

Welcome

Bienvenue and Welcome!

On behalf of the Canadian Medical and Biological Engineering Society and l'Association des médecins et ingénieurs biomédicaux du Québec (APIBQ), I would like to welcome each and every one of you to our beautiful Nation's Capital. This year, we are delighted to share the platform with APIBQ as we respectively share our 36th and 42nd conference anniversaries.

The committee organizers have worked hard to put forth a very impressive line-up of key notes, educational panels and workshops. There is also a very exciting group of exhibitors at this year's Trade Show who have come forth for this event. It is, therefore, important to point out that none of this would have been possible without the diligent hard work and commitment that comes from the many individuals it takes to make an event of this nature successful. Please know that your hard work has not gone unnoticed. I would like to particularly extend a welcome to a special guest, Mme Genevieve Gaschard, Présidente of L'Association Française des Ingénieurs Biomédicaux from Poitiers, France.

This year offers an impressive Program of Events that, I hope, provides you with an insightful and fulfilling experience over the next couple of days. Of special note, the spectacular Canadian War Museum will play host to this year's gala scheduled to take place on Thursday, May 23rd.

I hope you take some time to enjoy the Ottawa and Gatineau area and all that this wonderful city has to offer. I look forward to seeing you throughout the event.

Yours Sincerely,



Timothy J. Zakutney, MHSc, PEng, CCE
Chair, CMBEC 36/APIBQ42, CMBEC36-APIBQ42.cmbes.ca

Welcome From CMBES

To all CMBEC36/APIBQ42 participants:

On behalf of the Canadian Medical and Biological Engineering Society, I would like to welcome all delegates to our joint conference with Association des physiciens et ingénieurs biomédicaux du Québec.

We are honoured to hold our conference in Canada's Capital and are very excited about our collaboration with APIBQ. The joint conference organizing committee, led by Tim Zakutney, put together an amazing program. I would like to express my thanks to all members of the committee for their efforts. Also I need to extend special thanks to Anne Stacey and The Willow Group, for all her work in support of the conference.

There are so many exciting and innovative developments happening in our profession, our conference and CMBES Network are the best opportunities keep connected and in the know. CMBES Network has been expanded to more than double since we launched last year; CMBES Forum participants are growing daily, however nothing replaces meeting face to face with your peers during the conference. Specifically this year we all have the opportunity to get connected with APIBQ members.

Next year our conference will be held in beautiful Vancouver, British Columbia. May 20-24, 2014: Make sure to mark your calendars for another unforgettable conference.

Thank you for participating, I look forward to meeting with you in Ottawa!

Sincerely,



Murat Firat M.Sc., P.Eng., CCE
President,
The Canadian Medical and Biological Engineering Society
La Societe Canadienné de Génie Biomédical

Welcome From APIBQ

Dear attendees,

Our associations have collaborated this year to offer you a joint conference that, I am sure, will meet your highest expectations. In the beautiful city of Ottawa, we hope to provide you with a dynamic environment conducive for sharing knowledge and developing networking opportunities, gathering people from all over Quebec, Canada and from France as well. In fact, a delegation from l'Association Française des Ingénieurs Biomédicaux (AFIB), including its president, is attending our conference. I would like to wish them all, on behalf of both our associations, the warmest welcome.

In order to face challenges within the current context, our members have to establish best practices in order to support healthcare institutions, as efficiently as possible, for the sake of our patients.

I hope that you will come up with numerous ideas on that subject, thanks to our presenters' participation and by sharing your own experiences with your colleagues.

I wish you all a good conference and good exchanges.



Claude Pérusse
Président de l'APIBQ

TUESDAY, MAY 21, 2013

Continuing Education

7:30 am - 8:30 am **Registration and Continental Breakfast**

8:30 am - 5:00 pm

CE1 - A HOLISTIC FRAMEWORK FOR MEDICAL DEVICE SAFETY AND OPTIMAL PERFORMANCE

Meeting Room 118A

- Michael Cheng, PhD, PEng, CCE, CQA
- Tony Easty, PhD, PEng, CCE
- Associate Professor, Institute of Biomaterials & Biomedical Engineering

CE2 - MECHANICAL CIRCULATORY SUPPORT

Meeting Room 118B

- Mark Cleland, C.Tech, Senior Technologist, Medical Devices, Biomedical Engineering, University of Ottawa Heart Institute

10:00 am - 10:30 am **Morning Break**

Meeting Room 118C

12:00 pm - 1:00 pm **Lunch**

Meeting Room 118C

2:30 pm - 3:00 pm **Afternoon Break**

Meeting Room 118C

6:00 pm - 8:00 pm **CMBES Executive Meeting**

WEDNESDAY, MAY 22, 2013

Conference & Trade Show

7:30 am - 12:00 pm **Trade Show set up**

Main Ballroom 106

7:30 am - 8:15 am **Registration & Continental Breakfast**

Atrium / Plenary 118CD

8:15 am - 8:30 am **Opening and Welcoming Remarks**

Plenary Room 118CD

8:30 am - 9:00 am **Keynote Presentation**

Plenary Room 118CD

9:00 am - 9:30 am **Morning Refreshment Break**

Atrium

9:30 am - 11:00 am **Concurrent Breakouts**

A1 - BIOMECHANICS 1

Meeting Room 118C

CS1 - THE EVOLVING ROLE OF HEALTH CANADA IN MEDICAL DEVICE SAFETY (CMDSNET)

