteur présentateurs décrire verbalement leur affiche. C'est aussi une occasion pour les délégués atteindre une meilleure compréhension des travaux actuels et poser des questions aux auteurs pour complément d'enquête.

Tous les résumés disponibles pour visionnement au Congrès ont été choisis en fonction : mérite scientifique, originalité, intérêt pour les membres de la FSNC et clarté d'expression.

À la fin de l'affiche numérique – auteur veille séances, les participants seront informés de la recherche actuelle et les progrès en neurosciences

Auditoire : Tous les délégués au Congrès

Niveau d'apprentissage : Basic | Intermédiaire | Avancée

Style d'apprentissage : Poster numérique

CanMeds : Médecin-Expert

Épilepsie	Station 1	Modérateur: Danielle Andrade
Pédiatrie	Station 2	Modérateur: Simon Walling
AVC	Station 3	Modérateur: Jeanne Teitelbaum
Trauma, Soins intesifs	Station 4	Modérateur: Draga Jichici
Neurologie générale	Station 5	Modérateur: Rudolf Arts
Neurochirurgie/neuroradiologie	Station 6	Modérateur: Roberto Diaz
Neuro-oncologie	Station 7	Modérateur: Joseph Megyesi

Liste détaillée de station affiche pages 133 à 136

Tous les résumés d'affiches commencent sur la page 137

Programme scientifique vendredi

Plates-formes

08h00 - 11h00
Voir page 106 pour la liste détaillée
Résumés commencent à la page 109

AVC	*Salle Harricana*	*Modérateur: Celine Odier*
Colonne vertébrale	*Salle Peribonka*	*Modérateur: Eric Massicotte*
Trauma et neurochirurgie générale	*Salle Richelieu*	*Modérateur: David Steven*
Neuro-oncology et éducation	*Salle Saint Maurice*	*Modérateur: Brian Toyota*
Épilepsie	*Salle Bersimis*	*Modérateur: Cecil Hahn*
Anévrysmes et hémorragies sous-arachnoïdiennes	*Salle Matapedia*	*Modérateur: Loch Macdonald*
Pédiatrie	*Salle Chaudiere*	*Modérateur: Sharon Whiting*

Tables rondes

11h15 - 13h00 Salle Marquette / Jolliet

À la fin de cette séance, les participants pourront :

- Discuter des études de cas complexes en neurologie générale, neurochirurgie et neurologie pédiatrique
- Analyser/diagnostiquer les études de cas complexes en neurologie générale, neurochirurgie et neurologie pédiatrique

Auditoire cible : Neurologue – adulte | Neurologue – enfant | Neurochirurgien | Neurophysiologiste | Résident | Boursiers
Formats d'apprentissage : Études de cas, séances questions et réponses
Niveau de l'apprenant : Débutant | Intermédiaire | Avancé
Rôles de CanMED : Expert médical, communicateur, collaborateur, promoteur de la santé, universitaire et professionnel

Cas SCN / SCNC
Président : Alex Poppe
Conférencier résident : Ariel Levy

Cas SCNCH
Président : Judith Marcoux
Conférencier résident : Katherine Poon

Cas ACNP
Président : Chantal Poulin
Conférencier résident : Elana Pinchefsky

Programme scientifique vendredi

Seances d'attente avec auteur de l'affiche numerique

13:h00 - 14h15 pm
Hochelaga 2/3 et le Foyer

Affiche numérique – auteur présentateurs décrire verbalement leur affiche. C'est aussi une occasion pour les délégués atteindre une meilleure compréhension des travaux actuels et poser des questions aux auteurs pour complément d'enquête.

Tous les résumés disponibles pour visionnement au Congrès ont été choisis en fonction : mérite scientifique, originalité, intérêt pour les membres de la FSNC et clarté d'expression.

À la fin de l'affiche numérique – auteur veille séances, les participants seront informés de la recherche actuelle et les progrès en neurosciences

Auditoire : Tous les délégués au Congrès

Niveau d'apprentissage : Basic | Intermédiaire | Avancée

Style d'apprentissage : Poster numérique

CanMeds : Médecin-Expert

Troubles neurologiques du movement/ Neuromusculaire	Station 1	Modérateur: TBA
Pédiatrie	Station 2	Modérateur: TBA
AVC	Station 3	Modérateur: Draga Jichici
MS / démence	Station 4	Modérateur: Roger McKelvey
Histoire / Education	Station 5	Modérateur: Joseph Megyesi
Neurochirurgie / colonne vertébrale	Station 6	Modérateur: Ron Pokrupa

Liste détaillée de station affiche pages 133 à 136

Tous les résumés d'affiches commencent sur la page 137

Programme scientifique vendredi

Sclérose en plaques

Présidents : Paul Giacomini, Catherine Larochelle ***14h15 - 17h15 Salle Duluth***

La sclérose en plaques (SP) est un domaine qui évolue rapidement, et plusieurs nouvelles thérapies seront disponibles au cours des années à venir. Notre compréhension de plus en plus approfondie de la pathophysiologie de la SP nous a permis d'identifier d'autres thérapies potentielles pour la SP et les troubles connexes, tels que la neuromyélite optique (NMO). Les recommandations récentes sur l'optimisation du traitement au Canada reflètent la tendance vers une thérapie plus hâtive, avec un seuil moins élevé pour passer aux médicaments de deuxième intention. Enfin, de nouveaux médicaments et concepts ont également contribué aux progrès réalisés dans la gestion des symptômes.

À la fin de ce cours, les participants pourront :

- Identifier les concepts actuels de pathophysiologie de la SP
- Mieux comprendre le diagnostic et la gestion des troubles de démyélinisation de la colonne vertébrale, notamment la SP et la NMO
- Identifier les concepts actuels de gestion symptomatique de la SP
- Mettre à jour leurs connaissances en matière de thérapies émergentes modifiant la maladie
- Faire la distinction entre les nouvelles recommandations d'optimisation des traitements de la SP

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Résident | Infirmières et chercheurs SP

Niveau d'apprentissage : Débutant

Styles d'apprentissage : Cours magistral | Période de questions et réponses

Rôles de CanMED : Expert médical | Communicateur | Collaborateur | Promoteur de la santé | Universitaire | Professionnel

Ordre du jour

14 h 15 - 14 h 20	Présentation	Paul Giacomini et Catherine Larochelle
14 h 20 - 14 h 45	Mise à jour sur la pathophysiologie	Catherine Larochelle
14 h 45 - 14 h 50	Questions et discussion	
14 h 50 - 15 h 15	Maladie de la colonne vertébrale et SP	Paul Giacomini
15 h 15 - 15 h 20	Questions et discussion	
15 h 20 - 15 h 45	Thérapies émergentes pour la SP	Francois Grand'Maison
15 h 45 - 16 h 00	Questions et discussion et PAUSE	
16 h 00 - 16 h 25	Thérapies pour la SP symptomatique	Celine Jobin
16 h 25 - 16 h 30	Questions et discussion	
16 h 30 - 16 h 55	Optimisation des traitements	Pierre Duquette
16 h 55 - 17 h 00	Questions et discussion	
17 h 00 - 17 h 15	Mot de la fin et évaluation	Paul Giacomini et Catherine Larochelle

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con12

Programme scientifique vendredi

Cas complexes et controverses en matière de neurochirurgie (crânienne/de la colonne vertébrale)

Président : Joseph Megyesi, SCNCH ***14h15 - 17h15 Salle Mackenzie***

Ce cours traite des cas complexes et des controverses en matière de neurochirurgie. Il aborde divers sujets relatifs à la neurochirurgie, crânienne et de la colonne vertébrale, par exemple :

1. **Anévrysmes cérébraux.** Comment justifier le rôle de la pince dans une chirurgie pour un anévrysme, alors que désormais, le traitement endovasculaire est devenu plus répandu? Le neurochirurgien « moyen » doit-il utiliser une pince chirurgicale pour les anévrysmes, ou est-ce devenu le domaine des sous-spécialistes? Comment le passage de la pince à la bobine influence-t-il la formation des résidents?
2. **Tumeurs cérébrales intra-axiales.** Comment justifier que l'ampleur de la résection de la tumeur ait un impact sur la survie/survie sans progression d'un patient (peu importe la gravité de la tumeur)? Quelles sont les techniques disponibles pour optimiser l'ampleur de la résection de la tumeur cérébrale et/ou améliorer le ciblage dans les cas de biopsie d'une tumeur cérébrale? Quelle est l'importance de la quantité de tissus remis par le neurochirurgien au neuropathologiste (c.-à-d., comment la génétique de la tumeur influence-t-elle le traitement du patient)?
3. **Tumeurs cérébrales extra-axiales (comprenant les tumeurs à la base du crâne).** Comment justifier que la chirurgie endoscopique pour les tumeurs cérébrales extra-axiales (comprenant celles qui se trouvent à la base du crâne) est plus avantageuse qu'une chirurgie ouverte? Quelles techniques (notamment, sans s'y limiter, l'endoscopie) sont disponibles pour optimiser l'ampleur d'une résection de la tumeur cérébrale extra-axiale? Quand est-il inopportun de recourir à la résection d'une tumeur cérébrale extra-axiale (p. ex., méningiome, tumeur de l'hypophyse, etc.)?
4. **Craniectomie décompressive lors d'un trauma à la tête et un AVC.** Comment justifier le rôle de la craniectomie décompressive chez un patient souffrant d'une grave blessure fermée à la tête? Comment justifier le rôle de la craniectomie décompressive chez un patient victime d'un AVC? Quel est le moment idéal pour procéder à une chirurgie? Comment la craniectomie décompressive influence-t-elle la pression intra-crânienne, et quelles sont les techniques utilisées pour surveiller ceci?
5. **Laminectomie/discectomie et chirurgie endoscopique à la colonne vertébrale.** Comment justifier que la fusion est nécessaire pour une laminectomie et/ou discectomie de la colonne vertébrale? Quand l'instrumentation de la colonne vertébrale est-elle nécessaire et/ou utile? Comment justifier qu'une chirurgie endoscopique de la colonne vertébrale est préférable à une chirurgie ouverte traditionnelle? Quelle est la courbe d'apprentissage pour exécuter une chirurgie endoscopique de la colonne vertébrale?

Les conférenciers ont une expertise particulière du sujet qu'ils abordent, mais on leur a demandé de le présenter de manière équilibrée, en discutant des « deux côtés » des diverses questions. Les conférenciers doivent présenter des cas réels susceptibles d'être jugés « difficiles et/ou controversés », et engager l'auditoire en leur demandant leur opinion sur la façon dont les cas doivent être gérés.

À la fin de ce cours, les participants pourront :

1. Discuter le rôle de la pince dans une chirurgie pour un anévrysme cérébral, à une époque où le traitement endovasculaire est plus répandu
2. Discuter des faits qui démontrent que l'ampleur de la résection de la tumeur cérébrale intra-axiale a un impact sur la survie/survie sans progression d'un patient
3. Discuter du rôle de la chirurgie endoscopique pour les tumeurs cérébrales extra-axiales, notamment celles qui se trouvent à la base du crâne, et comment elle se compare à une chirurgie ouverte
4. Discuter du rôle de la craniectomie décompressive chez un patient souffrant d'une grave blessure fermée à la tête, et un patient victime d'un AVC
5. Discuter de la preuve que le fusion est utile pour une laminectomie et/ou une discectomie, et discuter du rôle de la chirurgie endoscopique de la colonne vertébrale, en la comparant à une chirurgie ouverte

Cas complexes et controverses en matière de neurochirurgie (crânienne/de la colonne vertébrale) (continué)

Auditoire : Neurochirurgien | Neurologue – Adulte

Niveau d'apprentissage : Débutant | Intermédiaire | Avancé

Styles d'apprentissage : Études de cas | Discussion | Échange avec le groupe/les pairs/groupes d'utilisateurs | Séance de questions et réponses | Cours magistral/séance plénière

Rôles de CanMED : Expert médical | Collaborateur | Universitaire

Ordre du jour

14 h 15 - 14 h 20	Présentations et survol des objectifs d'apprentissage du cours	Joseph Megyesi
14 h 20 - 14 h 45	Anévrysmes cérébraux : utiliser une pince ou non? Voilà la question.	Chris Wallace
14 h 45 - 15 h 15	Tumeurs cérébrales intra-axiales : résection ou non? Voilà la question.	David Fortin
15 h 15 - 15 h 45	Tumeurs cérébrales extra-axiales (comprenant la base du crâne) : utiliser un endoscope ou non? Voilà la question.	Amin Kassam
15 h 45 - 16 h 00	Pause	
16 h 00 - 16 h 30	Craniectomie décompressive en cas de trauma à la tête et d'AVC : procéder ou non? Voilà la question.	David Clarke
16 h 30 - 17 h 10	Laminectomie/discectomie : explorer ou non?; chirurgie endoscopique de la colonne vertébrale : y recourir ou non? Voilà les questions.	Daryl Fourney
17 h 10 - 17 h 15	Évaluation et conclusion	
17 h 15	Fin de la séance	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con11

Programme scientifique vendredi

Neurovasculaire et neuroradiologie interventionnelle

Président : Gary Redekop, SCNCH ***14h15 - 17h15 Salle Saint Maurice***

Ce cours met l'accent sur la gestion et la prévention des AVC. Les experts du domaine aborderont les sujets suivants : imagerie de l'AVC aigu, interventions en cas d'AVC aigu, et chirurgie hémorragique et ischémique. D'autres présentations traiteront du rôle de la chirurgie de revascularisation et des considérations éthiques relatives à la mise en œuvre d'une nouvelle technologie et de nouvelles techniques de chirurgie cérébrovasculaire et de neuroradiologie interventionnelle. L'accent sera mis sur la participation de l'auditoire avec questions et discussion.

À la fin de ce cours, les participants :

- Décriront les considérations éthiques relatives à la mise en œuvre d'une nouvelle technologie et de nouvelles technologies
- Seront familiers avec les modalités d'imagerie actuelles en cas d'AVC aigu
- Seront familiers avec le rôle des interventions endovasculaires en cas d'AVC aigu
- Décriront le rôle des interventions chirurgicales en cas d'AVC aigu
- Décrire les indications d'une chirurgie de revascularisation cérébrale

Auditoire : Neurologue – Adulte | Résident | Neurochirurgien | Neuroradiologue
Niveau d'apprentissage : Avancé | Intermédiaire
Styles d'apprentissage : Études de cas | Discussions | Échange avec le groupe/les pairs | Panels/Cours magistral | Période de questions et réponses
Rôles de CanMED : Expert médical | Universitaire | Communicateur | Collaborateur | Directeur | Promoteur de la santé | Professionnel

Ordre du jour

14 h 15 - 14 h 20	Présentations et survol des objectifs d'apprentissage	Gary Redekop
14 h 20 - 14 h 45	Considérations éthiques en chirurgie cérébrovasculaire/neuroradiologie interventionnelle	Jean Raymond
14 h 45 - 14 h 55	Discussion	
14 h 55 - 15 h 20	Imagerie d'un AVC aigu	Mayank Goyal
15 h 20 - 15 h 30	Discussion	
15 h 30 - 16 h 00	Pause	
16 h 00 - 16 h 18	Interventions en cas d'AVC aigu	Alain Weill
16 h 18 - 16 h 26	Discussion	
16 h 26 - 16 h 44	Chirurgie en cas d'AVC aigu	Charles Haw
16 h 44 - 16 h 52	Discussion	
16 h 52 - 17 h 10	Indications pour une chirurgie de revascularisation	Mike Tymianski
17 h 10 - 17 h 15	Évaluation et conclusion	Évaluation

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con13

Programme scientifique vendredi

Génétique des syndromes neurologiques et neurodégénératifs

Président : Matt Farrer ***14h15 - 17h15 Salle Hochelaga 4***

Depuis vingt ans, il y a eu une révolution technologique dans l'analyse génétique des troubles du cerveau. Les techniques telles que l'association et/ou le lien génomique, et le reséquencement de la prochaine génération sont devenus courants, ainsi que les concepts de la pénétrance d'une maladie, l'expressivité et le risque relatif. Près de 50 % des tests génétiques sont exécutés pour une maladie neurologique, et de plus en plus de patients demandent à leur neurologue de leur expliquer leurs découvertes génomiques. Les sociétés qui vendent directement au consommateur proposent également des analyses individuelles de génomes personnels. On promet que les connaissances génétiques permettront un pronostic, un diagnostic et/ou un traitement. Ce cours offre des lignes directrices pratiques sur le counseling génétique et les tests génétiques au Canada pour les troubles neurologiques. Cette année, nous illustrerons les progrès génétiques récents en matière d'ataxie, d'épilepsie et de parkinsonisme; ce que le test génétique peut offrir en extrapolant les progrès technologiques dans le séquencement de la prochaine génération; ce que l'avenir réserve au système de soins de santé au Canada.

À la fin de ce cours, les participants pourront :

- Comprendre les différences entre le test génétique et la recherche génétique, des premiers principes à la pratique
- Citer les ressources disponibles pour le counseling génétique et les tests subséquents au Canada
- Apprécier les récents progrès génétiques en matière d'ataxie, d'épilepsie et de parkinsonisme
- Fournir des exemples de lignage, d'association et de séquencement de la prochaine génération s'appliquant aux troubles du cerveau, et décrire certaines des limites/restrictions
- Illustrer le potentiel thérapeutique futur de l'analyse génétique relative aux troubles neurologiques/neurodégénératifs

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Résident | Conseillers en génétique/généticiens
Niveau d'apprentissage : Débutant | Intermédiaire
Styles d'apprentissage : Cours magistral/séance plénière | Tribune/panels questions et réponses
Rôles de CanMED : Expert médical

Ordre du jour

14 h 15 - 14 h 20	Présentation	Seyed Mirsattari
14 h 20 - 14 h 45	Counseling génétique	Susan Creighton
14 h 45 - 15 h 15	Diagnostic d'ataxie héréditaire et de paraparésie spastique	Nicolas Dupre
15 h 15 - 15 h 30	Pause	
15 h 30 - 16 h 00	Progrès réalisés en épilepsie pédiatrique	Michelle Demos
16 h 00 - 16 h 30	Maladie de Parkinson : gènes et fonction	Edward Fon
16 h 30 - 17 h 00	Frontière de séquencement de la prochaine génération	Carles Vilarino-Guell
17 h 00 - 17 h 15	Séance de questions et réponses, évaluations et conclusion	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con14

Programme scientifique vendredi

Neuroophtalmologie

Président : Jason Barton, SCN ***14h15 - 17h15 Salle Saint Laurent***

Ce cours est axé sur les troubles des mouvements de l'œil. Il débute par une approche rationnelle des antécédents et de l'examen servant à diagnostiquer la diplopie. Ensuite, il passera en revue les maladies myopathiques et neuromusculaires qui affectent les yeux. S'ensuivra une discussion sur les syndromes moteurs oculaires du tronc cérébral et du cervelet. Notre présentation de recherche examine comment les mouvements de l'œil révèlent des aspects de dysfonction cognitive dans les troubles neurologiques. Enfin, nous présenterons un algorithme pour le nystagmus, en mettant l'accent sur les implications diagnostiques.

À la fin de ce cours, les participants pourront :

- Évaluer habilement la diplopie grâce aux antécédents et à l'examen
- Diagnostiquer les myopathies et les troubles de la jonction neuromusculaire qui affectent les yeux
- Diagnostiquer les troubles du tronc cérébral des mouvements de l'œil
- Discuter de l'utilisation des antisaccades pour étudier une variété de problèmes neurologiques et psychiatriques
- Différencier les types de nystagmus et connaître leurs implications étiologiques

Auditoire : Neurologue – Adulte | Neurologue – Enfant | Neurochirurgien | Résident
Niveau d'apprentissage : Débutant | Intermédiaire
Styles d'apprentissage : Études de cas | Discussion | Tribune/panels | Cours magistral/séance plénière
Rôles de CanMED : Expert médical | Universitaire | Professionnel

Ordre du jour

14 h 15 - 14 h 20	Présentations	Jason Barton
14 h 20 - 14 h 45	Évaluation de la diplopie	William Fletcher
14 h 45 - 14 h 50	Questions	
14 h 50 - 15 h 15	Aspects oculaires des myopathies et des troubles de jonction neuromusculaire	François Evoy
15 h 15 - 15 h 20	Questions	
15 h 20 - 15 h 45	Syndromes moteurs oculaires du tronc cérébral et du cervelet	James Sharpe
15 h 45 - 15 h 50	Questions	
15 h 50 - 16 h 00	Pause	
16 h 00 - 16 h 30	Utilisation des antisaccades pour étudier les troubles neurologiques	Doug Munoz
16 h 30 - 16 h 35	Questions	
16 h 35 - 17 h 00	Nystagmus : une approche rationnelle	Jason Barton
17 h 00 - 17 h 10	Questions	Panel
17 h 10 - 17 h 15	Évaluation et conclusion	

Ce cours est offert en anglais seulement.

Accès à l'évaluation en ligne pour ce cours par code QR ou adresse Internet

http://www.surveymonkey.com/s/13con15

Society Prize Winners

Congratulations to our 2013 Society Prize Winners

André Barbeau Memorial Prize - Canadian Neurological Society

A.03 **Titin founder mutation is a common cause of myofibrillar myopathy with early respiratory failure**
G Pfeffer (Vancouver)*

Herbert Jasper Prize - Canadian Society of Clinical Neurophysiologists

H.01 **Using StatNet EEGs in the emergency department shortens diagnosis delay**
F Moien Afshari (Saskatoon)*

K.G. McKenzie Prize for Clinical Neuroscience Research - Canadian Neurosurgical Society

B.02 **Phase I trial of deep brain stimulation of the subcallosal cingulum for treatment-refractory anorexia nervosa**
N Lipsman (Toronto)*

K.G. McKenzie Prize for Clinical Neuroscience Research - Canadian Neurosurgical Society

B.04 **Visualizing plasticity in the injured human spinal cord with fMRI**
DW Cadotte (Toronto)*

The President's Prize - Canadian Association of Child Neurology

G.06 **Subgroup-specific patterns of recurrence in medulloblastoma**
V Ramaswamy (Toronto)*

Hepatosplenomegaly +

Vertical supranuclear Gaze Palsy +

Gelastic Cataplexy +

Dementia + Ataxia =

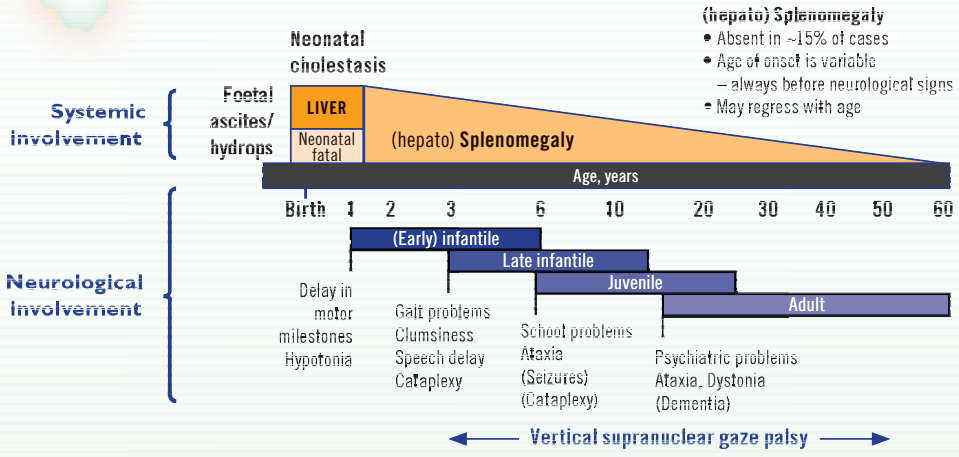
Sometimes, x PLUS y equals something surprising.

Be on the lookout for the "PLUS": progressive neurologic manifestations PLUS visceral or psychiatric symptoms.

When you see the PLUS, think beyond the individual symptoms. You might be facing **Niemann-Pick Disease Type C (NP-C)**.

- NP-C is a rare inborn error of metabolism affecting children and adults
- NP-C is characterized by a broad clinical variability involving neurological, psychiatric, and visceral symptoms
- NP-C is characterized by progressive neurological symptoms and premature death in most patients

Figure: Time course of selected neurovisceral symptoms of Niemann-Pick disease type C



Adapted from Vanier, M, 2010[1]

Early diagnosis of Niemann-Pick Disease Type C is crucial.

When you see the following manifestations:

- Neurologic PLUS…
- Visceral PLUS…
- Psychiatric PLUS…

…consider Niemann-Pick Disease Type C and take action.

Refer patients exhibiting signs and symptoms consistent with NP-C to a metabolic genetics specialist.

ACTELION

For more information: www.npc-si.ca

Reference:1. Vanier MT. Niemann-Pick disease type C. Orphanet *Journal of Rare Diseases* 2010; 5:16.

Brains matter.

www.mybrainmatters.ca

RESEARCH

ADVOCACY

EDUCATION

COLLABORATION

SUPPORT

Millions of Canadians are living with a brain condition today!

We need to learn more about this experience to better serve individuals and families. That's why the NHCC is collaborating with the Public Health Agency of Canada to lead Canada's first-ever National Population Study of Neurological Conditions.

Research teams across Canada are working to build a better understanding of:

- ✔ the incidence & prevalence of brain conditions in Canada
- ✔ their impact on individuals & families
- ✔ risk factors for onset & progression
- ✔ co-existing conditions
- ✔ best practice health & support services

Register to receive information and regular updates about the national study at **www.mybrainmatters.ca** or call the NHCC at **(416) 227-9700 x3476**.

Note: Your contact information will be used for the sole purpose of providing information updates. The NHCC does not fundraise or share our database with any other organizations.

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Platform Presentations

Thursday June 13th - Abstracts begin on page 109

CNS / CSCN Chair's Select

A01	11:15	Lysine Restricted Diet as Novel Therapy for Pyridoxine Dependent Epilepsy
A02	11:30	Magnetic resonance guided focused ultrasound (MRgFUS) for thalamotomy in treatment-refractory essential tremor
A03	11:45	Titin founder mutation is a common cause of myofibrillar myopathy with early respiratory failure
A04	12:00	Synchrotron imaging of photothrombotic stroke model in mice

CNSS Chair's Select

B01	11:15	Diffusion weighted imaging in the prognostication of Glioblastoma Multiforme
B02	11:30	Phase I trial of deep brain stimulation of the subcallosal cingulum for treatment-refractory anorexia nervosa
B03	11:45	Independent Risk Factors and Risk Factor Selection Modeling for the Recurrence of Chronic Subdural Hematomas
B04	12:00	Visualizing Plasticity in the Injured Human Spinal Cord with fMRI

CACN Chair's Select

C01	11:15	Predictors of seizure outcomes in children with tuberous sclerosis and intractable epilepsy undergoing resective epilepsy surgery: An individual participant data meta-analysis
C02	11:30	Ipsilateral Corticomotor Projections in Perinatal Stroke: Effects of rTMS
C03	11:45	Mutations in ATP1A3 Cause Cerebellar ataxia, areflexia, pes cavus, optic atrophy, and sensorineural hearing loss (CAPOS) syndrome
C04	12:00	Race, ethnicity and geographic distribution of pediatric chronic ataxia in Manitoba

Friday June 14th - Abstracts begin on page 112

Stroke

D01	8:00	Octogenarians should not be excluded from acute stroke endovascular trials as major clinical responses common with reperfusion
D02	8:15	Not All Successful Reperfusion Patients Are Equal: The Need for a TICI2c Score
D03	8:30	Imaging-to-Stent deployment Time Interval Is Shorter during Daytime Hours' Vs. Evening Times in Endovascular Therapy for Acute Ischemic Stroke
D04	8:45	Cerebral Flow Augmentation and outcomes in moderate severity stroke and good baseline ASPECTS
D05	9:00	Achieving an IV Needle to Arterial Puncture Time under 60 Minutes in Acute Endovascular Stroke Therapy is Feasible
D06	9:15	Optimizing Acute Stroke Imaging for Maximizing information and Minimizing Acquisition, Post processing and Interpretation times: Analysis of data from a prospective imaging cohort study
	9:30	Break
D07	9:45	A systematic comparison of different techniques to measure clot length in patients with Acute Ischemic Stroke
D08	10:00	Cerebral Flow Augmentation and outcomes in patients with good baseline ASPECTS and absence of M1 occlusion
D09	10:15	The Impact of Referral ABCD2 Score on Access to Resources in a Provincial Stroke Prevention Clinic
D10	10:30	Alterations in cerebrovascular reactivity to carbon dioxide in the early phase of subarachnoid hemorrhage do not predict vasospasm in good grade patients
D11	10:45	Different Strokes For Different Folks: Cerebrovascular Diseases among Chinese Canadians--Lessons learned over the past 30 years

Platform Presentations

Spine

E01	8:00	Spinal instability neoplastic score (SINS) reliability analysis in spine residents and fellows in orthopedics and neurosurgery
E02	8:15	Optimizing patient outcomes in the management of spinal cord injuries in Nova Scotia: a retrospective review from 2005-2010
E03	8:30	Can a clinical classification of symptoms and signs predict candidacy for lumbar spine surgery?
E04	8:45	Can wait times for surgical assessment and imaging be reduced through a spine care pathway?
E05	9:00	A Canadian perspective on neurosurgeon preference for surgical method, graft types, collar usage, physiotherapy and back-to-work return times after one-level Anterior Cervical Discectomy (ACD)
E06	9:15	Epidemiology of spinal infections: chart review of osteomyelitis, discitis & epidural abscesses
	9:30	Break
E07	9:45	Minimally invasive treatment of spinal cord cysts using a tubular retractor system: case series
E08	10:00	Spine surgery referrals redirected through a clinical pathway: effects of non-surgeon triage including imaging utilization
E09	10:15	Anterior Cervical Discectomy with Arthroplasty versus Arthrodesis for Single-Level Cervical Spondylosis: A Systematic Review and Meta-Analysis
E10	10:30	Investigating the implementation of acute care guidelines for spinal cord injuries in Nova Scotia from 2005-2010
E11	10:45	A retrospective study of the natural history of central cord syndrome and the role of surgical intervention

Trauma and General Neurosurgery

F01	8:00	Diagnostic Accuracy of Intraocular Pressure Measurement for Detection of Raised Intracranial Pressure: A Systematic Review and Meta-Analysis
F02	8:15	Mannitol dosing error during intra-facility transfer for intracranial emergencies
F03	8:30	Epidural hematoma treated conservatively; when to expect the worse
F04	8:45	Clival fractures in a level one trauma center: a ten year retrospective study
F05	9:00	Accurate Insertion of External Ventricular Drains in Neuro ICU Settings
F06	9:15	Image Guided Minimally Invasive Stereoscopic Inter-Fascicular Evacuation of Large Spontaneous Subcortical Intracerebral Hemorrhages
	9:30	Break
F07	9:45	When is the best time to start blood thinners after traumatic subdural hematoma?
F08	10:00	Low amplitude EEG improves flash VEP reproducibility during surgery
F09	10:15	A New Vision Scale For Monitoring Neurosurgical Inpatients: The McMaster Vision Scale
F10	10:30	Developing an Adult Hydrocephalus Clinic Care Model: Assessing and Treating Patients with iNPH
F11	10:45	Defining the Epidemiological Spectrum of Adult Hydrocephalus Care

Neuro-oncology and Education

G01	8:00	Comparative Integrated Analysis of Brain Tumor Initiating Cells and Their Parent Tumors
G02	8:15	Regulating Tumor Metabolism and Response to Therapy in GBMs with Hexokinase II (HK2)
G03	8:30	The Fractal Geometry of Gliomas
G04	8:45	Retinal architecture predicts visual outcomes in patients with pituitary macroadenomas
G05	9:00	Frequent progression of pilocytic astrocytomas in adults: a retrospective review
G06	9:15	Subgroup-specific patterns of recurrence in medulloblastoma
	9:30	Break
G07	9:45	Establishing a Curriculum for the Canadian Neurosurgery Rookie Camp: A Canadian National Survey
G08	10:00	Resident Migration Patterns: Did changes in ABNS eligibility affect resident destinations
G09	10:15	Teaching for the transition: the Canadian neurosurgery 'rookie camp' experience
G10	10:30	Neurosurgeons' perspectives on surgery for psychiatric disease and enhancement
G11	10:45	The level of evidence of the neurosurgical literature published in the highest impact clinical journals: Where has all the good evidence gone?

Platform Presentations

Epilepsy

H01	8:00	Using StatNet EEGs in the Emergency Department Shortens Diagnosis Delay
H02	8:15	Insulectomy for refractory epilepsy
H03	8:30	Outcomes in a Canadian single seizure clinic. A one year prospective study
H04	8:45	MRI Changes in Refractory Status Epilepticus: Is Isoflurane Neurotoxic?
H05	9:00	Improved seizure outcomes in resections involving the orbito-frontal cortex: Evidence for “orbito-frontal-plus” epilepsy
H06	9:15	Impact of mild cognitive impairment on health-related quality of life in Parkinson’s disease
	9:30	Break
H07	9:45	Demonstration of corticospinal tract pathology in ALS using high field diffusion tensor tractography
H08	10:00	Distinguishing Amyloid Positive from Amyloid Negative Mild Cognitive Impairment patients
H09	10:15	The Case for Vitamin D Supplementation in Multiple Sclerosis
H10	10:30	Histopathology of multiple sclerosis related trigeminal neuralgia following multiple rhizotomies and Gamma Knife surgery
H11	10:45	Diagnosing rare neurological disorders with exome sequencing: FORGE Canada

Aneurysms and Subarachnoid Hemorrhage

I01	8:00	Reporting the design of the ISAT-II study: A randomized clinical trial comparing surgical and endovascular treatments of ruptured intracranial aneurysms
I02	8:15	Decreased Rates of Perioperative Stroke and Delayed Cerebral Ischemia Following Implementation of a Comprehensive Neurovascular Program
I03	8:30	PRET Study: Patients Prone to recurrence after endovascular treatment
I04	8:45	FIAT: Flow diversion in Intracranial Aneurysm Treatment : A Randomized Trial Comparing Flow Diversion and Best-Standard-Treatment
I05	9:00	The utility of the electrocardiogram in predicting angiographic vasospasm following aneurysmal subarachnoid hemorrhage
I06	9:15	Angiographic outcome of intra-arterial milrinone on cerebral vasospasm after subarachnoid haemorrhage
	9:30	Break
I07	9:45	Familial Intracranial Aneurysms in Newfoundland and Labrador: Updated Report
I08	10:00	Excellent long-term outcomes in complex intracranial aneurysms treated with PED
I09	10:15	Flow Diversion of Giant Curved Sidewall and Bifurcation Aneurysms: Very Low Porosity Devices May Not Produce Reliable Occlusion in Experimental Models
I10	10:30	STAT: Stenting in the Treatment of large, wide necked or recurring intracranial Aneurysms Trial
I11	10:45	2013 Update on the Canadian Unruptured Endovascular vs Surgery (CURES) Trial

Pediatrics

J01	8:00	The metabolic phenotype guiding the discovery of treatable intellectual disability genes
J02	8:15	Evaluating the exposure of radiation from CT scans of children presenting with primary headache
J03	8:30	MRI findings in infants with infantile spasms after neonatal hypoxic-ischemic encephalopathy
J04	8:45	Malignant Infarction of the Middle Cerebral Artery in Children
J05	9:00	Safety and tolerability of TMS and rTMS in a pediatric clinical trial
J06	9:15	Serial diffusion imaging of cerebral diaschisis in childhood arterial ischemic stroke
	9:30	Break
J07	9:45	Glycyl-tRNA synthetase (GARS) mutations causing systemic mitochondrial disease
J08	10:00	CSF Leak After Intradural Spinal Surgery in Children
J09	10:15	Paired Associative Stimulation to Understand Neuroplasticity in Children
J10	10:30	EEG biomarkers of poor neuropsychological outcome following perinatal stroke
J11	10:45	Systematic screening study for treatable disorders in intellectual disability

PLATFORM PRESENTATIONS

CNS / CSCN CHAIR'S SELECT ABSTRACT PRESENTATIONS

A.01

Lysine restricted diet as novel therapy for pyridoxine dependent epilepsy

C van Karnebeek (Vancouver) H Hartmann (Hannover) S Jaggumantri (Vancouver) L Bok (Veldhoven) G Sinclair (Vancouver) J van Hove (Aurora) S Gospe (Seattle) B Plecko (Zurich) S Sylvia (Vancouver)*

Background: Pyridoxine Dependent Epilepsy (PDE) classically presents as a neonatal onset epileptic encephalopathy. This cerebral aciduria is caused by deficiency of α-aminoadipic semialdehyde dehydrogenase (ALDH7A8), an enzyme facilitating lysine catabolism. Despite adequate seizure control with pyridoxine, neurodevelopmental outcome is poor; 75% suffer developmental deficits. Our Objective was to evaluate effects of dietary lysine restriction as add-on therapy in PDE patients. *Methods:* A pilot study with observational n-of-1 cohort design was performed; seven patients were started at mean age six years on lysine restriction 50-60mg/kg/day and regular monitoring and outcome assessments during a 12-24mos period. *Results:* The diet was well tolerated; good compliance, no reports of adverse-events. Reduction of plasma pipecolic acid on diet was 20-67% of pre-treatment level; for urine α-AASA 13-72%, for CSF pipecolic acid 87.2% and AASA 81.7%. Improvement in age-appropriate skills was observed in 4 out of 5 patients showing pre-diet delays, and seizure control was maintained or improved in 6 out 7 children. *Conclusions:* This study provides Level 4 evidence that lysine restriction is well-tolerated with significant decrease of potentially neurotoxic biomarkers and potential to improve developmental outcomes. An international PDE consortium has been established to conduct future studies using novel trial methodologies and digital tools (www.pdeonline.org).

A.02

Magnetic resonance guided focused ultrasound (MRgFUS) for thalamotomy in treatment-refractory essential tremor

N Lipsman (Toronto) ML Schwartz (Toronto) Y Huang (Toronto) K Hynynen (Toronto) T Sankar (Edmonton) AM Lozano (Toronto)*

Background: Essential Tremor (ET) is the most common movement disorder, and is associated with significant functional impairment and disability. Although pharmacologic treatments are available, a substantial proportion of patients remain medication-resistant and thus eligible for surgical neuromodulation. Current options include stereotactic thalamotomy, deep brain stimulation (DBS), and gamma knife radiosurgery (GKRS). Here, we explore a fourth option; magnetic resonance guided focused ultrasound (MRgFUS), a non-invasive, image-guided approach that provides real-time feedback and immediate results. *Methods:* A pilot trial of MRgFUS thalamotomy for medication-refractory ET was designed. Eligible patients had their diagnosis confirmed by a movement disorder neurologist and underwent baseline tremor assessment and neuroimaging. Assessments were then repeated at 1- and 3-months following treatment. *Results:* All enrolled patients experienced immediate tremor improvement following treatment (N=5). Mean tremor reduction in the dominant (treated) arm was 89% at 1-month (N=4) and 78% at 3-months (N=3), with significant associated improvements in functional impairment. There were no serious neurological adverse events, with one patient experiencing persistent paresthesias at 3-months. *Conclusions:* MRgFUS appears to be a safe and effective means of non-invasively generating thalamic lesions in patients with medication-refractory ET. Procedures were well tolerated, with lesion size and temperature monitored in real time under image-guidance.