Meeting Room 118D

CE3 - EQUIPMENT TESTING AUTOMATION (PART 1)

Meeting Room 118B

STREAM #4

Meeting Room 118A

WEDNESDAY, MAY 22, 2013

Conference & Trade Show

11:00 am - 12:00 pm **Lunch in Trade Show Area**

Atrium / Plenary Room 118CD

CMBES Annual General Meeting

Meeting Room 118B

12:00 am - 1:30 pm **Concurrent Breakouts**

A2 – BIOSIGNALS 1
Meeting Room 118C

**CS2 – MANAGEMENT
IN CLINICAL
ENGINEERING**
Meeting Room 118D

**CE3 – EQUIPMENT
TESTING AUTOMATION
(PART 2)**
Meeting Room 118B

STREAM #4
Meeting Room 118A

1:30 pm - 2:00 pm **Afternoon Refreshment Break**

Atrium

2:00 pm - 3:30 pm **Concurrent Breakouts**

**A3 – MEDICAL IMAGE
PROCESSING 1**
Meeting Room 118C

**CS3 – MEDICAL
DEVICE INTEGRATION**
Meeting Room 118D

~~**CE4 – ENDOSCOPY
SUITE: DESIGNING
WORKSPACE
AND PROCESS IN
AN ENDOSCOPY
SUITE, REVIEW
OF TECHNOLOGY,
SERVICING, AND
INFORMATION
SYSTEMS THAT
ENHANCE WORKFLOW**~~
Meeting Room 118B

STREAM #4
Meeting Room 118A

3:45 pm - 5:15 pm

~~**CE4 – ENDOSCOPY SUITE: DESIGNING WORKSPACE AND PROCESS IN AN ENDOSCOPY SUITE,
REVIEW OF TECHNOLOGY, SERVICING, AND INFORMATION SYSTEMS THAT ENHANCE WORKFLOW
(CONT'D)**~~

Meeting Room 118B

3:30 pm - 6:30 pm **Opening Reception in the Exhibit Hall**

Main Ballroom 106

Presented by: Fresenius Kabi Canada

THURSDAY, MAY 23, 2013

Conference & Trade Show

7:00 am - 7:30 am **Poster Board Set Up**

Atrium

7:30 am - 8:15 am **Registration & Continental Breakfast in Trade Show Area**

Main Ballroom 106

8:15 am - 8:30am **Opening and Welcoming Remarks**

Plenary Room 118CD

8:30am - 9:00am **Keynote Presentation**

Plenary Room 118CD

THURSDAY, MAY 23, 2013

Conference & Trade Show

9:00 am - 9:30 am **Morning Refreshment Break**

Main Ballroom 106

9:30 am - 11:00 am **Concurrent Breakouts**

**A4 – BIOSIGNALS 2/
MEDICAL IMAGING 2**

Meeting Room 118C

**CS4 – PROFILE
OF THE CLINICAL
ENGINEERING
PROFESSION**

Meeting Room 118D

*** Primary language
of session is French
(S.I. available)

**CE5 – ELECTROSURGERY
TECHNOLOGIES: THE
BASICS OF RF ENERGY-
BASED SYSTEMS**

Meeting Room 118B

STREAM #4

Meeting Room 118A

11:00 am - 12:00 pm **Lunch in Trade Show Area**

Main Ballroom 106

12:00 pm - 1:30 pm **Concurrent Breakouts**

**A5 –
BIOMECHANICALS 2/
TISSUE ENGINEERING**

Meeting Room 118C

**CS5 – CLINICAL
ENGINEERING &
INFORMATION
SYSTEMS**

Meeting Room 118D

*** Primary language
of session is French
(S.I. available)

**CE5 – ELECTROSURGERY
TECHNOLOGIES: THE
BASICS OF RF ENERGY-
BASED SYSTEMS
(CONT'D)**

Meeting Room 118B

**CS10-
ADVANCEMENTS
IN CLINICAL
ENGINEERING**

Meeting Room 118A

1:30 pm - 2:00 pm **Afternoon Refreshment Break**

Main Ballroom 106

2:00 pm - 3:30 pm **Concurrent Breakouts**

**A6: JOINT
ACADEMIC/CLINICAL
ENGINEERING
SESSION**

Meeting Room 118C

**CS6 – TECHNOLOGY
MANAGEMENT**

Meeting Room 118D

*** Primary language
of session is French
(S.I. available)

STREAM #4

Meeting Room 118A

6:00pm - 10:00pm **Gala Dinner & Awards**

Canadian War Museum

FRIDAY, MAY 24, 2013

Conference & Trade Show

7:30 am - 8:15 am **Registration & Continental Breakfast** *Atrium / Plenary Room 118CD*

8:15 am - 8:30 am **Opening and Welcoming Remarks** *Plenary Room 118CD*

8:30 am - 9:00 am **Morning Refreshment Break** *Atrium*

9:00 am - 10:30 am **Concurrent Breakouts**

A7 – MEDICAL DEVICES
Meeting Room 118C

CS7 – STANDARDS OF PRACTICE II
Meeting Room 118D

CE9 – HEMODIALYSIS AND WATER PURIFICATION
Meeting Room 118A

10:30 am - 11:00 am **Morning Refreshment Break** *Atrium*

11:00 am - 12:30 pm **Concurrent Breakouts**

A8 – BIOSIGNALS 3 / MEDICAL DEVICES 2
Meeting Room 118C

CS8 - CLINICAL ENGINEERING STANDARDS OF PRACTICE FOR CANADA - 2013 REVISIONS
Meeting Room 118D

~~**CE8 – MONITOR ALARM MANAGEMENT: DECREASING NUISANCE ALARMS AND PREVENTING ALARM**~~
~~*Meeting Room 118B*~~

CE9 – HEMODIALYSIS AND WATER PURIFICATION (CONT'D)
Meeting Room 118A

1:00 pm - 1:15 pm **Award Presentation** *Atrium*
Academic Stream

TUESDAY, MAY 21, 2013

Continuing Education

7:30 am - 8:30 am

Registration and Continental Breakfast

Atrium / Room 118C

8:30 am - 5:00 pm

Continuing Education Courses

CE1 - A Holistic Framework for Medical Device Safety and Optimal Performance

Room 118A

- Michael Cheng, PhD, PEng, CCE, CQA
- Tony Easty, PhD, Senior Scientist, University Health Network

This session will present a comprehensive three-stage holistic framework for medical devices in order to achieve safety and optimal performance within healthcare institutions.

~~CE2 - Mechanical Circulatory Support~~

~~*Room 118B*~~

- ~~• Mark Cleland, C. Tech, Senior Technologist, Medical Devices, Biomedical Engineering, University of Ottawa Heart Institute~~

~~The growing Ventricular Assist Device (VAD) program at the University of Ottawa Heart Institute (UOHI) is a comprehensive example of the vast and important role that Clinical Engineering contributes to the healthcare environment. Mark Cleland, Senior Technologist at Ottawa Heart Institute (UOHI) will present a multidisciplinary collaboration between clinical staff, clinical engineering department and patients to successfully support a device program in order to increase successful patient outcome.~~

10:00 am - 10:30 am

Refreshment Break

Room: 118C

12:00 pm – 1:00 pm

Lunch

Room 118C

2:30 pm – 3:00 pm

Refreshment Break

Room 118C

6:00 pm – 8:00 pm

CMBES Executive Meeting

Room 118C

WEDNESDAY, MAY 22, 2013

Conference & Trade Show

7:30 am - 8:15 am

Registration and Continental Breakfast

Atrium

8:15 am - 8:30 am

Conference Opening and Welcoming Remarks

- Timothy Zakutney, Conference Chair

Room 118CD

8:30 am - 9:00 am

Keynote Address: **Technology, Care and Empowering Patients**

- W. James King, MSc, MD, FRCPC, Medical Director, Informatics, Children's Hospital of Eastern Ontario (CHEO)

Atrium

9:00 am - 9:30 am

Refreshment Break

9:30 am - 11:45 am

Concurrent Sessions

A1 – Biomechanics 1

Room 118C

- ***Unusual Fatigue Failure of a Cobalt-Chromium Alloy Cementless Femoral Stem: Implant Retrieval and Biomechanical Analysis***
 - Michel Nganbe, Gerard M.J. March, Paul R. Kim and Paul E. Beaulé
- ***Three-dimensional Modelling and Squat Depth to Examine Geometric Hip Joint Parameters of Cam Femoroacetabular Impingement***
 - K.C. Geoffrey Ng, Mario Lamontagne, Michel R. Labrosse, Kevin D. Dwyer and Paul E. Beaulé



- ***Computational Analysis of Fluid Structure interaction in Artificial Heart Valves***
 - Han Hung Yeh, Dana Grecov and Satya Karri
- ***Validation of Pneumatic Artificial Muscle for Powered Transfemoral Prostheses***
 - Jaime Murillo, Marc Doumit and Natalie Baddour

CS1 – The Evolving Role of Health Canada In Medical Device Safety (CMDSNET)

Room 118D

- Colleen Turpin, RN, BScN, M Ed., Regulatory Project Manager, Marketed Pharmaceuticals and Medical Devices Bureau, Marketed Health Products Directorate,

Health Canada

- Barbara Harrison, BScN. R.N., Compliance and Regulatory Advisor, Health Products and Food Branch Inspectorate, Health Canada

Health Canada will update on the Medical Device Sentinel Network (CMDSNet).