A.03

Titin founder mutation is a common cause of myofibrillar myopathy with early respiratory failure

G Pfeffer (Vancouver) R Barresi (Newcastle) IJ Wilson (Newcastle) SA Hardy (Newcastle) H Griffin (Newcastle) J Hudson (Newcastle) HR Elliott (Newcastle) AV Ramesh (Newcastle) A Radunovic (London) J Winer (Birmingham) S Vaidya (London) A Raman (Hull) M Busby (Leeds) ME Farrugia (Glasgow) A Ming (Hull) C Everett (London) HC Emsley (Manchester) R Horvath (Newcastle) V Straub (Newcastle) H Lochmuller (Newcastle) PF Chinnery (Newcastle) A Sarkozy (Newcastle)*

Objective: Titin gene (TTN) mutations have been described in 8 families with hereditary myopathy with early respiratory failure (HMERF). Some of the original patients had features resembling myofibrillar myopathy (MFM), arguing that TTN mutations could be a cause of MFM. *Methods:* We studied 127 undiagnosed patients with clinical presentation compatible with MFM. Sanger sequencing for the two previously described TTN mutations in HMERF (p.C30071R in the 119th fibronectin-3 (FN3) domain, and p.R32450W in the kinase domain) was performed in all patients. *Results:* We identified 5 new families with the p.C30071R mutation who were clinically similar to previously reported cases, and muscle pathology demonstrated diagnostic features of MFM. Two further families had novel variants in the 119th FN3 domain (p.P30091L and p.N30145K). No patients had mutations at p.32450. *Conclusions:* Mutations in TTN are a cause of MFM, and titinopathy is more common than previously thought. The finding of the p.C30071R mutation in 3.9% of our study population is likely due to a British founder effect. The occurrence of novel FN3 domain variants, although still of uncertain pathogenicity, suggests that other mutations in this domain may cause MFM, and that the disease is likely globally distributed. We suggest that HMERF due to mutations in the TTN gene be nosologically classified as MFM-titinopathy.

A.04

Synchrotron imaging of photothrombotic stroke model in mice

*Z Ivanishvili (Saskatoon)**

Background: Synchrotron imaging is a new method for studying stroke, which utilizes wide range of monochromatic beams allowing imaging at various levels of tissue organization including inorganic elements and organic molecules. Photothrombotic stroke model is a well-characterized animal model, which has not been imaged using synchrotron. This model provides well-localized reproducible stroke lesions, allowing for accurate targeting of the synchrotron beams. *Methods:* We imaged photothrombotic stroke lesions in mice with synchrotron using mid-Infrared (mid-IR) and X-ray Fluorescence (XRF) beam-lines. The stroke lesions were imaged at various time points post-induction: 1 hour, 4.5 hours, 6 hours, 1 week, 2 weeks, and 3 weeks. The lesions were characterized using basic immunohistochemistry methods as well, and the results were correlated with the imaging findings. *Results:* The mid-IR imaging maps showed gradient of oxidized protein, oxidized lipids and glycogen demonstrating "core" of the stroke lesion with surrounding "penumbra" and normal tissue. The XRF maps showed variability in the elemental (Potassium, Calcium, Zinc and Iron) distribution in the "core" across the time points. *Conclusions:* We present first synchrotron imaging results in photothrombotic stroke model, allowing to map the stroke lesion at the molecular and atomic levels.

CNSS Chair's Select Abstract Presentations

B.01

Diffusion weighted imaging in the prognostication of glioblastoma multiforme

*A Bata (Halifax) K Ritchie (Haliax) S Walling (Halifax) JJ Shankar (Halifax)**

Background: Glioblastoma Multiforme(GBM) are known to have poor prognosis with no available imaging marker that can predict the survival at the time of diagnosis. Diffusion weighted images (DWI) are used in characterisation of cellularity and necrosis of GBM. The purpose of this study was to assess whether pattern or extent of DWI help in prognositcation of patients with GBM. *Material and Methods:* We retrospectively analyzed 102 consecutive patients with confirmed GBM on biopsy or resection. Spearman's correlations explored relationships among: total volume of tumor on FLAIR images, post gadolinium T1W images, total volume of tumor showing restricted diffusion on DWI, lowest Apparent Diffusion Coefficient (ADC) in tumor region and in normal-appearing contralateral white matter, age, and survival (days). Cox regression tested for the model that best predicts survival. *Results:* Two strongest correlations with survival were between age (-0.335, $p < 0.01$) and minimum relative ADC (0.390, $p < 0.001$). Both age (Exp(B)=1.043 (95% CI 1.022, 1.066) and minimum relative ADC value (Exp(B)=0.481 (0.269, 0.86) were significant predictors of survival ($p < 0.05$). *Conclusion:* We may potentially estimate survival in patients with GBM at the time of diagnosis based on the diffusion characteristics of the tumour irrespective of the treatment received.

B.02

Phase I trial of deep brain stimulation of the subcallosal cingulum for treatment-refractory anorexia nervosa

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Background: Anorexia Nervosa (AN) is among the most common psychiatric conditions in young adults and is associated with the highest mortality rate of any psychiatric illness. Current treatment approaches have been largely ineffective in altering the natural history of the most chronic and treatment-refractory patients. Deep Brain Stimulation (DBS) has shown promise in modulating activity in neural circuits underlying disordered mood and anxiety, both of which feature prominently in chronic AN. Here we evaluate the use of DBS in AN. *Methods:* We designed and undertook a Phase I pilot trial of DBS of the subcallosal cingulum in patients with chronic, severe, and treatment-refractory AN. Patients were identified through Canada's largest eating disorders program and underwent baseline medical, psychometric and neuroimaging investigations. *Results:* At 9-months following surgery, 3/6 patients (50%) were at a body-mass-index significantly higher than their historic baseline. Chronic stimulation was associated in responders with significant improvements in mood, anxiety, AN-related rituals and preoccupations and cerebral metabolic changes, consistent with a reversal of baseline abnormalities in AN-relevant structures. *Conclusions:* DBS appears to be a safe and promising option in patients with chronic and treatment-refractory AN. Additional, larger trials are required to verify the results of this small, open-label study.

B.03

Independent risk factors and risk factor selection modeling for the recurrence of chronic subdural hematomas

A Jack (Edmonton) CJ O'Kelly (Edmonton) J Findlay (Edmonton)*

Introduction: Chronic subdural haematoma (CSDH) recurrence remains a challenge with reported rates approaching 20%. This study investigates independent factors predicting recurrence in a large cohort of CSDH patients. *Methods:* We retrospectively reviewed 331 consecutive operative CSDH cases between 2005-2009. Univariate, multivariate, and statistical selection modeling was completed identifying factors influencing recurrence requiring repeat drainage within 2-months. A model was developed to identify and quantify patients' recurrence risk. *Results:* The majority of patients were male (80.66%). The mean post-operative haematoma volume was 63.55cc. Factors associated with higher post-operative haematoma volume were loculated (septated) CSDHs, pre-operative volume, midline shift, age, and atrophy. All factors except midline shift were independently predictive of larger post-operative haematoma. A 12% recurrence rate of repeat drainage was found. Factors associated with reoperation were the type of operation, midline shift, pre-operative and post-operative haematoma volume. Loculated CSDHs was the only independent predictor. A scoring system for quantifying recurrence was created based on patient age, haematoma volume, and presence of loculations. Higher recurrence rates were found amongst higher patient scores. *Conclusion:* Haematoma volume, age, and presence of loculations are found to most strongly influence operative recurrence. A scoring model for identifying higher risk patients for recurrence was developed.

B.04

Visualizing plasticity in the injured human spinal cord with fMRI

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Background: Evidence of CNS plasticity after traumatic spinal cord injury has been observed in animal models and human brain fMRI studies. Herein, we provide novel evidence for plasticity of the human spinal cord and demonstrate that these changes persist in persons who fully recover. *Methods:* Heat (44°C) was applied to 2 dermatomes above and 2 below the level of SCI. Spinal fMRI data was collected on a 3T system (SSFSE, TE=30msec, TR=1sec). Data were analyzed using the general linear model (P=0.001). We conducted a functional connectivity analysis between the spinal segment stimulated and other regions of the spinal cord and brainstem. Clinical measures included AISA examination. *Results:* 35 people were examined: 20 control, 9 incomplete SCI and 6 ASIA E patients. We demonstrate that dermatomes of abnormal sensation negatively correlate with the number of active voxels ($R2 = 0.93$, $p < 0.001$). The number of intra-spinal connections is significantly higher in incomplete SCI patients in a dermatome of normal sensation, $p = 0.045$. This was also observed in ASIA E patients ($p=0.03$). *Conclusions:* For the first time, we show evidence for spinal plasticity in incomplete SCI patients that persist in those who fully recover from their injury.

CACN Chair's Select Abstract Presentations

C.01

Predictors of seizure outcomes in children with tuberous sclerosis and intractable epilepsy undergoing resective epilepsy surgery: an individual participant data meta-analysis

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Introduction: We performed an individual participant data meta-analysis to identify preoperative factors associated with a good seizure outcome in children with Tuberous Sclerosis Complex undergoing resective epilepsy surgery. *Methods:* We searched electronic databases (MEDLINE, EMBASE, CINAHL and Web of Science), and archives of major epilepsy and neurosurgery meetings with no language or date restrictions. We included cohort studies of consecutive participants undergoing resective epilepsy surgery. To identify predictors of a good seizure outcome (i.e. Engel Class I or II) we used logistic regression adjusting for length of follow-up for each preoperative variable. *Results:* Of 9863 citations, 20 articles reporting on 181 participants were eligible. Good seizure outcomes were observed in 126 (69%) participants (Engel Class I: 102(56%); Engel class II: 24 (13%)). In univariable analyses, absence of generalized seizure semiology (OR=3.1, 95%CI=1.2-8.2, p=0.022), no or mild developmental delay (OR=7.3, 95%CI=2.1-24.7, p=0.001), unifocal ictal scalp electroencephalographic (EEG) abnormality (OR=3.2, 95%CI=1.4-7.6, p=0.008) and EEG/Magnetic resonance imaging concordance (OR=4.9, 95%CI=1.8-13.5, p=0.002) were associated with a good postoperative seizure outcome. *Conclusions:* Small retrospective cohort studies are inherently prone to bias, some of which are overcome using individual participant data. We identified four preoperative factors predictive of good seizure outcomes following resective epilepsy surgery. Given the low incidence of children with Tuberous Sclerosis Complex undergoing epilepsy surgery, large long-term prospective multicenter observational studies are required to evaluate these predictors.

C.02

Ipsilateral corticomotor projections in perinatal stroke: effects of rTMS

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Background: Unilateral perinatal stroke (PS) causes most hemiparetic cerebral palsy. Developmental neuroplasticity models suggest persistence of ipsilateral projections from unlesioned motor cortex (M1) is potentially maladaptive. Transcranial magnetic stimulation (TMS) can assess ipsilateral neurophysiology while repetitive TMS (rTMS) may modulate it for therapeutic effect. *Methods:* Children with PS (6-18yrs) were recruited to a clinical trial (PLASTIC CHAMPS) of intensive motor learning therapy and randomization to daily inhibitory rTMS (unlesioned M1, 10 days) or sham. TMS neurophysiology and motor function measures (Melbourne, MA; Assisting-Hand, AHA) were completed at baseline and 1 week post. Outcomes included rest motor threshold (RMT), stimulus response curves (SRC), short-latency intracortical inhibition (SICI), and intracortical facilitation (ICF). Mean change and correlations between ispi- and contra- parameters were analyzed. *Results:* Of 35 children, 17(49%) had ipsilateral projections. Affected hand MA scores improved in the rTMS group ($p=0.045$). AHA scores were unchanged. Contralateral physiology showed increased RMT ($p<0.05$) and decreased SRC slope ($p=0.017$) after rTMS. Similar changes were observed ipsilaterally. rTMS-induced changes in ipsi- and contra-lateral cortical systems were correlated: SICI ($p=0.04$), ICF ($p=0.009$). Procedures were well tolerated. *Conclusions:* rTMS is feasible in PS children. Hand function does not decrease and may improve. rTMS-induced shifts in neurophysiology correlate bilaterally.

C.03

Mutations in *ATP1A3* cause cerebellar ataxia, areflexia, pes cavus, optic atrophy, and sensorineural hearing loss (CAPOS) syndrome

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Background: In 1996, CAPOS syndrome was first described in a single family in which previously healthy individuals developed early onset cerebellar ataxia following a febrile illness, along with progressive optic atrophy and sensorineural hearing loss. All affected family members also had areflexia and pes cavus. The pattern of inheritance was presumed autosomal dominant. A second affected family was identified in our clinic so we aimed to find the disease-causing gene using next generation sequencing. *Methods:* Whole-exome sequencing was performed on DNA from each of the two index cases to identify rare variants supporting autosomal dominant inheritance. Sanger sequencing was performed to confirm our results. *Results:* A missense mutation in the Na+/K+ -ATPase alpha3 gene (*ATP1A3*) was identified and confirmed in both probands. The same mutation was also shown to segregate with disease in both families and targeted sequencing of *ATP1A3* in a third affected family with CAPOS syndrome identified the same mutation in this gene. *Conclusions:* Mutations in *ATP1A3* have already been demonstrated to cause Rapid-onset Dystonia-Parkinsonism and more recently Alternating hemiplegia of childhood-2. This work shows that mutations in *ATP1A3* are also responsible for CAPOS syndrome which further expands the spectrum of phenotypes associated with mutations in this gene.

C.04

Race, ethnicity and geographic distribution of pediatric chronic ataxia in Manitoba

M Salman (Winnipeg) S Masood (Winnipeg) M Azad (Edmonton) B Chodirker (Winnipeg)*

Background: Genetic and environmental factors are important determinants of disease distribution. Several disorders associated with ataxia occur more commonly in certain religious or ethnic groups e.g. disequilibrium syndrome in the Hutterites. Our aim was to determine the racial, ethnic/religious and geographic distribution of pediatric patients with chronic ataxia in Manitoba. *Methods:* We identified 184 patients with chronic ataxia during 1991-2008 from multiple sources. Their diagnosis, race/ ethnicity and place of residence were determined following a chart review. *Results:* Most patients resided in Manitoba (N=177). Thirty five were Aboriginal, 28 Mennonite and 11 Hutterite. The latter two groups were significantly overrepresented in our cohort. Ataxia telangiectasia, mitochondrial disorders, and non-progressive ataxia of unknown etiology associated with pyramidal tracts signs and developmental delay were significantly more common in Mennonite patients. All four patients with neuronal migration disorders associated with chronic ataxia were Aboriginal. Few isolated disorders with chronic ataxia occurred in the 11 Hutterite patients. *Conclusion:* Three disorders associated with chronic ataxia were more prevalent than expected in Mennonites in Manitoba. Few rare disorders were more prevalent in the Hutterite and Aboriginal population. Further research is needed to determine the risk factors underlying these variations in prevalence within different ethnic groups.

STROKE

D.01

Octogenarians should not be excluded from acute stroke endovascular trials as major clinical responses common with reperfusion

M Almekhlafi (Calgary) J Desai (Calgary) S Mishra (Calgary) V Nambiar (Calgary) O Volny (Calgary) B Menon (Calgary) M Eesa (Calgary) AM Demchuk (Calgary) M Goyal (Calgary) W Morrish (Calgary)*

Background: Octogenarians were excluded from many endovascular stroke trials based on expected delays in achieving successful reperfusion due to tortuous vascular anatomy and a perceived poor potential for recovery. We assessed the safety of the stentrievers technology in those patients. *Methods:* This is a longitudinal cohort of anterior circulation stroke patients treated in our center. Octogenarians were considered for IA stroke therapy in the absence of a pre-existing disability (Barthel index ≥90) or terminal illness. *Results:* Characteristics are shown in Table 1 below. Octogenarians had a non-significant increase in the in-hospital mortality; all occurred in patients who did not reperfuse successfully. In a multivariable logistic regression, age did not impact NIH improvement in 24-hours. There was a non-significant trend toward increased puncture-to-reperfusion times with increasing age (p 0.8). *Conclusion:* Octogenarians can be treated in a safely and fast when selected carefully. The impact of age on long-term functional outcome was not assessed. Excluding these patients from randomized trials of acute stroke therapy may need to be revisited. Table 1 (D.01)

	Octogenarians	Non-Octogenarians
N	**20**	**66**
Median age (iqr)	83(4)	65(15)
Median baseline NIHSS	17(11)	18(9)
Median baseline ASPECTS	9(2.5)	8(3)
Proportion treated with IV tPA	60%	47%
Median door to imaging	22(13)	18(9)
Median imaging to puncture	60(45)	62(14)
Median puncture to reperfusion	42(38)	39(13)
Median onset to reperfusion	269(79)	233(184)
Proportion with successful reperfusion (TICI 2b-3)	75%	83.3%*
Median 24-hour NIHSS	9(14)	7(10)†
Median 24-hour ASPECTS	8(4)	6(3) †
Median NIH drop in 24 hours	7(6)	10(10)
Proportion with 50% or more drop in NIH in 24 hours	47%	58.5%
In-hospital mortality	15%	6%
	* Chi-square p >0.05	†U test p-value >0.05

D.02

Not all successful reperfusion patients are equal: the need for a TICI2c score

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Objective: Many studies used the TICI system for angiographic outcomes. We propose a new scoring system that separates

successful but incomplete reperfusion into two categories. *Methods:* This is a cohort of anterior circulation stroke treated using intra-arterial stentrievers in our center. Successful reperfusion was defined as 2b: substantial perfusion with distal branch filling of ≥ 50% of territory visualized, 2c: near complete perfusion except for slow flow in a few distal cortical vessels, or presence of small distal cortical emboli, 3: complete perfusion with normal filling of all distal branches. *Results:* In 101 patients, 78 achieved successful reperfusion (77.2%). The proportion of patients who had significant improvement of their clinical deficits in 24 hours (24-hour NIHSS score drop by 75%) was significantly higher with TICI2c reperfusion than those with TICI2b (50% vs. 24%, Fisher's exact p 0.04). *Conclusions:* Categorizing successful but incomplete reperfusion into 2 different classes has merits. We found evidence toward different short-term clinical and imaging outcomes in patients with TICI2b vs. TICI2c scores. The results are presented in the table below. Table 1 (D.02)

	TICI 2b	TICI 2c	TICI3
N	32	26	20
Median age	67.5	67	68
Median baseline NIHSS	18	17	17
Median baseline ASPECTS	8	8	8
Proportion treated with IV tPA	43.8%	50%	65%
Median imaging to reperfusion	115.5	96	74
Median puncture to reperfusion	48	35	33
Median onset to reperfusion	265	218	197
Median 24-hour NIHSS	11	5	2
Median 24-hour ASPECTS	5	7	8
Median NIH drop in 24 hours	8	12	11
Proportion with 75% or more drop in NIH in 24 hours	24%	50%	65%
Proportion with 24-hour symptomatic hemorrhage (SITS-MOST)	12.5%	7.7%	5%

D.03

Imaging-to-stent deployment time interval is shorter during daytime hours' vs. evening times in endovascular therapy for acute ischemic stroke

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Background: Stentrievers can deliver blood to the ischemic brain once the stent is deployed. A potential factor that may introduce delays is the timing of the intervention. We assessed the feasibility of achieving short imaging to stentriever deployment during the daytime hours. *Method:* This is a cohort of acute endovascular strokes patients. The imaging to first stentriever deployment time was defined as the time from the completion of CT angiogram to the first angiographic run that shows that the stentriever has been deployed in the target occluded artery. This interval was compared between daytime procedures (0700-1800 hours) vs. outside. *Results:* 99 patients were analysed. The median imaging to stentriever deployment was 86 minutes (80.5 minutes during the daytime vs. 97 minutes outside; U-test p value 0.038). The proportion of patients treated during daytime with imaging to stentriever deployment time < 120 minutes was 86% vs. 65.8% outside (Chi-square p 0.02). The proportion of successful reperfusion (TICI 2b or 3) during daytime was 76.7% vs.76.9% outside. None of the patients who did not meet this target time achieved mRS score ≤ 1 compared to 55% of those with an imaging to stentriever deployment time < 120 minutes (Chi-square p 0.002). *Conclusions:* Imaging to stentriever deployment time < 120 minutes is feasible and was achieved more consistently during daytime hours. It was associated with better outcomes.

D.04

Cerebral flow augmentation and outcomes in moderate severity stroke and good baseline ASPECTS

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Background: Small core determined by ASPECTS is an important determinant of outcomes after stroke. Given the variation in stroke-severity; this with ASPECTS can be important factors determining prognosis. Flow augmentation with the NeuroFlo device may be an alternative therapy for patients outside traditional time windows. We present an exploratory post-hoc analysis in patients with small core and moderate-severity stroke as determinants on outcomes from the SENTIS trial. *Methods:* SENTIS was a randomized, multicenter trial comparing standard therapy with and without NeuroFlo in patients with baseline NIHSS of 5-18 where treatment could be initiated within 14h. Long-term outcome was measured with 90-day mRS. We compared mRS in patients with NIHSS 8-15 and good baseline ASPECTS(7-10) between treatment and control arms. *Results:* A total of 515 patients were enrolled. Of these 152 patients had small core and NIHSS 8-15. There were 73 patients in the treated group [mean age 68.0±14.3;median NIHSS 10] and 79 in the non-treated group [mean age 67.1±14.9; median NIHSS 11] and no imbalances in baseline characteristics. mRS 0-2 was seen in 52.2% of the treatment arm and 41.4% of the non-treatment arm. A 3-level shift analysis for the three mRS groups 0-2/3-4/5-6 showed a p-value of 0.14. *Conclusions:* This post-hoc analysis suggests a trend towards good outcomes in moderate severity stroke with good baseline ASPECTS when treated with NeuroFlo.

D.05

Achieving an IV needle to arterial puncture time under 60 minutes in acute endovascular stroke therapy is feasible

S Mishra (Calgary) MA Almekhlafi (Calgary) V Nambiar (Calgary) J Desai (Calgary) O Volny (Calgary) AM Demchuk (Calgary) M Goyal (Calgary)*

Background: The IMS-III trial reports an 88-minute time interval from IV tPA administration to arterial groin puncture. We assessed the feasibility of achieving a shorter time interval in routine practice. *Methods:* This a cohort of acute anterior circulation strokes. Times were prospectively collected. *Results:* Out of 105 patients, 64 (60.6%) received IV tPA. The median age was 64 years with a median NIHSS score of 18 (iqr 9). The onset to IV needle time was 130 minutes (iqr 111). All patients were treated via endovascular therapy with a median and mean times of IV needle to arterial puncture times of 46 and 49.7 minutes, respectively. Of all treated with IV tPA, 39 patients (60.9%) had the arterial puncture within 60 minutes of the IV bolus time. Endovascular recanalization was achieved in 78.1% resulting in a median 24-hour NIHSS score of 6 (iqr 11). Significant improvement in the 24-hour NIHSS scores (drop of 50% or more from baseline to 24 hours) was noted in

70.3%. *Conclusion:* An IV needle to arterial puncture time under 60 minutes was feasible in about 60% of patients. Potential delays in randomized trials may include the time needed to obtain consent for enrolment and time to activate the endovascular team. Future trials should still aim to achieve a fast IV needle to puncture time given the potential for clinical improvement.

D.06

Optimizing acute stroke imaging for maximizing information and minimizing acquisition, post processing and interpretation times: analysis of data from a prospective imaging cohort study

M Goyal (Calgary) BK Menon (Calgary)*

Aim: To compare utility and efficiency of perfusion CT (PCT) to NCCT/multiphase CTA (mCTA) paradigm in making treatment decisions in patients with acute ischemic stroke. *Methods:* mCTA (patent pending) is a new technique and significantly better than conventional CTA. Data is from an ongoing prospective imaging based cohort study of patients with acute ischemic stroke at our center. All patients undergo NCCT followed by mCTA and PCT. *Results:* In 70 patients (median age 67, 49.3% male), median baseline NIHSS was 10 (IQR 13) and median onset to CT time in those with witnessed stroke onset was 101 mins (IQR 138). Acquisition and interpretation took < 2 mins for NCCT, < 5 mins for mCTA and < 20 mins for PCT. Uncertainty for IV tPA treatment was present in 10.1% of patients with NCCT, 1.4% with mCTA and 15.9% with PCT. Uncertainty for IA treatment was present in 66.7% of patients with NCCT but only in 2.9% with mCTA. Patient motion affected image interpretation in 1.4% of patients with NCCT and mCTA when compared to 7.2% with PCT. Agreement between mCTA and PCT for IV tPA was seen in 91.2% patients (k=0.41, p<0.001). *Conclusion:* NCCT with mCTA is a robust tool for making IV and IA treatment decisions in patients with acute ischemic stroke.

D.07

A systematic comparison of different techniques to measure clot length in patients with acute ischemic stroke

AA Qazi (Calgary) M Eesa (Calgary) E Qazi (Calgary) M Goyal (Calgary) A Demchuk (Calgary) B Menon (Calgary)*

Introduction: Clot length on CT/CTA has been used to predict recanalization with thrombolytic treatment in patients with acute ischemic stroke (AIS). We compared two techniques of measuring clot length on CT/CTA to identify the most reliable method. *Methods:* 41 patients with M1 MCA occlusions were included from INTERRSeCT (prospective cohort study of AIS patients). Two readers independently measured clot length on CTA by: 1) measuring the occluded segment of M1 MCA and 2) ratio of residual lumen length within M1 MCA to length of contralateral patent M1 MCA. Level of concordance between raters was calculated using Cohen's kappa and Intra-class Correlation Coefficient. *Results:* Residual lumen ratio on CTA (3 mm) is the most reliable technique for measuring clot length. Length of hyperdense sign on NCCT is fairly reliable. Direct clot length measurements on CTA are reliable if done on CTA thick slices (24 mm): *Conclusion:* Reliability of clot length assessment depends on the imaging modality and technique used. CTA still remains the best tool to measure clot length. See Table 1.

Table 1 (D.07)

Modality	Clot Assessment Methodology		Level of Concordance	p value
Non contrast CT	Presence of Hyperdense Sign		k=0.80	<0.001
Non contrast CT	Presence of Hyperdense Sign	Proximal 1/3rd of M1 MCA	k=0.60	<0.001
Non contrast CT	Presence of Hyperdense Sign	Middle 1/3rd of M1 MCA	k=0.66	<0.001
Non contrast CT	Presence of Hyperdense Sign	Distal 1/3rd of M1 MCA	k=0.85	<0.001
Non contrast CT	Length of Hyperdense Sign		ICC=0.68	0.48
Non contrast CT	Length of Hyperdense Sign (after seeing CTA)		ICC=0.47	0.001
CTA 3 mm	Clot Length		ICC=0.27	0.11
CTA 3 mm	Residual lumen ratio		ICC=0.92	0.32
CTA 3 mm	Length of patent lumen		ICC=0.92	0.32
CTA 3mm	Contrast permeation		k=0.2	0.09
CTA 24mm	Clot length		ICC=0.73	0.61
CTA 24mm	Residual lumen ratio		ICC=0.88	0.01
CTA 24mm	Length of patent lumen		ICC=0.89	0.34

D.08

Cerebral flow augmentation and outcomes in patients with good baseline ASPECTS and absence of M1 occlusion

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Background: Baseline ASPECTS is an important determinant of outcomes after acute stroke. Outcomes in proximal occlusions are dependent on recanalization. Flow augmentation with the NeuroFlo device may be an alternative outside traditional time windows. We present a post-hoc analysis in patients with small core and mild-to-moderate stroke in the absence of M1 occlusion. *Methods:* From patients in SENTIS, we included those with NIHSS 5-15, and no M1 occlusion on imaging. We also analyzed a larger cohort of patients with NIHSS 5-10, with the premise of a low likelihood of an M1 occlusion. The baseline ASPECTS was 7-10. 90-day mRS was compared between groups. *Results:* Of 515 patients, imaging identified 71 patients with ASPECTS 7-10; NIHSS 5-15 and no M1 occlusion. A second analysis was performed on 172 patients with small core (ASPECTS 7-10) and NIHSS 5-10, with a low likelihood of having M1 occlusion. In patients with moderate stroke and no M1 occlusion, 56.7% in the treatment arm had good outcome vs 42.5%(control). In the larger group with no vascular imaging 71.6% in the treatment arm had good outcome (mRS 0-2) compared to 60.9%(control). 3-level shift analysis showed p-value of 0.09 / 0.24 respectively. *Conclusions:* This analysis suggests a trend towards good outcomes in mild-to-moderate stroke with good ASPECTS and a low likelihood of having an M1 occlusion when treated with NeuroFlo.

D.09

The impact of referral ABCD2 score on access to resources in a provincial stroke prevention clinic

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Background: ABCD2 score is used to predict short-term stroke risk among patients with Transient Ischemic Attack (TIA). Stroke Prevention Clinics (SPC) across North America use the ABCD2 score to efficiently triage referred patients. We assessed concordance of ABCD2 score generated by the referring agent to ABCD2 score generated by the stroke neurologist at the time of visit to SPC. *Methods:* 871 patients were seen in SPC between January 2010 to January 2012. 377 patients met the inclusion criteria of receiving

both a referral ABCD2 score, and an ABCD2 score generated by the stroke neurologist. Impact was assessed by comparing actual waiting time to the average waiting time for their corrected score. *Results:* ABCD2 score concordance existed in 63.4% of cases (Weighted Kappa .436, 95% confidence interval .359 - .514). 138 patients were mis-scored by at least one full ABCD2 risk category. 26 patients (6.8%) were underscored & 80 patients (21.2%) were overscored. On average, underscored patients were seen ten days later, while overscored patients were seen 34 days sooner. *Conclusion:* Inaccurate referral ABCD2 scores can lead to higher-risk patients being seen less urgently, and lower-risk patients being seen ahead of those with greater need. Inclusion of precise directions on referral forms, and increased education for referral agents are two methods of improving the accuracy of triage. Table 1 (D.09)

Table 1		ABCD2 @ SPC			
		Semi-Urgent (0-3)	Urgent (4-5)	Emergent (6-7)	Totals
ABCD2 Referral	Semi-Urgent (0-3)	115 (59%)	20 (13.9%)	6 (15.8%)	141
	Urgent (4-5)	72 (36.9%)	102 (70.8%)	10 (26.3%)	184
	Emergent (6-7)	8 (4.1%)	22 (15.3%)	22 (57.9%)	52
Totals		195	44	38	

D.10

Alterations in cerebrovascular reactivity to carbon dioxide in the early phase of subarachnoid hemorrhage do not predict vasospasm in good grade patients

L da Costa (Toronto) J Fierstra (Zurich) D Houlden (Ottawa) G Rubenfeld (Toronto) M Tymianski (Toronto) JA Fisher (Toronto)*

Objective: Subarachnoid hemorrhage (SAH) alters cerebrovascular reactivity (CVR) CO2, which could be related to increased risk of vasospasm. Bedside methods to monitor CVR are of interest. We report the results of CVR testing in good grade SAH patients using a new method of CO2 control. *Methods:* Eighteen SAH patients and 26 controls underwent CVR testing using Transcranial Doppler (TCD) and standardized iso-oxic end-tidal CO2 changes. Tests were performed on average 3.2 days after SAH when there was no clinical or radiological evidence of vasospasm. Middle cerebral artery blood flow velocity (MCAv), heart rate (HR), blood pressure (BP) and intracranial pressure (ICP) were recorded whenever available. CVR index was calculated as Δ MCAv / Δ PCO2. The relationship of abnormal CVR and vasospasm was tested. *Results:* SAH patients had significantly lower CVR ($p = 0.0001$). PCO2 changes and MCAv was strongly correlated in controls ($r = 0.83$, 95% CI 0.46-1.20) but not in SAH patients ($r = 0.071$, 95% CI -0.19-0.33) ($p=0.0027$). Impaired CVR early after SAH was not predictive of future vasospasm ($p=0.2$). *Conclusions:* CVR is impaired in early phases of SAH, when changes in PCO2 may not correlate with MCAv changes. Despite abnormal CVR in 50% of the patients, no correlation with later occurrence of vasospasm was found. At least in good grade patients, impaired CVR does not predict future vasospasm.

D.11

Different strokes for different folks: cerebrovascular diseases among Chinese Canadians—lessons learned over the past 30 years

JY Chu (Toronto) S Lam (Waterloo)*

With the influx of many immigrants to Canada, the population of Chinese Canadians has been steadily increasing over the past 40 years. It is therefore essential to study this population regarding their stroke patterns since in Peoples' Republic of China where most of these Chinese immigrants are coming from, stroke is the leading cause of death.

Over the past three decades, the principal author and his team of researchers has been carrying out systematic, retrospective epidemiological studies in Toronto about the patterns of cerebrovascular diseases amongst Chinese Canadians. The current presentation will be focused on the results of these studies and lessons learned over this period of time. *Findings:*

1. Chinese Canadians has a higher frequency of hypertension compared to a case-mixed cohort of Caucasians.
2. Chinese Canadians frequently has higher incidence of intracranial small vessel atherosclerotic disease and they tend to have lesser incidence of extracranial vascular stenosis.
3. Chinese Canadians with ischemic strokes tend to have a higher frequency of diabetes mellitus.
4. Chinese Canadians with diabetes mellitus and strokes tends to have a higher hypertension severity scale.

Future prospective population based studies of Chinese Canadians may help to answer a fundamental question about how genes and environmental factors influence the development of strokes amongst this population of immigrants.

SPINE

E.01

Spinal instability neoplastic score (SINS) reliability analysis in spine residents and fellows in orthopedics and neurosurgery

*M Spiess (Calgary) L Hnenny (Saskatoon) D Fourney (Saskatoon)**

Introduction: The Spinal Instability Neoplastic Score (SINS) was developed to facilitate the diagnosis of neoplastic instability and improve referral patterns to surgery. The purpose of this study was to determine the reliability of SINS in spine trainees. *Methods:* 25 subjects (23 residents [orthopedics=18; neurosurgery=5], 2 fellows) independently scored 30 de-identified cases on two occasions at least 6 weeks apart. *Results:* (A) Interobserver agreement: The ICC for total SINS score was 0.990, representing near perfect agreement. The Kappa statistics were 0.948, 0.739, 0.382, 0.427, 0.550, and 0.435 for the fields of location, pain, bone quality, alignment, vertebral body collapse, and posterolateral involvement, respectively. The level of agreement was near perfect for location, substantial for pain, moderate for alignment, vertebral body collapse, and posterolateral involvement, and fair for bone quality. (B) Intraobserver agreement: The ICC for total SINS score was 0.907, representing near perfect agreement. The Kappa statistics were 0.954, 0.814, 0.576, 0.610, 0.671, and 0.561 for the same respective fields. The level of agreement was near perfect for

location and pain, substantial for alignment and vertebral body collapse, and moderate for bone quality and posterolateral involvement. *Conclusion:* SINS was highly reliable in spine trainees. Further analysis will be required to determine any differences by level or type of training.

E.02

Optimizing patient outcomes in the management of spinal cord injuries in Nova Scotia: a retrospective review from 2005-2010

A Dakson (Halifax) D Brandman (Halifax) G Thibault-Halman (Halifax) S Christie (Halifax)*

Background: Studies of acute care aimed at improving outcomes for patients with traumatic spinal cord injuries (SCIs). Nova Scotia presents an ideal setting to study the effect of these interventions, since the population base is relatively constant and all cases are managed at a single tertiary center. *Methods:* Provincial Trauma Registry was retrospectively reviewed from 2005-2010, investigating the association between management guidelines of SCI and improvements in the American Spinal Injury Association (ASIA) Impairment Scale (AIS) grades. *Results:* 95 patients were identified. At mean 5-month post-discharge, 20%, 100%, 80% and 5% of the AIS grades A, B, C, D patients had ≥ 1 AIS grade improvement. Patients decompressed within 24 hours of injury (OR 2.4, 95% CI 0.45 – 12.9), having a pre-hospital systolic BP < 90mmHg (OR 2.1, 95% 0.03 – 12.8) and a positive blood-alcohol level (OR 0.3, 95% 0.02 – 3.4) was not significantly associated with AIS grade improvement (P > 0.05). Maintaining a MAP > 85 mmHg post-operatively was associated with a significant improvement (OR 7.7, 95% CI 1.2 – 48.1, p=0.037). *Conclusion:* This study demonstrates that contemporary clinical improvement may exceed historical literature reports. Specific guidelines surrounding post-operative blood pressure management is associated with improved neurological outcomes.

E.03

Can a clinical classification of symptoms and signs predict candidacy for lumbar spine surgery?

C Wilgenbusch (Saskatoon) D Fourney (Saskatoon)

Introduction: The Saskatchewan Spine Pathway utilizes a clinical classification (SSPc) for back and leg pain to triage appropriate referrals for surgery. The objective of this study was to determine how well SSPc predicts an indication for surgery and to compare it to back dominance and leg dominance by VAS score. *Methods:* A retrospective chart review of 124 consecutive elective referrals for low back and leg pain from a single surgeon's practice was conducted over one year (June 1, 2011-May 30, 2012). *Results:* There was no difference between mean VAS back for back dominant and leg dominant SSPc patterns (6.1/10 vs. 5.6/10 respectively, p=0.27, t-test), and VAS leg did not achieve minimum clinically important differences (5.1/10 vs. 6.4/10 respectively, p=0.0147). VAS back and leg scores were highly correlated (p<0.0001, Pearson correlation coefficient). Back dominant pain patterns (SSPc 1 and 2) were found in 50 patients (40.3%), and only 2 (4.2%) were offered surgery. Leg dominant pain patterns (SSPc 3 and 4) were found in 74 patients (60.7%), and 40 (54%) were offered surgery. There was a strong correlation between SSPc and whether or not surgery was indicated (p<0.0001, Chi Square test). *Conclusions:* This preliminary study suggests that the SSPc is superior to VAS back/leg for triaging referrals to surgery. These finding need to be confirmed in other practice settings to determine generalizability.

E.04

Can wait times for surgical assessment and imaging be reduced through a spine care pathway?

C Wilgenbusch (Saskatoon) D Fourney (Saskatoon)

Introduction: In Canada, the wait time for surgical assessment is often longer than the wait for surgery. The Saskatchewan Spine Pathway (SSP) includes triage clinics for imaging and surgical assessment. There is concern that the "extra step" of a triage clinic could lengthen the total wait to see the spine surgeon. Since access to imaging influences the wait to see the spine surgeon, this was also evaluated. *Methods:* A retrospective chart review of 124 consecutive elective referrals for low back and leg pain from a single surgeon's practice was conducted over one year (June 1, 2011-May 30, 2012). Patient with red flags were excluded. Group A patients were referred from the SSP and Group B were conventional referrals. *Results:* There were 35 (28.2%) patients in Group A and 89 (71.8%) patients in Group B. The mean wait time for surgical assessment was 69.9 days (SD, 46.4, range 37-92) in Group A and 144.0 days (SD 117.3, range 41-219) in Group B (p=0.004). The mean wait time for MRI was 29.4 days (SD 22.6, range 14-36) in Group A and 73.8 days (SD 41.4 range, 55-99) in Group B (p<0.0001). *Conclusions:* Wait times for MRI and surgical assessment were significantly reduced through implementation of a spine care pathway. Population-based data derived from multiple practice settings is required to confirm these results.

E.05

A Canadian perspective on neurosurgeon preference for surgical method, graft types, collar usage, physiotherapy and back-to-work return times after one-level Anterior Cervical Discectomy (ACD)

R Baweja (Hamilton) M Bennardo (Hamilton) M Aref (Hamilton) F Farrokhyar (Hamilton) K Reddy (Hamilton)*

Background: The purpose of this study is to determine actual neurosurgeon practice in Canada regarding ACD surgical method, collar usage, physiotherapy and back-to-work return times. *Methods:* A one-page questionnaire of 13 questions was e-mailed to all practicing neurosurgeons in Canada using Survey Monkey. Statistics were calculated using SPSS v. 18 and analysed to determine surgeon preference to surgical method, graft types, hard collar usage and back-to-work return times. *Results:* A total of 182 surveys were sent with 107 replies resulting in a 59% response rate. Of responders, 81 preformed ACD procedures and 22 did spine fellowships. ACD procedures correlate with collar usage where fusion surgery alone requires a collar but fusion and plate surgery do not. Similarly, graft types correlate with collar usage where surgeons using autografts recommend collars and those that use allograft or metal/PEEK spacers do not. Surgeons recommend physiotherapy for ACDFP patients except for those with autografts. Back-to-work return time was recommended at 6 weeks for ACDF and ACDFP and for the three main graft types (allograft, autograft and metal/PEEK spacer). *Conclusion:* We report here current Canadian neurosurgeon

preference for ACD surgical method, graft types, collar usage, physiotherapy and back-to-work-return times.