CE3 – Equipment Testing Automation

Room 118B

- Tony Giulone, President, Promed Technologies

Automating test sequences for medical equipment can contribute to reduce the required time to perform these tasks and improve quality and uniformity so that every inspection is done the same way every time. At the same time, it reduces the burden of documenting the results since it is automatically available in electronic format. This workshop offers an understanding of common medical equipment testers, their expected performance, and documenting calibration results. There will also be hands-on exercises on automation software so that participants are able to customise reports according to service manual inspection procedure.

This session will cover the following topics:

- Common medical equipment testers;
- Recording test results and creating an history of maintenance;
- Creating automation report and procedure (based on service manual).

11:00 am - 12:00 pm

Lunch

Atrium / Room 118CD

CMBES Annual General Meeting

Room 118B

12:00 pm - 1:30 pm

Concurrent Sessions

A2 – Biosignals 1

Room 118C

- **Estimating Forces in Multiple Degrees of Freedom From Intramuscular EMG Using Muscle Synergies**
 - Bahareh Atoufi, Ernest Nlandu Kamavuako, Bernard Hudgins and Kevin Enlehart
- **Investigation of Optimum Pattern Recognition mMethods for Robust Myoelectric Control During Dynamic Limb Movement**
 - Ashkan Radmand, Erik Scheme, Peter Kyberd and Kevin Enlehart
- **Evaluation of Real-Time Biosignal Quality Analysis for Ambulatory ECG with ST-Segment Deviations**
 - Patrick Quesnel, Adrian D. C. Chan and Homer Yang
- **Use of Temperature as a Contrast Agent in Electrical Impedance Tomography**
 - Yasin Mamatjan, Pascal Gaggero, Stephan Böhm and Andy Adler



CS2 – Management in Clinical Engineering

Room 118D

CS2-1) Marketed Health Products Directorate

- Andrew Slack, Ph.D., Scientific Evaluator, Marketed Pharmaceuticals and Medical Devices Bureau, Health Canada

This presentation will highlight Health Canada's collaboration with stakeholders in ensuring timely and accurate safety signal identification, risk assessment and risk mitigation strategy implementation.

CS2-2) Raising the Profile of Clinical Engineering through Effective Technology Management

- Kim Greenwood, M. A. Sc., Director, Clinical Engineering, The Children's Hospital of Eastern Ontario (CHEO)

Children's Hospital of Eastern Ontario (CHEO) Clinical Engineering (CE) uses long range planning function for capital equipment to optimally manage the corporate healthcare assets.

CS2-3) Surgical Instrument Repair Programs: Opportunities and Benefits

- Kyle Eckhardt, M. Eng. EIT, Regional Clinical Engineer, Winnipeg Regional Health Authority

The presentation will focus on the hospital-based surgical instrument repair program done in Winnipeg.

CE3 – Equipment Testing Automation (cont'd)

Room 118B

- Tony Giulone, President, Promed Technologies

Automating test sequences for medical equipment can contribute to reduce the required time to perform these tasks and improve quality and uniformity so that every inspection is done the same way every time. At the same time, it reduce the burden of documenting the results since it is automatically available in electronic format. This workshop offers an understanding of common medical equipment testers, their expected performance, and documenting calibration results. There will also be hands-on exercises on automation software so that participants are able to customise reports according to service manual inspection procedure.

This session will cover the following topics:

- Common medical equipment testers;
- Recording test results and creating an history of maintenance;
- Creating automation report and procedure (based on service manual).

1:30 pm - 2:00 pm

Refreshment Break

Exhibit Hall

2:00 pm - 3:30 pm

Concurrent Sessions

A3 – Medical Image Processing 1

Room 118C

- ***A Method for Narrow Field-of-View Region-of-Interest Computed Tomography***
 - Esmaeil Enjilela and Esam M.A. Hussein
- ***A Spline Model for RV Registration From Cardiac PET Images***
 - Simisani Takobana, Andy Adler, Lisa Mielniczuk, Stephanie Thorn, Jean Dasilva, Robert Dekemp, Rob Beanlands, Jennifer Renaud and Ran Klein
- ***Blood Flow Analysis and Red Blood Cell Aggregation Investigation***
 - Rym Mehri, Catherine Mavriplis, Marianne Fenech and Jérémie Laplante
- ***Using Local Binary Patterns for Non-Contact Optical Tongue Tracking***
 - Ahmad Ghadiri, James R. Green and Andrew Marble

CS3 – Medical Device Integration

Room 118D

CS3-1) Medical Device and EMR Interoperability: Challenges in Planning

- Robert P. Maliff, Director, Applied Solutions, ECRI Institute

Medical device interoperability (MDI) requires a significant planning effort as well as significant changes in roles and responsibilities. The presentation will explore MDI and the experiences of several hospitals on MDI.