E.06

Epidemiology of spinal infections: chart review of osteomyelitis, discitis and epidural abscesses

*JP Switzer (Saskatoon)**

Background: Spinal infections are one of the most difficult, complex, and multi-disciplinary health conditions faced by health professionals. Although numerous literatures have been published, clear guidelines for management are lacking. The purpose of this paper was to gather demographic information of the patients with spinal infections and to determine clinical characteristics of such patients. *Methods:* Charts from 96 adult patients with osteomyelitis, discitis or epidural abscesses admitted to the Royal University Hospital, the University of Saskatchewan from 2007-2011 were analyzed retrospectively. *Results:* Of the patients studied, 62% were male and 32% female, 35% of patients required surgery, 45% were IV drug users, and 15% had a poor outcome measure. Five variables were isolated as being statistically significant in relation to poor patient outcomes. These were the presence of a neurological deficit, higher white blood cell count, positive biopsy result, shorter time before disease diagnosis, and longer hospital admission. *Conclusions:* Spinal infections are serious conditions requiring long hospital admissions, extended treatments with antibiotics, and the involvement of numerous specialists. As such, spinal infections create a great burden to the health care system. The variables associated with poorer outcomes would alert clinicians when treating patients with spinal infection.

E.07

Minimally invasive treatment of spinal cord cysts using a tubular retractor system: case series

BA Yarascavitch (Hamilton) K Reddy (Hamilton)*

Objectives: Traditional open shunting of syringomyelia and cysts of the spine and spinal canal can be problematic. Minimally invasive treatment is a desirable alternative. We present a series of cases successfully treated with cyst-fenestration, cyst-resection or shunting of spinal cysts by means of a tubular retraction system. *Methods:* The METRx tubular retraction system (Medtronic) was utilised to provide access to perform a full or hemi-laminectomy and provide access to the spinal canal. Intraoperative microscoy was used to visualize the field. Resection or entry of the cyst was then carried out based on configuration and, if required, a shunt catheter inserted and secured in place. Dural opening and closure were done through the tubular retractor system and closure augmented with fibrin sealant. *Results:* Two patients underwent syringopleural shunting, two patients had cystoperitoneal shunting of epidural cysts, one patient had cysto-subarachnoid shunting, one patient underwent resection of a cystic lesion, and a seventh patient underwent syrinx fenestration with concurrent terminal ventriculostomy. All patients had radiographic and clinical improvement post-operatively and no complications were encountered. *Conclusions:* We believe that, although technically challenging, insertion of syringopleural and spinal cystoperitoneal shunts or resection of cystic lesions using minimally invasive techniques can decrease procedure-related morbidity and patient discomfort.

E.08

Spine surgery referrals redirected through a clinical pathway: effects of non-surgeon triage including imaging utilization

*D Kindrachuk (Saskatoon) D Fourney (Saskatoon)**

Introduction: The Saskatchewan Spine Pathway (SSP) includes triage clinics staffed by specialized physiotherapists. There is very limited data regarding the efficacy of non-surgeon triage of lumbar spine surgery referrals. *Methods:* A retrospective analysis of 87 patients with lower back and leg pain initially referred to a spine surgeon but triaged by the SSP clinic between May 1-November 30, 2011. Diagnosis was by the classification of Hall et al. Pain and disability were scored by visual analog pain scale(VAS), modified Oswestry Disability Index (ODI) and EuroQol EQ5D. *Results:* 62 (71.26%) patients (Group A) were discharged after patient education, self-care advice and/or referral for additional mechanical therapies. 25 (28.74%) patients (Group B) were referred for surgical assessment. The surgical yield in Group B was 44%, compared to 15% for all new spine referrals prior to implementation of the SSP: an almost three-fold increase. For the combined cohorts, we estimate that the triage clinic prevented 50/87 (57.5%) MRI studies. Non-surgeon triage captured all red flags detected by the surgeon. Patients in Group B were much more likely to have a leg-dominant pain pattern ($p = 0.0088$) and had significantly greater ODI ($p = 0.0121$) and EQ5D Mobility ($p = 0.0484$) scores. *Conclusions:* This preliminary study suggests that the SSP may reduce unnecessary imaging and surgical referrals.

E.09

Anterior cervical discectomy with arthroplasty versus arthrodesis for single-level cervical spondylosis: a systematic review and meta-analysis

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Background: It remains unclear whether anterior cervical discectomy with arthroplasty (ACDA) results in improved patient-important outcomes compared to anterior cervical discectomy with fusion (ACDF) and whether its widespread use should be advocated. *Objective:* To perform a systematic review to estimate the effectiveness of ACDA compared to ACDF for patient-important outcomes for single level cervical spondylosis. *Results:* Of 2804 citations, 9 articles reporting on 9 trials (1446 participants) were eligible. ACDA is associated with a clinically significant lower incidence of neurologic failure (RR=0.53, 95% CI=0.37-0.75, p=0.0004) and improvement in the Neck pain visual analogue scale (VAS) (MD=6.56, 95% CI=3.22-9.90, p=0.0001; Minimal clinically important difference (MCID)=2.5). ACDA is associated with a statistically significant but not clinically significant improvement in Arm pain VAS (MD=2.88, 95% CI=0.63-5.12, p=0.01, MCID=2.5) and SF-36 physical component summary (MD=2.28, 95% CI=0.40-4.17, p=0.02, MCID=4.1). ACDA is associated with non-statistically significant higher improvement in the Neck Disability Index Score (MD=3.03, 95% CI=-0.16-6.21, p=0.06) and lower incidence of ALD requiring surgery (RR=0.80, 95% CI=0.45-1.41, p=0.43).

Conclusions: There is no strong evidence to support the routine use of ACDA over ACDF in single-level cervical spondylosis. Current studies lack long-term data required to assess safety as well as surgery for ALD. We suggest that ACDA in patients with single level cervical spondylosis is an option although benefits over ACDF remain in question.

E.10

Investigating the implementation of acute care guidelines for spinal cord injuries in Nova Scotia from 2005-2010

A Dakson (Halifax) D Brandman (Halifax) G Thibault-Halman (Halifax) S Christie (Halifax)*

Background: In Nova Scotia, all identified SCI patients are referred to a single tertiary center in Halifax. We sought to investigate the implementation of best practice guidelines for the management of traumatic SCI patients. *Methods:* Nova Scotia Provincial Trauma Registry was retrospectively reviewed from 2005-2010. We investigated the time to surgical decompression, post-operative dietary optimization, chemical prophylactic anticoagulation, cardiovascular support and presence of pressure ulcers. *Results:* 95 patients with SCI were identified. The mean age was 47.7±20.5 years (range: 16-94), with 78% being male. About 33% of cases were complete injuries. The mean time to assessment was 9.1±13.4 hours. Target mean arterial pressure > 85mmHg was achieved in 26% (95% CI, 15.3-41.1%) of patients. Operative stabilization was performed on 77 patients, and 42% occurred within 24 hours of injury. Chemical prophylactic anticoagulation was administered within 48 hours of stabilization in 57.1% (95% CI, 47.3-66.5%). In cases where imaging was indicated to exclude venous thromboembolism, 6.1% (95% CI, 0.17-0.20%) and 24.2% (95% CI, 12.8-41.0%) demonstrated DVT or PE, respectively. 16.3% (95% CI, 10.3-24.9) had a documented pressure ulcer. *Conclusion:* This retrospective review of traumatic SCI from 2005-2010 provides invaluable information in which to optimize patient care in the acute care setting.

E.11

A retrospective study of the natural history of central cord syndrome and the role of surgical intervention

D Brandman (Halifax) A Dakson (Halifax) G Thibault-Halman (Halifax) S Christie (Halifax)*

Background: The management of central cord syndrome (CCS) is controversial. There is a perception that CCS patients tend to improve without the need for surgical intervention. The purpose of this study was to compare the clinical improvements of patients with traumatic SCI, both with and without CCS. *Methods:* Nova Scotia Provincial Trauma Registry was retrospectively reviewed from 2005-2010. Improvement in the American Spinal Injury Association (ASIA) Impairment Scale (AIS) was determined after mean five months follow-up. *Results:* The study population comprised 96 cases with SCI, subdivided into cases with AIS grade A, non-CCS cases with AIS grades B-D and CCS cases. 88% of the non-CCS and 65% of the CCS patients underwent surgical decompression, with mean operative times being 71.6±137.8 and 102.9±144.6 post injury (p=0.45). The mean improvements in the mean ASIA motor scores for the three groups were 1.3±6.5 and 15.6±35.0 and 22.5±14.6 (p=0.004) respectively, with a statistically significant difference only between the CCS and AIS grade A groups (p<0.001). 20%, 54% and 10% of the patients respectively, underwent an improvement of ≥ one AIS grades (p=0.018, $\chi 2$=8.0). *Conclusion:* This retrospective review investigates the natural history of CCS and explores the role of surgical intervention on optimizing patient outcome.

TRAUMA AND GENERAL NEUROSURGERY

F.01

Diagnostic accuracy of intraocular pressure measurement for detection of raised intracranial pressure: a systematic review and meta-analysis

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Background: Intraocular pressure (IOP) has been proposed as a non-invasive method of intracranial hypertension (IC-HTN) diagnosis. We therefore conducted a systematic review and meta-analysis to determine the correlation between IOP and intra-cranial pressure (ICP) and the diagnostic accuracy of IOP for IC-HTN. *Methods:* We searched bibliographic databases (MEDLINE, EMBASE, and the Cochrane Central Register of Controlled Trials); references of included studies; and conference abstracts for studies comparing IOP and invasive ICP measurement. Two independent reviewers screened abstracts, reviewed full text articles and extracted data. DerSimonian and Laird methods and bivariate random effects models were used to calculate summary estimates. *Findings:* Among 355 identified potentially relevant citations, 12 studies enrolling 546 patients were aggregated. The pooled correlation coefficient between IOP and ICP was 0.44 (95%CI 0.26-0.63; I2 statistic, 97.7%, p<0.001). The summary sensitivity and specificity of IOP for IC-HTN were 72% (95%CI 36-92) and 87% (95%CI 65-96), respectively. The summary positive and negative likelihood ratios were 5.8 (95%CI 1.3-25.2) and 0.3 (95%CI 0.1-1.0), respectively. When measures were taken within an hour of another, correlation between IOP and ICP improved. *Interpretation:* Although a modest aggregate correlation was found between IOP and ICP, the measurement of IOP provides limited diagnostic accuracy for IC-HTN. The significant heterogeneity between studies suggests further investigation is required to determine the clinical utility of IOP in the detection of IC-HTN.

F.02

Mannitol dosing error during intra-facility transfer for intracranial emergencies

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Background: Mannitol is commonly used to treat elevated intracranial pressure. We analyzed mannitol dosing errors at peripheral hospitals prior to transport to tertiary care facilities for intracranial emergencies. *Methods:* We conducted a retrospective review of the Shock Trauma Air Rescue Society (STARS) electronic patient database of helicopter medical evacuations in Alberta, Canada between 2004-2012 limited to patients receiving mannitol before transfer. We extracted data on mannitol administration; patient characteristics including diagnosis, mechanism, GCS,

weight, age and pupils. *Results:* 120 patients received a mannitol infusion initiated at a peripheral hospital for intracranial emergency (median gcs 6; range 3 – 13). There was a 23% error rate, including an underdosing rate (<0.25 g/kg) of 8.3% (10/120), an overdosing rate (>1.5g/kg) of 7.5% (9/120), and a non-bolus administration rate (> 1 hour) of 6.7% (8/120). A process analysis was used to identify potential factors leading to these errors and will be presented. *Conclusions:* Mannitol administration at peripheral hospitals is prone to dosing error. Our analysis suggests potential strategies, such as a pre transport checklist, to mitigate this risk.

F.03

Epidural hematoma treated conservatively; when to expect the worse

A Robert (Montreal) M Basamh (Montreal) M Maleki (Montreal) J Marcoux (Montreal)*

Background: The Brain Trauma Foundation's guidelines have defined when epidural hematomas (EDH) could be treated conservatively. But patients need careful monitoring and the literature does not provide clues to identify which are at risk for EDH progression. The goal of our study was to identify those patients. *Methodology:* A level 1 adult trauma center retrospective review of all EDH patients who were triaged initially for conservative management over five years. Demographic data, injury demographics, coagulation parameters, radiological parameters, conversion to surgery and its timing and outcome were analyzed. *Results:* 184 patients presented with acute traumatic EDH; 37 required urgent evacuation and two were treated with comfort measures. 125 (or 68.7% of actively treated) patients were treated conservatively and included in the study. Only 11.2% of these patients required delayed surgery, with a mean delay of 13h. Statistical comparison showed that younger age ($p< 0.0001$) and coagulopathy ($p= 0.009$) were significant risk factors. Gender, ISS, GCS, alcohol level, blood thinner use, location of lesion, associated fractures, midline shift, size of EDH were not. Outcome was similar even if surgery became necessary. *Conclusion:* The majority of EDH is treated conservatively. Coagulopathy and younger age are significant predictors for conservatively treated EDH patients who need closer observation. However, outcome of urgent evacuation was similar to successful conservative management.

F.04

Clival fractures in a level one trauma center: a ten year retrospective study

A Winkler-Schwartz (Montreal) J Marcoux (Montreal)*

Background: Clival fracture (CF) is rare among head traumas. This study examines CF incidence, cause, fracture characteristics and clinical course. *Methods:* All skull base fracture cases admitted to the Montreal General Hospital between February 2002 and October 2012 were obtained from the Quebec trauma registry. Radiologic data was reviewed for CF. Identified CF was categorized by orientation, location and type. Injury mechanism, clinical presentation and outcome were obtained through retrospective chart review. *Results:* Of the 1738 patients with skull base fractures, 65 (3.7%) exhibited CF, representing 1.2% of traumatic brain injuries admitted. Mean Glasgow Coma Scale (GCS) was 7.8 (3-15). Thirty (46.2%) demonstrated linear fracture, sixteen (24.6%) hairline, ten (15.4%) diastatic, and nine (13.8%) displaced. Diastatic fractures had lower GCS than linear and hairline fractures (4.2 versus 8.1 and 9.8, respectively; $p<0.05$). Thirty-seven (56.9%) suffered occipital impact, ten (15.4%) frontal, five (9.2%) lateral, three (4.5%) frontal-lateral, three (4.5%) lateral-occipital, and two (3.1%) multiple locations. Mean Extended Glasgow Outcome Scale was 3.3 (1-7) at discharge. Twenty-four (36.9%) patients died in hospital. *Conclusions:* High impact injury, occipital impact site, and linear or hairline fractures often occur with CF. Brain injury and mortality are common. This represents the largest CF population studied.

F.05

Accurate insertion of external ventricular drains in neuro ICU settings

*AA Al Jishi (Montreal)**

Introduction: An External Ventricular Drain enables us to monitor the ICP and serve as a proxy for assessing cerebral perfusion after an aneurysmal SAH. It has a few pitfalls however - such as malpositioning that preclude accurate ICP readings, or injury to vital cerebral structures. We present a novel efficient grading scale to better evaluate adequate EVD positioning after insertion. *Methodology & Results:* Data included patients admitted with an aneurysmal SAH July 2006 and May 2009. We included all EVDs that were planned for a frontal horn insertion. An original grading system was developed and applied to each EVD insertion (Grades I-IV). Multiple variables are discussed in the platform. Around 160 EVDs were inserted and 60% of the EVDs were placed in an adequate entry zone. Of these catheters, only 15.66% landed in the optimum in the vicinity of foramen of Monro (Grade I), 47.59% were placed elsewhere in the ventricles (Grade II) while 36.75% were placed extraventricular (Grade III). This latter was associated with a higher risk of traversing vital anatomical structures, EVD malfunction, or more insertion attempts. *Conclusion:* EVD insertion, based on external surface landmarks is associated with a high chance of missing the intended intraventricular target. We propose this grading system to better aid surgeons in EVD insertion and consider it a useful tool in the ongoing neurosurgical virtual projects .

F.06

Image guided minimally invasive stereoscopic inter-fascicular evacuation of large spontaneous subcortical intracerebral hemorrhages

H Shane (San Antonio) J Caron (San Antonio)*

Background: Subcortical intracerebral hemorrhages (SC-ICH) frequently expand along the fibers of the superior longitudinal fasciculus, presenting as ovoid masses with their long axis oriented in the anterior-posterior plane. Lesions <15cc have a low mortality, while lesions >90cc are often fatal. A subgroup of subjects with ICH within this range might benefit from minimally invasive SC-ICH evacuation. *Method:* We describe an innovative minimally invasive surgery (MIS), combining fascicular anatomy, advanced imaging technologies and stereoscopic microsurgery for evacuation of large SC-ICH though a 12mm aperture port (VBAS™, Vycor Medical Inc.). Targeted SC-ICH between 40 ccs and 120ccs with admission GCS> 5. Subjects followed with sequential CT and MR scans. *Results:* Of 400 ICHs evaluated (2010-12), 16 SC-ICH met selection

criteria. A mean 80% reduction in hemorrhage size was achieved (mean pre-op volume 82.6cc ± 21.8, post-op 16.9cc ± 12.9). MR imaging demonstrated minimal injury to long white matter tracts on T2-FLAIR. Effect on cortico-spinal tract anatomy will be demonstrated by DTI. Operative nuances will be discussed to achieve maximal ICH evacuation. *Conclusion:* Innovative MIS technique for large SC-ICH evacuation is feasible and effective, without significant disruption of subcortical white matter tracts.

F.07

When is the best time to start blood thinners after traumatic subdural hematoma?

M Kia (Montreal) M Maleki (Montreal) J Marcoux (Montreal)*

Background: Of all the intracranial injuries associated with trauma, subdural hematomas (SDH) have the worse reputation for rebleeding. Therefore, anti-platelet or anticoagulation treatment is withheld for all patients with SDH. However, there are some risks associated with this practice. In the literature, there are no guidelines as to how long it is safe to withhold and when it is safe to restart blood thinners. *Methodology:* Over 400 patients with traumatic SDH who required blood thinning therapy were reviewed. Demographic and injury-related data, indication for therapy, duration of medication withholding, complications related to delay in initiating therapy, complications related with initiation of therapy were noted. *Results:* The main indications for anti-platelet therapy were cardiac event and stroke prevention, while the main indications for therapeutic anticoagulation were atrial fibrillation, venous thromboembolic event treatment and cardiac metallic valve. The risk of SDH rebleed is present as long as there is a residual hematoma, especially convexity SDH (8% requiring surgical intervention). Myocardial infarction and embolic stroke occurred in 1% of the patients each and within one week of admission. *Conclusion:* The maximum risk of complication from withholding therapy is during the first week and is low. The risk of SDH progression is higher and more prolonged. Blood thinners should be held in the majority of cases for as long as the SDH is present.

F.08

Low amplitude EEG improves flash VEP reproducibility during surgery

DA Houlden (Ottawa) CA Turgeon (Ottawa) T Polis (Ottawa) P Bourque (Ottawa) J Sinclair (Ottawa) S Coupland (Ottawa) A Kassam (Ottawa)*

Background: Flash visual evoked potentials (FVEPs) are typically not reproducible during surgery. We assessed the relationship between intraoperative FVEP reproducibility and EEG amplitude. *Methods:* Left then right eyes were stimulated by goggle light emitting diodes, and FVEPs were recorded from Oz–Fz' (International 10-20 system) in 12 patients. Recording bandpass filters were typically 3-100 Hz but in two patients the FVEP was simultaneously recorded using 3–100 Hz, 10–100 Hz and 30-100 Hz. The reproducibility of FVEP N70–P100 and the amplitude of the concomitant EEG from C4'–Fz were measured. *Results:* Nine patients had low amplitude EEG (<30μV); reproducible FVEPs (3-100 Hz bandpass) were obtained from 12 of 13 eyes with normal pre-operative vision. The other three patients had high amplitude EEG (>50μV); no FVEPs were obtained from 3 of 4 eyes with normal pre-operative vision (the other eye had a non-reproducible FVEP). Raising the low cut filter to 10 Hz and 30 Hz progressively reduced EEG and FVEP amplitude but improved FVEP reproducibility. *Conclusions:* FVEP reproducibility was enhanced in the presence of low amplitude EEG. Raising the low cut filter decreased EEG amplitude and improved FVEP reproducibility.

F.09

A new vision scale for monitoring neurosurgical inpatients: the McMaster Vision Scale

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Introduction: This study is being conducted in order to test a new vision scale for bedside monitoring of vision over time in a quantitative method. Current methods for measuring vision are subjective with variation and inconsistencies occurring. Therefore, a simple scale would allow for more consistent and reliable examination. *Material and Method:* The design consists of a 2-phase cross-sectional study. Using a neuro-ophthalmologist as "gold standard" will allow convergent validity assessment. Each eye is tested separately. Visual acuity, visual field and extraocular movements are scored. Visual acuity is scored from 0 (absent) to 12 (normal 20/20). Visual fields are scored from 0 (absent) to 12 (count fingers in all quadrants). Extraocular movements are scored from 0 (absent) to 6 (full). The maximum score for each eye is 30. Statistical analysis is completed using SPSS v. 19. Reliability coefficients equivalent to intra-observer, inter-observer, and test-retest reliability coefficients are calculated. *Results:* A total of 11 patients (N=22 eyes) met the inclusion criteria. A Repeated ANOVA model revealed test-retest and inter-observer reliability at 86.8% and 86.0%, respectively. Overall reliability of the scale test is 92.6%. *Conclusions:* The McMaster Vision Scale is a valid and reliable method for testing vision of neurosurgical patients. This scale can be administered by a spectrum of health care workers at the bedside with consistent results.

F.10

Developing an adult hydrocephalus clinic care model: assessing and treating patients with iNPH

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Introduction: Adult Hydrocephalus patients are managed best by utilizing outcome-based assessment and treatment measures. Our experience developing an Adult Hydrocephalus Clinic in the Canadian Health care system is reviewed. *Methods:* We report data for patients enrolled in the Calgary Adult Hydrocephalus Clinic (CAHC) from January 2009 to December 2012. A database and registry were used. *Results:* The number of total patients seen in the CAHC has increased from 100 (26 new) in 2009 to 405 (127 new) per year. These patients represent all four clinical domains of adult hydrocephalus: transition, acquired, "arrested" congenital, and idiopathic normal pressure hydrocephalus (iNPH). Patients with a potential diagnosis of iNPH who were formally assessed increased from 8/100 in 2009 to 37/127 in 2012. Assessment and tretment outcome was primarily assessed using gait and cognitive measures. In 2012: 4 /16 lumbar puncture (LP)-iNPH patient assessments were

positive (treated with a VP shunt). 28 potential iNPH patients were evaluated with lumbar drainage (ELD): 22 underwent VP shunt insertion. A positive outcome for treatment with a VP shunt was possible in 24/26 (92%). *Conclusion:* The CAHC manages a heterogeneous patient population: iNPH represent 29% of current new referrals. This experience with an outcome-based assessment and treatment model for patients with potential iNPH illustrates how Adult Hydrocephalus care can be accomplished in the Canadian Health Care system.

F.11

Defining the epidemiological spectrum of adult hydrocephalus care

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Introduction: There are four common Adult Hydrocephalus subgroups: 1) transition patients with an established pediatric diagnosis and or treatment; 2) patients with acquired hydrocephalus; 3) adults with previously untreated/undiagnosed congenital hydrocephalus (APUCH) also known as arrested hydrocephalus); and 4) elderly patients with "normal pressure" hydrocephalus (NPH). *Methods:* We report data for patients enrolled in the Calgary Adult Hydrocephalus Clinic (CAHC) as of June 2012. A database and registry were used. Information regarding patients treated by none CAHC Neurosurgeons was also assessed. *Results:* There were 1281 adult hydrocephalus patients identified: 624 patients enrolled in the CAHC, and 657 who had procedures performed by other neurosurgeons: 219 (17.1%) transition patients; 446 (34.8%) acquired etiology patients; 172 (13.4%) APUCH patients; and 188 (14.7%) patients with iNPH. 47 (27.3%) of the patients with APUCH have not been treated and 67 (38.9%) have been treated with endoscopic third ventriculostomy (ETV). Neuroendoscopy has been used in 309 adult patients and ETV has been the primary mode of treatment in 224 adult patients (only three patients with NPH). *Conclusion:* It is important that Adult Hydrocephalus Clinics be inclusive and not limited to patients with a diagnosis of iNPH. Our Adult Hydrocephalus Clinic has identified a heterogeneous patient population. Patients with APUCH are more common then typically appreciated. Neuroendoscopy is an important treatment modality that should be considered for appropriate adults with hydrocephalus.

NEURO-ONCOLOGY AND EDUCATION

G.01

Comparative integrated analysis of brain tumor initiating cells and their parent tumors

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Glioblastoma (GBM) is a uniformly fatal intra-axial neoplasm with a dismal prognosis. It is speculated that brain tumor initiating cell (BTIC) cultures derived from resected GBM better captures its molecular heterogeneity and clinical features than traditional cell lines. As the effect of culture stresses on genomic alterations in BTICs has yet to be elucidated, we sought to inspect the genomic and epigenetic fidelity of BTICs compared to their parent tumors (PTs) with a comparative analysis. Using the Affymetrix 6.0 SNP array and the Illumina HT12 beadarray, we acquired data on copy number alterations (CNAs), loss of heterozygosity (LOH), and gene expression patterns from 12 BTIC lines and their matched PTs. Although BTICs acquired more amplifications and deletions than their PTs, statistical significance was not achieved. However, the magnitude of amplifications with and without LOH in coding regions of the genome were significantly different. Expression analysis revealed that differentially expressed genes in BTICs were chiefly involved with metabolism, while an integrated analysis demonstrated chromosomal alterations in BTICs were most commonly associated with chromosome 7 amplifications, a location associated with putative oncogenes. BTICs maintain their ancestor's core genome structure, with many changes appearing to be "passenger" alterations. However, statistically significant changes did occur in the form of enhancement of existing genomic modifications. Notably, novel recurring genomic alterations were not observed in BTICs.

G.02

Regulating tumor metabolism and response to therapy in GBMs with Hexokinase II (HK2)

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We recently demonstrated that Hexokinase II (HK2) is a critical regulator of the Warburg effect in glioblastomas (GBM). HK2-depletion in intracranial GBM xenografts resulted in reduction of tumor growth with enhanced overall survival. Thus, we hypothesize that altering tumor metabolism through HK2-depletion can sensitize GBM tumors to microenvironmental stressors such as hypoxia and therapeutics such as radiation (RAD) and/or temozolomide (TMZ). Our results indicated that HK2 loss sensitizes GBM cells to radio-chemotherapy under hypoxia, with decreased cell proliferation and increased DNA damage. We utilized an inducible short-hairpin-RNA system to direct conditional expression of HK2 at different stages of GBM growth and modulated HK2 concurrent with therapeutics. The conditional loss of HK2 significantly improved the survival of glioma-bearing mice, with further enhancement in RAD and combined RAD/TMZ group. Furthermore, loss of HK2 significantly altered GBM neo-vascularization, with decreased microvascular density. We examined the potential for new vessel formation in the context of low-HK2 and found a significant reduction in the recruitment of bone marrow derived progenitor cells (BMDC) to the vasculature. Our results support HK2's role in GBM metabolism, with further capacity to modulate hypoxia and tumor vasculature in order to adapt to altered tumor microenvironment. Taken together, the synergistic effect upon combining HK2-knockdown with RAD/TMZ suggests HK2-depletion as a promising strategy to improve clinical efficacy of current GBM therapies.

G.03

The fractal geometry of gliomas

*AD Di Ieva (Toronto)**

Fractal geometry is a valid tool for the analysis of complex systems and natural structures. By means of a fractal-based

approach, we analyzed patterns of the microvascular trees of human gliomas, in neuropathology as well as in neuroradiology. We applied computer-aided fractal-based analysis to the morphometric quantification of the geometrical patterns of microvessels shown in: a) CD34 immunotreated slices of II to IV grade human gliomas in vitro; b) SWI patterns of gliomas of patients undergoing to ultra-high field MR imaging (7 Tesla) in vivo. We found that higher-grade gliomas are more vascularized than lower ones. Furthermore, the existence of different patterns within the same group of tumors (IV grade) was shown, indicating that the glioblastoma is "multiforme" ("multishape"), including its microvascularity. In the neuroradiological step, we analyzed 36 patients by means of SWI 7T MRI, finding higher values of fractal dimension in the higher histological grade groups of tumors, demonstrating the presence of more microvessels and microbleedings in malignant gliomas. Fractal parameters are valid estimators of microvascular geometrical complexity. Gliomas of different grades own specific angiogenic patterns, allowing us to speculate the existence of a specific "microvascular fingerprint" in each class of glioma. We suggest this approach as a tool for quantifying and categorizing different neoplastic microvascular patterns and as a potential morphometric surrogate biomarker for use in clinical practice.

G.04

Retinal architecture predicts visual outcomes in patients with pituitary macroadenomas

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Background: Clinically relevant pituitary lesions affect approximately 1/1000 people. For patients with associated vision loss, the optimal surgical treatment window is not known and there are no validated predictors of visual recovery. The purpose of this study was to determine whether eyes with pre-operative retinal nerve fiber layer (RNFL) loss had worse visual outcomes after surgery than eyes with normal pre-operative retinal architecture. *Methods:* 20 patients (11 females, mean age 52 years) with visually-significant pituitary macroadenomas underwent a neuro-ophthalmic evaluation and spectral-domain optical coherence tomography (OCT) testing pre-operatively and 6-months after surgery. Pre-operative RNFL thickness (RNFLT) and macular volumes (MV) were compared between patients with normalized visual function versus persistent visual deficits after surgery. *Results:* After 6-months, only 54% of patients with normal visual outcomes reported awareness of vision loss at onset, as compared to 100% of patients with poor visual recovery after surgery. Pre-operative RNFLT (72 vs 84μm; p = 0.01) and MV (9.2 vs 10.0mm3; p = 0.0007) were lower in patients with poor outcomes relative to patients with normal vision after surgery. *Conclusions:* Awareness of vision loss at presentation and lower pre-operative OCT-measures are associated with worse visual outcomes in patients with surgically treated macroadenomas.

G.05

Frequent progression of pilocytic astrocytomas in adults: a retrospective review

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Background: Pilocytic astrocytomas (PAs) are well circumscribed, slow-growing WHO grade I tumors of the CNS. They generally follow a benign course with excellent survival rates. However, recent studies focusing on PAs in adults show high recurrence rates and malignant transformation. We therefore conducted a retrospective review to identify risk factors associated with progression of PAs in adults. *Methods:* The British Columbia Cancer Registry was searched for all cases of pilocytic astrocytomas treated in adult patients. Tumors that were anaplastic on initial pathology were excluded. Baseline characteristics were recorded. Kaplan-Meier estimates and log-rank tests were used to evaluate the impact of clinical, radiological, and histological characteristics on progression-free survival and overall survival. *Results:* The search yielded 38 adult patients treated between 1977 and 2009. 65% of patients had progression of their tumors after initial treatment. 32% of patients died from their disease. Extent of resection and the absence of edema on imaging were significantly associated with an increased progression-free and overall survival. *Conclusions:* Pilocytic astrocytomas have a high rate of progression in adults. Mortality rates were higher than expected. The presence of edema on initial imaging emerged as a potential negative prognostic factor in PAs.

G.06

Subgroup-specific patterns of recurrence in medulloblastoma

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Background: Recurrent medulloblastoma remains an enormous treatment challenge is almost always uniformly fatal. Recent studies confirmed that medulloblastoma comprises four distinct subgroups. We sought to delineate subgroup-specific differences in recurrent medulloblastoma. *Methods:* We identified a screening cohort of all recurrent medulloblastomas at the Hospital for Sick Children between 1994-2012, and subgrouped cases using a nanoString-based gene expression class predication algorithm. Our findings were confirmed through analysis of two independent non-overlapping cohorts. *Results:* A screening cohort of 30 recurrent medulloblastoma was assembled; 9 with local tumor bed recurrences, and 21 metastatic recurrences. Notably, SHH tumors recurred more frequently in the tumor bed (8/11, 73%) whereas Group 3 and Group 4 recur more frequently with metastases (16/18, 89%; p<0.001). Latency to death post recurrence was significantly longer in Group 4 patients (p=0.03). The subgroup-specific location of recurrence was confirmed in a multicenter validation cohort (p=0.02, n=40), and an independent validation cohort comprising 96 recurrences (SHH in 21/24 local recurrences, Group 3/4 tumors represented 69/72 metastatic relapses) (p<0.001). Strikingly, in all 40 cases where matched primary and recurrent pairs were available, the subgroup affiliation remained stable at recurrence. *Conclusions:* Significant differences in the pattern of recurrence exist across

medulloblastoma subgroups further highlighting the clinical differences between the four principle subgroups. Intensified local therapy should be considered upon initial treatment for SHH patients.

G.07

Establishing a curriculum for the Canadian neurosurgery rookie camp: a Canadian national survey

DM Brandman (Halifax) F Haji (London) M Matte (Halifax) DB Clarke (Halifax)*

Background: The first Canadian 'rookie camp' was developed by residents, program directors and representatives from the Royal College of Physicians specialty committee on Neurosurgery. In the months leading up to the camp, we performed a national needs assessment to develop a focused curriculum. *Methods:* A survey was conducted of all Canadian academic neurosurgical centers, targeting incoming and current PGY-1 neurosurgical residents as well as Program Directors (PDs). A web-based questionnaire consisting of 61 anchored Likert scale and 8 free-text questions was developed. Questions were based on the CanMEDS competency framework and focused on skills relevant to neurosurgical training at the PGY-1 level. *Results:* 52 individuals were contacted and 38 responses were received. 10 responses were from PDs (10/14, or 71%), 11 from current PGY-1 residents (11/19, or 58%) and 17 from incoming PGY-1 residents (17/19, or 89%). Residents and PDs identified similar educational objectives. Areas of emphasis included common clinical scenarios such as status epilepticus and foundational skills such as performing a neurological examination or interpreting radiographic imaging; in contrast, skills related to advanced operative equipment such as endoscopes were considered less important. Free text answers were concordant with the quantitative data. *Conclusion:* We surveyed Canadian neurosurgical PDs and PGY-1 residents to identify critical areas to be incorporated as part of the curriculum for a Canadian Neurosurgical 'rookie camp'.

G.08

Resident migration patterns: did changes in ABNS eligibility affect resident destinations?

AD Tu (Vancouver) B Toyota (Vancouver)*

Background: The American Board of Neurological Surgery (ABNS) is the body awarding certification of competency in neurological surgery in the USA. While it does not define practice privilege, recognition is necessitated by many institutions. Application was open to residents entering Canadian programs prior to 1997; however has since been only available to Accreditaion Council for Graduate Medical Education (ACGME) recognized programs, excluding Canadian schools. This study asks whether this change has affected education and employment opportunities for graduating neurosurgeons. *Methods:* All neurosurgical residency programs in Canada were invited to participate. Programs were asked to provide lists of graduates from 2012 to 1984. Graduates were sorted by year of graduation into pre or post 2003 (ie. six years after 1997) and further training and employment information, if not provided, was gathered from public domain resources. *Results:* 50% of programs participated in this study for 220 graduating residents. There was no difference in proportion of American fellowships obtained relative to graduation date. The proportion of American consultant positions declined from 36.4% to 28% after 2003. This difference was statistically significant. *Conclusion:* Changes in ABNS eligibility did not affect the proportion of American fellowships while consultancy positions did decrease. The aetiology may be multifactorial, including coinciding evolving economics and hiring trends. Future study may delineate the other factors that influence migration and assist future residency planning.

G.09

Teaching for the transition: the Canadian neurosurgery 'rookie camp' experience

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Background: The recent AFMC-FMEC report calls for the development of a national orientation program to standardize entry into residency training. To address this goal, a national, simulation-based 'rookie camp' was designed to foster acquisition of essential technical, cognitive and behavioral skills among incoming Canadian PGY-1 neurosurgery residents. *Methods:* A needs-based curriculum was developed collaboratively by program directors, residents and Royal College staff. Sessions used high and low-fidelity simulation to explore common clinical presentations (spinal cord injury, raised ICP, etc.) and addressed multiple CanMEDS competencies. Program evaluation included: participant and faculty feedback; pre-, post-, and retention knowledge tests; and follow-up interviews to determine clinical behaviour change among participants. *Results:* 17 of 23 (74%) PGY-1 residents participated in the camp. All indicated the course helped prepare them for residency training. Test scores revealed a statistically significant improvement in knowledge related to course content ($p = 0.017$), but not unrelated content ($p = 0.453$), with no significant difference in retention-test scores at three months ($p=0.783$). Post-course interviews are underway. *Conclusions:* A simulation 'rookie camp' for PGY-1 neurosurgical residents was delivered, engaging participants, training programs, specialty societies and accreditation bodies at a national level. The program has promoted knowledge-retention, skill development and facilitated the transition from clerkship to residency by fostering socialization to the specialty.

G.10

Neurosurgeons' perspectives on surgery for psychiatric disease and enhancement

D Mendelsohn (Vancouver) N Lipsman (Toronto) M Bernstein (Toronto)*

Background: Deep brain stimulation for psychiatric indications is becoming increasingly safe and effective. Given the troubled history of the field and its current renaissance, it is important to evaluate current practices and to gauge cultural attitudes towards invasive neuromodulation. *Methods:* We designed an online survey distributed electronically to 1180 functional neurosurgeons globally. We measured general and regional trends in functional neurosurgery, and focus specifically on surgery for mind and mood. *Results:* One hundred ninety surveys were returned (16.1%). Psychiatric indications are the most frequently treated conditions for 28% of respondents. Obsessive-Compulsive Disorder (OCD), and depression are the most common psychiatric disorders treated. The majority of respondents (81%) felt optimistic about the future of

neurosurgery for psychiatric disease (NPD). The reluctance of psychiatrists to refer patients was viewed as the greatest obstacle facing the field. In response to hypothetical scenarios involving cognitive and personality enhancement, opinions varied but the majority opposed enhancement interventions. Regional variations uncovered distinct attitudinal differences depending on geographic location. *Conclusions:* Most neurosurgeons see neurosurgery for psychiatric disease continuing to grow and psychiatric surgery becoming a larger part of their daily practice. Optimism towards the future of NPD predominates with a general reluctance towards surgery for enhancement purposes.

G.11

The level of evidence of the neurosurgical literature published in the highest impact clinical journals: where has all the good evidence gone?

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Background: Level of evidence (LOE) is well utilized across surgical specialties. We aimed to categorize the LOE of Neurosurgery related papers over a one year period across three clinically focused journals with very high impact factors; New England Journal of Medicine, Lancet and Journal of the American Medical Association. *Methods:* Clinical neurosurgery literature published in the highest impact clinical journals (HICL) between April 2011 and March 2012 was reviewed. Demographic data was collected and LOE ratings performed in duplicate using the Oxford LOE scale. This was compared to a reference work of clinical studies from top clinical neurosurgical journals in 2010. *Results:* 4612 articles were screened and 12 met our eligibility criteria. Half of all of studies were Level I evidence (n=6) and of the remaining studies, one was Level II, two were Level III and three were Level IV publications. We found the mean LOE in the neurosurgical HICL was 2.17 which compared favorably to neurosurgical journals (mean 4.0). *Conclusions:* Overall, there is a paucity of neurosurgical literature published in the HICL. The small amount of literature this is published in the HICL does have a greater proportion of higher LOE studies.

EPILEPSY

H.01

Using StatNet EEGs in the emergency department shortens diagnosis delay

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Background: Delays in diagnosing non-convulsive status epilepticus increases emergency department (ED) mortality. The conventional EEG set up is time consuming even by well-trained technologists. The StatNet electrode can be applied after minimal training. *Methods:* Hypothesis is that StatNet EEG decreases EEG recording and interpretation delay and facilitates patients' disposition from the ED. We compared several parameters between StatNet EEG with control and historical control (HC) using one-way ANOVA. *Results:* EEG set up was shorter in the StatNet (34 ± 4, N=20) vs. control (25 ± 3.3, N=24, $p<0.05$). The delay from EEG order to completion was the shortest in the StatNet group (86 ± 9.3, N=25) vs. control group (170 ± 25, N=25) vs. HCs (225 ± 46, N=23, $p<0.01$). Time from EEG completion to interpretation was shorter for StatNet (39 ± 7, N=25, $p<0.001$) and control (59 ± 5, N = 21, $p<0.01$) groups vs. HCs (158 ± 48, N=7, $p<0.01$). Finally, time from EEG order to ED disposition was shorter in the StatNet (185 ± 19, N=20, $p<0.001$) and control (180 ± 19, N=15, $p<0.01$) vs. HCs (374 ± 37, N=19). *Conclusions:* We showed that using StatNet EEG in ED is feasible, faster, and does not require EEG technicians. Thus, it is a desirable alternative to conventional EEG and may improve patients' care in the ED.

H.02

Insulectomy for refractory epilepsy

A Bouthillier (Montreal) DK Nguyen (Montreal)*

Purpose: Wilder Penfield was the pioneer of insulectomies for refractory epilepsy, notably when electrocortigraphy performed after temporal lobe removal disclosed insular spikes. However, this approach was abandoned because of poor results and complications. With technological advancement in seizure focus localisation and microsurgery, it is time now to reassess the surgical outcome of insulectomies. *Methods:* All patients with intracranial insular recordings and all patients who had an insulectomy for refractory epilepsy at the Université de Montreal were reviewed. Insular surgeries for tumors and vascular lesions were excluded. *Results:* Thirty patients had intracranial insular recordings. Five had electrode placement by stereotaxy and 25 by direct implantation after microsurgical opening of the Sylvian fissure, including ten with the Hybrid Operculo-Insular Electrodes. No patient had complications with permanent consequences. Twenty-one patients had an insular resection, combined with an opercular resection in 19. Seven insulectomies were performed on the dominant hemisphere. Pre-operative insular MRI was normal or non specific in 14/21 patients (67%). Engel class I seizure outcome was achieved in 18/21 patients (86%) (mean follow-up four years, range 0,1-14). No new permanent deficits were detected. *Conclusion:* Intracranial EEG sampling of the insula and insulectomy for refractory epilepsy are safe procedures. Good seizure control is now a reachable goal.

H.03

Outcomes in a Canadian single seizure clinic. A one year prospective study

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Background: The assessment of patients with single unprovoked seizures should be done within two weeks of referral and the diagnosis should be confirmed ideally by a consultant with expertise in epilepsy. *Methods:* We performed a one year prospective study including all patients who were referred to the single seizure clinic in Saskatoon from November 2011 to December 2012. Three certified epileptologists and a registered nurse were responsible for the diagnosis and treatment of patients. *Results:* Eighty patients were included in this study. The mean age of patients was 38.2+17.8 (range 14-84). Forty seven percent were females. The wait time from the spell to the assessment was 26+31 days (range 2-202). Patients

were referred mostly for emergency room physicians (52%), 38% for family (38%) and neurologist (10%). Seventy five percent of patients had diagnosis at the first visit. The diagnoses were as follow: Epilepsy was diagnosed in 42.5% of patients. Twenty five percent of patients had syncopes, provoke seizures in 12.5% (alcohol withdrawal, drugs use and hypoglycemia), single seizures in 11% and non-epileptic events in 9%. Medications more commonly prescribed were lamotrigine and topiramate. *Conclusions:* Our clinic has produced a tremendous benefit for patients in our province providing the best care for patients. In all patients the assessment and conclusion was done in the next month after the spell.

H.04

MRI changes in refractory status epilepticus: is isoflurane neurotoxic?

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Background: Refractory status epilepticus (RSE) is associated with high morbidity and mortality. Experts recommend aggressive therapy with continuous intravenous infusions or inhaled anesthetics such as isoflurane. However, there is concern that MRI changes in RSE reflect isoflurane neurotoxicity. We performed a case-control study to address this issue. *Methods:* We reviewed 21 age- and sex-matched patients with RSE: 11 cases treated with isoflurane and 11 controls treated with intravenous anticonvulsants alone, who underwent MR imaging. MRI reports were reviewed for abnormalities in the meninges, cortex, white matter, basal ganglia, thalamus, hippocampus, brainstem and cerebellum. *Results:* Abnormalities were identified in nine (90.0%) cases and eight (72.7%) controls (p=0.59). Hippocampal abnormalities were reported in five (50.0%) cases and one (9.1%) control (p=0.06). All patients with NORSE had hippocampal abnormalities (three cases). There were no significant differences between groups for any other abnormalities (p=0.31-1.0). *Conclusions:* Our results do not support extra-hippocampal neurotoxic potential of isoflurane when used in RSE. The hippocampal abnormalities seen in our cases may be the consequence of a previously reported association with the NORSE syndrome, but an independent association with isoflurane use cannot be excluded on the basis of these data alone.

H.05

Improved seizure outcomes in resections involving the orbito-frontal cortex: evidence for "orbito-frontal-plus" epilepsy

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Introduction: Surgery for frontal lobe epilepsy has poor seizure outcomes, likely due to incomplete resection of the epileptogenic zone (EZ). Specifically in orbito-frontal (OF) epilepsy, we identified two pathological and electro-clinical patterns requiring different surgical approaches. We present here a consecutive series of patients with OF epilepsy, highlighting different surgical strategies and correlation with seizure outcome. *Methods:* Eleven patients with refractory epilepsy involving the OF region were prospectively identified over three years, in whom stereoelectroencephalography (SEEG) was required to identify the EZ. All patients underwent pre-operative evaluation, SEEG and post-operative MRI. Demographic and clinical features were analyzed, and surgical outcome was correlated with type of resection. *Results:* Post-operative seizure control improved for all patients, with no complications or mortalities. Five patients exhibited "OF-plus frontal polar epilepsy", with the EZ residing in the frontal lobe; following surgery, four were seizure-free and one improved. The remaining six patients had multi-lobar epilepsy, with the EZ in the OF cortex associated with the temporal pole ("OF-plus temporal polar"). Post-operatively, all six were seizure-free (mean follow-up of 26.6 months). Pathology confirmed focal cortical dysplasia (FCD) I in ten patients, with FCD II identified in the remaining patient. *Conclusions:* In patients with OF epilepsy, multi-lobar resections may be needed to achieve seizure freedom. Failures in frontal resections can be partially explained by incomplete resection of the EZ by leaving behind the temporal pole.

H.06

Impact of mild cognitive impairment on health-related quality of life in Parkinson's disease

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Background/Aims: Assess the impact of mild cognitive impairment or cognitive decline on health-related quality of life (HR-QOL) in Parkinson's disease. *Methods:* HR-QOL measured by the Parkinson Disease Quality of Life Questionnaire (PDQ-39), mild cognitive impairment according to Level 2 Movement Disorder Society Task Force criteria and cognitive decline from premorbid baseline (Wechsler Test of Adult Reading) were assessed in non-demented patients with Parkinson's disease at six academic movement disorders clinics. *Results:* Among 137 patients, after adjusting for education, gender, disease duration, and Movement Disorder Society Unified Parkinson's Disease Rating Scale total score, mild cognitive impairment was associated with worse scores within the PDQ-39 dimension of communication. Scores in the dimension of stigma were worst in the second tertile of cognitive decline from premorbid estimates. Mild cognitive impairment was associated with worse social support scores in the second tertile of cognitive decline but not in other tertiles. *Conclusion:* Mild cognitive impairment and cognitive decline from estimated baseline are associated with reduced health-related quality of life in one or more of communication, stigma, and social support domains. Degree of cognitive decline from baseline appears to modify the association between mild cognitive impairment and HR-QOL in PD and knowing both will allow a better appreciation of the difficulties patients could be facing in daily life.

H.07

Demonstration of corticospinal tract pathology in ALS using high field diffusion tensor tractography

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Background: Amyotrophic lateral sclerosis (ALS) is a rapidly progressive and fatal neurodegenerative disease with a hallmark of upper motor neuron (UMN) and lower motor neuron (LMN) degeneration. Currently, there is no objective and standardized means of UMN assessment. The primary goal of this study is to explore the ability of diffusion tensor imaging (DTI) performed at high field to detect pathological changes in the corticospinal tract (CST) of ALS patients. *Methods:* Ten ALS patients and fourteen healthy controls were scanned on a high-field (4.7 tesla) MRI scanner. Blinded post-processing of DTI data yielded fractional anisotropy (FA) maps, which were used as a measure of white matter integrity. Manual deterministic tractography was performed to isolate the fibres contributing to the CST from the precentral and postcentral gyri for region of interest (ROI) analyses using the FA maps. Unilateral and bilateral mean FA was calculated for the CST with and without inclusion of fibres originating from the postcentral gyrus. *Results:* Non-parametric analysis of all four ROIs (unilateral and bilateral CSTs with and without inclusion of fibres from the postcentral gyrus) showed significantly reduced FA in patients (all $p<0.002$). *Conclusions:* These results suggest that high-field DTI may be useful in developing an objective UMN assessment for ALS patients as well as elaborating on our understanding of pathological changes associated with the disease process.

H.08

Distinguishing amyloid positive from amyloid negative mild cognitive impairment patients

*H Chertkow (Westmount)**

Background: Amnestic Mild Cognitive Impairment is a high risk state for progression to dementia. According to new NIH criteria, presence of brain amyloid indicates "MCI of the Alzheimer's Type". We wished to ascertain the cause of MCI in individuals lacking amyloid. *Methods:* 46 patients all meeting criteria for amnestic MCI were studied and compared with 23 age-matched normals. Cognitive decline was documented with MoCA and neuro-psychological evaluation. All were studied with PET amyloid imaging with PIB (Pittsburgh B Compound). PIB results were dichotomized as positive/negative according to SUVR cut-offs of 1.4. Exhaustive chart reviews and imaging were carried out to ascertain possible causes of the MCI. *Results:* 22 MCI individuals were PIB "positive" and 24 MCI individuals were PIB "negative". All the normal controls were PIB negative. These groups were equivalent on age, education, MMSE and MoCA. PIB negative MCIs showed significantly more Cardiovascular risk factors, sleep apnea, and a greater load of psychiatric illness.They had mean 3.5 "cognition-related" morbidities, vs. 1.9 in PIB positive individuals. PIB positive MCIs had more cognition "unrelated" morbidities, consistent with a "frailty" model for AD. *Conclusions:* The PIB negative MCI subjects represented a heterogeneous group. Many PIB negative subjects had more than one possible cause of cognitive impairment, often with reversible factors that might be amenable to therapy.

H.09

The case for vitamin D supplementation in Multiple Sclerosis

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Introduction: Given vitamin D's immunomodulatory role and association with developing Multiple Sclerosis (MS), it may also influence disease activity in MS. We conducted a systematic review examining: (1) vitamin D's role in MS activity, and (2) its therapeutic supplementation in MS. *Methods:* A comprehensive search of Medline, Embase, Pubmed, and unpublished abstracts yielded 57 studies for appraisal. The evidence was interpreted in light of the Bradford-Hill causation criteria, and the number needed to treat (NNT) to prevent one patient from relapsing annually was calculated for studies examining relapse rate. *Results/Discussion:* Cross-sectional and longitudinal studies have demonstrated a strong negative correlation between higher vitamin D levels and risk of relapse and/or disability, and higher inflammatory markers in MS. Thus, vitamin D fulfills Bradford-Hill criteria for strong consistent association, biological plausibility, and coherence. Those of temporality, dose-response, and experimental evidence are yet to be adequately met, although preliminary evidence from randomized clinical trials (RCTs) suggests supplementation can reduce relapse rates and/or disease burden. Published data on relapse prevention from heterogeneous studies indicates the possibility of small NNTs of 1.36-25.00. *Conclusions:* Ultimately, current evidence does not permit inference of a causal relationship between vitamin D deficiency and MS activity. Supplementation appears to be therapeutically promising, but given the paucity of RCTs with placebo/comparator arms, the evidence is not definitive and dosing remains uncertain.

H.10

Histopathology of Multiple Sclerosis related trigeminal neuralgia following multiple rhizotomies and Gamma Knife surgery

D Phillips (Winnipeg) M Del Bigio (Winnipeg) A Kaufmann (Winnipeg)*

In this report, we describe the pathological changes in trigeminal nerve rhizotomy excisions from three cases of multiple sclerosis-related trigeminal neuralgia (MS-TN) after Gamma Knife radiosurgery. Our observations are compared one patient with typical TN who underwent partial surgical rhizotomy following failure of Gasserian injury procedures and normal trigeminal nerve from autopsy specimens. The non-irradiated TN sample was generally well myelinated but there were rare degenerating axons. Mild lymphocytic infiltrate, likely related to MS, was present in 2/3 samples. The three irradiated MS-TN specimens had axon loss, demyelination, myelin debris, and fibrosis. Irradiation at this dose, which was ultimately ineffective for treatment of TN, causes considerable damage to the trigeminal nerve. These data add insight into the changes in a trigeminal nerve due to GammaKnife radiosurgery.

H.11

Diagnosing rare neurological disorders with exome sequencing: FORGE Canada

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Background: Exome sequencing is a powerful approach targeting protein coding regions of genes that has revolutionized disease gene identification in neurological disorders. FORGE Canada (Finding of Rare Disease Genes) is a national consortium of clinicians and scientists using exome sequencing to identify gene mutations associated with rare disorders. *Method:* FORGE comprises internationally-recognized Canadian scientists using the infrastructure of the Genome Canada Science and Technology Innovation Centres to sequence human exomes and to identify the molecular etiology of rare genetic disorders. *Results:* Thus far, 135 of the 187 disorders studied demonstrated neurological features, with 77 genes identified. Exome sequencing has facilitated: (1) the discovery of new neurological disorders, (e.g., Hereditary Spastic Paraplegia type 54); (2) the identification of novel mutations in known genes (e.g., Autosomal Recessive Primary Microcephaly); and (3) the expansion of the phenotype of known disorders (e.g. isolated Primary Dystonia caused by a novel mutation in the ATM gene). *Conclusions:* Our experience demonstrated immediate and long-term benefits for patients with rare neurological disorders, including molecular diagnosis translating to improved patient care and directed therapy, as well as identifying pathways for further study and potential therapeutic investigation. Canada is emerging as an international leader in the study of rare neurological disease.

Aneurysms and Subarachnoid Hemorrhage

I.01

Reporting the design of the ISAT-II study: a randomized clinical trial comparing surgical and endovascular treatments of ruptured intracranial aneurysms

AE Jack (Edmonton) TE Darsaut (Edmonton) R Kerr (Oxford) J Raymond (Montréal)*

Background: ISAT demonstrated improved one-year clinical outcomes for patients with ruptured intracranial aneurysms treated with coiling compared to clipping. ISAT patients were mostly good grade subarachnoid hemorrhage (SAH) patients with small anterior circulation aneurysms. ISAT results are now commonly extrapolated to patients not studied in the original trial, some who are treated using devices not available at that time. Conversely, many patients are treated by clipping despite ISAT, usually to offer more durable protection from aneurysm recurrences. These practices have never been validated. For many ruptured aneurysm patients the question of which treatment leads to a superior clinical outcome remains unclear. *Methods/Design:* ISAT-II is a pragmatic, multicenter, randomized trial comparing clinical outcomes for non-ISAT patients with SAH allocated coiling or clipping. Inclusion criteria are broad. The primary end-point is incidence of poor clinical outcome (mRS>2) at one year, just as in ISAT. Secondary end-points include measures of safety for several pre-specified subgroups, with efficacy end-points including major recurrences at one-year; 1896 patients (862 each arm plus 10% losses) are required to demonstrate a significant difference between coiling and clipping, hypothesizing 23% and 30% poor clinical outcome rates for coiling and clipping respectively. The trial should involve at least 50 international centres, and take approximately 12 years. Analysis will be by intention-to-treat. ISAT-II is registered: clinicaltrials.gov-NCT01668563.

I.02

Decreased rates of perioperative stroke and delayed cerebral ischemia following implementation of a comprehensive neurovascular program

A Algird (Hamilton) C Martin (Hamilton) DJ Sahlas (Hamilton) D Jichici (Hamilton)*

Background: The Neurovascular program at our center was expanded to include 24/7 access to neuroendovascular services with protocols for coiling as the first option for treatment of aneurysmal subarachnoid hemorrhage (aSAH), and a Nurse Practitioner (NP) to perform Transcranial Doppler (TCD) and assist with clinical management. *Methods:* 205 aSAH patients' charts were reviewed pre and post implementation of the program collecting the following data: demographic, clinical presentation, radiological evidence of perioperative stroke and delayed cerebral ischemia (DCI), clinical evidence of vasospasm, modified Rankin Score (mRS) at hospital discharge, and mortality rate. *Results:* 100 patients between 2007-2009 were compared to 105 patients between 2010-12. Incidence of radiological perioperative stroke decreased from 44% to 22% (p=0.001). This corresponded to a practice shift from aneurysmal clipping to coiling. Also, there was a decrease in radiological perioperative stroke rates within the coiling group of patients (16% compared with 35%, p=0.04) and a decreased incidence of DCI from cerebral vasospasm (30% compared with 50%, p=0.04) following implementation of the new program. *Conclusions:* Implementation of comprehensive neurovascular program for aSAH resulted in a 50% decrease in the number of perioperative strokes. The decrease in the rate of DCI secondary to cerebral vasospasm in the coiled patients correlated with TCD monitoring and the role of the NP ensuring that the management protocol was followed.

I.03

PRET Study: patients prone to recurrence after endovascular treatment

J Raymond (Montréal) D Roy (Montréal)*

In patients with intracranial aneurysms treated with endovascular coiling, angiographic recurrences are often observed. This problem becomes significant in patients with large or recurring aneurysms, which we label "aneurysms with a high Propensity for Recurrence after Endovascular Treatment" (PRET). The PRET RCT thus aims at comparing treatment with hydrogel coils to standard treatment in patients with large aneurysms (≥10mm; PRET-1 patients) or in patients with a major recurrence after previous coiling (PRET-2 patients). The primary hypothesis is that the use of hydrogel coils decreases recurrence rate from 50% to 30% (range: 40-50% to 21-

30%) at 18 months as compared to bare platinum coils. The design is a multi-centre, randomized, controlled trial with concealed allocation, with Data Safety and Monitoring Committee (DSMC) overview. A total of 500 subjects (250 PRET-1; 250 PRET-2) equally divided between the two treatment arms are followed for 18 months. The primary endpoint is recurrence rate, multiply defined; the secondary endpoints include safety measures and overall morbidity and mortality. Recruitment is almost completed with more than 400 (PRET-1: 221; PRET-2: 182) subjects enrolled. Three Interim Safety Analyses were carried out by the DSMC and did not reveal a significant difference between treatment groups on recorded safety measures.

I.04

FIAT: flow diversion in intracranial aneurysm treatment: a randomized trial comparing flow diversion and best-standard-treatment

TE Darsaut (Edmonton) D Roy (Montréal) A Weill (Montréal) J Raymond (Montréal)*

Large/giant, fusiform or recurrent intracranial aneurysms are increasingly treated with flow diverters (FDs). Although there is growing enthusiasm to use these devices, complications are increasingly reported in series and registries. There is thus an urgent need for an RCT to evaluate FDs in patients presenting with a difficult aneurysm. The FIAT (Flow diversion in Intracranial Aneurysm Treatment) trial aims to compare flow diversion (FD) to Best-Standard Treatment (BST). BST may be: 1) conservative management; 2) coiling with or without stenting; 3) parent vessel occlusion with or without bypass; 4) surgical clipping; 5) registry for FD, when the only treatment alternative is FD for compassionate use. The primary hypothesis is that FD can be performed with an "acceptable" complication rate (15% morbidity and mortality, modified Rankin Score > 2 at 3 months), AND increase the number of patients experiencing successful therapy (near complete occlusion of the aneurysm from 75 to 90%). 344 subjects will be recruited and followed for 12 months. Follow-up includes two clinical and neurological assessments and vascular imaging at the 12 month follow-up. A pilot phase is underway in Canada and has already enrolled 23 FIAT subjects.

I.05

The utility of the electrocardiogram in predicting angiographic vasospasm following aneurysmal subarachnoid hemorrhage

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Background: Angiographic vasospasm following aneurysmal subarachnoid hemorrhage (SAH) is a significant cause of morbidity and mortality, with few early predictors. Increased central sympathetic activity may contribute both to angiographic vasospasm and electrocardiographic (ECG) changes after SAH. Here, we determine the association between ECG changes and angiographic vasospasm after SAH. *Methods:* Exploratory analysis was performed on 413 patients from the CONSCIOUS-1 trial. ECGs were obtained within 24 hours of aneurysm rupture and during the vasospasm risk period. Angiographic vasospasm was assessed using catheter angiography at baseline and 7 to 11 days after SAH. Multivariate logistic regression was used to identify significant associations. *Results:* The most prevalent finding on ECG both immediately following SAH and during the vasospasm risk period was QT prolongation (42% and 25%, respectively). Prolonged QT interval both at baseline (OR, 1.85;95%CI:1.00-3.45) and during the vasospasm risk period (OR, 3.53;95%CI:1.69-7.39) and tachycardia on the baseline ECG (OR:10.83;95%CI:1.17-100.50) were associated with angiographic vasospasm. Receiver Operator Characteristics curve analysis revealed no difference in predictive value between baseline subarachnoid clot burden and prolonged QT at three days (p=0.26) and baseline tachycardia (p=0.18). *Conclusions:* QT prolongation and tachycardia on ECG were independently associated with angiographic vasospasm after aneurysmal SAH on multivariate analysis.

I.06

Angiographic outcome of intra-arterial milrinone on cerebral vasospasm after subarachnoid haemorrhage

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Purpose: The goal of this study was to determine whether there is a change in arterial diameter after intraarterial milrinone infusion for cerebral vasospasm secondary to subarachnoid haemorrhage (SAH). *Methods:* We retrospectively reviewed the procedure reports, clinical charts, CT and angiograms of patients with symptomatic cerebral vasospasm after SAH. Eight independent radiologists reviewed angiograms of cerebral vessels treated (or not) by intraarterial infusion of milrinone. The arterial diameter assessment was done in a blinded manner. The study group included arteries that received milrinone with or without balloon angioplasty. Controls corresponded to arteries diagnosed with or without vasospasm and that did not receive milrinone. Changes in the arterial diameter were coded as 1. Changes in arterial diameter were pooled and compared for all reviewers. *Results:* Twenty-one patients underwent angiograms for symptomatic vasospasm after SAH between October 2004 and August 2006. Nine cerebral arteries treated with intraarterial milrinone and nine control arteries were assessed for the arterial diameter change. Improved arterial diameter was significantly more often seen (p<0.0001) in arteries after addition of milrinone (65/72, 90%) than in controls (8/72, 11%). *Conclusion:* Intraarterial milrinone improves angiographic vasospasm after SAH. However, how long this effect persists is still unknown. Further prospective studies are warranted to asses the effect of milrinone on intracranial artery diameter as well as its clinical impact.

I.07

Familial intracranial aneurysms in Newfoundland and Labrador: updated report

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Introduction: It is estimated that 20% or more of aneurysms are familial. The purpose of this study is to delineate the clinical, epidemiological features of familial and sporadic intracranial aneurysms (ICA) and identify gene(s) that predispose to them. *Method:* Once ICA patients were identified, a 3-generation pedigree was constructed and the participant was classified familial or sporadic. DNA was collected and molecular study as well as 3D-CT

scan or MRA were requested. We focused on recruiting familial cases, particularly those with more than two affected relatives. *Result:* The present cohort includes 86 probands with ICA including 50 familial probands, 34 of their affected relatives and 338 of their unaffected relatives. There are 29 probands with sporadic ICAs and 14 unaffected relatives. In total 558 individuals have been enrolled. CT or MRA has been completed on 437. Of the 117 affected participants, clipping has been performed on 42, coiling on 22. 53 patients are being followed for unruptured aneurysms. Death from SAH occurred in 4. There are 8 major families (each with 4 – 11 affected individuals) and these will be the focus of future molecular genetic studies. Details of some of these families will be discussed. *Conclusion:* Identification of patients with familial ICA is important for early treatment, family screening and eventual prevention of subarachnoid hemorrhage.

I.08

Excellent long-term outcomes in complex intracranial aneurysms treated with PED

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Background: The Pipeline embolization device (PED) is a flow-diverting stent that has been used to treat complex aneurysms not amenable to treatment alternatives. We present a single-centre experience of the long-term efficacy and outcomes of PED placement. *Methods:* Case data of aneurysms treated with the PED were collected prospectively and pooled for retrospective analysis. Clinical outcomes were converted to modified Rankin scores and imaging was used to determine post-procedure aneurysm filling. *Results:* 32 PEDs were placed in 16 patients. Patients were followed-up for an average of 20 months. Angiographic cure was achieved in 12/16 patients, and 14/16 scored ≤ 2 on the modified Rankin scale at most recent follow-up. One patient presenting with SAH died, and a second suffered progressive right-sided weakness leading to hemiplegia. *Conclusions:* Our experience shows high rates of angiographic cure and favourable clinical outcomes at long-term follow-up, and suggests that the PED is a viable treatment option for complex cerebral aneurysms.

I.09

Flow diversion of giant curved sidewall and bifurcation aneurysms: very low porosity devices may not produce reliable occlusion in experimental models

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Background and Purpose: Flow diverters (FDs) are increasingly used to treat difficult intracranial aneurysms. Giant curved sidewall (cSW) and bifurcation aneurysms present special difficulties that could perhaps be overcome using very low porosity devices. *Materials and Methods:* Large and giant endwall bifurcation (EwB; n=12) and cSW aneurysms (n =5) were constructed in 17 dogs. EwB aneurysms were treated with 48 (n =4), 64 (n=4) or two telescoping 64 wire low-porosity devices (n=4), while all cSW aneurysms were treated with 64 wire devices. Angiographic results were recorded immediately, at 2-4 and at 12 weeks, immediately before euthanasia. Pathological specimens were photographed and metallic and neointimal closure of the aneurysm ostium measured and scored. *Results:* One of twelve EwB and 1/5 cSW aneurysms were occluded at 12 weeks. All other aneurysms were patent. Device-related stenoses occurred in 13/17 animals, hemodynamically significant in two. All branches jailed by the FDs remained patent. For all animals, there was a significant correlation (P=0.04) between the angiographic scores and the degree of neointima formation (Rho = 0.527). Failures of aneurysm occlusion could be explained by leaks or holes, sometimes barely visible, in the neointima over the device, which tended to occur at the level of specific, transition zones within the stent. *Conclusion:* Low porosity FDs can fail to occlude experimental giant EwB and cSW aneurysms.

I.10

STAT: stenting in the treatment of large, wide necked or recurring intracranial aneurysms trial

TE Darsaut (Edmonton) D Roy (Montréal) A Weill (Montréal) J Raymond (Montréal)*

In patients with intracranial aneurysms treated with endovascular coiling, angiographic recurrences are often observed. This problem becomes significant in patients with large, recurring, or wide necked aneurysms. Stenting combined with coil occlusion presumably modifies intra-aneurysmal hemodynamics and leads to a decrease in recurrence rate. The STAT (Stenting in the Treatment of large, wide necked or recurring intracranial Aneurysms Trial) RCT thus aims at comparing coiling versus coiling plus stenting in patients with aneurysms prone to recurrence, i.e. large aneurysms (≥10mm; STAT-1), recurring aneurysms after previous coiling (major recurrence; STAT-2), or wide-necked aneurysms (aspect ratio<1.5; STAT-3). The primary hypothesis is that the use of stenting in addition to coiling decreases the recurrence rate from 33% to 20% at 12 months. Six hundred subjects will be enrolled and followed for 12 months. The interventions are : coiling (any type); OR the addition of stenting to coiling (any stent). Follow-ups include clinical and neurological evaluation and, for the 12 months follow-up, angiographic imaging of the aneurysm. The primary endpoint is recurrence rate, multiply defined; the secondary endpoints include safety measures, overall morbidity and mortality and incidence of in-stent stnenosis (>50%). A pilot phase is underway in Canada and has already enrolled 9 STAT subjects.

I.11

2013 update on the Canadian Unruptured Endovascular vs Surgery (CURES) trial

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Background: The best treatment for patients with unruptured intracranial aneurysms (UIA) remains uncertain. Surgical clipping is widely considered to provide more consistent and permanent aneurysm exclusion and better long-term protection from hemorrhage but may result in greater morbidity than endovascular treatment. A randomized comparison of the two treatments has not been done. *Purpose:* To compare anatomical results, treatment morbidity & mortality, and long-term clinical outcome of surgical clipping versus endovascular coiling of intracranial aneurysms in a randomized controlled trial. *Methods:* So far, in Canada, 53 patients with UIAs have been randomized. The available anonymized data will be presented at the conference. *Conclusion:* CURES is a CIHR-

funded, two-phase RCT comparing angiographic and clinical outcomes. The lead-in phase aims to verify superior anatomical results of clipping and determine its risks. Phase II will compare clinical outcomes including overall re-treatment rates and bleeding at five years.

PEDIATRICS

J.01

The metabolic phenotype guiding the discovery of treatable intellectual disability genes

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Introduction: Intellectual disability (ID) is a lifelong, debilitating condition affecting 2.5% of children and adults worldwide. Our TIDEX project aimed to identify novel, potentially treatable ID genes employing the utility of the metabolic phenotype. *Methods:* Criteria were applied to select patients for NGS: patient with unexplained, Mendelian ID plus metabolic abnormalities. Whole exome sequencing was performed for trio's with customized bio-informatics and subsequent validation. *Results:* In seven families meeting the selection criteria, we discovered five new genes, including a new treatable disorder Mitochondrial carbonic anhydrase VA (CA-VA) deficiency identified in two non-consanguineous siblings with neonatal lethargy, hyperammonemia, hyperlactatemia, hypoglycemia. CA-VA deficiency impairs bicarbonate provision to four mitochondrial enzymes with a central role in the urea cycle and intermediary metabolism. CA-VA deficiency is amenable to preventive and emergency treatment, and expands the number of treatable IDs. The other discovered genes (various phases validation) include a nuclear mitochondrial disease, biotin responsive, neuronal arborization, early endosomal recycling genes. *Conclusions:* Our high success rate (>70%) emphasizes the importance of the metabolic phenotype for gene discovery using NGS technologies. Advantages include: facilitation candidate gene hypothesis, validation causality identified variants, and targets for treatment. Most important, such discoveries can be directly translated into improved patient outcomes.

J.02

Evaluating the exposure of radiation from CT scans of children presenting with primary headache

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Objective: To determine the frequency of computed tomography (CT) scanning ordered by a range of medical practioners for pediatric patients presenting with migraine headaches. *Background:* Headaches are a common problem in the pediatric population. In 2004, The American Academy of Neurology (AAN) developed guidelines on neuroimaging for headache. The medical-legal climate may be causing physicians to disregard these guidelines. *Methods:* A retrospective chart review was conducted at the Children's Hospital of Eastern Ontario (CHEO), a tertiary care center in Ontario. Records from 2004-2010 were collected for pediatric patients referred to the outpatient neurology clinic at CHEO with 'headache' as the primary complaint. *Results:* Thirty-four percent (34/99) of patients presenting with normal neurologic exams had undergone a CT scan. Zero percent (0/34) of CT scans showed significant findings, of which zero percent (0/34) of these CT scans changed the headache diagnosis or management. Thirty-eight percent (13/34) of CT scans were ordered by neurologists, thirty-eight percent (13/34) by community physicians, and twenty-four percent (8/34) by CHEO emergency physicians. *Conclusion:* Physicians are performing unnecessary CT scans on children presenting with primary headaches, despite well established AAN guidelines regarding neuroimaging. The reality of the medical-legal climate in North America encourages physicians to over-investigate, unnecessarily increasing the risk of adverse events from radiation exposure to pediatric patients.

J.03

MRI findings in infants with infantile spasms after neonatal hypoxic-ischemic encephalopathy

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Background: Neonatal hypoxic-ischemic encephalopathy (HIE) is a common cause of infantile spasms (IS). The purpose of this study was to evaluate the predominant pattern of brain injury and the anatomic areas of injury in children with IS following neonatal HIE. *Methods:* A nested case-control of IS in children with term neonatal HIE was performed. All patients had T1/T2-weighted MRI with diffusion-weighted imaging on day 3 of life. Using a validated scoring system, the predominant pattern of injury was prospectively classified as: normal, watershed, basal ganglia/thalamus (BG/T), total, or focal-multifocal. Two study investigators scored additional anatomic areas of injury (cortical extent, brainstem, hypothalamus) blinded to the outcome. The pattern of injury and anatomic areas of injury were compared between cases with IS and randomly selected controls. *Results:* Eight patients who developed IS were identified among a cohort of 176 term newborns with HIE (~4.5%). There were no significant differences in the perinatal and neonatal course between newborns who developed IS and controls. The development of IS was significantly associated with BG/T and total brain injury (P=.001), extent of cortical injury ≥50% (OR=11.67, 95% CI=1.1-158.5, P=.01), injury to the midbrain (OR=13, 95% CI=1.3-172, P=.007) and hypothalamic abnormalities (P=.01). *Conclusions:* The development of IS after HIE is associated with extensive brain injury on neonatal MRI, particularly when the midbrain is involved.

J.04

Malignant infarction of the middle cerebral artery in children

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Background: Large hemispheric strokes have a high risk of fatal cerebral edema. This syndrome has been described as "Malignant infarction of the middle cerebral artery" (MIMCA), this complication is commonly seen in adults. The description of this syndrome in the pediatric population is scarce. The goal for the study is to identify possible clinical, radiological and electrographic features associated with MIMCA syndrome in children. *Patients and Methods:* We reviewed retrospectively, patients with a definite diagnosis of arterial ischemic stroke of the middle cerebral artery

(MCA) that developed cerebral edema, and were evaluated for hemicraniectomy. *Results:* We identified 117 children with stroke at the Hospital for Sick Children, from January 2008 to September 2012. 68 (58%) had arterial ischemic stroke (AIS), and 30 (44%) had MCA AIS. 8 patients developed MIMCA. 6/8 were boys and 2/8 were girls. Mean age was 10 years (range from 3 to 15). The most common etiology was cardioembolic (5/8).6/8 had a PedsNIHSS score greater than 10. 5/8 presented with seizures, 8/8 had hyperdense MCA sign on initial non contrast CT head. *Discussion:* Although MIMCA is rare in children, its early recognition and prompt surgical management appears to be related with a better outcome. Hyperdense MCA sign, seizures and a score equal or higher than 10 at the PedsNHISS are common features in children with MIMCA.

J.05

Safety and tolerability of TMS and rTMS in a pediatric clinical trial

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Background: Transcranial magnetic stimulation (TMS) can define neurophysiology while repetitive TMS (rTMS) may modulate neuroplasticity. Applications in the developing brain are limited. *Methods:* PLASTIC CHAMPS is a randomized, blinded, factorial clinical trial of rTMS and constraint therapy in children aged 6-18 years with perinatal stroke-induced cerebral palsy. Thirty five children (mean 11years) attended a 2-week motor learning camp, randomized to daily non-lesioned M1 inhibitory (1Hz, 1200 stimulations) rTMS or sham. TMS neurophysiology was assessed pre- and post-camp. Safety outcomes were: 1) decreased affected hand function (Assisting Hand Assessment, AHA; Melbourne Assessment; MA) 2) decreased unaffected hand function (grip, pinch strength (GS/PS)) and 3) Pediatric TMS Tolerability Scales at 4 timepoints. Differences were compared between groups and over time. *Results:* TMS and rTMS were well tolerated with no drop outs or serious adverse events. Affected hand function did not decrease (stable AHA, improved MA) including children with ipsilateral projections. Unaffected hand function was stable. Side effects were mild with headache most common (43% 1st TMS) and decreasing (20% last TMS). Headache was rare during rTMS. *Conclusions:* TMS trials are safe in children with perinatal stroke. Headaches are common but mild. Inhibitory rTMS does not negatively impact hand function on either side.

J.06

Serial diffusion imaging of cerebral diaschisis in childhood arterial ischemic stroke

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Background: Acute corticospinal diffusion MRI (DWI) correlates with motor outcome in childhood arterial ischemic stroke (AIS). In neonatal AIS, DWI detects changes in other remote but connected brain structures (diaschisis). We hypothesized that cerebral diaschisis is measureable in childhood AIS and associated with outcome. *Methods:* This sub-study (Validation of the PedNIHSS) prospectively enrolled 112 AIS children imaged at diagnosis (MR1) and 5-14 days (MR2). Inclusion criteria: unilateral AIS, MR1/2 DWI, and 12 month Pediatric Stroke Outcome Measure. Diaschisis was localized and quantified using validated ImageJ software. Diaschisis scores corrected for stroke volume were compared to outcome. *Results:* Nineteen children (53% male, median 8.1 years) had median MRI times of 21 and 168 hours. Diaschisis was common and evolved over time; observed in 1 (5%) on MR1 but 8 (42%) by MR2. Thalamic and callosal diaschisis were common (5/8, 63%). Children with diaschisis tended to be younger (p=0.14). Diaschisis scores were associated with poor overall outcome (p=0.08) with strongest correlations to non-motor outcomes (p=0.05). Corticospinal DWI correlated with poor motor outcome (p=0.004). Reliability was excellent (ϱ=0.99). *Conclusions:* Diaschisis is common in childhood AIS and should not be mistaken for new infarction. Correlation to non-motor outcome suggests a possible imaging biomarker of network injury.

J.07

Glycyl-tRNA synthetase (GARS) mutations causing systemic mitochondrial disease

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Background: Aminoacyl-tRNA synthetases (ARSs) are essential for the first step of protein translation by linking a specific amino acid to its corresponding tRNA. Glycyl-tRNA synthetase (GARS) is a bifunctional protein active within cytoplasm and mitochondria. Dominant mutations in GARS have been linked to CMT2D and distal spinal muscular atrophy. We report a case of a girl who presented at six years (yrs) old with exercise-induced myalgia. An echocardiogram showed left ventricular non-compaction with normal function. She had persistent elevation of blood lactate and alanine. Her initial neurological exam, NCS/EMG and muscle biopsy (including respiratory chain enzyme and mtDNA sequencing) were normal. MRI brain (10 yrs old) revealed mild periventricular leukomalacia. Repeat evaluation (12 yrs old) revealed mild distal foot weakness and a low right common peroneal nerve CMAP amplitude. *Method:* Exome sequencing revealed compound heterozygous mutations within each GARS allele. *Results:* One affected allele was inherited from each parent. The paternally inherited mutation (c.1904C>T; p.S635L) has been previously linked to CMT2D and the father was shown to have mild sensorimotor polyneuropathy. The maternally inherited allele (c.1787G>A; p.R596Q) is previously unreported but occurs at a highly conserved site and is predicted to be deleterious. *Conclusions:* The clinical phenotype of this girl expands our understanding of GARS mutations and when present in a compound heterozygous state can present with a mitochondrial disease phenotype.