CS3-2) Bedside Monitor Integration with the Cerner Electronic Health Record

- Martin Poulin, M.Eng., P.Eng., Manager, Biomedical Engineering & Vancouver Island Health Authority – Royal Jubilee Hospital; Membership Chair - CMBES

This presentation is on the construction and implementation of the new Patient Care Centre at the Royal Jubilee Hospital in Victoria, BC (March, 2011), to automate the transfer of vital signs data from bedside monitors to the Cerner electronic health record.

~~2:00 pm – 5:15 pm~~

~~CE4 – Endoscopy Suite: Designing Workspace and Process in an Endoscopy Suite, Review of Technology, Servicing, and Information Systems that Enhance Workflow~~

~~Room 118B~~

- ~~Frédéric Latendresse, Vice President Regional, Olympus Canada~~

~~Planning or renovating an endoscopy suite can be challenging for clinical engineers and the clinical team involved in the process. This session will present best practices for workspace design, workflow, equipment planning, benchmarking, maintenance and decontamination of endoscopes. New technologies and information systems will also be reviewed as part of this workshop.~~

~~This session will cover the following topics:~~

- ~~Designing Workspace and Process;~~
 - ~~Workspace Design;~~
 - ~~Workflow analysis;~~
 - ~~ECHO (Endoscopy Care & Handling Observation).~~
- ~~Scope Design and Configuration~~

WEDNESDAY, MAY 22, 2013 - Conference & Trade Show

- ◆ ~~Scope Inspection Course and Basic Troubleshooting~~
- ◆ Strategic Planning
- ◆ New technologies;
 - ◆ Endocapsule
 - ◆ ~~Co2 Use~~
- ◆ Information System
 - ◆ Image Management
 - ◆ Integration of Technologies

3:30 pm - 6:30 pm

Welcome Reception

Presented by: Fresenius Kabi Canada

Exhibit Hall

THURSDAY, MAY 23, 2013

Conference & Trade Show

7:30 am - 8:15 am

Registration and Continental Breakfast

Exhibit Hall

8:15 am - 8:30 am

Conference Opening and Welcoming Remarks

- Timothy Zakutney, Conference Chair

Room 118CD

8:30 am - 9:00 am

Keynote Address: Old Crock - New Gear - Young at Heart

- Colin Maxwell, Former Educator, Saskatchewan Cabinet Minister, Executive Vice-President Canadian Wildlife Federation and left Ventricular Assist Device (LVAD) Patient

A patient's perspective on medical technology; from bleak prognosis to testimonial to the skill of researchers and practitioners in the field of medical technology and biomedical engineering.

9:00 am - 9:30 am

Refreshment Break

Exhibit Hall

9:30 am - 11:00 am

Concurrent Sessions

A4 – Biosignals 2/Medical Imaging 2

Room 118C

- ***Level Set Technique for Image Reconstruction***
 - Peyman Rahmati and Andy Adler
- ***Prediction of CPAP Failure in the Neonatal ICU***
 - Laura Livant and Colleen Ennett
- ***Towards a Robust Automated Technique to Construct Aortic Finite Element Meshes Directly From Medical Images***
 - Sharareh Bayat, Dan Neculescu and Michel Labrosse
- ***Compensating Electrode Errors Due to Electrode Detachment in Electrical Impedance Tomography***
 - Yasin Mamatjan, Pascal Gaggero, Beat Müller, Bartłomiej Grychtol and Andy Adler



CS4 – Profile of the Clinical Engineering Profession

Room 118D

***French presentation – Simultaneous Interpretation available*

CS4-1) Ingénieur biomédical : Un rôle en perpétuelle évolution...

- Geneviève Gaschard - Wahart, President of Association of Biomedical Engineering

President of Association of Biomedical Engineering in France will speak about the current picture of Biomedical Engineers in France, their roles and functions for the evolving future of the trade.

CS4-2) Approvisionnement en commun des équipements médicaux pour la province de Québec, vision du Ministère de la Santé et des Services Sociaux du Québec.

- Caroline Imbeau, Director, Directorate of Logistics Health, Ministry of Health and Social Services

The director of the Directorate of Logistics Health will present the objectives, the vision and the future developments of the Ministry of Health and Social Services regarding group purchases for the province of Quebec.

CS4-3) Evaluation of Medical Equipment at the Testing Stage at Sainte-Justine - Montréal UHC

- Dr. Philippe Jovet, MD PhD, Associate professor, Director of the Pediatric Intensive Care Unit / Professeur agrégé de Clinique, Chef de service des soins intensifs pédiatriques
- Dominique Vallée, B.Sc inf., Assistante infirmière-chef clinicienne , soins intensifs pédiatriques
- Martin Cyr, M.Sc.A., ing., Direction des technologies, CHU Sainte-Justine - Le centre hospitalier universitaire mère-enfant/ Sainte-Justine UHC – Mother and Child University Hospital Center

This presentation will discuss the shortcomings of performance evaluation of medical instruments done at the testing stage at Sainte-Justine UHC, during which the characteristics and reliability of the medical instruments are analyzed in standardized conditions that are difficult to reproduce during clinical evaluations.

CE5 – Electrosurgery Technologies: The Basics of RF Energy-Based Systems

Room 118B

- Sylvain Lepage, Directeur régional Est, Conmed Canada

RF based devices have existed since the early 1900's and are now a major component of a hospital's available surgical & therapeutic approach to delivering care. This session will review RF electrosurgical systems both from a technical and a clinical perspective: How does a generator harness and alter electrical current to create the Monopolar (Cut, Coag and Blend) and Bipolar modalities and how do these differ clinically in tissue?

This session will cover the basic functions of an electrosurgical unit's output and safety circuits as well as the following topics:

- Back to the Basics of Electrosurgery

- The Basics of RF Energy
- Contact (monopolar Cut, Coag, Blend 1-2-3, Bipolar)
- Non-Contact (Argon)
- What is RECOM (basics of patient return electrode monitoring)?
- ESU performance verification
 - Output Power (testers, impedances, testing technique)
 - Patient Return Electrode Testing
 - RF Leakage
- Basic ESU Troubleshooting (techniques)
- Basics of Smoke Evacuation
 - Principles and Dangers
 - Technical Considerations in the Acquisition of a Smoke Evacuator
- Preventive Maintenance and Performance Verification

CS9 - Standards of Practice I

Room 118A

CS9-1) *Still Alarming?...Take Control!*

- Rikin Shah, Senior Associate, Applied Solutions, ECRI Institute

This presentation will review areas of alarm management, and technologies that can help with alarm management and how to integrate into the hospital's current established practices.

CS9-2) *"Good bye WHMIS, Hello GHS"*

- Kelly Huckabone, MLT, ASQ, CQA, Manager of Quality, Regulatory & Health & Safety, Fisher Scientific

This presentation will provide an overview of the regulation and updates on how Global Harmonization System (GHS) will replace WHMIS in Canada. GHS implementation will have a significant impact to workplaces using controlled products such as chemicals and gases.

11:00 am - 12:00 pm

Lunch

Exhibit hall

Poster Presentations with Authors

Atrium

12:00 pm - 1:30 pm

Concurrent Sessions

A5 – Biomechanics 2/Tissue Engineering

Room 118C

- *Generation of Cartilage-like Constructs Using Continuous Expansion Culture Primary Chondrocytes Seeded in Dense Collagen Gels*
 - Derek H Rosenzweig, Florencia Chicatun, Showan N. Nazhat and Thomas M. Quinn
- *Numerical Modeling of Red Blood Cells Sedimentation Using Population Balance Method*
 - Erfan Niazi and Marianne Fenech



- **Perfusable Branching Microvessel Bed for Vascularization of Engineered Tissues**
 - Loraine Chiu, Miles Montgomery, Yan Liang, Haijiao Liu and Milica Radisic
- **Use of Ultrasound With Motion Capture to Measure Bone Displacement During Movement Made for Functional Hip Joint Center Determination**
 - Swati Upadhyaya, Wonsook Lee, Zhen Qu, Yuu Ono and Chris Joslin

CS5 – Clinical Engineering & Information Systems

Room 118D

***French presentation – Simultaneous Interpretation available*

CS5-1) Systemic Budget Assessment Model of Medical Equipments Installation and Maintenance at CSSS du Lac-Des-Deux-Montagnes

- Gnahoua Zoabli, ing., M.ing., Ph.D., Chef du service du génie biomédical, CSSS Lac-des-Deux-Montagnes

The arrival of new medical specialists within the Health Center and Social Services of Lac-des-Deux-Montagnes requires a technological enhancement of its clinical and/or medical departments. On that account, this study gives a brief summary of the key elements to consider when planning for such an upgrade.

CS5-2) Installation of a Wireless Network : Choices and Integrator/Hospital Project Management Perspective

- Hugo Hamel, President, Prival, Services d'infrastructures réseautiques et télécommunications

Connecting medical devices to a hospital Wi-Fi network improves clinical workflow and ensures access to real-time patient data but is this enough? This presentation will cover hospital requirements for a Wi-Fi infrastructure plan with strong security practices that will allow to add a RTLS (real time location system), to work from individual mobile devices or to improve the overall patient experience by given them Internet access.

CS5-3) Advanced Clinical Decision Support and Documentation System at Ste-Justine's Pediatric Intensive Care Unit: Technical and Clinical Integration Challenges

- Dr. Philippe Jouvett, MD PhD, Associate Professor, Director of the Pediatric Intensive Care Unit
- Dominique Vallée, B.Sc inf., Assistante infirmière-chef clinicienne , soins intensifs pédiatriques
- Martin Cyr, M.Sc.A., ing., Direction des technologies, CHU Sainte-Justine - Le centre hospitalier universitaire mère-enfant

An intelligent bed project was developed with stakeholders input from varied sectors from the University Hospital Center. The project is unique in pediatrics in Quebec, and it offered a more efficient and more attractive workplace environment for nurses.