J.08

CSF leak after intradural spinal surgery in children

CC Gillis (Vancouver) V Liu (Vancouver) A Singhal (Vancouver) D Cochrane (Vancouver) P Steinbok (Vancouver)*

Cerebrospinal fluid (CSF) leakage is a complication of intradural spinal surgery and is associated with poor wound healing and infection. The incidence of CSF leak is reported at ~16% in adults,

but little information is available in children. This study was a retrospective chart review of 638 intradural spinal operations at B.C. Children's Hospital. CSF leak was defined as pseudomeningocele or CSF leak through incision. Primary operations to untether lipomyelomeningoceles, myelomeningocele/ meningocele closure, and Chiari decompressions were excluded. CSF leaks occurred in 7.1%, with 3% having overt CSF leaks through skin (OCSF leak). CSF leaks, specifically OCSF leaks, were associated with post-operative wound infection (p=0.0016). 16 of 45 cases of CSF leak required re-operation. The type of suture, anatomic site, or use of fibrin glue did not affect CSF leak rates. Previous spinal surgery (p<0.0001), use of dural graft (p=0.0043), method of dural suturing (p=0.0023), and procedure performed (p<0.001) were associated with CSF leakage. Patients with CSF leak were older than those without leak (98 vs. 72 months, p=0.002). Our results provide evidence on intraoperative factors that may predispose to CSF leaks after spinal intradural surgery and may help guide surgical practice. This study confirms that the pediatric population shares similar risk factors to the adult population. Further research is needed to explain how specific factors are associated with CSF leaks.

J.09

Paired associative stimulation to understand neuroplasticity in children

O Damji (Calgary) J Roe (Calgary) S Shinde (Calgary) O Kotsovsky (Calgary) A Kirton (Calgary)*

Introduction: Transcranial magnetic stimulation (TMS) non-invasively assesses neurophysiology. Paired associative stimulation (PAS) combines peripheral sensory stimulation with TMS over the primary motor cortex (M1). PAS induces rapid, reversible, topographically specific increases in M1 excitability consistent with NMDAR-dependent long-term potentiation. PAS has not been studied in children. *Methods:* Healthy right-handed children (6-18 years) were recruited. Median nerve stimulation was delivered 25ms prior to suprathreshold left M1 stimulation. Primary outcome was change in motor evoked potential (MEP) amplitude from baseline to five time-points post-PAS (0/15/30/45/75 minutes). Effects were categorized as definitive, possible, or no effect. Secondary outcomes included stimulus response curves (SRC), and safety and tolerability evaluations. *Results:* Of 15 children (9 male, mean age 12 years), 8 (53%) showed definitive PAS effect (2 possible, 5 no effect). Maximal effect was seen at 0 minutes in 5 and 15 minutes in 3. Mean SRC slope increased across all subjects (p=0.05). Tolerability scores were favorable with no adverse events. *Conclusions:* PAS appears safe and tolerable in children. Frequency of PAS effects seems higher in children (>50%) than adults. SRC curves may be more sensitive at detecting PAS effects. PAS may provide insight on developmental plasticity and therapeutic targets in children with cerebral palsy and motor disorders.

J.10

EEG biomarkers of poor neuropsychological outcome following perinatal stroke

A Mineyko (Calgary) B Brooks (Calgary) H Carlson (Calgary) L Bello-Espinosa (Calgary) A Kirton (Calgary)*

Background: Perinatal stroke (PS) causes most hemiplegic cerebral palsy and often intellectual disability. Evidence suggests children with arterial lesions have dichotomized neuropsychological outcomes. We hypothesized neuropsychological outcomes correlate with pathological changes on EEG after PS. *Methods:* Retrospective analysis of Calgary Pediatric Stroke Project data (>3 years-of-age, arterial PS, available neuropsychological evaluation) was combined with prospective data (post-neonatal EEG with sleep). Continuous epileptiform discharges in slow wave sleep (CDSS) for discharges in >75% of recording were analyzed by blinded EEG review. Severe neuropsychological outcomes consisted of intellectual scores <2SD of age mean, or impairment preventing testing. *Results:* Seventy-one children with arterial PS were evaluated. Ninety-three EEGs were available for 48 patients. Seven (15%) were showed CDSS. Twenty-nine neuropsychological test results were available. Of the seven with CDSS, all had clinical epilepsy and severe neuropsychological outcomes. CDSS correlated with severe neuropsychological outcome ($p < 0.001$). Eighteen of the remaining 22 children (82%) had favorable intellectual outcome (≥2SD of the mean). *Conclusions:* CDSS is a potential EEG biomarker of severe intellectual impairment in children with PS. Integration of EEG findings may improve predictive models of neuropsychological outcomes. Identifying abnormal rhythms early in development may represent a new therapeutic target.

J.11

Systematic screening study for treatable disorders in intellectual disability

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Background: Intellectual disability (ID) is a debilitating disorder affecting 2-3% of patients worldwide. Inborn errors of metabolism (IEM) currently constitute the only group of genetic defects amenable to causal therapy. Early diagnosis prevents or minimizes brain damage. Our literature review identified 81 such treatable IEM; although evidence is limited, therapies are often effective, safe, accessible. *Methods:* We translated this knowledge into the TIDE diagnostic protocol: The 1st tier comprises metabolic screening tests in blood/urine with potential to identify 62% of treatable IDs. The second tier focuses on remaining disorders, requiring 'single test per disease' approach. A freely available App (www.treatable-id.org) supports the protocol. *Results:* In our tertiary care institution one year implementation of this protocol identified treatable IEMs in > 5% of 210 ID patients. Further analysis comparing these patients to those diagnosed in our hospital between 2000-2009 revealed that the TIDE protocol reduced 'time to diagnosis' by 6 months (range 1-50 months) as well as costs of unnecessary testing (>$1500- per patient). *Conclusions:* Our protocol for treatable forms of ID has proven effective in terms of increasing the diagnostic yield and reducing costs and diagnostic delay. Improved cognitive functioning allows the patient to reach full potential and avoids unnecessary burden to society. These results provide the evidence to support a new practice for ID patients: prioritize for the treatable ones!

Poster Presentations

Thursday June 13th - Abstracts begin on page 137

Epilepsy .....Station 1

17:10	P.005	Refractory Spike Wave After Prolonged Seizure Freedom
17:16	P.001	CJD-like periodic EEG discharges in VGKC-complex antibody encephalitis
17:22	P.002	Ketamine usefulness in refractory status epilepticus: a retrospective multicentric study
17:28	P.003	Acute porphyria presenting as epilepsia partialis continua: A report of two cases
17:34	P.004	Five year experience of a new adult epilepsy program in Canada. The Saskatchewan experience
17:40	P.006	Hippocampal spike-and-wave discharges in a rat model of typical absence seizures
17:46	P.007	Childhood onset non-progressive Rasmussen's Encephalitis
17:52	P.008	Inter-temporal seizure propagation
17:58	P.009	Clinical characteristics and prognosis of autoimmune disease-related epilepsy

Pediatrics .....Station 2

17:10	P.097	The epidemiology of chronic and intermittent ataxia in children in Manitoba, Canada
17:16	P.099	Comparison between radiologic feature of infantile glioblastoma and desmoplastic tumors: BC children's hospital (BCCH) experience and review of literature
17:22	P.100	Chemotherapy-Induced Peripheral Neuropathy Among Pediatric Oncology Patients
17:28	P.101	Autism spectrum disorder in a term birth NICU population
17:34	P.102	Sport Participation in Epileptic Children: A Review of the Literature
17:40	P.104	Epilepsy outcome in pediatric supratentorial cavernomas: A review of 26 cases
17:46	P.105	Chorioamnionitis in children with cerebral palsy
17:52	P.108	A survey of infantile-onset facioscapulohumeral muscular dystrophy in Canada
17:58	P.109	Epilepsy evolution in focal cortical dysplasia and tuberous sclerosis complex
18:04	P.110	Autistic regression in a toddler: a rare presentation of anti-NMDAR encephalitis
18:10	P.115	Cerebral diaschisis in neonatal arterial ischemic stroke
18:16	P.120	Syringomyelia in Scoliotic Children: Rare and under estimated etiology

Stroke .....Station 3

17:10	P.038	Rock 'til You Drop: Cervical artery dissection in musicians
17:16	P.040	Delayed migration of the Pipeline embolization device stent following treatment of an internal carotid artery aneurysm: the need for early follow-up imaging
17:22	P.041	Incidence of Hemorrhage in a Cohort of Patients with Unruptured Intracranial Aneurysms
17:28	P.042	Minimally invasive subcortical parafascicular access clot evacuation (MiSPACE)
17:34	P.043	Clinician's Guide to Outcome Prediction in Clinical Neurosciences: Application of Bayesian Neural Networks with Fuzzy Logic Inferences
17:40	P.046	Pathophysiology and genetic determinants of subarachnoid hemorrhage
17:46	P.047	Reversible cerebral vasoconstriction syndrome associated with autonomic dysreflexia: a case report
17:54	P.048	Tran arterial Embolization of Spinal Pial AVM
18:00	P.049	The role of intra-aortic balloon counter-pulsation pumps in subarachnoid hemorrhage patients with refractory symptomatic vasospasm: a successful case report and review of the literature
18:06	P.055	Platelet-mediated changes to neuronal glutamate receptor expression at sites of microthrombosis following experimental subarachnoid hemorrhage

Poster Presentations

Trauma, Critical Care .....Station 4

17:10	P.058	The Mini-Mental State Examination and the Montreal Cognitive Assessment after Traumatic Brain Injury: an Early Predictive Study
17:16	P.059	Hospitalized traumatic brain injury patients are susceptible to dehydration during heat waves
17:22	P.060	Decompressive craniectomy in traumatic brain injury: does size matter?
17:28	P.061	Subgaleal hematoma in craniectomized patients: an unreported life-threatening complication of decompressive craniectomy
17:34	P.062	Analysis of risk factors for minor brain injury in patients presenting with a facial fracture
17:40	P.063	Does White Cell Count at Presentation have any Implication in Traumatic Brain Injury?
17:46	P.064	The management of traumatic subarachnoid hemorrhage and vasospasm with Milrinone
17:54	P.065	Brainstem Reversible Hypertensive Encephalopathy : a Case Report
18:00	P.066	Prognostic quality of MRI in severe traumatic brain injury patients
18:06	P.067	Do patients with combined traumatic brain injury and brachial plexus injury have poorer outcome then patients with an uncombined injury?

General Neurology .....Station 5

17:10	P.071	Inflammatory focal myositis with IgG4 infiltrate in a patient with rheumatoid arthritis: a case report
17:16	P.072	Cognitive Function in Cerebellar Ataxia: an Assessment of MSA-C and Sporadic Ataxia
17:22	P.073	C-ANCA associated vasculitis presenting as isolated focal leptomeningeal enhancement: report of a case and review of the literature
17:28	P.074	Familial hemiplegic migraine presenting with encephalopathy and seizures
17:34	P.075	Altered mTOR signaling and mitochondrial respiration in the BTBR mouse model of autism
17:40	P.076	Infiltrative brain tumor mimicking acute viral encephalitis
17:46	P.077	Insulin neuritis: an unusual form of diabetic polyneuropathy
17:54	P.078	A Rare Case of MAMA
18:00	P.079	Anti-NMDA-receptor encephalitis: case series and analysis

Neurosurgery/Neuroradiology .....Station 6

17:10	P.083	Aneurysmal bone cyst of the temporal bone presenting with headache and partial facial palsy
17:16	P.084	Rate of intraventricular hemorrhage post-ventricular peritoneal (VP) shunt insertion
17:22	P.087	Patients' anxiety around incidental MRI findings: a qualitative study
17:48	P.090	Microvascular Decompression of the Optic Nerve
17:34	P.086	Programmable Valve in the Treatment of Secondary Tonsillar Herniation Due to Lumboperitoneal Shunt.....

Neuro-oncology .....Station 7

17:10	P.023	MRI vs. Optical Coherence Tomography: What is the best mode of following patients with compressive pituitary macroadenomas?
17:16	P.024	Familial Brain Tumour in Two Siblings
17:22	P.025	Religion and brain tumour patients: a qualitative study
17:28	P.026	Bone Marrow Derived Progenitor Cell contribution to tumor Neo-vascularization
17:34	P.027	Management Strategies of Diffuse Low-Grade Gliomas in Canada – A Multi-Center Questionnaire
17:40	P.028	Institutional Review and Identification of Indications for Endoscopic Expanded Endonasal Approach to Olfactory Groove and Tuberculum Sellae Meningiomas
17:46	P.029	Role of microRNA-mediated mechanisms for maintenance of Glioma derived Stem Cells properties
17:54	P.030	Early Severe Complications of Radiosurgery: an Autopsy Series and Literature Review

18:00	P.031	Role of MMP16 in Malignant and Invasive Meningioma
18:06	P.032	Analysis of Growth Rate and Growth Patterns in Pituitary Adenomas: Correlations to MIB-1, p27, and FGFR4
18:12	P.033	A case of a lung adenocarcinoma metastasizing to scalp

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Movement Disorders / Neuromuscular .....Station 1

13:10	P.015	Longitudinal quantitative MRI in multiple system atrophy and progressive supranuclear palsy
13:16	P.018	An evolving ataxia syndrome - Autosomal Dominant Cerebellar Ataxia with Deafness and Narcolepsy (ADCA-DN) caused by DNMT1 mutations
13:22	P.019	Overexpressing fragments of CREB-binding protein (CBP) to block transcriptional dysregulation and toxicity in a cell model of Huntington's disease
13:28	P.020	A case of Myoclonus Dystonia diagnosed as Tourette's syndrome
13:34	P.021	A clinicopathological study of corticobasal degeneration (CBD)
13:40	P.034	Secondary hypokalemic periodic paralysis
13:46	P.035	Effectiveness of second corticosteroid injections for carpal tunnel syndrome
13:52	P.037	Paraneoplastic stiff person syndrome mimicking tetanus: A case series report and literature review

Pediatrics .....Station 2

13:10	P.098	The syndrome of infantile-onset saccade initiation delay (congenital ocular motor apraxia)
13:16	P.103	Brain injuries in children presenting with facial fractures
13:22	P.111	Acquired Infantile Bilateral Striatal Necrosis: a rare yet treatable disorder
13:28	P.112	Prognostication and the contribution of MRI in hypoxic-ischemic injury in infants
13:34	P.113	The Cost of Pediatric Primary Headache: A retrospective review of 100 cases in a Canadian pediatric tertiary care centre
13:40	P.116	Robotic quantification of proprioceptive deficits in perinatal stroke
13:46	P.117	Glial scaring after perinatal stroke: Quantification and correlation to outcome
13:54	P.118	Ependymoma in children under 3 years of age: the Canadian experience
14:00	P.119	Normal verbal abilities in a child with Joubert syndrome

Stroke .....Station 3

13:10	P.044	Health Related Quality of Life following Aneurysmal Subarachnoid Hemorrhage – A Qualitative Synthesis of Determinants and Measurement
13:16	P.045	Cerebellar stroke presenting with global aphasia in a patient with muscular dystrophy
13:22	P.050	SAH with multiple intracranial aneurysms: pitfalls in endovascular treatment
13:28	P.051	Molecular Alterations in Hippocampus Underlying the Loss of LTP after Subarachnoid Hemorrhage
13:34	P.052	Avoid delay in giving IV tPA to achieve timely reperfusion with bridging therapy
13:40	P.053	Aneurysm coiling- 16 years experience in a single Canadian center
13:46	P.054	Concurrent Solitaire FR use and Carotid Stenting in acute tandem carotid occlusion setting
13:54	P.056	Prophylactic Magnesium Sulfate for Cerebral Vasospasm in Aneurysmal Subarachnoid Hemorrhage: Systematic Review and Meta-analysis
14:00	P.057	Microsurgical excision and decompression of giant coiled aneurysms: Report of 2 cases

Poster Presentations

MS/Dementia .....Station 4

13:10	P.069	Less education predicts anticholinesterase discontinuation in dementia patients
13:16	P.070	Benign Mesial Temporal Lobe Epilepsy
13:22	P.080	Do serum levels of prolactin rise in multiple sclerosis patients with ocular involvements?
13:28	P.081	Clinical MRI Correlation in RRMS Patients on Natalizumab
13:34	P.082	Treatment of natalizumab-associated PML-IRIS – a case report

History, Education .....Station 5

13:10	P.011	Program directors' and residents' perceptions of pediatric neurology training and manpower in Canada
13:16	P.012	Building on in-class neurosciences: evaluation of knowledge during a clinical rotation
13:22	P.013	Canadian Trends in the Management of Intracranial Aneurysms: Implications for the Education of the Next Generation of Neurosurgeons
13:28	P.014	Psychosurgery Revisited: An Early Medley of Neurology, Neurosurgery, and Psychiatry

Neurosurgery/Spine .....Station 6

13:10	P.091	Predicting success of endoscopic third ventriculostomy on clinical grounds: validation of the ETV Success Score in a "closed-skull" population
13:16	P.092	Peripheral nerve sheath tumor: dealing with the unexpected
13:22	P.093	Complications in Halo Vest Treatment of Cervical Spine Injuries
13:28	P.094	Can intraoperative monitoring predict post-operative course in extra-medullary spinal tumor?
13:35	P.095	Spinal subdural hematoma in the setting of atlanto-occipital dislocation: the case for early aggressive management
13:40	P.096	Familial Lumbar Spondylolysis and Spondylolisthesis
13:46	P.068	fMRI-driven DTT in the assessment of corticospinal tract in patient with glioma

POSTER PRESENTATIONS

EPILEPSY (EEG, BASIC SCIENCE, IMAGING, NEUROLOGY AND EPILEPSY SURGERY)

P.001

CJD-like periodic EEG discharges in VGKC-complex antibody encephalitis

M Savard (Québec) S Gosselin-Lefebvre (Québec) RJ Laforce (Québec) A Guillemette (Québec) M Geschwind (San Francisco) SR Irani (San Francisco) P Gould (Québec)*

Background: VGKC-complex antibody encephalitis is a treatable, likely antibody-mediated condition, which has been previously reported to clinically mimic Creutzfeldt-Jacob disease. Clinical and radiological clues have been suggested to help distinguish these diseases. However, the periodic discharges classically associated with sporadic CJD have never been reported in association with VGKC-complex antibody encephalitis. *Methods:* Case report. *Results:* A 76-year-old male was transferred to a tertiary neurology center with a six-month history of weight loss, cognitive disturbances and generalized weakness. He later had two generalised seizures and developed a severe encephalopathy, requiring mechanical ventilation. Generalised periodic discharges every 1-2 seconds over slowed background were found on EEG, and MRI showed cerebellar and bifrontal cortical T2/FLAIR/DWI hypersignal without restricted diffusion on ADC mapping. Extra-cerebral PET-scan was negative. Despite administration of steroid/IVIG/PEX, the patient died after life support withdrawal. Brain autopsy revealed arachnoid and white matter perivenular mononuclear infiltrates, with increase in neocortical microglial cells but no significant spongiosis. The VGKC-complex antibody result was 336 pmol/L (normal: 0-31), reported three months after death. *Conclusion:* This is the first reported case of VGKC-complex antibody encephalitis associated with periodic EEG discharges, which brings further confound to the differential diagnosis of Creutzfeldt-Jakob disease and autoimmune encephalitis.

P.002

Ketamine usefulness in refractory status epilepticus: a retrospective multicentric study

S Gosselin-Lefebvre (Québec) A Rabinstein (Rochester) A Rossetti (Lausanne) M Savard (Québec)*

Background: Super refractory status epilepticus (SRSE) is a life-threatening condition, with no established optimal treatment options. Because of the marked increase of gluatmatergic transmission in animal models, an NMDA receptor antagonist such as ketamine could be beneficial. *Methods:* Between 2004 and 2011, we identified nine consecutive patients with SRSE who were treated with ketamine at three tertiary neurological centers. *Results:* Median age was 35 years (range 18-78 years) and median number of medications received before ketamine was 8 (range 5-11). Median time before initiation of ketamine was 12 days (range 6-25 days). Median maximal dose was 5mg/kg/h (range 2-15 mg/kg/h). In 4 patients, frank EEG improvement was observed, 3 had modest response, and no effect was observed in 2. There was no direct correlation between ketamine dose and EEG response. Ketamine permanently controlled SRSE in only 1 case. No major side effects were noted. Clinical outcomes were variable; 5 patients died, 1 remained disabled, and 3 had favorable recovery. *Conclusion:* Although ketamine can result in electrographic improvement in some patients with SRSE, it did not significantly influence the clinical outcome. The long delay before treatment initiation may have limited its usefulness. Earlier administration of ketamine in SRSE should be examined.

P.003

Acute porphyria presenting as epilepsia partialis continua: a report of two cases

K Leduc (Québec) T Yen Tran (Montreal) D Nguyen (Montreal) N Dupré (Québec) D Rivest (Lévis) M Savard (Québec)*

Background: The porphyrias are a defect in the biosynthesis of haem wich can be associated with different neurologic symptoms during acute attacks such as peripheral neuropathy, mental disturbance and seizures. So far, there has only been a few case reports of status epilepticus, none of which were of epilepsia partialis continua (EPC). *Methods:* Case series. *Results:* Case 1 is a 30-year-old male who came to the emergency room for a convulsive status epilepticus. Case 2 is a 49-year-old male who first presented a tonic-clonic seizure. Both evolved to EPC over the next days. EPC persisted despite several antiepileptic drugs trials. Diagnosis of hereditary coproporphyria was confirmed by high level of urine, fecal and serum porphyrins in both and by genetic testing in one. The first patient died a month and half after admission from brain oedema. Over the last three years, the second patient has continued to present non-disabling EPC and has had four tonic-clonic seizures associated with alcohol consumption. *Conclusion:* Acute porphyrias should be included in the differential diagnosis of new onset status epilepticus, including epilepsia partialis continua. Their recognition is important as it modifies significantly patient management, since many anticonvulsants are porphyrogenic.

P.004

Five year experience of a new adult epilepsy program in Canada. The Saskatchewan experience

JF Tellez-Zenteno (Saskatoon) A Wu (Saskatoon) M Vrbancic (Saskatoon) N Lowry (Saskatoon) F Moien-Afshari (Saskatoon) D Dash (Saskatoon) K Watherhouse (Saskatoon) L Hernandez-Ronquillo (Saskatoon)*

Background: There is no doubt about the benefits of surgical programs for patients with intractable epilepsy. We analyzed the experience of a new adult epilepsy surgical program in Canada. *Methods:* The adult epilepsy program in Saskatchewan has been operating since 2007. The program has the following human resources; three epileptologist, two neurosurgeons, one nurse, and a

neuro-psychologist. The program has five registered technologist and one video-EEG telemetry bed. *Results:* The program has performed 158 video-EEG telemetries in five years. Thirty five percent of patients were identified as candidates for epilepsy surgery without intracranial investigation, 21% had non-epileptic events and 15% were candidates for epilepsy surgery but needed intracranial recording. In the rest of patients the video-EEG was useful to classify the syndrome. Fifty two patients have had epilepsy surgery in Saskatoon. 41 patients had temporal lobectomies, 8 extratemporal resections and 2 callosotomies. Forty nine patients have had at least one year of follow up after surgery, and 71% have reached a seizure free status. The program also has a single seizure clinic, provides vagus nerve stimulation and ketogenic diet and soon will have a transition clinic. *Conclusions:* The results of the Saskatchewan epilepsy program are in line with the international standards in the first years of operation. The access for epilepsy surgery has been improved in the province of Saskatchewan

P.005

Refractory spike wave after prolonged seizure freedom

*F Moien-Afshari (Saskatoon) G Hunter (Saskatoon) CB Gervais (Saskatoon)**

Background: We report a case of refractory Non-Convulsive Status Epilepticus (NCSE) in a patient previously seizure-free on Carbamazepine for 16 years. *Methods:* Case report *Results:* A 78-year-old Caucasian male with primary generalized epilepsy, diagnosed at 52. His seizures were well controlled for many years on Carbamazepine monotherapy. In April 2012 he had a right total knee replacement that became infected, and was admitted to hospital with sepsis in June 2012. After stabilization, he was discharged on long-term outpatient Clindamycin, which was switched to Co-Trimoxazole in 4 months and later discontinued. He subsequently had seizure recurrence in August 2012, after being seizure free for years. He had more than a dozen seizures in August, presenting as prolonged, refractory Non-Convulsive seizures. Several events were recorded on EEG telemetry showing generalized polyspike-and-wave discharges while the patient simultaneously sustains a simple conversation with the examiner and moves all limbs with dexterity. MRI brain and lab investigations including serum and CSF routine parameters as well as tetrahydrofolate, B6, organic and amino acids were unremarkable. He failed several AEDs and is currently managed on Levetiracetam, Phenobarbital and Carbamazepine. This case is notable for the patient's long-standing seizure-free interval when managed only on Carbamazepine, which defies conventional logic for the treatment of generalized epilepsy. In addition, it indicates long-lasting brain irritability after prolonged antibiotic treatment.

P.006

Hippocampal spike-and-wave discharges in a rat model of typical absence seizures

J Arcaro (London) S Mirsattari (London) SL Leung (London)*

Typical absence seizures are characterized by bilateral 3 Hz spike-and-wave discharges (SWDs) in humans. Both typical and atypical absence seizures are generated by the interconnected circuitry of the thalamus and cortex. A fundamental distinction is a role of the hippocampus in atypical absence seizures, which is not thought to be involved in typical absence seizures due to the lack of evidence of SWD expression in the hippocampus of animal models. Electroencephalography (EEG) was used to characterize neural activity between the thalamus, cortex and the hippocampus in the gamma-butyrolactone (GBL) rat model of typical absence seizures. Rats (n=8) were surgically implanted with depth electrodes in the medial parietal cortex, frontal cortex, visual cortex, hippocampus and ventrolateral thalamus. Following a week of recovery, rats were injected with 200mg/kg GBL intraperitoneally and EEG was recorded continuously for 2 hours. Within 9 minutes of injection, rats became completely immobile with a vacant stare. There was a simultaneous reduction in frequency from a 5-6 Hz burst pattern to continuous at 4-6 Hz with an increase in power. SWDs were recorded from all electrodes with the highest amplitude observed in the hippocampus. The expression of SWDs in the hippocampus demonstrates an interaction between the thalamocortical and hippocampal circuitry and suggests an important link between the hippocampus and typical absence seizures.

P.007

Childhood onset non-progressive Rasmussen's encephalitis

P Rizek (London) C Cheung (London) RS McLachlan (London) B Hayman-Abello (London) DH Lee (London) RR Hammond (London) SM Mirsattari (London)*

Background: Rasmussen's encephalitis (RE) is an inflammatory neurological disease that typically manifests with medically intractable partial seizures and a progressive clinical course including unilateral cerebral atrophy, hemiparesis, and cognitive impairment. Since its first description, a number of atypical features are reported that have widened the clinical spectrum of RE. Our goal is to describe patients with pathology-proven RE found to have a non-progressive course on long followup. *Methods:* Four patients who were referred to our Comprehensive Epilepsy Program at London Health Science Centre in London, Ontario, were diagnosed with RE on a pathological basis after epilepsy surgery to treat their partial onset seizures. *Results:* None of our four cases followed the typical course of RE despite their childhood onset seizures between ages 2-12 years. One was preceded by a mild head trauma and fever at the onset. None had epilepsia partialis continua (EPC). Their long-term followup revealed a non-progressive form of the syndrome with respect to the neurological examination, EEG, MRI, and neuropsychological findings. *Conclusions:* These cases extend the spectrum of childhood-onset intractable epilepsy with chronic encephalitis to include non-progressive variants of RE. The absence of EPC may be a prognostic indicator of a non-progressive course.

P.008

Inter-temporal seizure propagation

H Abualela (London) ML Jones (London) WT Blume (London)*

Identified routes of inter-temporal seizure propagation depend heavily on sites of invasive electrode implantation. Studying patients with adequate bi-temporal and bi-frontal subdural electrode coverage, thus encompassing all published proposed routes, we found a variety of propagation pathways. Fifteen (15) electro-clinical seizures originated unilaterally in a mesial temporal lobe and propagated to the contralateral temporal lobe among eleven (11) patients with such ictal spread studied. The following 3 routes to the

contralateral temporal region appeared: 1) direct mesial temporal-mesial temporal in 6 (40%), 2) mesial temporal-frontal-temporal in 4 (27%), and 3) mesial temporal - lateral temporal - temporal in 5 (33%). Median latencies between seizure onset and propagation to the contralateral temporal lobe were: 1) direct: 4.75 sec, 2) via frontal 28.5 sec, and 3) via lateral temporal: 20.5 sec. Our findings suggest that at least three possible routes for contralateral temporal propagation exist. Additionally, the longer latencies through frontal and lateral temporal routes indicate that more than contralateral temporal receptiveness is requisite for some homotopic ictal involvement.

P.009

Clinical characteristics and prognosis of autoimmune disease-related epilepsy

M Jones (London) A AlQassmi (London) S Mirsattari (London) J Burneo (London) R McLachlan (London)*

There is a now well-established link between epilepsy and autoimmune processes, particularly with respect to certain neuronal autoantibodies. A sizeable subset of patients in this category is typically refractory to anti-seizure drug regimens and requires immunosuppressive therapy. In order to characterize the electro-clinical features of such patients, we interrogated our database searching for patients with autoantibody-related epilepsy. Seventeen patients were identified, mean age was 46 years (range 20-72), and 11 patients were female. Four patients presented with status epilepticus. EEG recordings in the majority of the patients showed multifocal abnormalities, primarily epileptiform activity in the temporal lobes. Only 23% had MRI anomalies consistent with mesial temporal sclerosis. The majority of patients demonstrated a satisfactory response to anti-seizure medications only and did not require immunosuppressive therapy. Recognition of underlying autoantibodies in patients with late onset epilepsy is paramount. A significant proportion of these patients respond favourably to anti-seizure medications alone, but a relatively low threshold for use of immunosuppression is generally warranted.

HISTORY, EDUCATION

P.011

Program directors' and residents' perceptions of pediatric neurology training and manpower in Canada

A Doja (Ottawa) C Clarkin (Ottawa) S Whiting (Ottawa) M Moharir (Toronto)*

Pediatric neurology trainee numbers have grown considerably in Canada resulting in the number of pediatric neurology graduates outpacing the current number of available positions for academic pediatric neurologists. The purpose of this study is to seek the opinion of pediatric neurology program directors (PD's) and trainees regarding possible solutions to this issue. Two semi-structured focus groups occurred in June 2012 involving current and former PD's, and current pediatric neurology trainees The focus groups explored the participants' perceptions of child neurology manpower issues in Canada and possible solutions. Qualitative content analysis was used to analyze the data and identify major themes. Major themes emerging from both focus groups included the emphasis on community pediatric neurology as a viable option for trainees, including the need for community mentors; the recognition of the needs of underserviced areas; and the establishment of academic positions for community preceptors. The need for career mentoring and support structures during residency training was also discussed. Moreover, PDs and residents gave suggestions on reducing the current oversupply of trainees in Canada, including limiting the number of trainees entering programs, as well as for the creation of a long-term vision of child neurology in Canada.

P.012

Building on in-class neurosciences: evaluation of knowledge during a clinical rotation

CS Casserly (London) LM Mai (London)* SL Venance (London)**

Background: Canadian medical students undergo preclinical neurosciences education with the goal of building on this knowledge during medical clerkship. Our objective was to assess core neuroscience knowledge before and after a clinical experience. *Methods:* A quiz consisting of 6 clinical vignettes and 30 multiple-choice questions was administered at the beginning and end of a two week clinical neurology rotation to senior medical students (n=50). *Results:* Overall there was no significant difference between pre-test and post-test scores (mean scores 17.8±3.5 and 18.8±3.8 respectively, p=0.20). Individual interval improvement was 1.1±3.2. Forty participants completed both tests with 60% (n=24) improving, 28% (n=11) worsening and 12% (n=5) unchanged. A control group of six neurology residents scored 23.2±1.9 (p=0.03). There were no differences between first and second year medical clerkship students, or between Western students (n=28) and other Canadian (n=15) or international (n=5) schools. *Conclusions:* The lack of improvement was disappointing. Explanations include use of negatively phrased questions (4), and questions targeted beyond the expected scope of medical students (5) (e.g. management and medication) rather than recall of basic knowledge. Immediate feedback on pre-test performance to identify gaps coupled with coaching by teachers to consolidate and apply knowledge may improve performance.

P.013

Canadian trends in the management of intracranial aneurysms: implications for the education of the next generation of neurosurgeons

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Background: The publication of the International Subarachnoid Aneurysm Trial rapidly changed the management of patients with subarachnoid hemorrhage. The present and perceived future trends of aneurysm management have significant implications for patients and how we educate future cerebrovascular specialists. *Objective:* To determine present competencies, expectations from graduating neurosurgical residents, implications and the geographical differences within Canada in the management of cerebral aneurysms. *Methods:* A 35 item questionnaire completed by 23 neurosurgeons and neuro-radiologists from Canada. We used descriptive analyses to determine future trends in cerebral aneurysm management as well as the educational implications on the future. *Results:* Canadians believe that graduating residents are presently

competent to perform basic procedures like evacuation of a hematoma and clipping a simple 7 mm middle cerebral artery aneurysm. Most of those surveyed believe that endovascular and open surgical management of aneurysms should be a part of residency training for all residents. Graphs, tables and percentages will be demonstrated. *Conclusions:* Despite the definite trend towards endovascular management of patients with aneurysms, residency education has not yet been modified to address the needs of patients. Those responsible for the education of future clinicians who will care for patients with cerebrovascular problems should adjust educational objectives and implement learning processes and neurosurgical curricula that will accommodate changing trends in the care of such patients.

P.014

Psychosurgery revisited: an early medley of neurology, neurosurgery, and psychiatry

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Background: The controversial era of 20th century psychosurgery, particularly preceding the dissemination of "ice-pick" lobotomy, witnessed an intriguing early collaboration among neurologists, neurosurgeons, and/or psychiatrists, as exemplified by the partnership of neurologist Walter Freeman (1895-1972) and neurosurgeon James Watts (1904-1994) beginning in 1936. A closer examination of historical publications could reveal important inter-disciplinary contributions arising from this period. *Methods:* The databases of Medline, the National Library of Medicine, and the Surgeon-General's Office were searched using the terms "psychosurgery", "lobotomy", and "leucotomy". Of 283 screened results, 49 met the primary criterion of reporting data pertaining to a 20th century psychosurgical procedure. *Results:* Several insights into functional neuroanatomy arose from outcomes of these procedures, including an improved characterization of the complex roles of the frontal lobes, thalamus, and amygdala. The cognitive and personality changes undergone by patients post-psychosurgery facilitated the advancement of objective neuro-psychiatric testing. These observations also strengthened the notion that frontal lobes were the centres of personal awareness and identity. *Discussion:* Attempts by early psychosurgeons to methodically excise portions of the brain and examine their impact on behavior, emotion, and cognition helped establish the organic basis of psychiatric disease. The early inter-disciplinary collaboration that emerged during this era resulted in notable neuroscientific insights that are reflected in modern procedures like stereotactic lesioning/excision and deep-brain stimulation for various neuro-psychiatric conditions.

Movement Disorders (Basic Science, Neurology, Imaging & Functional Neurosurgery)

P.015

Longitudinal quantitative MRI in multiple system atrophy and progressive supranuclear palsy

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Objective: MRI has been used in parkinsonism to assess atrophy, tissue water diffusivity, and mineral deposition but usually at a single time-point. However, multiple system atrophy (MSA) and progressive supranuclear palsy (PSP) are progressive. This study assessed the value of longitudinal MRI in characterizing the time course of the degenerative process. *Methods:* Two serial MRIs (mean 22 months apart) were retrospectively analysed blind to diagnosis and scan date in 13 MSA, 6 PSP, and 19 age and sex matched controls. Assessment included apparent diffusion coefficient (ADC) and gradient echo (GRE) intensity ratios from lateral ventricles, caudate, putamen, middle cerebellar peduncle, pons and midbrain. *Results:* On follow-up imaging, there was a larger ADC increase in the putamen in PSP over time compared to controls ($p=0.047$). In MSA there was greater volume loss in the pons over time compared to controls ($p=0.0021$). *Conclusions:* Evidence of progressive neurodegeneration can be observed on MRI in MSA and PSP within two years consisting of increasing putaminal ADC in PSP and pontine atrophy in MSA.

P.018

An evolving ataxia syndrome - autosomal dominant cerebellar ataxia with deafness and narcolepsy (ADCA-DN) caused by DNMT1 mutations

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Background: Autosomal Dominant Cerebellar Ataxia with deafness and narcolepsy (ADCA-DN) is an adult-onset, neuro-degenerative disorder causing ataxia, sensorineural deafness and narcolepsy and variably neuropathy, optic atrophy, dementia and seizures. ADCA-DN appears to be caused by mutations in exon 21 of the DNA methyltransferase 1 (DNMT1) gene. *Methods:* We investigated the clinical, genetic, imaging, electrophysiologic and neuropathologic features from a large multigenerational family with ADCA-DN. *Results:* The DNMT1 mutation was found in clinically affected patients with a heterozygous DNMT1 c.1709C>T [p.Ala570Val] mutation confirmed by Sanger sequencing. Deafness and ataxia were the first symptoms to appear in the fourth and fifth decade, followed by narcolepsy and cognitive decline. MRI brain imaging revealed cerebral and cerebellar atrophy, with maxillary mucosal thickening in all subjects. Multiple sleep latency tests indicated significant pressure for both non-REM and REM sleep. Nerve conduction studies demonstrated axonal neuropathy. Neuropathological results demonstrated loss of purkinje cells in the

cerebellum and relative decrease in hypothalamic orexin immunostaining with reactive astrocytes staining for GFAP, consistent with a clinical diagnosis of narcolepsy. DNMT1 is essential for maintenance of methylation, chromatin stability, and gene regulation. *Conclusion:* This report expands the phenotypical variability of the emerging syndrome adult-onset ADCA-DN caused by DNMT1 mutations.

P.019

Overexpressing fragments of CREB-binding protein (CBP) to block transcriptional dysregulation and toxicity in a cell model of Huntington's disease

GW Hosier (Halifax) EM Denovan-Wright (Halifax)*

Background: Huntington's disease (HD) is caused by expression of the huntingtin gene containing an expanded CAG repeat. N-terminal mutant huntingtin protein (N-mHtt) accumulates in the nucleus and impairs transcription of a subset of genes by binding nuclear proteins. CREB-binding protein (CBP) is a co-activator and acetyltransferase (AT) that binds N-mHtt. We hypothesized that overexpressing CBP or CBP fragments would block abnormal interactions of N-mHtt in the nucleus and delay HD progression. *Methods:* We tested the effect of overexpressing full-length CBP or CBP fragments on transcription (using luciferase promoter assays) and cytotoxicity (using Ethidium Homodimer-1 and Fluoro-Jade C staining) in striatal progenitor cells derived from mice made to express the human huntingtin gene with 7 or 111 CAG repeats. *Results:* Overexpressing fragments of CBP increased cytomegalovirus and PGC-1αlpha promoter activity in wild-type and heterozygous HD cells, but not homozygous HD cells. Overexpressing full-length CBP and a CBP fragment containing the AT domain increased toxicity in wild-type cells, while overexpressing a CBP fragment lacking the AT domain had no effect. Overexpressing full-length CBP or CBP fragments decreased toxicity in heterozygous and homozygous HD cells. *Conclusions:* Overexpressing full-length CBP or CBP fragments increased activity of multiple promoters regardless of the presence of N-mHtt. Excess CBP AT activity was detrimental in wild-type cells, while overexpressing CBP or CBP fragments was protective in HD cells.

P.020

A case of myoclonus dystonia diagnosed as Tourette's syndrome

*GW Hosier (Halifax)**

Background: Myoclonus dystonia (M-D) is a rare movement disorder characterized by a combination of myoclonic jerks and mild dystonia typically beginning before age 20. M-D is caused by mutations in the SGCE gene in about 40% of cases. We report a patient with genetically confirmed M-D who was diagnosed with Tourette's syndrome for 15 years. A similar case was recently reported (Blackburn and Cirillo, Neurology, 2012), indicating the need to consider M-D in patients with early onset myoclonus and dystonia. *Methods:* This patient was seen in the Movement Disorder Clinic of the QEII Hospital, Halifax, Nova Scotia. *Results:* Features that indicated M-D were: 1) Early onset (<20 years), 2) myoclonus predominating in the upper body, either isolated or associated with dystonia, 3) positive family history for M-D, 4) exclusion of additional neurological features including cerebellar ataxia, spasticity, and dementia, 5) alcohol-responsive myoclonus, and 6) psychiatric symptoms (obsessive-compulsive disorder, depression, and anxiety). Myoclonic jerks are distinguished from ticks seen with Tourette's syndrome in that they are neither suppressible or proceeded by an urge. *Conclusion:* Although M-D is rare, it must be considered in patients with early onset myoclonus and dystonia, especially in cases with a positive family history.

P.021

A clinicopathological study of corticobasal degeneration (CBD)

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Background: Corticobasal degeneration is a rare form of parkinsonism. There are few autopsy reported series. *Methods:* Patients seen at Movement Disorder Clinic Saskatchewan (MDCS) with post-mortem pathological diagnosis of CBD were included. Retrospective chart review identified associated clinical features. *Results:* Seven CBD cases were identified. Mean age of onset (65 years), mean survival (6 years), and mean disease duration prior to first visit (2.6 years) were similar to other clinicopathological studies. The most common initial feature at disease onset was unilateral asymmetric motor dysfunction (5/7), with one case each having gait disorder and cognitive dysfunction, respectively. Six cases used levodopa; one had transient benefit documented while another case had subjective benefit reported by the family but not noted on the neurological exam. While all cases had moderate to prominent nigral neuronal degeneration and a moderate number of typical CBD tau inclusions, the severity of cortical neuronal degeneration and frequency of typical CBD tau inclusions in the cortex varied and did not necessarily correlate with the severity of cortical dysfunction noted clinically. *Conclusions:* Our findings in general agree with previous clinicopathological reports. We found that the severity of cortical degeneration may not reflect the degree of cortical dysfunction.

NEURO-ONCOLOGY (MEDICAL AND RADIATION ONCOLOGY, IMAGING, TUMOUR SURGERY, BASIC SCIENCE)

P.023

MRI vs. optical coherence tomography: what is the best mode of following patients with compressive pituitary macroadenomas?

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Background: Estimated prevalence of pituitary macroadenoma is 40/100,000. Patients without visual dysfunction despite contact of the tumor with anterior visual pathways must be followed. A number of different types of MRI analyses have been previously performed including chiasmal elevation, but none has taken into account the large anatomic variation in optic nerve diameter. Growing evidence suggest prognosticative utility of retinal nerve fiber layer thickness

(RNFLT) for visual function in patients with compressive tumors. The purpose of this study was to determine whether the severity of anterior pathway compression correlated with intraocular structural changes as measured by RNFLT. *Methods:* 18 patients (11 females, mean age 52 years) with pituitary macroadenomas underwent optical coherence tomography (OCT) testing. MRI analysis was performed by computing a ratio of the cross sectional area of the point of maximum compression to the intraorbital optic nerve. Correlation between degree of compression and RNFLT was sought in 36 optic nerves. *Results:* Mean RNFLT was 81±12μm and mean optic nerve compression was 53±16%. We found no relationship between the RNFLT and degree of optic nerve compression ($p>0.05$). *Conclusions:* Visual function in the setting of anterior visual pathway compression is often undisturbed. This suggests that the traditional longitudinal assessment using high resolution MRI may be a poor predictor of visual function. These findings have important implications for how these patients should be followed.

P.024

Familial brain tumour in two siblings

FB Maroun (St. John's) R Avery (St. John's) T Stuckless (St. John's) L Bowes (St. John's)*

Background: Familial gliomas, though reported, are a rare occurrence. We present the case of two siblings with supratentorial malignant gliomas. *Method:* Case 1: A 9-year-old girl presented with focal seizures of recent onset. Subsequent investigations followed by surgery revealed a left parietal supratentorial PNET. In spite of a wide variety of treatment she died one year after her diagnosis. Case 2: A 14-year-old boy presented with a short history of headache and diplopia. A large left frontal giant cell glioblastoma was removed. He received a course of radiation and chemotherapy and is still alive a year after his surgery with local recurrence. *Discussion:* Familial syndromes associated with CNS brain tumours are well known. The present cases and other reported series are unique in that there appears to be an obvious genetic association in the absence of any known syndrome. These should be investigated more genetically.

P.025

Religion and brain tumour patients: a qualitative study

*N Ravishankar (Mississauga)**

Background: As the focus on modern neurosurgery has shifted to the realm of technological advancement, some patients and their loved ones still hold a strong faith in their religion to guide them through the process. This study aimed to determine whether religion as a coping mechanism was beneficial for patients before, during and after craniotomy. *Method:* Qualitative case study methodology was used. Semi-structured interviews were conducted with 36 adult patients who underwent surgery for a benign or malignant brain tumour. Interviews were audio recorded and transcribed, and the data subjected to thematic analysis. *Results:* Four overarching themes emerged from the data: 1) neurosurgical patients said to have significantly benefitted from religion; 2) patients did not require a dedicated religious room in the hospital; 3) patients required religious resources such as leaders and/or groups; and 4) patients were not in favour of their physician engaging in the religious ritual. *Conclusions:* Most patients found religion to be an effective coping mechanism, offering them strength, comfort and hope through the surgery. The findings from this study emphasise the need for including a "religious time-out" before and after surgery and the inclusion of religious leaders/groups for those in favour to ensure quality care and patient satisfaction.

P.026

Bone marrow derived progenitor cell contribution to tumor neo-vascularization

K Burrell (Toronto) G Zadeh (Toronto)*

Introduction: There is emerging evidence that bone marrow derived cells (BMDC) contribute to tumor neo-vascularization and provide a mechanism for cancer cells to evade therapy and reoccur despite maximal therapy and targeted treatments. Our aim is to better understand how anti-angiogenic therapy alters the contribution of Bone Marrow Derived Cells (BMDCs) to malignant brain tumors. *Methodology:* Using GFP+ bone marrow chimeric mice to engraft intracranial glioma xenografts we will perform real-time in-vivo longitudinal imaging of tumor vasculature and BMDC. We will analyze the mechanism of BMDC contribution to tumor vasculature in response to anti-angiogenic therapy using VEGF-trap alone or used as combinatorial therapy with radiation therapy (RT). *Results:* BMDCs are recruited to malignant brain tumor in a tumor-regional dependent manner. Treatment with VEGFtrap and RT results in loss of regional dependent integration of BMDCs into malignant brain tumor vasculature. *Conclusion:* Anti-angiogenic therapy disrupts the regional dependent contribution of BMDC to tumor neovascularization potentially providing a mechanism by which tumors can evade therapy. Clinically being able to disrupt the regional dependent contribution of BMDCs to tumor neo-vascularization and hence target the influx of BMDCs following treatment would provide a novel and promising therapeutic strategy to prevent reoccurrence through re-vascularization mechanisms.

P.027

Management strategies of diffuse low-grade gliomas in Canada – a multi-center questionnaire

OH Khan (Toronto) P Kongkham (Toronto) WP Mason (Toronto) G Zadeh (Toronto)*

The management of adult diffuse low-grade gliomas (LGG) is variable. The level of evidence to support clinical care remains controversial and we are faced with the daily challenge of designing the best management strategy for individual patients. Controversies are, in general, about a "wait-and-see" strategy, diagnostic workup, surgical intervention, postoperative imaging, adjuvant treatment, and follow-up. In order to better understand the practice trends across Canada we will present a questionnaire that surveyed neurosurgeons, radiation oncologists, and medical oncologists (neuro-oncology), neuropathologists and neuroradiologists involved in treating low-grade gliomas. We will present the results of our survey in order to demonstrate the range of existing clinical practice across Canada, identify specific Canadian health care relevant and applicable practice patterns and reflect areas in need of further development. Furthermore, our hope is that the survey results will provide a forum to engage clinicians involved and interested in treating low-grade gliomas to form a nation working-group that can

focus on identifying clinical needs of medical communities involved in the care of these patients.

P.028

Institutional review and identification of indications for endoscopic expanded endonasal approach to olfactory groove and tuberculum sellae meningiomas

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Several microsurgical transcranial approaches have been utilized for resection of anterior cranial fossa meningiomas. However, debate continues as to whether these approaches may be more prone to injury of the optic apparatus or it's blood supply. The definitive indications for using the endoscopic expanded endonasal (EEE) approach are not yet clear. We report our experience of the EEE approach for tuberculum sellae and olfactory groove meningiomas using the endoscope as the sole means of visualization (i.e. "pure" endoscopic). In addition, we reviewed and pooled the available literature regarding the use of the pure EEE approach for these lesions. Following local research ethics board approval a prospectively maintained database of all surgical cases between May 2006 and August 2012 was retrospectively reviewed. A PubMed literature search was performed and articles were retrieved, reviewed for patients undergoing pure EEE approaches in addition to all references therein being assessed for further relevant cases. Single case reports were excluded. At the time of abstract submission the results of our series are being analyzed. Results of literature search will be presented in table format. Pure EEE approach for anterior cranial fossa meningiomas can be safely utilised by surgeons appropriately experienced in endoscopic endonasal procedures.

P.029

Role of microRNA-mediated mechanisms for maintenance of glioma derived stem cells properties

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Role of cancer stem cells in tumor formation and tumor heterogeneity is currently one of the most researched topics in cancer biology. A better understanding of molecular mechanisms regulating the biology of cancer stem cells may ultimately help provide a better management of cancer patients. Various individual or families of microRNAs have been shown to have oncogenic or tumor suppressor function in high-grade gliomas. MiRNAs have functional relevance in regulation of critical genes and parameters implicated in glioma stem cell (GSC) behavior and differentiation. We have investigated global role of microRNA in GSCs after biogenesis of microRNA is compromised. Analysis of TCGA database suggests that high Dicer expression level is correlated with better prognosis of glioblastoma (GBM) patients. Gene signatures correlated with Dicer expression levels suggest Dicer/miRNA mediated mechanisms potentially regulate a multitude of cellular pathways in GBMs. Immunohistochemistry analysis of GBM tissue microarray reveals that approximately 48% of GBM patients have low or undetectable levels of DICER1 protein. We have utilized various in vitro approaches (including exposure to hypoxia) to characterize the GSC properties after knockdown of Dicer. Furthermore, we have applied biochemical methods to establish direct miRNA-mRNA interaction network relevant to GSCs. The scope and importance of these results from GSCs will be discussed specifically in context of GBM and GBM heterogeneity.

P.030

Early severe complications of radiosurgery: an autopsy series and literature review

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Early severe complications are uncommon after radiosurgery, and little data are available. This report describes the autopsy findings in 4 patients who suffered early complications of Gamma Knife radiosurgery, and provides an extensive literature review to better understand the problem. Autopsy reports were gathered from three consecutive cases of fatal complication of radiosurgery. The autopsy findings demonstrate tumoral and peritumoral hemorrhage in three patients 2 weeks, 24 hours and 5 hours post-radiosurgery in a patient with undifferentiated high grade pleomorphic sarcoma, metastatic rectal adenocarcinoma and meningioma, respectively. A fourth patient suffered pituitary infarction 10 months after radiosurgery for a null-cell adenocarcinoma. All complications occurred within the irradiated field, but not the tumor itself in one case. An extended literature review of the English-language literature was performed. This report documents 65 cases of early complications, including hemorrhage, thrombosis, deterioration in seizure control and acute neurologic deficit. Only two prior cases with pathologic descriptions have previously been published (one in English), and the largest prior clinical series contained 18 patients with acute moderate/severe deficits. Radiosurgery can cause early severe complications, though these remain rare. This report helps describe the extent and nature of early complications.

P.031

Role of MMP16 in malignant and invasive meningioma

S Jalali (Toronto)

Skull base meningiomas are typically managed by surgical resection. However in the instances of malignant, hyperostotic or bone invasive skull base meningiomas complete surgical resection becomes challenging. We aimed to identify novel signaling molecules mediating brain and bone invasion of meningiomas in order to be able to identify targeted therapeutics. Using micro-array analysis on malignant versus non-malignant, plus bone invasive and non-invasive meningiomas, we identified over 200 differentially expressed genes. For the purposes of this study we focused on the role of MMP16 in bone invasive and malignant meningiomas. We confirmed elevated expression of MMP16 in malignant and bone invasive meningiomas using real-time PCR analysis. To study the in vitro and in vivo characteristic of meningioma cell lines, we transfected cells to over-express and under-express MMP16. Knock-down of MMP16 showed statistically significant reduced invasion in vitro. Furthermore, knock-down of MMP16, using zymography, we demonstrated an alteration in activity of other MMPs including MMP2 and MMP9. Knock-down of MMP16 reduced tumor progression, as confirmed by volumetric assessment of serial MRI images of xenograft meningioma tumors. In summary, our data

supports a role for MMP16 in invasive phenotype of the meningioma tumors and supports targeting MMP-16 as a potential therapeutic target in aggressive meningiomas. Ongoing studies are focused on pre-clinical and potentially clinical studies to establish the clinical value of targeting MMP16.

P.032

Analysis of growth rate and growth patterns in pituitary adenomas: correlations to MIB-1, p27, and FGFR4

*E Monsalves (Toronto)**

Objective: To establish whether the growth and invasion pattern of pituitary adenomas (PA) correlate with tumor proliferation and growth factors expression. *Materials:* PA operated on at our institution between 1999-2011 were reviewed for this study. We calculated pre- and post-operative tumor volume doubling time (TVDT). We recorded patient demographics, PA growth patterns and compared to the expression profile of the MIB-1 LI, p27, and FGFR4. *Results:* 67% were clinically non-functioning PA and 33% were functioning. There were 53% women and 47% men with an average age of 53. The preoperative TVDT was positively correlated with patient age in all PA. Preoperative TVDT was inversely correlated with the MIB-LI. Gonadotrophs were associated with a faster TVDT if there was negative p27 and positive FGFR4 expression. Null cell and somatotroph adenomas had a lower mean TVDT when there was a cystic/hemmorhagic component. Somatotrophs were also associated with a faster TVDT if the tumor had optic chiasm compression. There were 34.6% postoperative residuals, 41.5% of which re-grew. The presence of residual tumor was related to several recorded preoperative growth patterns. Postperative TVDT exhibited a significant correlation to preoperative TVDT. *Conclusions:* The preoperative TVDT correlates with postoperative TVDT, which is useful for treatment planning. Furthermore, the MIB-1, p27, and FGFR4 are associated with TVDT in PA providing evidence for the clinical relevance of these biomarkers.

P.033

A case of a lung adenocarcinoma metastasizing to scalp

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Background: Lung adenomacarcinoma metastasis to scalp and skull has not been previously reported. *Methods:* A 61-year-old female presented with a scalp mass that increased in size from one cm to 10 cm, over a 7-month period. She had a recent history of 20lb weight loss. *Results:* CT scan revealed a soft tissue mass in left frontal scalp involving the underlying bone and thickening of dura. Magnetic Resonance Imaging (MRI) three months later exhibited rapid growth of the lytic lesion. Bone scan showed no other primary lesions. Intraoperative biopsy specimen displayed histological characteristics of an adenocarcinoma. The patient was pan-scanned and a primary lung lesion with extensive hilar lymphadenopathy was identified. She subsequently underwent operative resection of the lesion and cranioplasty. Pathological examination of tumor biopsy showed a moderately differentiated adenocarcinoma characterized by large irregularly shaped acini embedded in a desmoplastic stroma with a mixed acute and chronic inflammatory infiltrate. Mitotic figures were encountered. The neoplastic cells were immunopositive for CK-CAM5.2, CK 7 and TIF-1 (nuclear), and immunonegative for CK 20, features in keeping with adenocarcinoma. *Conclusions:* We describe a rare case of metastasis from a lung adenocarcinoma to skull. The histopathological features and differential diagnosis of such lesions are discussed.

NEUROMUSCULAR (BASIC SCIENCE, EMG/NCS & PERIPHERAL NERVE SURGERY)

P.034

Secondary hypokalemic periodic paralysis

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Background: We report a case of hypokalemic periodic paralysis (HypoPP), likely secondary to gastrointestinal losses. *Method:* Case report. *Results:* A 31-year-old First Nations male presented to hospital after developing generalized weakness of his trunk and extremities. The weakness was noted immediately on waking after normal function the night prior. He had been overindulging on carbohydrates and had experienced significant diarrhea the previous day. His vital signs were stable and neurologic exam revealed 0/5 strength in the lower limbs and 2/5 strength in the upper limbs. The rest of the examination, including deep tendon reflexes, was normal. Laboratory analysis showed a potassium of 1.8 mEq/L (3.5 - 5 mEq/L) and normal thyroid studies. After replacement of potassium his symptoms resolved within hours. Genetic testing for CACNA1S and SCN4A did not identify any mutations. *Discussion:* HypoPP can be the result of several underlying conditions requiring systematic evaluation. The clinical manifestation is similar to familial HypoPP, where a mutation in CACNA1S or SCN4A is found in approximately 80% of patients. A profoundly low potassium level (less than 2 mEq/L) suggests (but does not prove) a secondary cause of periodic paralysis. It is important for clinicians to investigate for gastrointestinal potassium losses, since this unusual presentation of severe weakness usually rapidly resolves with normalization of serum potassium.

P.035

Effectiveness of second corticosteroid injections for carpal tunnel syndrome

NL Ashworth (Edmonton) J Bland (Canterbury)*

Background: A single local corticosteroid injection is an effective treatment for carpal tunnel syndrome. No existing studies specifically examine the effectiveness of a second injection on relapse after primary injection. *Methods:* We identified a cohort of patients who had received an initial corticosteroid injection into one wrist and then, at a later date, a second injection into the same wrist. We then compared the change in the Boston symptom severity scale (SSS) and functional status scale (FSS), and relapse time between the first and second injections for each patient. *Results:* In 229 patients who received two injections the mean improvement in SSS was 1.2 (sd 0.8) for the first injection and 1.3 (sd 0.9) for the second,

not statistically significant. Mean improvement in FSS for the first injection was 0.4 (sd 0.8) and 0.7 (sd 0.8) for the second, which was statistically significant (p<0.001). The mean time to relapse for the first injection was 336 (sd 180) days and for the second injection 348 (sd 182) days, which was not statistically significant. *Conclusions:* Second corticosteroid injections appear to be at least as effective and long lasting as the first injection.

P.037

Paraneoplastic stiff person syndrome mimicking tetanus: a case series report and literature review

J Madhani (Vancouver) K Chapman (Vancouver) S Cresswell (Vancouver) G Gibson (Vancouver)*

Background: Stiff Person Syndrome (SPS) results from an imbalance between excitatory aminergic and inhibitory GABAergic and glycinergic systems, and can be paraneoplastic. *Methods:* We describe a case series of two patients presenting with trismus, who were initially treated for tetanus. Both subsequently developed long tract findings, neuropathic pain, lower extremity stiffness and myoclonus. One patient had known bladder cancer at the time of presentation, and the second was subsequently diagnosed with small cell lung cancer. Serologic testing revealed antibodies against glycine receptors in both. Other paraneoplastic antibodies were negative. Both responded to immunomodulatory treatment (IVIg and rituximab), in combination with treatment of their underlying cancers. *Results:* Literature review found three similar cases of Stiff Person Plus Syndrome with Progressive Encephalomyelitis with Rigidity and Myoclonus (PREM) with associated positive antibodies against glycine receptors. Glycinergic cells are important inhibitory cells at the spinal level. Glycinergic cells are also a target of the tetanus toxin. *Conclusions:* Anti Glycine may be an important antibody associated with Stiff Person Plus variant of Progressive Encephalomyelitis with Rigidity and Myoclonus (PREM). Paraneoplastic SPS should be considered in patients presenting with trismus.

STROKE (VASCULAR NEUROLOGY, IMAGING, BASIC SCIENCE, NEUROVASCULAR/ ENDOVASCULAR SURGERY)

P.038

Rock 'til you drop: cervical artery dissection in musicians

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Background: Cervical artery dissection (CAD) is a rare but potentially devastating cause of stroke. CAD may be secondary to trauma, trivial trauma, or idiopathic. Repetitive neck flexion/ extension to the beat of the music is an unusual cause of trauma to the neck vessels. Most patients present with neck pain; TIA or stroke may occur at the time of presentation or in the days that follow. *Methods/Case Descriptions:* Two rock musicians presented with CAD. A 30-year-old male base guitar player, presented with headache and increasing unsteadiness. CT angiogram demonstrated a vertebral artery dissection and a significant posterior fossa infarct requiring urgent surgical decompression. A 40-year-old male guitar player presented with headache and transient right hemiparesis after a concert and had a carotid artery dissection. No mechanism other than guitar playing was identified. *Results/Discussion:* The majority of CAD is thought to be idiopathic however, neck flexion/extension is a risk factor. Neither of the described patients had any known risk factors for CAD. Rigorous guitar playing with "head banging" may have contributed to the dissections seen. Both were treated with ASA and one patient had significant infarct and lasting neurologic symptoms; the other patient had no deficits. *Conclusion:* Two cases of CAD in healthy young musicians are described. Rhythmic neck flexion/extension while playing rock music may be a risk factor for CAD.

P.040

Delayed migration of the pipeline embolization device stent following treatment of an internal carotid artery aneurysm: the need for early follow-up imaging

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Background: The Pipeline embolization device (PED) has become an alternative for treatment of broad-necked aneurysms. Stent migration can lead to residual aneurysm filling. We report the second case of delayed proximal stent migration. *Methods:* A 60-year-old female with a three month history of dizziness with occasional nausea and vomiting. She was found to have a 10.4 mm broad-necked left internal carotid artery (ICA) aneurysm on computed tomography angiography (CTA). She underwent treatment for this aneurysm with a PED. Two PED stents (4.75 x 14 mm and 4.75 x 18 mm) were deployed with good intra-operative result. *Results: six* week follow-up imaging showed proximal migration of the stent with residual aneurysm contrast filling. The stent was oriented such that the contrast jet was directed into the dome of the aneurysm. The patient was also complaining of increasing headaches. She therefore underwent a second treatment with a single 4.75 x 20 mm PED stent to cover the neck of the aneurysm. Follow-up imaging at four months revealed obliteration of the aneurysm. *Conclusions:* Proximal migration of the PED can occur in a delayed fashion leading to residual aneurysm filling. The time course for delayed stent migration is unclear. We recommend early follow-up imaging after PED placement to ensure timely definitive management of this problem.

P.041

Incidence of hemorrhage in a cohort of patients with unruptured intracranial aneurysms

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Background: Natural rate of aneurysm rupture remains controversial, especially for small aneurysms. Centers frequently choose to follow rather than treat aneurysms < 7 mm. We aim to study the safety of observation in patients with small UIAs followed in Saskatchewan. *Methods:* We conducted a retrospective review of all patients in a prospective database presenting between July 2008 and June 2012 with unruptured aneurysms. Aneurysm characteristics recorded included size, presentation, and follow-up

imaging. Multiple aneurysms in a single patient were considered independently. Patients with no follow-up were excluded from the analysis, including those still awaiting initial follow-up. *Results:* Of the 203 UIAs < 7 mm, 25 were treated, while mean follow-up time was 12.3 months for followed aneurysms, with two incidences of rupture. Of the 88 UIAs ≥ 7 mm, 42 (48%) were treated. Mean follow-up time for followed aneurysms was 8.2 months, and there was one incidence of rupture during follow-up. *Conclusions:* Treatment decision paradigms used in our center showed low rates of rupture in untreated aneurysms less than < 7 mm.

P.042

Minimally invasive subcortical parafascicular access clot evacuation (MiSPACE)

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Background: Spontaneous intracranial hemorrhage (ICH) is common and causes significant mortality and morbidity. To date, optimal medical and surgical intervention remains uncertain. A lack of definitive benefit for operative management may be attributable to adverse surgical effect, collateral tissue injury. This is particularly relevant for ICH in dominant, eloquent cortex. Minimally invasive surgery (MIS) offers the potential advantage of reduced collateral damage. MIS utilizing a parafascicular approach has demonstrated such benefit for intracranial tumor resection. *Methods:* We present a case of dominant hemisphere spontaneous ICH evacuated via the minimally invasive subcortical parafascicular access clot evacuation (MiSPACE) model. We use this report to review the literature on ICH surgical management, introduce MiSPACE, and to examine the application of this novel MIS paradigm. *Results:* The featured patient presented with a left temporal ICH and severe global aphasia. The hematoma was evacuated via the MiSPACE approach. Post-operative reassessments showed significant improvement. At two months bedside language testing was normal. MRI tractography confirmed limited collateral injury. *Conclusions:* This case illustrates successful application of the MiSPACE model to ICH in dominant, eloquent cortex. MRI tractography illustrates collateral tissue preservation. Safety and feasibility studies are required to further assess this promising new therapeutic paradigm.

P.043

Clinician's guide to outcome prediction in clinical neurosciences: application of bayesian neural networks with fuzzy logic inferences

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Background: Complex relationships exist among heterogeneous groups of prognostic factors. In real life, data points rarely fit perfectly linear relationships. Greater deviations from linearity point to the need for exploratory analyses with complex non-linear systems. *Methods:* The novel approach of Bayesian Neural Networks with Fuzzy Logic Inferences was applied with data from 4 trials of tirilazad for aneurysmal subarachnoid hemorrhage that included 3561 patients. Validation was carried out to increase generalizability of this approach. *Results:* Neural Networks with Bayesian Regularization of 30 prognostic variables revealed 11 latent variables in one layer using MATLAB. Internal validation was performed with discrimination c-statistic (ROC curve) of 0.84. Fuzzy logic inference rules were then created for external (domain) validation, and impact analysis in ambispective patient cohorts. *Conclusions:* Conceptual generalization of Bayesian Neural Networks with Fuzzy Logic Inferences is as follows: Based on one's own experience (summation of existing parameters weighted by strength of belief in what happened beforehand), one can predict (based on one's assigned strength of belief) where along a spectrum of probabilities the unknown quantity value will end up. If it falls outside the spectrum in real life, then, one has to check whether there are still unknown elements influencing the outcome variable in question.

P.044

Health related quality of life following aneurysmal subarachnoid hemorrhage – a qualitative synthesis of determinants and measurement

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Background: More than half of aSAH patients who recover to functional independence experience chronic reductions in health related quality of life (HRQoL). Longitudinal studes show residual physical disability as key predictor of decreased HRQoL. Many of these studies face methodological challenges, including those of reporting and measurement. *Methods:* Systematic review of current literature on aSAH HRQoL was performed, with emphasis on qualitative thematic saturation. *Results:* Under self-reported and diagnosed psychological determinants of decreased HRQoL include cognitive deficits (executive functioning, visuospatial function, attention, verbal memory, information processing and reaction time), mood and emotional complaints (depressive symptoms, anxiety, post-traumatic stress, loss of motivation, abnormal introversion, lability), personality and vitality changes (passive coping, fatigue and vitality deterioration with decreased energy and tolerance to mild stressors). Methodological issues involve those of reporting: patient selection bias and observation bias. Measurement issues include capturing discriminative health measurement scales with requirements of validity, reliability and responsiveness. *Conclusions:* Methodological limitations may be overcome with longitudinal mixed methods studies of HRQoL with both qualitative aspect (phenomenological or thematic exploration of HRQoL domains) and quantitative aspect with use of stroke measurement scales to capture multidimensional HRQoL domains. Random effects models should be specified a priori to acknowledge account for both within and between study variability.

P.045

Cerebellar stroke presenting with global aphasia in a patient with muscular dystrophy

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Background: We report a case of global aphasia resulting from right cerebellar ischemic stroke, on a background of limb-girdle muscular dystrophy. *Method:* Case report *Results:* A 49-year-old right-handed Caucasian male, with a long-standing history of

presumed limb-girdle muscular dystrophy, presented to hospital with acute onset of speech impairment. Neurologic examination was significant for mutism, impaired naming, and reduced comprehension and repetition. Reading and writing were similarly impaired. There was no nystagmus. Testing for strength and coordination was limited due to his muscle disorder, but there were no apparent new deficits. MRI of the brain revealed a focus of diffusion restriction involving the right cerebellar hemisphere. Extensive testing did not reveal a source, including detailed cardiac investigations. His language impairment gradually resolved and he was close to his baseline within the next few days. At three month follow-up his language was entirely normal, and there were no cerebellar deficits apparent. *Discussion:* An important connection between the cerebellar hemisphere and the contralateral cerebrum exists. Investigators have suggested that the right cerebellar hemisphere appears to be associated with language and the left cerebellar hemisphere with visuospatial functions. This case adds evidence to this view that language impairment in cerebellar mutism may be a consequence of "crossed cerebello-cerebral diaschisis".

P.046

Pathophysiology and genetic determinants of subarachnoid hemorrhage

JA D'Abbondanza (Toronto) J Ai (Toronto) R Macdonald (Toronto)*

Subarachnoid hemorrhage (SAH) can occur traumatically or spontaneously. Although SAH only accounts for approximately 7% of all strokes worldwide, it is associated with a greater proportion of morbidity and mortality. The goal of this study was to investigate the potential contribution of different genetic backgrounds to the secondary complications after SAH in a mouse model. SAH was induced in 7 inbred strains of mice, and the degree of large artery vasospasm and brain injury was assessed. After 48 hours, SAH mice showed a significant reduction in middle cerebral artery diameter compared to sham counterparts ($P<0.05$, Student's t-test), with the exception of KK/HIJ and DBA/2 mice. Neuronal injury in the cerebral cortex, as determined by fluoro-jade positive cells, was exhibited across all strains compared to sham mice ($P<0.05$, Student's t-test). A/J and DBA/2 mice differed significantly from C57 mice in the number of degenerated neurons ($P<0.05$, ANOVA, Fisher LSD) and demonstrated the two extremes of brain injury. Additionally, no correlation was found between brain injury and vasospasm, which suggests a disconnect between vasospasm and neuronal injury. Further microarray investigations of A/J and C57 mice may also provide invaluable insight into the causes of these inter-strain differences and may more accurately identify which genetic contributors are responsible for secondary complications after SAH.

P.047

Reversible cerebral vasoconstriction syndrome associated with autonomic dysreflexia: a case report

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Background: Reversible cerebral vasoconstriction syndrome (RCVS) is characterized by recurrent thunderclap headaches and multifocal segmental vasoconstrictions of the cerebral blood vessels with or without focal neurological deficits. RCVS has already been reported in various clinical settings. It has been reported once before in association with autonomic dysreflexia (AD) in a patient with a traumatic spinal cord injury. *Methods:* Case report. *Results:* A 52-year-old man with a residual spastic quadriparesis from a traumatic C5 fracture experienced recurrent thunderclap headaches. He also experienced episodes of AD due to manipulation of an indwelling catheter before each thunderclap headache. A CT scan of the head, a brain MRI and a lumbar puncture were normal. A CT angiography of the brain vessels revealed multiple segmental vasoconstrictions of the main cerebral arteries. A follow-up CT angiography of the brain vessels three months later showed normalization of the segmental vasoconstrictions and a diagnosis of RCVS due to AD was made. *Conclusions:* This is the second reported case of RCVS associated with autonomic dysreflexia thus rendering more credible that clinical association. This association supports the theory of abnormal sympathetic activity, which is observed in AD, as a component of the underlying pathophysiology of RCVS.

P.048

Tran arterial embolization of spinal pial AVM

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We described a 39-year-old woman who presented to emergency department with a post coital headache and neck pain. Her symptoms lasted approximately 20 minutes with her headache resolving over the 2 hours before her presentation to Emergency. Neurological examinations were benign and CT of her head reveled no acute findings. A CT angiogram reveled no dissection and no aneurysm of her intracranial arterial system. A lumber puncture was performed, which reveled elevated protein, red blood cells and white blood cells. An MRI of her cervical spine was performed on post admission day 1, which reveled what was believed to be consistent with a small vascular malformation in the cervical spinal cord at the level of C2 and C3. Differntial diagnosis were Spinal pial AVM or a cavernoma. The patient underwent a Tran arterial embolization of the above- mentioned spinal Dural AV fistula. The procedure was successful in partially emboli zing the lesion. She remained in the hospital for two weeks and was then discharged.

P.049

The role of intra-aortic balloon counter-pulsation pumps in subarachnoid hemorrhage patients with refractory symptomatic vasospasm: a successful case report and review of the literature

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Background: Subarachnoid hemorrhage is a devastating disease; up to 15% die from the initial rupture and approximately one third of those who survive remain dependent with respect to daily activities. Secondary complications include delayed cerebral ischemia (DCI) and myocardial dysfunction. The use of mechanical augmentation, with intra-aortic balloon counter-pulsation pump (IABP) technology, for severe left ventricular failure has been reported in the literature. *Methods:* We report the case of a 43-year-old patient with a ruptured anterior communicating aneurysm who went on to develop severe vasospasm. This was complicated by severe left ventricular failure in the presence of pharmacological hemodynamic augmentation. An IABP was inserted successfully and the patient made a full recovery. *Results:* A review of the

literature revealed only eight publications in the past 16 years, with a total number of 15 patients reportedly treated with IABP for refractory vasospasm and myocardial dysfunction. Only one of these 15 patients made a full recovery (GOS 5). Our case is the second documented patient to make a full recovery. *Conclusions:* Contemporary therapies to prevent DCI, including pharmacological hemodynamic augmentation and cerebral balloon angioplasty, may be insufficient or exhausted in a subset of patients. Our case demonstrates the effective use of an IABP as rescue therapy.

P.050

SAH with multiple intracranial aneurysms: pitfalls in endovascular treatment

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Background: Ruptured intracranial aneurysms are the most common cause of spontaneous subarachnoid hemorrhage (SAH), accounting for 75-80% of cases. When an aneurysm is identified, it is important to assess for additional aneurysms. The incidence of multiple aneurysms ranges from 20-30%. With ruptured aneurysms, the primary therapeutic goal is to secure the aneurysm by isolating it from the circulation in order to prevent re-rupture. *Method:* We present four patients with spontaneous SAH and multiple intracranial aneurysms. All were treated initially with endovascular coiling immediately after conventional cerebral angiography. *Results:* Three out of four patients were subsequently found to have the wrong aneurysm coiled. Two of the patients went on to urgent microsurgical clipping of the remaining aneurysm(s) and were found to have had the wrong aneurysm coiled. A third patient also had the wrong aneurysm coiled and experienced re-rupture, requiring a second coiling procedure to secure the ruptured aneurysm. Additional morbidity was incurred in these cases as a result. *Conclusion:* When multiple aneurysms are identified in SAH, it may be a challenge to correctly identify the ruptured one, which must be treated first. Little is reported in the literature regarding this problem. This report highlights this dilemma, which seems to be increasing along with the increased use of endovascular aneurysm coiling – a technique less likely to confirm rupture site as compared to surgical clipping.

P.051

Molecular alterations in hippocampus underlying the loss of LTP after subarachnoid hemorrhage

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Patients who survive aneurysmal subarachnoid hemorrhage (SAH) often have deficits in learning, memory and executive function. We have previously reported that rodents with SAH develop cognitive deficits and loss of long-term potentiation (LTP). Here we investigate the potential mechanisms underlying the loss of LTP. SAH was created by injection of 300μl of fresh unheparinized arterial blood into the prechiasmatic cistern of Sprague-Dawley rats. In the dendritic area of CA1 neurons, the number of synapses was significantly decreased in SAH models compared to controls. Similarly, the expression of GluR1, GluR2 and CaM kinase II was significantly decreased in SAH rats. A decreased level of superoxide but increased level of NO was detected in SAH animals as compared to controls. These results suggest that the loss of LTP after SAH in rat model may be due to a synaptic plasticity rather than cell death. Decreased immunoreactivity to GluR1, GluR2 and CaM kinase II in SAH animals suggests reduction in key protein mediators necessary for the maintenance of LTP may simultaneously contribute to the loss of LTP. Decreased superoxide and increased nitric oxide (NO) levels in SAH models suggests oxidative stress is involved in the loss of LTP. The identification of potential mechanisms involved would provide novel therapeutic targets and a better understanding the causative factors of cognitive deficit in patients with SAH.

P.052

Avoid delay in giving IV tPA to achieve timely reperfusion with bridging therapy

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Background: There is suspected advantage of bridging (IV+IA) therapy. We studied whether bridging therapy influenced successful reperfusion compared to the endovascular approach alone. *Methods:* We analysed anterior circulation ischemic stroke patients treated with stentriever devices, with or without IV tPA, between January 2011 to June 2012. Patient clinical and radiologic data were collected. Outcomes included 24-hour NIHSS improvement and sICH (SITS-MOST definition). *Results:* Summarized in table. IV tPA resulted in delay of 26 minutes on average, in the time from imaging to endovascular reperfusion compared to the IA only group (p 0.03). However, this delay did not significantly impact the median improvement in 24-hour NIHSS, as these patients were still treated relatively early from onset time (median of 130 minutes). Incidence of sICH was slightly higher in the bridging group, but did not reach significance (p 0.5). *Conclusion:* Randomized trials should be designed to avoid delays caused by IV tPA administration to achieve timely endovascular reperfusion. Our findings do not identify any added risks associated with the use of bridging approach.

Table 1 (P.052)

	IV+IA	IA alone
Number of patients	64	41
Median age (IQR)	68 (19.5)	68 (18)
Median baseline NIHSS	18 (9)	17 (7)
Median baseline ASPECTS	8 (2)	8 (3)
Proportion with cervical ICA occlusion	10.9%	4.9%
Proportion with terminal ICA occlusion	12.5%	7.3%
Proportion with M1 MCA occlusion	81.3%	48.8%
Proportion with M2 MCA occlusion	15.6%	17.1%
Median door to imaging (mins)	20.5 (14)	20.5 (11)
Median imaging to puncture (mins)	65 (32)	44 (43)#
Median puncture to reperfusion (mins)	42 (44)	39 (51)
Median imaging to reperfusion (mins)	113 (62)	87 (62)#
Median onset to IV tPA (mins)	130 (111)	NA
Median onset to reperfusion (mins)	250 (123)	305 (237)
Proportion with TICI 2b-3 reperfusion	78.1%	80.5%
Proportion with TICI 2c & 3 reperfusion	48.4%	39% ##
Median 24-hour NIHSS	6 (11)	9 (10)
Median 24-hour ASPECTS	7 (3)	6 (4)
Median NIHSS drop in 24 hours	11 (11)	8 (6)†
Proportion with 50% or more drop in NIHSS in 24 hours	70.3%	53.7%*
Symptomatic ICH in 24-hour CT (SITS-MOST)	7.8%	4.8% **
	# U-test p 0.03 †U-test p 0.18	* Chi-square p0.08 ** Chi square p 0.5 ## Chi-square p 0.4

P.053

Aneurysm coiling- 16 years experience in a single Canadian center

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Background: Endovascular coiling of aneurysms has now become a preferred treatment in most of the Canadian centers. We were one of the early adopter of this technique in Canada. The purpose of this study was to evaluate our endovascular coiling experience for intracranial aneurysms. *Material and Methods:* We retrospectively reviewed our endovascular database in the department of Neuroradiology to assess all interventional cases done in our center. The distribution of intracranial aneurysms, the method and outcome of treatment were recorded. *Results:* From 1997 to 2012, we had done a total of 1269 endovascular procedures. Out of these 767 were endovascular treatments for intracranial aneurysms. Out of these 197 aneurysms were located in the posterior circulation and others in the anterior circulation. The most common location for the treated aneurysms was anterior communicating artery (n=220) followed by basilar tip (n=118) and posterior communicating artery (n=117). Most of the aneurysms were treated either with conventional coiling or balloon assisted coiling. Stent assisted coiling was used in only 37 patients. SILK flow diverter was used in 23 patients. *Conclusion:* Our study shows the evolution of endovascular technique in the treatment of intracranial aneurysm over the last 16 years in a medium size Canadian center.