CE5 – Electrosurgery Technologies: The Basics of RF Energy-Based Systems (cont'd)

Room 118B

- Sylvain Lepage, Directeur régional Est, Conmed Canada

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- Basic ESU troubleshooting (techniques)
- Basics of Smoke Evacuation
 - Principles and Dangers
 - Technical Considerations in the Acquisition of a Smoke Evacuator
- Preventive Maintenance and Performance Verification

CS10-Advancements in Clinical Engineering

Room 118A

CS10-1) Panel Discussion - IT Integration and Medical Devices

- Kyle Eckhardt, M. Eng. EIT, Regional Clinical Engineer, Winnipeg Regional Health Authority
- Mike Capuano CET, CBET, CCE, Manager, Biomedical Technology, Hamilton Health Sciences
- Martin Poulin, M.Eng., P.Eng., Manager, Biomedical Engineering & Vancouver Island Health Authority, Royal Jubilee Hospital Site, Membership Chair – CMBES

A panel that involves Clinical Engineering (CE) Managers and Directors from across the country to discuss about approaches and strategies both at a staffing and commitment /responsibility level for the scope of an IT integration project in which Medical Devices become connected to an IT network.

CS10-2) Technological Assessment of Laparoscopic Monopolar Electrosurgery Instruments at CSSS du Lac-Des-Deux-Montagnes

- Gnahoua Zoabli, ing., M.ing., Ph.D., Chef du service du génie biomédical, CSSS Lac-des-Deux-Montagnes

Thermal injuries observed at the distal end of the insulative sheathing of monopolar laparoscopes during two recent interventions at the CSSS du Lac-des-Deux-Montagnes' surgical unit prompted this technological assessment of monopolar laparoscopes.

1:30 pm - 2:00 pm

Refreshment Break

Exhibit Hall

2:00 pm - 3:30 pm

Concurrent Sessions

A6: Joint Academic/Clinical Engineering Session

Room 118C

- **Academic Programs in Clinical Engineering in Canada**
 - Varsha Chaugai, Timothy Zakutney, Adrian Chan and Andy Adler
- **Mitigating Risks Associated with Secondary Intravenous (IV) Infusions: An Empirical Evaluation of a Technology-based, a Practice-based, and a Training-based Intervention**
 - Katherine Y. Chan, Sonia Pinkney, Mark Fan, Christopher Colvin, Anthony C. Easty and Patricia Trbovich
- **A Case Study: Gentamicin Hard Limit Events and Follow-up Actions in Smart Infusion Pumps**
 - Queeny Shaath, Adrian Chan, Doron Nussbaum, Kim Greenwood, Mary MacNeil, Carmen Ma and Regis Vaillancourt



Cost of Ownership of Upper Limb Prostheses - A Retrospective Analysis

- Anthony Chan, Ezra Kwok and Petcharatana Bhuanantanondh

CS6 – Technology Management

Room 118D

***French presentation – Simultaneous Interpretation available*

CS6-1) Optimisation de la gestion et de l'entretien du parc d'équipements médicaux du CSSS LTEAS

- Isabelle Jolicoeur, ing., M.ing., SSGB, Directrice principale, associée, CIM Conseil en immobilisation et management inc.,
- Dominique Ferron ing., M.Sc.A., SSGB, Conseiller senior, CIM Conseil en immobilisation et management inc.,

The Health Center and Social Services of Lucille Teasdale collaborated with CIM experts to develop a partnership agreement with the Maisonneuve-Rosemont Hospital, in order to obtain the support of its biomedical engineering team to perform various maintenance tasks and management of medical equipment.

CS6-2) 10 Technologies that Clinical Engineering Should Watch for Their C-Suite Leaders

- Robert P. Maliff, Director, Applied Solutions, ECRI Institute

This presentation will review ECRI Institute's 2013 Top 10 C-Suite technology Watch list and discuss best practices that clinical engineering departments can implement to assist their hospital leaders with technology reviews.

6:00 pm - 10:00 pm

CMBEC36/APIBQ42 Joint Banquet and Awards Presentation

Canadian War Museum

FRIDAY, MAY 24, 2013

Conference & Trade Show

7:30 am - 8:15 am

Registration and Continental Breakfast

Atrium / Room 118CD

8:15 am - 8:30 am

Conference Opening and Welcoming Remarks

- Timothy Zakutney, Conference Chair

Room 118CD

8:30 am - 9:00 am

Refreshment Break

Atrium

9:00 am - 10:30 am

Concurrent Sessions

A7 – Medical Devices

Room 118C

- *De Novo Peptide Sequencing Using General-purpose Computing on a Graphics Processing Unit*
 - Sankua Chao and James Green **missing author**
- *ECG Data Encoding for Continuous Heart Monitoring in Athletes and CVD Patients*
 - Adrian Ocneanu, Colin Jones and Andy Adler **title doesnt match**
- *Development of a Sheath for an Ultrasound Probe Used to Monitor Coagulation During Prostate Cancer Treatment*
 - Adeel Alam, Brian Wilson and Robert Weersink
- *RUTalking2Me? An Assistive Device Combining Beamforming and Speech Recognition*
 - Colin Miyata, Raymond Greiss, James Green and Jim Ryan



CS7 – Standards of Practice II

Room 118D

CS7-1) CMBES Peer Review Workshop

- Michael J. Capuano, CET, CBET, CCE, Manager, Biomedical Technology, Hamilton Health Sciences

This session will inform and inspire those interested in having their medical equipment support program audited by representatives of the CMBES Peer Review Committee.