P.054

Concurrent Solitaire FR use and carotid stenting in acute tandem carotid occlusion setting

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Background: Treatment of tandem acute internal carotid artery (ICA) occlusion and middle cerebral artery (MCA) occlusion represents a challenge from a neurointerventional point of view. Multiple modalities and approaches are described in the literature with limited evidence on each. *Method:* Three patients presented with acute stroke symptoms and signs. Computed tomography (CT) and CT angiogram revealed tandem ICA and MCA occlusions. Endovascular treatment was aimed to address MCA occlusion and achieve recanalization distally as a first step; utilizing the Solitaire FR revascularization device. After MCA recanalization was restored, the ICA occlusion was treated with balloon angioplasty and stenting during the same setting. *Results:* Three patients (51-year-old male, 49 and 73-year-old females) were treated utilizing the technique described above. Near complete or complete recanalization was achieved during the procedure and confirmed with ultrasound during follow- up. Follow-up CT head revealed only small basal ganglia infarcts with sparing of the remainder of the MCA territory in all treated patients. *Conclusions:* The described endovascular approach above is successful and technically feasible. As the phrase 'time is brain" goes, the authors suggest this approach offers earlier cerebral reperfusion and potentially saves more neuronal tissue as opposed to the reversed approach (ICA stenting followed by MCA recanalization).

P.055

Platelet-mediated changes to neuronal glutamate receptor expression at sites of microthrombosis following experimental subarachnoid hemorrhage

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Glutamate is important in the pathogenesis of brain damage after cerebral ischemia and traumatic brain injury. Notably, brain extracellular and cerebrospinal fluid as well as blood glutamate concentrations increase after experimental and clinical trauma. While neurons are one potential source of glutamate, platelets also release glutamate as part of their recruitment which might mediate neuronal damage. This study investigates the hypothesis that platelet microthromboemboli release glutamate that mediates excitotoxic brain injury and neuron dysfunction after subarachnoid hemorrhage (SAH). We used two models, primary neuronal cultures exposed to activated platelets, as well as a whole animal subarachnoid hemorrhage preparation. We demonstrate that thrombin-activated platelet-rich plasma releases glutamate, which exceeds concentrations of 300 micromolar. When applied to neuronal cultures, this activated plasma is neurotoxic, and attenuated in part by glutamate receptor antagonism. We also demonstrate that exposure to thrombin-activated platelets induces a marked downregulation of the surface glutamate receptor GluR2, a marker of excitotoxicity exposure and a possible mechanism of neuron dysfunction. Linear regression demonstrated that seven days following SAH in the animal there was a strong correlation between proximity to microthrombi and reduction of surface glutamate receptors. This novel data suggests that platelet-mediated microthrombosis contributes to neuronal glutamate receptor dysfunction and might therefore influence clinical outcome following subarachnoid hemorrhage.

P.056

Prophylactic magnesium sulfate for cerebral vasospasm in aneurysmal subarachnoid hemorrhage: systematic review and meta-analysis

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A systematic review was conducted to determine the evidence for the use of prophylactic magnesium sulfate for the prevention of cerebral vasospasm in aneurysmal subarachnoid hemorrhage. *Search methods:* Medline, Embase, Cochrane library, clinicaltrials.gov and controlled-trials.com were searched with a comprehensive search strategy. 2035 records were identified in the initial search and 1574 remained after removal of duplicates. *Selection criteria:* Randomized, parallel group, controlled trials were included. Studies included at least one of the pre-specified outcome measures. Nine studies were included in the quantitative analysis. *Results:* The summary effect for GOS and MRS is a RR of 0.93 (95% CI 0.82-1.06). The RR for Mortality is 0.95 (95% CI 0.76-1.17). Delayed cerebral ischemia has a RR of 0.54 (95% CI 0.38-0.75), which is the only outcome with a statistically significant summary effect measure, favouring magnesium treatment. Delayed ischemic neurological deficit has a RR of 0.93 (95% CI 0.62-1.39). TCD vasospasm has a RR of 0.72 (95% CI 0.51-1.03). The outcome

dependent GRADE quality of evidence ranges from low to high, though is high for patient important outcomes of mortality and unfavourable functional outcome. *Authors' Conclusion:* Current evidence does not support the use of Magnesium Sulfate for the prophylaxis of cerebral vasospasm in aneurysmal subarachnoid hemorrhage.

P.057

Microsurgical excision and decompression of giant coiled aneurysms: report of 2 cases

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Objective: Endovascular therapy with coil embolization and flow diverters for giant aneurysms may be complicated by severe mass effect. We present the surgical treatment of such complications. *Material and method:* Two patients underwent microsurgical excision of coils to relieve severe mass effect after endovascular treatment for giant aneurysms. The first patient is a 57-year-old women treated for a ruptured giant basilar artery aneurysm with multiple embolizations and insertion of a flow diverter. She developed a pseudobulbar syndrome followed by severe tetraparesis and respiratory distress requiring endotracheal intubation. The second patient is a 66-year-old woman who underwent endovascular treatment for a giant unruptured left MCA aneurysm with coils and flow diverter. She developed dysphasia, right hemiparesis and eventually intracranial hypertension not responding to corticosteroids and osmotherapy. *Results:* Both patients underwent coils excision without compromising the flow diverters. Both patients had significant improvement of their clinical condition with significant reduction of brain oedema surrounding the aneurysms. *Conclusion:* Surgical intervention of giant coiled aneurysms exerting significant mass effect is warranted in selective cases, even when faced with severe neurological impairment. The surgical pitfalls will be presented.

TRAUMA, CRITICAL CARE

P.058

The Mini-Mental State Examination and the Montreal Cognitive Assessment after traumatic brain injury: an early predictive study

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Background: to compare results of the Montreal Cognitive Assessment (MoCA) to those of the Mini-Mental State Examination (MMSE) in persons with traumatic brain injury (TBI) and to predict outcome at discharge from the acute care setting. *Methods:* The MoCA and the MMSE were administered to 214 patients with traumatic brain injury (TBI) during their acute care hospitalization in a Level I trauma center. Outcome was measured with the Disability Rating Scale (DRS). A linear regression determined that the MoCA, the MMSE, TBI severity, education level and presence of diffuse injury. *Results:* the model determined that the MoCA, the MMSE, TBI severity, education level and presence of diffuse injuries predicted 57% of the total variability of the DRS scores. The model without the MMSE had a R^2 of 53.7% and the model without the MoCA had a R^2 of 55.0%. The models without the MMSE or the MoCA had a R^2 of 24.9%. *Conclusion:* the MoCA is not a better predictor of outcome as assessed with the DRS than the MMSE. Perhaps it would be the case at a later time in the recovery process that is after the acute stage when cognitive deficits of patients with TBI are more subtle. Further studies on the MoCA are therefore needed in the later stages of recovery post TBI.

P.059

Hospitalized traumatic brain injury patients are susceptible to dehydration during heat waves

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Background: The literature has documented the association of elevated environmental temperatures and dehydration in disabled geriatric and psychiatric hospitalized patients. Hospitalized Traumatic Brain Injury (TBI) patients represent a disabled population that can suffer from dehydration when environmental temperatures rise. *Methods:* We retrospectively analyzed all patients admitted to the Neurosurgery Ward at the Montreal General Hospital with a diagnosis of Traumatic Brain Injury during the months of July and August of 2012. Seventy patients were included for whom all serum creatinine, urea and urea/creatinine ratios were collected. Subgroup analysis regarding age, comorbidities, TBI severity, need for an operative intervention and the main traumatic lesion found on head computed tomography was also completed. *Results:* Linear regression analysis showed a linear increase in urea/creatinine ratios when compared to rising mean environmental temperatures. This association approached statistical significance ($p = 0.09$) in severe TBI patients. Furthermore, there were 14 temperature peaks over the two months. In all instances where temperature peaks lasted five days or more, severe TBI patients had a significant ($p < 0.05$) rise in their urea/creatinine ratios when compared to mild/moderate TBI patients. *Conclusions:* This is the first study to identify hospitalized traumatic brain injury patients as a susceptible population to dehydration. Policies and protocols instituted for other disabled populations should be adapted to hospitalized TBI patients to prevent morbidity from dehydration.

P.060

Decompressive craniectomy in traumatic brain injury: does size matter?

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Background: The neurotrauma setting, decompressive craniectomy for refractory ICP is still widely used even if the DECRA trial showed that the surgical cohort treated with bifrontotemporoparietal craniectomy was associated with more unfavorable outcomes. Likewise to the RESCUEicp trial, our institution recommends large unilateral or bilateral fronto-temporoparietal craniectomy. We believe that this technique achieves better bony decompression. Recent work also suggested that craniectomy size impacts on ICP control and outcome. *Methods:* We identified around fifty cases of severe TBI requiring craniectomy at the Montreal General Hospital over the last ten years. We correlated the craniectomy size to different clinical variables,

including ICP control, quantity of CSF removed with extra ventricular drain, ICU stay and quantity and length of post-operative hyperosmolar therapy given. *Results:* We project to demonstrate that cases treated with larger craniectomy size provide overall better ICP control, require less medical therapy and perhaps have a better outcome. Preliminary results show that craniectomy size varies considerably between the cases. *Conclusions:* We believe that large craniectomy size could be beneficial and we aim at giving intraoperative tools to assess the adequacy of the bone flap removed, since measuring the craniectomy diameter is impossible before having achieved the procedure itself.

P.061

Subgaleal hematoma in craniectomized patients: an unreported life-threatening complication of decompressive craniectomy

P Martel (Montreal) M Maleki (Montreal) J Marcoux (Montreal)*

Background: craniectomy is commonly used in acute-care neurosurgery. In fact, it is now becoming the standard of care for refractory cases of raised intracranial pressure due to severe traumatic brain injury. Many complications of this procedure are well known and treatment algorithms are already recognized. Formation of a subgaleal hematoma in such patient is a rare unreported complication. It can result in rapid neurological deterioration because the underlying brain tissue is now vulnerable and left unprotected without any rigid skull. If left untreated, such a hematoma can progress to uncal herniation. *Methods:* We report three cases of early and three cases of delayed subgaleal hematoma formation in craniectomized patients. We describe the circumstances and the steps taken in each scenario to treat this complication. *Results:* Several risk factors could be identified, such as coagulopathies and probably the use of low-molecular weight heparin for DVT prophylaxis. *Conclusions:* Subgaleal hematoma formation in a craniectomized patient is a life-threatening situation that necessitates urgent surgical attention. We propose a treatment algorithm that considers bedside reopening of the skin incision and drainage of the subgaleal hematoma in an attempt to decrease the intracranial pressure while awaiting definitive surgical treatment.

P.062

Analysis of risk factors for minor brain injury in patients presenting with a facial fracture

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Background: Minor brain injuries (BI) are increasingly recognized as an important health problem. They have received less-than-deserved attention in the setting of facial fractures; once major BI is excluded, cognitive and neurological monitoring often ceases. We sought to determine prospectively the incidence of minor BI, presenting characteristics, and risk factors to determine which patients should be followed more closely. *Methods:* We identified 100 consecutive patients with facial fractures at a level 1 trauma center. A clinical questionnaire was used to identify those with major versus minor BI. Patients were analyzed using group comparisons of continuous data by Student's t-test and nominal and ordinal data by Pearson $\chi 2$. Logistic regression analysis was performed to identify variables associated with minor BI. *Results:* 38 patients met criteria for minor BI. Impaired consciousness occurred in 37. 26 and 16 reported pre- and post-injury amnesia, scoring lower on cognitive functions (orientation, concentration, short-term and delayed memory) (all $p < 0.05$), and standardized assessment of concussion score ($p = 0.016$). Motor vehicle collisions (MVC) and combined facial fractures resulted in at least a minor BI. Mechanism of injury ($p = 0.030$) was the only significant predictor of minor BI, though fracture type approached significance ($p = 0.066$). *Conclusions:* Facial fractures are frequently associated with undetected minor BI. Suspicion is especially warranted among those in MVCs or with combined facial fractures.

P.063

Does white cell count at presentation have any implication in traumatic brain injury?

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Objective: To study the association of high white cell count with severity of head injury & outcomes in patients with isolated head injury. *Methods:* It was a retrospective observational study. We reviewed medical charts & electronic database of patients with isolated head injury from 1 Jan 2006 - 31 June 2012. Demographic variables, Presentation GCS, Revised trauma score & total white cell counts at presentation were recorded. Glasgow outcome scale was then applied on follow up. Data was analyzed on SPSS19. *Results:* A total of 121 patients were included in the study. Mean age of our population was 38.86 years (±16.71). For the purpose of analysis we divided the population into three groups on the basis of GCS & compared for various variable & mean white cell count. Mean white cell count in mild, moderate and severe head injury was 13.81±6.12, 18.17±5.67, 19.37±7.17 respectively with statistically significant difference between mild & moderate head injury groups (p value<0.001). We found TLC to be negatively correlated with GCS on arrival with statistical significance (r=-0.238). However we did not find any significant association with unfavorable outcomes or GOS. *Conclusion:* Total white cell count is associated with severity of head injury. However study does not find a significant association with outcomes. Studies on larger sample size is required. Key Words: Isolated head injury, Total white cell count, GCS.

P.064

The management of traumatic subarachnoid hemorrhage and vasospasm with milrinone

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Background: Traumatic subarachnoid hemorrhage (tSAH) is the most common traumatic lesion amongst traumatic brain injury patients. The literature has confirmed that cerebral vasospasm occurs at high rates in these patients and that delayed ischemic symptoms can occur and worsen patient outcomes. Unfortunately, there is limited literature on the management of post-traumatic vasospasm. *Methods:* We applied the "Montreal Neurological Hospital Protocol" by Angle et al, which uses Milrinone to reverse vasospasm in aneurysmal subarachnoid hemorrhage, to 3 mild TBI patients with tSAH and vasospasm that developed clinical delayed ischemic symptoms. The Modified Fisher Scale was used to grade the tSAH. Radiological confirmation with CT-Angiography was available in one patient. *Results:* Two of the three patients had their

deficits completely reversed after Milrinone was started. The third case remained with residual neurological deficits but had an overall improvement. The Glasgow Outcome Scale for the three patients was favorable (GOS = 4-5). There were no reported complications from the use of Milrinone in these patients. *Conclusion:* The "Montreal Neurological Hospital Protocol" was successfully used in our TBI patients and appeared safe. This is the first report of Milrinone use in TBI patients for the treatment of cerebral vasospasm. This report emphasizes that larger prospective studies are warranted to establish the efficacy and safety of Milrinone for post-traumatic vasospasm.

P.065

Brainstem reversible hypertensive encephalopathy: a case report

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Background: Posterior reversible encephalopathy syndrome (PRES) is an acute neurotoxicity syndrome. Classically, MRI shows bilateral signal abnormalities in cortical and subcortical regions of the posterior circulation in relation with vasogenic edema. *Methods:* Case report. *Results:* A 48-year-old women presented following an episode of generalized seizures. She previously had progressive pancephalic headaches, intermittent confusion and disorientation. Her neurological examination revealed no focal deficit, including cranial nerves. However, her blood pressure was measured at 225/110 mmHg. An emergent MRI showed marked hyperintensity of the brainstem extending from the lower thalami to the upper cervical cord on T2WI and FLAIR sequences. With intensive antihypertensive therapy, her mental status considerably improved and, by day 7, she had completely recovered. On day 9, a repeat MRI showed a near resolution of T2/FLAIR hyperintensities in the brainstem and in the periventricular area. *Conclusion:* Patients with PRES may present with isolated brainstem edema. In these cases, there may be a "clinico-radiologic dissociation", with MRI findings far more extensive than would suggest the clinical presentation. MRI is the diagnostic tool of choice; typically, vasogenic edema with mass effect is present and T2WI, FLAIR and DWI can help differentiate PRES from ischemic, infectious, tumoral or other conditions.

P.066

Prognostic quality of MRI in severe traumatic brain injury patients

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There is no precise tool to accurately define the prognosis of severe TBI patients. Magnetic resonance imaging (MRI) provides more sensitive ways to define the extent of brain injury in the early phase of TBI than computed tomography (CT) do. To our knowledge, no study reported the predictive value of MRI in isolation from other important predictors of outcome such as GCS score, hypotension and pupils reactions. We conducted a retrospective study on all severe TBI patients admitted to the Montreal General Hospital who had an MRI post injury. GCS, ISS, pupil reactivity, occurrence of hypotension, age, CT scan grade, and MRI (grade and number of lesions) were collected and findings were correlated with outcome (GOS). Eighty-five patients were included. The location of lesions did not correlate with outcome. However, the number of axonal lesions had a significant relationship with the prediction of death (p=0.033), vegetative state (p=0.006), or good outcome (p=0.008). Furthermore, the number of lesions had a higher predictive value than GCS, hypotension or CT scan findings (p = 0.002). This study infirm previous conception that brainstem lesions had a predictive value. However it provides clear relationship between the burden of axonal injury in severe TBI patients and the outcome, and this is in isolation of the other known predictors of outcome for severe TBI.

P.067

Do patients with combined traumatic brain injury and brachial plexus injury have poorer outcome than patients with an uncombined injury?

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Among factors affecting the outcome in brachial plexus injuries, delay to referral to surgery, cerebral plasticity, as well as cognitive possibilities in the rehabilitation stage are of utmost importance. These factors can be modified by a simultaneous brain injury, but few reports have focused on this specific issue. From our traumatic brain injury database, we performed an observational study on 22 patients, who sustained a combined brain and brachial plexus injury between the years of 2000 to 2011. Average initial GCS was 11,3. Glasgow Outcome Scale was favorable in all but one patient. Time to referral/brachial plexus surgery, brain imaging findings and neuropsychological assessment were studied. Outcome concerning the limb function was compared to a control population of brachial plexus injury patients. Cognitive changes and cerebral plasticity are discussed as possible causes of poor outcomes. We believe that cognitive rehabilitation is as important as physical therapy in this subset of patients.

General Neuroradiology

P.068

fMRI-driven DTT in the assessment of corticospinal tract in patient with glioma

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Background: fMRI-driven diffusion tensor tractography(DTT) has provided the ability to evaluate the spatial relationship between the corticospinal tract and tumor borders. The main objective of this study was to improve the preoperative assessment of the corticospinal fibers in patients with gliomas involving the motor cortical areas. *Methods:* Nineteen patients with gliomas involving the motor cortical areas underwent fMRI and DTI scan. We tracked the fibers from seed point selected in the white matter adjacent to the location of fMRI activation, and the target point was placed in the cerebral peduncle. Karnofsky performance status (KPS) was evaluated in patients before and after surgery. *Results:* In the seventeen patients of nineteen cases, we successfully tracked fibers by choosing seed and target point. What is more, DTT can indicate preoperatively the possibility of the extent of surgical resection. The

post-operative average KPS of the 17 patients increased by more than 10 scores. *Conclusions:* Incorporating fMRI into DTT show a maximum benefit in surgical treatment and will enhance the accuracy of operative.

DEMENTIA

P.069

Less education predicts anticholinesterase discontinuation in dementia patients

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Objective: We investigated patient socio-demographic, clinical and functional factors predicting cholinesterase inhibitor discontinuation by patients presenting to a memory clinic in Saskatoon, Saskatchewan. *Methods:* Data collection began in March 2004 at the Rural and Remote Memory Clinic where family physicians referred their non-institutionalized patients. Neurological and neuropsychological assessment, patient and caregiver questionnaires provided the socio-demographic, clinical and functional variables. Univariate logistic regression analysis was used to examine possible associations between each independent variable and the binary outcome variable of treatment discontinuation. Multivariate logistic regression was used to determine predictors of cholinesterase inhibitor discontinuation within six months of drug initiation. *Results:* Our sample consisted of the first 63 patients (60.3% female) for whom we prescribed a cholinesterase inhibitor. The mean age at clinic day was 74.56 years (SD=7.78). We found that years of formal education was the only variable significantly associated with cholinesterase inhibitor discontinuation by six months. The more years of formal education, the lower the rate of drug discontinuation by six months. *Conclusions:* Likelihood of cholinesterase inhibitor discontinuation by six months was predicted by fewer years of formal education.

P.070

Benign mesial temporal lobe epilepsy

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Benign mesial temporal lobe epilepsy (bTLE) is often not well recognized. It requires at least 24 months of seizure freedom with or without antiepileptic medication. Seizure onset tends to be in adolescence or adulthood, and 40% show evidence of hippocampal sclerosis in long standing bTLE. We describe the clinical features of a benign form of temporal lobe epilepsy in 24 patients (6 Males). The mean age was 32.2 years (range 28-80), and the follow-up period exceeded two years. Neurological examinations were performed at every follow up visit (4-12 months). All patients had at least two EEGs and a MRI. All patients had a mild epileptic disorder and achieved seizure freedom at onset of treatment, which persisted for at least 24 months. Sixteen patients (73%) had MTS, 79% had significantly older age at onset, and two patients (8%) had early onset. EEGs were normal in four, showed temporal slowing in 17 and temporal spikes in three. Aetiology consisted of a viral encephalitis in one, but was unknown in 23. In three patients, we attempted discontinuation of AEDs after a long period of remission (5-8 years), but all had recurrence within two to four weeks. Not all temporal lobe epilepsy, even with MTS, is refractory to medication. Lifelong treatment is advocated.

GENERAL NEUROLOGY

P.071

Inflammatory focal myositis with IgG4 infiltrate in a patient with rheumatoid arthritis: a case report

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Background: IgG4-related disease (IgG4-RD) is a recently defined entity with multi-organ involvement characterized by serum IgG4 elevation and tissue IgG4-positive plasma cell infiltration. The literature suggests IgG4-related autoimmune pancreatitis as the prototype, however other commonly affected sites are the digestive tract, salivary gland, orbit, lymph nodes, and retroperitoneum. To our knowledge there is no description in the literature of IgG4 infiltrates in muscle. *Methods:* We describe a 64-year-old female with stable rheumatoid arthritis treated with golimumab. She presented with new onset of bilateral temporalis muscle pain, tightness around her temples and focal tenderness and firmness on palpation of the muscle. CK and EMG were normal. *Results:* Histopathologically, a temporalis muscle biopsy revealed extensive inflammatory reaction with severe loss of myofibers, marked fibrosis, lymphoplasmacytic aggregates and prominent IgG4 plasmacytic infiltrate (>10 IgG4 per high-power field) in addition to elevated serum levels of IgG4. Clinically the patient improved over 6 months without any additional immunomodulation. *Conclusions:* This unusual case of inflammatory focal myositis with involvement of temporalis muscle extends the spectrum of IgG4-RD. Further studies are necessary to delineate the role of IgG4 in the pathogenesis. However, physicians need to be aware of this entity as biopsy and serum IgG differential are critical in making the diagnosis.

P.072

Cognitive function in cerebellar ataxia: an assessment of MSA-C and sporadic ataxia

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Background: The integrity of cognitive function in Multiple System Atrophy Cerebellar Variant (MSA-C) and Sporadic Ataxia (SA) is uncertain. We used the Montreal Cognitive Assessment (MoCA) to evaluate cognitive function in these disease groups. *Methods:* Subjects and age matched controls were recruited at the UBC Neurogenetics Clinic. History of neurodegenerative diseases other than MSA-C and SA were exclusion criteria. The MoCA and International Cooperative Ataxia Rating Scale (ICARS) were administered. Disease groups were each compared to controls using Mann-Whitney U Test. Correlations of MoCA with ICARS were examined with Spearman rank coefficient. *Results:* There were 6 subjects with MSA-C (M age=64.2±9.2, 4M//2F, M disease duration (DD)=4.8±2.2), 14 with SA (M age=61.4±7.0, 7M//7F, M DD=11.9±5.7) and 14 controls (M age=57.0±8.2, 7M//7F). MoCA scores were significantly lower for MSA-C and SA (M=19.0±3.5, p=0.000, M=23.4±3.7, p=0.004, respectively), compared to controls

(M=27.4±1.3). The MSA-C group scored significantly lower than the SA group (p=0.033). MoCA scores were inversely correlated with ICARS for MSA-C (r=-0.250, p=0.633) and for controls (r=-0.463, p=0.095) but not for SA (r=0.003). *Conclusion:* This study demonstrates early, moderate cognitive impairment in MSA-C. By contrast, in SA cognitive impairment appears to be milder, later and unrelated to cerebellar ataxia severity.

P.073

C-ANCA associated vasculitis presenting as isolated focal leptomeningeal enhancement: report of a case and review of the literature

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We report the case of a 63-year-old Caucasian man who presented with a five-month history of stereotyped episodes of left perioral tingling spreading to the left hand over a few seconds, sometimes associated with left lower face asymmetry, dystonic position of the left fingers and heaviness in the left arm. His past medical history included bilateral carotid endarterectomy and right common carotid artery stenting many years ago for bilateral transient ischemic attacks as well as renal angioplasty, high blood pressure, dyslipidaemia and coronary artery disease. Brain magnetic resonance imaging (MRI) demonstrated right frontoparietal leptomeningeal enhancement with adjacent cortex signal abnormality. A pancorporal positron emission tomography (PET) scan showed hypermetabolism in the right frontoparietal region and no other hypermetabolic zone. Two electroencephalograms (EEGs) performed during hospital stay were normal. Extensive serologic investigation revealed isolated positive cytoplasmic anti-neutrophil cytoplasmic antibodies (C-ANCA). Meningeal biopsy demonstrated inflammation with abundant lymphocytes, compatible with leptomeningeal vasculitis. Levetiracetam 500mg twice daily was started for the probable epileptic nature of the episodes. Also, Prednisone 50mg once daily was prescribed and within four weeks, the enhancement almost completely resorbed and the episodes stopped. This case illustrates the rare but possible limited form of ANCA-associated vasculitis.

P.074

Familial hemiplegic migraine presenting with encephalopathy and seizures

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Background: We report a case of familial hemiplegic migraine – type 1 (FHM-1) presenting with encephalopathy, hallucinations and new onset focal seizures. *Method:* Case report *Results:* A 26-year-old female with long-standing history of presumed FHM-1 presented to hospital with right temporal headache accompanied by visual aura and left hemiparesis. Three days after onset she became encephalopathic with profound visual and auditory hallucinations. She also developed recurrent episodes of focal motor seizure activity, with occasional secondarily generalized tonic-clonic seizure. Laboratory analysis and lumbar puncture was unremarkable. Brain CT and MRI revealed dramatic diffuse right hemisphere cerebral edema. EEG showed profound right hemisphere delta activity and occasional epileptiform discharges. Keppra and acetazolamide were initiated and she gradually returned to baseline within 14 days. Repeat MRI in one month revealed complete resolution of cerebral edema. Genetic testing identified the responsible CACNA1A gene mutation. *Discussion:* Hemiplegic migraine is a rare form of migraine with motor aura. It can occur as a sporadic or familial disorder. FHM-1 is the most common familial form, caused by mutation in the CACNA1A gene. Weakness can last days. Although uncommon, patients are at risk of major episodes of encephalopathy and severe attacks can include seizures. During an attack imaging may reveal ipsilateral cerebral edema and EEG may show diffuse slow waves contralateral to the motor deficit.

P.075

Altered mTOR signaling and mitochondrial respiration in the BTBR mouse model of autism

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Background: BTBR T+tf/J (BTBR) mice exhibit core features of autistic spectrum disorder (ASD) including: abnormal social interactions, cognitive inflexibility and repetitive motor behaviors. While the pathogenesis of ASD remains obscure, the mammalian target of rapamycin (mTOR) signaling pathway is increasingly being implicated. As such, we hypothesized that the mTOR pathway might be impaired in BTBR mice. *Methods:* Western Blot: Lateral temporal neocortices were collected from P35 BTBR mice and probed with antibodies against P-AKT, P-mTOR, P-S6, and P-4EBP1. Mitochondrial Bioenergetics: Total mitochondria were isolated from neocortex of similarly aged BTBR and B6 mice. Bioenergetic profiles were established using a standard Oxytherm and the Seahorse Bioscience XF24 Flux Analyzer. *Results:* In BTBR mice (n=3), mTOR signaling phospho-proteins were significantly decreased compared to B6 controls (n=5; $P<0.05$). Further, BTBR mice demonstrated increased basal respiration compared to B6 animals (n=4 per group, $P<0.05$) and increased oxygen consumption rates (OCR) (n=7 per group, $P<0.001$). *Conclusions:* Our results provide additional evidence that alterations in mTOR signaling may play a role in the pathogenesis of ASD. Additionally, we show intrinsic enhancement of mitochondrial respiration, which may reflect a compensatory mechanism. These results suggest a mechanistic connection between mTOR signalling and mitochondrial function in BTBR mice.

P.076

Infiltrative brain tumor mimicking acute viral encephalitis

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Background: We report a case of an infiltrative anaplastic astrocytoma presenting as acute encephalitic illness. *Method:* Case report *Results:* A previously healthy 49-year-old gentleman presented to hospital upon waking in the morning with sudden onset of headache, mild fever, and confusion. Initial brain MRI revealed increased signal in the temporal lobes with no enhancement or mass effect. Cerebrospinal fluid showed normal cells and chemistry with elevated opening pressure. The patient initially improved after medical treatment with a presumed diagnosis of herpes simplex encephalitis (HSE). Extensive testing did not reveal a viral source and detailed investigation for paraneoplastic and other autoimmune conditions was negative. There was no relief with trial of steroids or

IVIG and a ventriculoperitoneal shunt was eventually placed to manage high-pressure headaches. After 3 months, the patient was readmitted with new onset focal seizures. A follow-up brain MRI revealed marked increase signal change and new corresponding diffusion restriction. Stereotactic brain biopsy revealed an infiltrative anaplastic astrocytoma. *Discussion:* HSE is the major cause of sporadic encephalitis with a predilection for the temporal lobe. While the initial presentation was consistent with HSE, it can be difficult to distinguish an infiltrative temporal lobe lesion early on. If definitive diagnosis using PCR assays for common viruses cannot be found, a stereotactic brain biopsy should be considered in patients with temporal lobe lesions.

P.077

Insulin neuritis: an unusual form of diabetic polyneuropathy

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Background: We report a case of suspect "insulin neuritis, an acute painful polyneuropathy which may complicate rapid correction of hyperglycemia with insulin. *Methods:* Case report *Results:* A 74-year-old male was referred to the neurology service with rapidly progressive weakness and dysesthetic extremity pain. He had known type 2 diabetes mellitus, managed with diet only prior to admission. He was admitted to hospital with pneumonia and subcutaneous insulin was prescribed to manage uncontrolled severe hyperglycemia. He developed a rapidly progressive quadriparesis with diffusely painful extremities within three days of insulin administration. Sensorium, cognition and cranial nerve examinations were normal. His motor exam was limited by pain with tactile stimulation of the extremities and with movement of the limbs. Upper and lower extremity strength was graded as 2/5 proximally and distally. Biceps and triceps reflexes were hypoactive (1+) while knee and ankle were absent. Plantar reflexes were mute. Pain and vibration sensation was impaired below the knees bilaterally and proprioception was impaired with distal lower extremities. Nerve conduction studies showed absent motor and sensory responses in upper and lower extremities. *Conclusions:* This case highlights an under-reported rare form of diabetic neuropathy. While appropriate glycemic control is important, overly rapid correction with insulin may lead to a severe painful polyneuropathy, sometimes termed "insulin neuritis".

P.078

A rare case of MAMA

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Background: We report a case of Multifocal Acquired Motor Axonopathy (MAMA) in a young woman. *Methods:* Case report *Results:* Our patient is a 35-year-old caucasian female. She experienced onset of symptoms at 21. They involved slowly progressive muscle wasting & weakness of finger extension in the fingers of her right, then left hand. It gradually spread up both arms, involving biceps, triceps, infraspinatus and deltoids bilaterally. Two inital sets of EMG/NCS demonstrated a multifocal non-myotomal motor axonal process involving denervation without conduction block in the arms. At age 32 she noticed weakness of right ankle dorsiflexion. Over the past three years her weakness has spread to bilateral hip abduction, ankle dorsiflexion & ankle eversion. Reflexes are absent in upper limbs, 3/4 at the knees, 2/4 at ankles, with downgoing plantars. She has no associated sensory, respiratory, bladder, or bulbar symptoms. Comorbidities include Psoriasis, Raynaud's Phenomenon & Crohn's disease. MRI Brain/Spine, LP, Anti-GM1 antibodies, Lyme Serology and Genetic testing for SMA are unremarkable. She failed to respond to trials of IVIG, Prednisone & Imuran. MAMA is a rare entity in the literature, and report of these cases is important in developing better identification and understanding of disease.

P.079

Anti-NMDA-receptor encephalitis: case series and analysis

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Objective: We have performed a Case Series analysis of recent admissions to McMaster University Hospitals of paraneoplastic encephalitis due to antibodies against the Anti-N-methyl-D-aspartate receptor (anti-NMDA-R). *Background:* Anti-NMDA-receptor encephalitis is an immune-mediated syndrome that is increasingly being recognized cause of seizure or psychiatric conditions requiring hospital admission. Previous reports have described young females presenting with symptom of personality changes, focal neurological deficits, seizures, or autonomic dysfunction. In the past it has often reported in patients with ovarian teratomas. *Design/Methods:* Case Series Analysis *Results:* We describe an array of clinical presentations of anti-NMDA-R encephalitis over the past several years at McMaster University. Complex partial seizures, personality change, and psychiatric symptoms were common presentations of this disorder. A majority of patients showed dramatic improvement with five day course of IVIG at 2g/kg. Many of the patients had no underlying tumour identified at time of presentation. *Conclusions:* These findings indicate antibody-associated immune response against NR1/NR2 heteromers of the NMDA receptor (NMDAR) is a potentially severe yet reversible medical condition. Often it may precede the detection of any tumor such as ovarian teratoma by several years and therefore follow-up screening is indicated.

MULTIPLE SCLEROSIS

P.080

Do serum levels of prolactin rise in Multiple Sclerosis patients with ocular involvements?

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Background: Multiple Sclerosis (MS) is an autoimmune disorder of the nervous system that is commonly manifested by ocular involvements. It is caused by an interaction of genetic and environmental factors. Prolactin has an immune stimulatory effect and autoimmune diseases like systemic lupus erythematosus, rheumatoid arthritis and also MS have been associated with hyperprolactinemia. The purpose of this study was to evaluate serum prolactin levels in MS patients with ocular involvements. *Methods:* Twenty five patients with confirmed diagnoses of MS and ocular involvements were enrolled and their data including sex, age and age at the onset of the disease were obtained. Serum prolactin levels were measured in patients and in age-matched control subjects. *Results:* Among our 25 patients, 23 were female and two were male.

The ages and the ages of onset of disease were under 30 years in more than 90% of patients. Serum prolactin levels were high in two patients but we didn't find any statistically important difference between prolactin levels of the patients and the controls. *Conclusion:* In this study prolactin levels in MS patients with ocular involvement were not different from the control group. Further investigation, especially during exacerbation periods of MS might be more helpful.

P.081

Clinical MRI correlation in RRMS patients on natalizumab

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Background: Several studies have evaluated the efficacy of natalizumab in relapsing remitting MS (RRMS) patients but clinical and neuroradiological correlation has been insufficiently studied. *Methods:* We retrospectively reviewed the clinical course and MRI results in patients treated with natalizumab. The main parameters included the clinical course and the number and volume of Gadolinium-enhancing, new or enlarging T2 hyperintense on natalizumab. *Results:* Thirty five patients were reviewed. While on natalizumab, 19/35 patients had 0 relapses, 10/35 1 relapse, 1/35 2 relapses and 5/35 demonstrated continuous progression. Of the 11 relapses, 2 correlated with new MRI lesions; 2 relapses were optic neuritis and another transverse myelitis and thus may not have been visualized radiologically, leaving 6/11 relapses without corresponding MRI activity. Overall, new MRI lesions were detected only in 6/35 (17%) patients. EDSS scores improved or remained stable while on natalizumab in 24/35 (68%) patients. Of the patients who evolved to secondary progressive MS (SPMS), 4/5 did not show any inflammatory activity on the MRI, while 1/5 had multiple new lesions over time with continuous EDSS progression (no clear relapses). *Conclusions:* Our review demonstrates that natalizumab suppresses both clinical and MRI activity in RRMS but that MRI activity does not always predict clinical activity. However, progressive worsening of clinical symptoms in the absence of MRI activity is suggestive of a conversion to SPMS.

P.082

Treatment of natalizumab-associated PML-IRIS – a case report

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Background: Nearly all cases of progressive multifocal leukoencephalopathy (PML) among multiple sclerosis (MS) patients treated with natalizumab develop immune reconstitution inflammatory syndrome (IRIS). Treatment for natalizumab-associated PML-IRIS is not well established. Suppression of the immune response by corticosteroids for IRIS may promote PML progression. Maraviroc, a CCR5 inhibitor with immunomodulating properties, may be effective in preventing IRIS. *Methods:* We describe a case of natalizumab-associated PML-IRIS treated with maraviroc and methylprednisolone. *Results:* A 50-year-old man with relapse-onset MS treated with natalizumab for five years presented with subacute onset of progressive cognitive impairment. PML was diagnosed following detection of a nonenhancing lesion in the left temporal subcortical white matter on MRI and JC virus in the cerebrospinal fluid. Natalizumab was removed by plasma exchange and he received mirtazapine (in vitro activity against JC virus). Maraviroc 300 mg PO bid was prescribed for prevention of IRIS. However, IRIS was diagnosed three weeks later, with classic MRI findings and accompanying clinical worsening (marked aphasia and right arm paresis). He received intravenous methylprednisolone followed by a slow taper of oral prednisone. Subsequently, he demonstrated significant clinical improvement. *Conclusions:* Natalizumab-associated PML-IRIS may develop despite prophylactic treatment with maraviroc while corticosteroids retain a role in treatment of IRIS.

General/Intracranial Neurosurgery

P.083

Aneurysmal bone cyst of the temporal bone presenting with headache and partial facial palsy

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Aneurysmal bone cysts are benign bony lesions that rarely affect the skull base. We describe a case of an otherwise healthy 23-year-old woman who presented with a pulsatile noise in the left ear, followed by a four-week history of throbbing headache with nausea. There was no associated emesis, visual or auditory changes, or other neurological features. Neurological examination revealed a partial left lower motor neuron facial palsy. Computed tomography and magnetic resonance imaging demonstrated a large lesion in the left middle cranial fossa skull base with erosion of the petrous temporal bone. Based on preoperative imaging studies, the lesion was interpreted to likely be consistent with a meningioma. An orbitozygomatic approach was utilized for tumor resection. Pathological evaluation demonstrated evidence of an aneurysmal bone cyst. Postoperatively, the patient had improvement in the lower motor neuron facial paresis and there was no worsening of hearing. She had no other new deficits and was discharged home on the third post-operative day. A thorough literature search identified a few case descriptions of aneurysmal bone cyst in this location. The authors reviewed all available literature and discuss the clinical significance and management of this lesion.

P.084

Rate of intraventricular hemorrhage post-ventricular peritoneal (VP) shunt insertion

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Background: We determined the rate of intraventricular hemorrhage (IVH) and intracranial hemorrhage (ICH) post-VP shunt surgery since current literature on this is lacking. Our objective is to determine the rate of IVH and ICH from post-op CT radiological reports after primary insertion or first proximal revision. *Methods:* We carried out a retrospective analysis of medical records from VP shunt patients at Hamilton General Hospital from 2006 to 2012. Statistical analysis was done using SPSS 19. *Results:* A total of 277 patients were identified. Of these, 122 cases included primary VP insertions and 27 cases included first revisions for a total of 149 cases. The mean age at VP shunt operation is 49 years. Thirty-four percent (n=51) of patients had

post-op hemorrhages following VP shunt surgery (19.5% IVH, 8.7% ICH and 6.0% both). The rate of IVH post-operatively for primary or revision surgery was 22% and 42.3%, respectively. The rate of IVH between these two surgeries was found to be significantly different (p=0.046). All other comparisons were found to be non-significant. *Conclusion:* We report here the rate of IVH and ICH post-VP shunt surgery. The rate of IVH is significantly higher for VP shunt revisions when compared to primary surgeries.