CS7-2) Good Planning and Management Practices for Medical Devices in Healthcare

Facilities

- Michael Cheng, PhD, PEng, CCE, CQA , Independent

This presentation will use simple, quality management standard methodology to identify essential activities for the life cycle management of medical devices in healthcare facilities, from planning through to acquisition, use, and eventual disposal.

CE9 – Hemodialysis and Water Purification

Room 118B

- Ralph Berger, Water Sales Specialist, Gambro Renal Products
- Philippe Desroches, IT specialist, Gambro Renal Products

This session will review basic aspects of hemodialysis equipment, the water purification process and use of electronic records to enhance hemodialysis treatment while reducing at the same time the nurse's administrative tasks.

The following topics will be reviewed :

- Importance of High Quality Water
- Filtration
- Water Quality Definitions
- CSA Standards
- Microbiology
- Biofilm
- Clinical Consequences
- Reverse Osmosis
- Monitor Service tools
- Electronic Documentation of Treatments
- Submission Requirements to ORN (Ontario Renal Network)
- Improving Workflow With Patient Treatment Records

10:30 am - 11:00 am

Atrium

Refreshment Break

11:00 am - 12:30 pm

Concurrent Sessions

A8 – Biosignals 3 / Medical Devices 2

Room 118C

- ***Weighted L1 and L2 Norms for Image Reconstruction: First Clinical Results of Electrical Impedance Tomography Lung Data***
 - Peyman Rahmati and Andy Adler
- ***Scoring Cognitive Change Through Sensing and Analysis of Changing Driving Ability***
 - Bruce Wallace, Rafik Goubran and Frank Knoefel
- ***Wireless ECG systems with New Sampling-rate Approach Based on Compressed Sensing Theory***
 - Mohammadreza Balouchestani, Kaamran Raahemifar and Sridhar Krishnan
- ***Calibration Interface for the Electronic Swim Coach***
 - Allen Amos-Binks and James Green

CS8 - Clinical Engineering Standards of Practice for Canada - 2013 Revisions

Room 118D

- (Chair) Bill Gentles, Vice President, BT Medical Technology Consulting,
- (Co- Chair) Gurpreet Saini, Provincial Director - Clinical Engineering, Center of Expertise, Alberta Health Services

Panel:

- Mario Ramirez, Hospital for Sick Children
- Gnahoua Zoabli, CSSS Lac-des-Deux-Montagnes, Saint-Eustache (Québec)
- John Inch, Health Association Nova Scotia
- Anthony Chan, BCIT
- Monique Frize, University of Ottawa,
- Kelly Kobe, Alberta Health Services
- Darrel Nilsson, Alberta Health Services

The original Clinical Engineering Standards of Practice for Canada was published by CMBES in 1998. It was recognized that for this Standards of Practice document to remain relevant to Canadian Clinical Engineers, it must undergo periodic reviews and updating. The second edition was published in 2007. A newly revised edition is scheduled for publication in late 2013.

This session provides opportunity for all attendees to provide input on the proposed revisions in the 2013 edition of the Standards of Practice. Copies of the Standards of Practice are available at no charge to CMBES members.

~~CE8 – Monitor Alarm Management: Decreasing Nuisance Alarms and Preventing Alarm Fatigue~~

~~Room 118B~~

- ~~• Lois Macpherson, Clinical Educator, Spacelabs Healthcare (Canada) Inc.~~
- ~~• Paul Roy, National Service Manager, Spacelabs Healthcare (Canada) Inc.~~

~~Critical Care Physiological Monitors detect and notify clinicians of many types of alarms; from technical problems, changes in vital signs, to life threatening arrhythmias. Clinicians may become desensitized when they are overwhelmed with the number of alarms. This can lead to alarms being ignored or disabled. This presentation will discuss causes and prevention of false positive physiological monitor alarms and management of alarm settings for patient safety.~~

CE9 – Hemodialysis and Water Purification (Cont'd)

Room 118B

- Ralph Berger, Water Sales Specialist, Gambro Renal Products
- Philippe Desroches, IT Specialist, Gambro Renal Products

This session will review basic aspects of hemodialysis equipment, the water purification process and use of electronic records to enhance hemodialysis treatment while reducing at the same time the nurse's administrative tasks.

The following topics will be reviewed :

FRIDAY, MAY 24, 2013 - Conference & Trade Show

- Importance of High Quality Water
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- Electronic Documentation of Treatments
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- Improving Workflow With Patient Treatment Records

1:00 pm - 1:15 pm

Award Presentation

Academic Stream

Room 118C