P.086

Programmable valve in the treatment of secondary tonsillar herniation due to lumboperitoneal shunt

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Background: When severe, the treatment of idiopathic intracranial hypertension includes, among other modalities, the insertion of a lumboperitoneal shunt. Tonsillar herniation seen from over drainage is frequently asymptomatic. *Method:* We present a case of an 18-year-old male who was diagnosed with benign intracranial hypertension at the age of eight years. Because of severe papilledema, headache and 6th nerve palsy, an insertion of lumboperitoneal shunt was carried out with resolution of his symptoms and signs. Ten years later he presented with a four month history of neck pain and occipital headaches. His neurological examination was normal. MRI showed a marked tonsillar herniation with syringomyelia and edema of the upper cervical cord. The lumboperitoneal shunt was revised and a programmable valve was inserted at 2.0. Improvement of symptoms was noted immediately after. *Conclusion:* Symptomatic tonsillar herniation after lumboperitoneal shunt can be treated in a less aggressive manner by an insertion of a programmable valve controlling CSF outflow rather than posterior fossa decompression or ventriculoperitoneal shunt.

P.087

Patients' anxiety around incidental MRI findings: a qualitative study

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Background: Incidental findings are a common on MRI. Our study examined how patients are told about their incidental finding, anxiety until the neurosurgical consultation, and afterward. *Methods:* Qualitative research methodology was used. Thirty-two participants were interviewed using open-ended questions. Answers were transcribed and analyzed for themes. *Results:* The level of patient satisfaction for the initial breaking of the news averaged 4.1 (range 1-5). Four themes were identified: 1) Emotional stresses over incidental findings are partially dependent on how the news was communicated; 2) Breaking worrisome news is best done in person, but telephone communication can sometimes be acceptable; 3) Patients are divided about how much information they wish to get about incidental findings before going for a MRI; 4) Waiting for the neurosurgical consultation is a stressful time without adequate support. *Conclusions:* When dealing with an unexpected MRI finding, patients are anxious about the situation. Our study exposes ways the experience could be made more comfortable for patients right from the start, from being told the news in a calm and sympathetic manner, to providing support for patients while they wait for a meeting with a neurosurgeon, to expediting the neurosurgical consultation.

P.090

Microvascular decompression of the optic nerve

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Background: Intracranial dolichoectasia affects primarily elderly patients with vascular risk factors. Reported rates vary between 0.06-5.8%, however most remain asymptomatic. Symptomatic compression of the optic apparatus by a tortuous internal carotid artery (ICA) is exceedingly rare. Reported here is a patient who presented with a visual field deficit due to supraclinoidal carotid artery compression of the right optic nerve. *Case Presentation:* A 36-year-old woman presented with onset of a right monocular nasal visual field deficit. Laboratory and ophthalmological work-up revealed no discernible cause, however magnetic resonance imaging (MRI) and angiography demonstrated distortion of the right optic nerve by the ipsilateral supraclinoidal ICA. A pterional approach for craniotomy was proposed for microvascular decompression. Intraoperatively, the optic nerve and ophthalmic segment of the carotid were tethered by arachnoidal adhesions. Following surgery, untethering and microvascular decompression of the nerve proved to result in visual field improvement. *Conclusion:* Visual field loss due to optic nerve compression from an ectactic carotid artery is rare, however should be considered in the absence of more common causes. Here, microvascular decompression was performed with a modest improvement in visual field testing.

P.091

Predicting success of endoscopic third ventriculostomy on clinical grounds: validation of the ETV success score in a "closed-skull" population

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Introduction: Endoscopic third ventriculostomy (ETV) has become the first line of treatment in obstructive hydrocephalus. The Toronto group (Kulkarni et al, 2009) developed the ETV Success Score (ETVSS) to predict the clinical response following ETV based on age, previous shunt and hydrocephalus etiology in a pediatric population. However, the use of the ETVSS has not been validated for a population comprising adults. *Objectives:* The objective of this study is to validate the ETVSS in a "closed-skull" population, including patients aged two years or older. *Methods:* In this retrospective observational study, medical charts of all consecutive cases of ETV performed in two university hospitals were reviewed for demographic and clinical variables. The ETVSS was calculated for all patients. Discriminative properties along with calibration of the ETVSS will be established for our population. *Results (preliminary):* 197 primary ETVs were incuded in our study. The mean age of was 41 years (3 years to 85 years old). ETV was successful at 6 months in 159 patients (80.7%). Neither age nor previous shunt were significantly associated with unsuccessful ETV. However better outcomes were achieved in patients with aqueductal stenosis, tectal compressions and other tumoral hydrocephalus than in cases secondary to myelomeningocele, infection or haemorrhage (p = 0.03). *Conclusion:* Etiology may be the predominant prognostic factor in adults and children with closed fontanels undergoing ETV.

P.092

Peripheral nerve sheath tumor: dealing with the unexpected

L Jacques (Montreal) M Hebert-Blouin (Montreal)*

Neurofibromas and schwannomas are the most common peripheral nerve sheath tumour encountered. They are well defined and progress very slowly. Imaging follow-up is being done annually, but immediate intervention should be considered if the mass is continuing to grow, becomes painful and or is associated with neurological deficit. The radiological criteria are well known, but in certain cases, imaging fails to reveal the nature of these lesions and therefore unforeseen pathology can be anticipated. We will discuss five patients who presented with presumed benign peripheral nerve sheath tumours clinically and confirmed with imaging. When in fact these patients were later found to have the following pathologies; leimysarcoma, malignant transformation of a neurofibroma, synovial sarcoma, angiolymphoid hyperplasia and a castleman syndrome. The Intraoperative and postoperative strategies will be reviewed as well as their outcome so far.

SPINE

P.093

Complications in halo vest treatment of cervical spine injuries

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Background: Halo vest immobilization (HVI) is the gold standard for external fixation of the cervical spine. Numerous studies cite high rates of HVI complications including infections, pneumonia, and non-union. Compared to other centers, our center has orthotists that apply all halo braces. *Hypothesis:* Application of halo vests in a standardized manner results in higher success and lower complication rates. *Methods:* Retrospective chart review of cervical spine traumas requiring HVI presenting to the Foothills Medical Center, Calgary, between 1999 and 2012. *Results:* 900 patients were identified. To date, 148 patients have been analyzed. 128 patients required HVI only; 20 patients required halo and surgical fixation. Seven failed HVI requiring further surgical management. Medical complications include pin site infections (16.2%), pneumonia (13.5%), dysphagia (6.8%), and DVT(2%). *Discussion:* HVI is a common treatment for cervical spine injuries. High complication rate has deterred many from considering its use. One of the most common medical complications of HVI is pin-site infections, and reported to be between 8-36%. The failure rate of HVI is reported to be as high as 20-30%[1]. In a center where halo vests are placed by experienced orthotists with regular follow-up, the medical complication rate is consistent with the literature. However, the success of halo vest treatment is significantly higher.

REFERENCE

1. Bransford, RJ et al. Halo vest treatment of cervical spine injuries. Spine 2009;34 (15): 1561-6.

P.094

Can intraoperative monitoring predict post-operative course in extra-medullary spinal tumor?

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Background: Intraoperative monitoring (IOM) is been used over the last couple of decades to guide extend of surgical resection and avoid major neurological deficit. Very little is known whether IOM can predict post-operative course of patients undergoing extra-medullary spinal tumor resection. *Method:* Eight patients underwent surgical resection of intradural extra-medullary spinal tumors under IOM. All patients are followed up in clinic. *Results:* Nine patients (five males and four females) with age range 16-78 years are included. The tumors include six schwannomas, one meningioma, one lipoma, and one myxopapillary ependymoma. IOM showed a mean reduction in latency of the motor evoked potential (MEPs) intraoperatively of 20ms, with around 2/3 of this reduction occurring upon the immediate debulking, and the remaining up until the time of skin closure. *Conclusions:* IOM can be utilized not only as an adjunct to guide surgical resection of extra-medullary spinal tumor, in addition; it can be a helpful tool to predict post-operative course and potentially the speed of recovery.

P.095

Spinal subdural hematoma in the setting of atlanto-occipital dislocation: the case for early aggressive management

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Background: Traumatic spinal subdural hematomas (SSDH) are rare. Few cases have been reported in the setting of atlanto-occipital dislocation. *Methods:* We present the case of a 31-year-old gentleman who sustained polytrauma from a motor vehicle accident. He presented with partial loss of brainstem reflexes and hemodynamic instability, yet was able to follow simple commands. Imaging revealed atlanto-occipital subluxation and SSDH extending from the foramen magnum to C4/5. There was little to no supratentorial pathology. The patient was treated with an occiput-C4 decompression and fusion and evacuation of the SSDH. *Results:* The patient underwent an extended stay in hospital but was eventually weaned from his tracheostomy and has since been transferred to our rehabilitation centre. He was able to communicate verbally and displayed good cognitive capacity. *Conclusions:* Patients suffering traumatic atlanto-occipital injuries with or without SSDH often die prior to reaching medical care. Our experience suggests that survivors should be managed aggressively regardless of their clinical presentation. This is particularly true in those patients with injuries confined to the cervico-medullary region as they may have better functional outcomes given the relative sparing of the higher cortical centres.

P.096

Familial lumbar spondylolysis and spondylolisthesis

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Background: The etiology of idiopathic spondylolysis and listhesis is unclear. The possibility of a genetic cause has been incriminated. *Method:* We report a large family with five members including a mother, father and three children, who have been diagnosed with spondylolysis and associated spondylolisthesis at the first lumbar and sacral segments. They all presented with back pain and some with sciatica requiring surgical intervention in three children. Clinical, radiological and operative findings will be presented. *Conclusion:* The occurrence of this anomaly affecting the parents and the three children, clearly raises the possibility of an autosomal dominant inheritance. A detailed genetic study is being assessed.

PEDIATRICS (NEUROLOGY, NEUROSURGERY)

P.097

The epidemiology of chronic and intermittent ataxia in children in Manitoba, Canada

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Background: Chronic ataxia is caused by several disorders. The epidemiology of chronic ataxia has not been studied systematically. Our aim was to determine the epidemiology of pediatric chronic ataxia in Manitoba. *Methods:* Multiple sources and disease codes were used to identify children (0-16 years old) with chronic ataxia (>2 months duration) seen at Winnipeg Children's Hospital during 1991-2008. Patients with tumors, isolated vestibular or peripheral nerves diseases were excluded. *Results:* We identified 184 patients (mean age (SD) 15 (7.7)y, M=F) with ataxia. Median age at the presenting symptom onset was 1.25 years and at ataxia onset 3.1 years. Median duration of follow-up was 6.4 years. During the study period, the crude incidence rate was 5.62/10000; the crude prevalence rate was 6.62/10000; and the crude mortality rate 0.446/10000. The commonest presenting symptoms were developmental delay, ataxia, or seizures. The most common diagnoses (known in 129) were Angelman syndrome (N=16), ataxia telangiectasia (N=13), mitochondrial disease (N=9), Friedreich ataxia (N=7), stroke (N=7), and familial/genetic episodic ataxia (N=7). *Conclusions:* Chronic ataxia is a relatively common early-presenting symptom in childhood. A specific diagnosis is possible in 70% of patients. The mortality rate is relatively low and the disease burden is high with significant co-morbidities e.g. developmental delay and epilepsy.

P.098

The syndrome of infantile-onset saccade initiation delay (congenital ocular motor apraxia)

M Salman (Winnipeg) K Ikeda (London)*

Objective: Infantile-onset saccade initiation delay (ISID) is a defect in initiating volitional saccades. Several abnormalities are reported in ISID including developmental delay. Our aim was to quantify these abnormalities. *Methods:* Detailed review of the English medical literature revealed 383 patients with possible ISID. Patients with inadequate information, Joubert syndrome, neurodegenerative disorders or acquired SID were excluded whenever possible. Details on the remaining 325 patients were analyzed. *Results:* Head thrusts were reported in 80.6% of patients. Spontaneous saccades were present in 17.2%. Impaired smooth ocular pursuit was reported in 37.5%, strabismus in 15.7%, and nystagmus in 10.2%. Deficits in the fast phases of the vestibulo-ocular reflex and optokinetic response were reported in 41.2% and 72.6% respectively. Hypotonia was reported in 38.8%, developmental delay in 45.2%, speech/language delay in 41.2%, and ataxia/clumsiness in 53%. Neuroimaging (N=234) was normal in 32.9%. Infratentorial abnormalities were reported in 40.2% and cerebrum in 18.8%. Analysis on 288 patients using stricter inclusion criteria had minimal impact on the results. *Conclusions:* Significant abnormalities are associated with ISID. This suggests that ISID is a neurological syndrome rather than primarily a disorder of saccadic initiation. The high prevalence of various abnormalities in these patients is consistent with widespread brain dysfunction.

P.099

Comparison between radiologic feature of infantile glioblastoma and desmoplastic tumors: BC Children's Hospital (BCCH) experience and review of literature

*AA Bader (Vancouver)**

Background: On standard MRI scans, two of the commoner supratentorial infantile tumours, glioblastoma (GBM) and the benign desmoplastic infantile glioma (DIG) may look similar. We hypothesized that diffusion MRI would show restricted diffusion in infantile GBM but not in DIG, thus distinguishing these 2 tumours. *Methods:* Retrospective review of MRI features of infantile GBM and DIG at BCCH between 1982-2012, supplemented by literature review of MRI characteristics of these tumours. *Results:* Of 70 infantile brain tumors at BCCH, 2 GBM and 3 DIG met inclusion criteria. All cases were supratentorial, with cystic-solid consistency. On diffusion MR studies, both GBM but none of the DIG had restricted diffusion. Literature review revealed 30 cases of infantile GBM and 42 cases of DIG with MRI findings described. The tumor was cystic-solid in 33% of GBM and 80% of DIG. Enhancement was heterogeneous in 30% of GBM cases and 20% of DIG cases. Diffusion MRI studies in 2 published cases of infantile GBM had restricted diffusion. Only 1 report described diffusion scans in DIG, but interpretation was difficult. *Conclusions:* Although reported rarely in the literature, diffusion MRI seemed to distinguish between infantile GBM and DIG better than other radiographic parameters.

P.100

Chemotherapy-induced peripheral neuropathy among pediatric oncology patients

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Background: Vinca alkaloids and platinum-containing chemotherapeutic drugs have the potential to cause chemotherapy-induced peripheral neuropathy (CIPN). This study was to determine the frequency of CIPN among children who were treated for ALL, lymphoma, brain tumors or Wilms tumor. *Method:* This retrospective cohort study reviewed 252 patients treated at the Children's Hospital of Eastern Ontario from 2001-2011. Patients were included if they developed clinical symptoms of CIPN such as limb paraesthesia, weakness and/or ataxia during chemotherapy and their treating neurologist or oncologist deemed that their symptoms were due to a peripheral cause. Patients were excluded if an MR imaging identified a central cause for their symptoms. *Results:* CIPN occurred in children at a frequency of 18.8% (29/154) for ALL; 9.4% (3/32) for lymphoma; 17.9% (5/28) for Wilms tumor; and 23.7% (9/38) for brain tumor. Nerve conduction studies (NCS) were completed for 8/46 CIPN patients (all tumor types) and were abnormal in all but one patient. Among surviving CIPN patients (41/46), 93% showed no clinical deficits at their last examination. *Conclusions:* The frequency of CIPN at our center (9-24%) is less than that previously reported in adults receiving chemotherapy. Our study shows that children with CIPN have a favorable clinical outcome.

P.101

Autism spectrum disorder in a term birth NICU population

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Background: Non-specific perinatal and neonatal risk factors have been associated with autism development; however exclusively term at-risk infants remain underrepresented in the literature. This study examines the incidence and neonatal risk factors for autism spectrum disorder (ASD) in term neonatal intensive care unit (NICU) survivors. *Methods:* Infants were selected for retrospective chart analysis from a single university-practice database of neonates admitted to the NICU and followed by paediatric neurology. Term infants (≥ 37 weeks), born between 1991 and 2008 with ≥ two years follow-up were included. Principle outcomes were: ASD, cerebral palsy (CP), global developmental delay (GDD), and epilepsy. *Results:* 180 infants were selected from a database of 564 neonates. 10 (5.6%) developed ASD, 52 (29%) CP, 77 (43%) GDD and 47 (26%) epilepsy. Seventy-one (40%) developed no adverse outcomes. Seven patients with ASD exhibited at least one other adverse outcome. Emergency caesarean section (OR, 4.12; 95% CI, 1.02-16.56) and foetal distress (OR, 5.81; 95% CI, 1.20-28.27) were associated with ASD. *Conclusions:* In term NICU survivors, ASD occurs with greater incidence than in the general population, often with comorbidities, and is associated with non-specific neonatal risk factors. This highlights the importance of screening NICU survivors, particularly when comorbidities are present.

P.102

Sport participation in epileptic children: a review of the literature

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Background: Over the last few decades, a more permissive approach has been taken towards epileptic youth and participation in sports. Despite this progress, most studies show that epileptic children are less physically active than non-epileptic children. *Design/Methods:* A systematic review of Medline and SportDiscus using EBSCOhost interface was conducted. No limits were imposed for language, study design or publication date. Database searching identified 162 records for screening. Consensus of two reviewers was required to exclude a study. This resulted in 85 records and, ultimately, 33 records were included for review. *Results:* Providing seizures are reasonably controlled, most sports are acceptable to play, although some may require additional supervision. Studies have revealed that there is no increased injury risk among epileptic children who participate in contact sports. Not only does sport restriction impact a child from a psychosocial standpoint, but a sedentary lifestyle in this population presents greater health risks than sport participation itself. *Conclusions:* This review suggests that further studies should examine the epidemiology regarding seizure rates and triggers among young epileptic athletes within their respective competitive sports. This would enable physicians to provide future young athletes suffering from epilepsy with more precise data regarding risks and benefits.

P.103

Brain injuries in children presenting with facial fractures

A Ranger (London) A Grant (London) G Bowden (London) B Young (London) A Yazdani (London)*

Background: Increasing attention is being paid to the importance of minor brain injuries (BI) in children. With facial fractures, associated minor BI may be missed, particularly when major BI has been excluded. We identified the rate and characteristics of minor and major BI in children presenting with facial fractures. *Methods:* Over nine months, 100 consecutive patients presenting with facial fractures to our level-1 trauma centre were identified. A clinical questionnaire and checklist were completed from examination and chart review, to identify and compare; major, minor, and no BI. Statistical methods were utilized to determine risk factors for BI. *Results:* Among 27 eligible children, ranging in age from 6 to 18 years, 59.2% suffered a minor (n=8) or major (n=8) BI. Injuries resulted from assaults, falls, sports and motor vehicle accidents. Younger age was associated with an increased injury rate ($p<0.05$). Every facial fracture type was associated with a BI, except single orbital floor fractures. All patients with Lefort 2 or 3 fractures had BI ($p=0.008$), as did patients with additional non-cranial injuries ($p=0.004$). Minor BI patients exhibited impaired delayed memory ($p<0.001$) weeks after the event. Mechanism and patient age were strong predictors of BI. *Conclusions:* BI are common sequelae of facial fractures in children. Vigilance and validated criteria for BI are necessary, as minor BI are particularly missed in this setting.

P.104

Epilepsy outcome in pediatric supratentorial cavernomas: a review of 26 cases

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Background: The prevalence of cerebral cavernomas (CC) is estimated at 0,4-0,8% in the general population, one fourth presenting in pediatric patients. Seizures are the most frequent symptom of supratentorial CC. We wanted to evaluate the epilepsy outcome of children with CC comparing surgical versus conservative therapy. Our hypothesis is that surgical resection is associated with a better outcome in seizure control. *Methods:* We conducted a chart review of all pediatric supratentorial CC cases treated at Sainte-Justine Hospital from 1998-2012. *Results:* Sixteen patients received conservative treatment and ten underwent resection. The surgical indication was acute hemorrhage in seven and refractory seizures in three children. In the surgical group, 7/10 patients experienced seizures and at last follow-up, only one (14,3%) was on AED and still had seizures while six (85,7%) were seizure and AED free. In the conservative treatment group, 11/16 patients experienced seizures, two (18,2%) were still having seizures, four (36,4%) were on AED and seizure free and five (45,4%) were seizure and AED free. *Conclusion:* Our results suggest that there is no clear difference in seizure control between the surgical and conservative group. However, children who undergo surgery are more likely to be off medication.

P.105

Chorioamnionitis in children with cerebral palsy

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Background: The neuroinflammatory response to prenatal infection has been inconsistently linked to periventricular white matter injury and subsequent neurologic impairment. We aimed to investigate the association between histological chorioamnionitis and maternal and child factors in a cohort of children with cerebral palsy. *Methods:* We conducted a retrospective observational study on a cohort of children with cerebral palsy who were identified from a large population-based Cerebral Palsy Registry. Factors associated with histological chorioamnionitis were explored. *Results:* In 455 children with cerebral palsy, 54 had histologic chorioamnionitis reported on placental pathology (11.9%), which was the most common placental pathology reported. These children were born significantly more prematurely (mean 33.0 weeks, SD 6.2, p 0.0003) and at a lower birth weight (mean 2171.9g, SD 1123.3, p 0.004) than the rest of the cohort. Although periventricular white matter injury and spastic diplegic type of cerebral palsy were more often reported in these children on univariate analysis, neuroimaging and cerebral palsy subtype were no longer significant once gestational age was adjusted for. Placentas with chorioamnionitis were also more likely to have a mass above the 90th percentile. *Conclusions:* Chorioamnionitis is associated with premature birth with no observed additional effect on cerebral palsy subtype or neuroimaging. The significance of larger placental mass in this population is unclear.

P.108

A survey of infantile-onset facioscapulohumeral muscular dystrophy in Canada

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Background: Facioscapulohumeral dystrophy (FSHD) is caused by contraction of D4Z4 repeats on chromosome 4q. The prevalence across Canada remains undefined. *Methods:* CPNG members were surveyed to determine the clinical and genetic features of infantile FSHD (iFSHD). *Results:* 20/24 (83%) physicians from 18 CPNG centers participated in the survey. Eleven (4 males, 7 females) individuals with genetically confirmed iFSHD were identified; their mean age was 19.5 (range 8.7-50.9) years. The mean length of D4Z4 was 22 (range 15-38) kb. Facial weakness was present in all but one case. The mean age at onset of facial, scapular, hip, and foot weakness was 1.0, 5.8, 6.5, and 8.0 years respectively, except for one woman with congenital facial diplegia and relative sparing of other muscles until later. Four (36%) became wheelchair-dependent (mean age=17 years); two (18%) required non-invasive nocturnal ventilation (mean age=23 years), and five (50%) had neurosensory hearing loss. The prevalence of iFSHD is estimated to be <2% of all FSHD. *Conclusions:* Infantile FSHD is rare and is associated with a severe phenotype. The diagnosis may be delayed due to under-recognition of its unique features. This knowledge is critical to the development of successful clinical care models for individuals with FSHD across Canada. See table on following page.

Table 1 (P.108)

Genetically confirmed cases	Suspected cases	Physician(s) & site
2	1	Jean Mah, Alberta Children's Hospital, Calgary, AB
1	1	Kathy Selby, British Columbia Children's Hospital, Vancouver, BC
0	0	Edward Leung, Children's Hospital, Winnipeg, MB
0	0	Joe Dooley, Izaak Walton Killam Hospital, Halifax, NS
2	0	Garth Smith, CDC Hotel Dieu Hospital, Kingston, ON
0	0	Mark Tarnopolsky, McMaster University, Hamilton, ON
0	0	Craig Campbell, London Health Sciences Centre, London, ON
0	0	Gillian Hogan, Erinoak Kids Centre, Mississauga, ON
0	0	Chantal Poulin & Maryam Oskoui, Montreal Children's Hospital, Montreal, QC
0	1	Guy D'Anjou, CHR Sainte-Justine, Montreal, QC
0	0	Hugh McMillan & Anna McCormick, Children's Hospital of Eastern Ontario, Ottawa, ON
5	0	Grace Yoon, Jiri Vajsar, & Brenda Banwell, Hospital for Sick Children, Toronto, ON
0	2	Laura McAdam & Doug Biggar, Bloorview Kids Rehab, Toronto, ON
0	0	David Buckley, Janeway Child Health Center, St. John's, NL
1	0	Hanna Kolski, Stollery Children's Hospital, Edmonton, AB
Total = 11	Total = 5	Response rate = 20/24 (83%) physicians

P.109

Epilepsy evolution in focal cortical dysplasia and tuberous sclerosis complex

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Background: FCD and TSC are the commonest malformations of cortical development causing intractable epilepsy. Natural history of epilepsy in these disorders and outcomes is not fully elucidated. *Method:* Ten-year retrospective chart-review of FCD and TSC cases at Montreal Children's Hospital (major referral centre for neurological disorders). We included all cases involved neurosurgery, neurology and neuroradiology. *Results:* Thus far, we reviewed 32 charts (24 FCD, 8 TSC). Presentation age ranged from birth to 13-years. In FCD Group, all but one had epilepsy (75% intractable). The prevalent potential risk factors: febrile seizures and family history. One third had a developmental delay. Fifteen patients (63%) required surgery, mainly lesionectomies. Of the six patients who had well-documented follow-up more than one year, three were completely seizure-free. The commonest pathology was FCD type 3. In TSC group, five -of eight- patients had epilepsy (4 intractable). No significant risk factors were found. Genetic testing was confirmatory in three cases only. Two patients had developmental delay. Two required surgery. *Conclusion:* This work helps in a better understanding of the natural history of epilepsy in these disorders, and success of medical/surgical interventions. Further work would help to address variability in these two disorders in epilepsy development and control.

P.110

Autistic regression in a toddler: a rare presentation of anti-NMDAR encephalitis

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Background: Anti-NMDA receptor encephalitis has been typically associated with psychiatric changes (predominantly aggression), seizures, language dysfunction, dystonia, or dyskinesias. *Methods:* Case report. *Results:* A 33-month-old boy presented with decreased appetite, irritability, and insomnia, following an upper respiratory tract infection. Over the following month he lost previously-acquired language skills and social interest, finally becoming mute. Repetitive left hand movements and posturing appeared. Toe-walking and wring movements of the left wrist were observed on neurological exam. Laboratory investigations were normal, apart from mild elevation of ALT and AST, and increased CSF IgG index. Brain imaging was normal, and EEG revealed a non-specific background slowing with no seizures. Subsequently, CSF came back positive for NR1 anti-NMDAR antibodies. The patient was treated with Intravenous Immunoglobulins followed by a course of oral steroids, resulting in reacquisition of language and social skills, and resolution of left hand posturing. *Conclusions:* Our case emphasizes the significance of suspecting anti-NMDAR encephalitis as the cause of autistic regression, even in an age group where the diagnosis of autism is first made. We caution physicians to maintain a high index of suspicion, especially in cases where deterioration is rapid, or following a febrile illness.

P.111

Acquired infantile bilateral striatal necrosis: a rare yet treatable disorder

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Background: Acquired Infantile Bilateral Striatal Necrosis (IBSN), sometimes reported as post-infectious, manifests as a movement disorder and basal ganglia imaging abnormalities. A defect in biotin metabolism has been implied in its aetiology. *Methods:* Case report. *Results:* A 4-year-old boy presented with decreased level of consciousness and involuntary movements following febrile pharyngitis. Neurological examination showed reduced mentation, posturing of left extremities, and involuntary tongue movements. Deep tendon reflexes were brisk and clonus was elicited in the lower limbs. Babinski and Hoffman reflexes were positive on the left, as well as Palmomental, Glabellar and Snout reflexes. Laboratory workup was unremarkable, except for mild protein and WBC elevation in CSF. Cultures and serology were negative. Brain MRI revealed cortical edema, which subsequently subsided, and abnormal signals in the lentiform and caudate nuclei bilaterally, which became more prominent over the next few days. Patient was started on biotin, resulting in significant improvement in both clinical picture and MRI findings. *Conclusions:* Due to its rarity, the diagnosis of Acquired IBSN is not commonly considered. We suggest physicians consider IBSN in patients presenting with acute movement disorder following febrile infections, as timely treatment with biotin is effective and may result in rapid improvement.

P.112

Prognostication and the contribution of MRI in hypoxic-ischemic injury in infants

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Background: Magnetic resonance imaging (MRI) could improve prognostication in neonatal brain injury but without consensus about the value of MRI biomarkers, practice may remain inconsistent. *Methods:* A vignette-based survey of Canadian neonatologists and pediatric neurologists. Two clinical vignettes of neonatal hypoxic-ischemia assessed the: (1) usefulness of MRI biomarkers in prognostication and (2) certainty of prognosis based on MRI biomarkers. Assessment of the impact of MRI biomarkers on general practice evaluated: (1) the contribution of MRI biomarkers in practice; (2) their use in consulting with parents; (3) access to MRI in the Canadian context; and (4) confidence in inter-subjective reliability. *Results:* Early analysis based on a sample of N=43 (16% response rate) suggests 63% of participants agree on the prediction of future disability (severe disability in vignette 1, moderate disability in vignette 2) with remaining participants varying in their prognostication of the cases (from death to mild or no disability). Although 77% of participants reported applying MRI routinely in

practice for cases of this nature, the timing of these examinations was varied. Other areas of variability in general practice and physician perspectives will be explored. *Conclusions:* New MRI measures generate clinical variability and interact with challenging ethical dilemmas.

P.113

The cost of pediatric primary headache: a retrospective review of 100 cases in a Canadian pediatric tertiary care centre

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Objective: Compare direct costs of primary headache in a Canadian pediatric tertiary care centre before and after neurological consultation. *Background:* Pediatric primary headache results in a substantial number of referrals to pediatric neurologists. Wait times are prolonged as primary headache is rarely considered urgent. *Methods:* Retrospective chart review of patients aged 2 – 18 years referred to neurology at the Children's Hospital of Eastern Ontario (CHEO) between 2004-2010. Medical data was collected prior to and following neurology consultation. *Results:* One hundred patient records were reviewed. Average costs of ER visits and imaging were $80.08 and $70.55 per patient prior to and after neurology consultation ($t = 8.37$, $df = 99$, $p < 0.0005$). Average wait time from referral to consultation was 101 days (range: 1 to 323). Patients averaged 0.41 and 0.16 visits to ER prior to and after neurology consultation, respectively ($t = 2.808$, $df\ 99$, $p < 0.005$). Non-neurologists ordered significantly more CT scans (N=23) relative to neurologists (N=13; $t = 1.7$, $df\ 99$, $p < 0.05$); whereas neurologists ordered significantly more MRIs (N=21) relative to non-neurologists (N=8; $t = 2.57$, $df\ 99$, $p<0.01$). *Conclusion:* Prolonged wait time to neurology consultation likely increases direct costs and ordering of CT scans for pediatric primary headache. Future research should examine the effect of decreasing wait times in this population.

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Cerebral diaschisis in neonatal arterial ischemic stroke

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Objectives: Diffusion MRI (DWI) corticospinal changes remote from neonatal arterial ischemic stroke (NAIS) correlate with physiology and outcome. We hypothesized DWI can quantify acute alterations in other remote connected structures ("diaschisis"). *Methods:* Children from Calgary and SickKids Stroke Programs with unilateral NAIS, DWI <10 days from term birth, and Pediatric Stroke Outcome Measure >12 months (mos) were studied. Image J thresholding quantified diaschisis in connected structures using validated methods. Atrophy was measured volumetrically on MRI >12mos (OsiriX). Primary outcome (total diaschisis, TD) was corrected for stroke volume and regionalized by structure. Associations to MRI timing and outcome were sought (nonparametric statistics). *Results:* Twenty neonates met criteria (55% male). Median age at MRI was 72 hours. Diaschisis was observed in 16 (80%). Thalamic diaschisis was common (100%), followed by callosal (50%) and striatal (15%). Perilesional diaschisis estimates were variable. Structures manifesting acute diaschisis atrophied on follow-up imaging. TD correlated with stroke volume ($p=0.001$) but not with age at MRI. TD correlation to poor outcome ($p=0.01$) did not persist when corrected for infarct volume. Method reliability was good ($\rho > 0.80$). *Conclusion:* Diaschisis is common and measurable in NAIS. Potentially an early imaging biomarker of network injury, larger studies are required to determine clinical relevance.

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Robotic quantification of proprioceptive deficits in perinatal stroke

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Background: Perinatal stroke causes most hemiplegic cerebral palsy. Sensory dysfunction has been ignored and objective measurement tools are limited. Robotic technology can quantify complex sensory function in adult stroke but has not been applied to kids. *Methods:* Children from the Alberta Perinatal Stroke Project had MR confirmed unilateral perinatal stroke and upper extremity functional deficit. A bilateral exoskeletal robot (KINARM) tested planar upper limb movements in an augmented reality environment. Primary outcomes were 2 dimensional variability, shift, and contraction/expansion scores of a position-matching task. Clinical measures of sensory function (touch, proprioception, graphesthesia, stereognosis) were scored. Matched controls (age/gender) were tested. *Results:* Five children (median 14 yrs, 3 male) with perinatal stroke (3 PVI, 2 arterial) were compared to 7 controls. Stroke children demonstrated marked impairment in position matching including variability (6.48±1.4vs3.89±0.7cm) and shift (5.05±2.2vs2.00±1.3cm, $p=0.001$). Contraction/expansion ratios were also abnormal (0.56±0.27vs0.31±0.22; $p=0.09$). Clinical sensory scores were lower but correlated poorly with robotic measures and motor function. Assessments were well tolerated with no adverse events. *Conclusion:* Robotic quantification of proprioception is feasible in perinatal stroke. Sensitivity and quantification appear superior to clinical exam. Disordered proprioception is an under-recognized component of disability and a novel therapeutic target.

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Glial scaring after perinatal stroke: quantification and correlation to outcome

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Background: Perinatal stroke diseases cause most hemiparetic cerebral palsy: Neonatal Arterial Ischemic Stroke (NAIS), arterial presumed perinatal stroke (APPIS), and periventricular venous infarction (PVI). Gliosis, a reaction to brain injury, may be both a marker of timing and a barrier to novel therapies. We hypothesized that gliosis is measureable and associated with poor outcome. *Methods:* Children from the Alberta Perinatal Stroke Project were included with: (1) unilateral NAIS, APPIS, or PVI, (2) axial FLAIR MRI >24 months of age, and (3) >24 months follow-up (Pediatric Stroke Outcome Measure). Novel ImageJ software protocols quantifying gliosis were developed and validated. Gliosis scores (GS) corrected for infarct and brain volumes were compared across stroke types and outcomes. *Results:* Forty-three children were studied. GS were comparable between NAIS (438±171) and APPIS (407±373 $p=0.86$) and between all arterial and PVI (414±336 vs.

360±540, p=0.69). Arterial GS was associated with good motor outcome (p=0.003) and good overall outcome (p=0.022). PVI GS was not associated with outcome. Method reliability was excellent (ρ=0.99). *Conclusion:* MRI quantification of gliosis is feasible in perinatal stroke. Comparable gliosis in NAIS and APPIS provides indirect evidence of similar timing. The association of gliosis with good outcome warrants further study.

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Ependymoma in children under 3 years of age: the Canadian experience

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Background: Ependymomas represent approximately 30% of infant brain tumors and prognosis remains poor. Consensus is lacking around management in this age group, as radiotherapy is controversial. *Methods:* This was a multicentre, retrospective review of children < 36 months of age diagnosed with intracranial ependymoma. Twelve Canadian centres participated in data collection and pathology was reviewed centrally. *Results:* 74 children were identified: 44.6% were alive at a median follow-up (FU) of 7.8 years (range 1.3-16.6). Children with incomplete resection (IR) and gross total resection (GTR) had similar survival-40.7% (median FU 6.7 years; 1.3-16.6) and 46.8% (median FU 8.8 years; 4.0-15.6) respectively. Amongst those with IR, 66.7% were alive who received radiation at diagnosis, versus 27.8% amongst those who did not. In those < 24 months old, only 28.3% were alive (median FU 7.7 years; 1.3-15.6), versus 71.4% (median FU 7.9 years; 2.7-16.6) in the older group. The majority of patients < 24 months had an additional high risk factor. Patients aged 24-36 months tended to do well across all treatment groups. All 13 patients who did not receive radiation at relapse died. *Conclusions:* Children with an IR who did not receive radiation had poor survival. Patients < 24 months of age had a bad prognosis. Further prospective trials are required to determine the best treatment approach.

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Normal verbal abilities in a child with Joubert syndrome

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Background: Joubert syndrome is a genetic disorder characterized by abnormal breathing patterns, hypotonia, ataxia, abnormal eye movements, developmental delay, and cerebellar abnormalities. Although cognitive and language disability have historically been described in Joubert syndrome, a previous study suggested that motor and speech delay and abnormal eye movements may make assessment of intelligence and verbal skills difficult leading to underestimation of abilities in these domains. A literature review revealed three previous case reports illustrating normal verbal abilities in Joubert syndrome: a 20-year-old female with verbal IQ = 93, three children with normal language, and two adult brothers with normal, although slow, reading, writing, and speech. *Case:* Our patient presented at age 3 with characteristic clinical findings of hypotonia, ataxia, abnormal eye movements and developmental delay, as well as the typical "molar tooth sign" on cerebellar MRI. Although delayed speech was part of her initial presentation she was found to have verbal abilities well within the normal range on psychometric testing at age 10. Gross and fine motor domains showed significant disability. *Conclusions:* This case further illustrates the variability in verbal abilities in Joubert syndrome and the need for testing methods and educational tools that compensate for the associated motor difficulties.

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Syringomyelia in scoliotic children: rare and under estimated etiology

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Introduction: Sytingomyelia is relatively a common referral disease to neurosurgery clinics. The majority of the patient presents with scoliotic deformity and other associated motor or sensory dysfunction. They often correlated to tethered cord or Chiari malformation. Other rare etiologies are seldom reported in which patients might regrettably be mismanaged. *Methodology:* A 13-year-old girl presented with a two-year history of syringomyelia-related scoliotic deformity. She was operated for a presumptive diagnosis of Chiari malformation at another hospital. She was referred to us with progressive post operative weakness. The initial MRI at our hospital showed a holocord hemorrhagic syrinx with different ages of blood. *Result:* Adjusted MRI sequences for her scoliotic spine revealed an intramedullary cavernoma at the apex of her scoliosis. No associated vascular malformation was seen in catheter spinal angiogram. The lesion was resected safely with no post operative complications. Early post operative follow-up showed good gain of motor function with stable scoliosis. *Conclusion:* Surgeons should be vigilant toward unusual presentations in scolitic children. Such cases perhaps can benefit from a multidisciplinary team approach in which an accurate diagnosis is established and proper treatment can be planned in order to facilitate patient's functional outcome.

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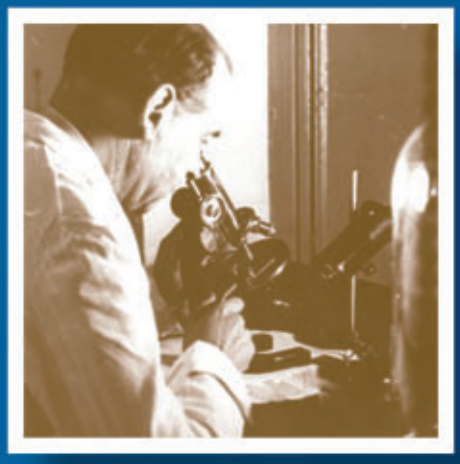

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