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**Feature Article**

Recap of CMBEC 42 in Ottawa

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**Overview of the Canadian Medical Devices Sentinel Network (CMDSNet)**

Do you have material that you would like to share with the CMBES Community? Email brendan.gribbons@vch.ca to have your content featured in the next newsletter!

Editor: Brendan Gribbons
Thank you for checking out this newsletter for August 2019! Reflecting on CMBEC42 in Ottawa back in May (from a 360 point of view), the perception is that the conference was successful and that all of the elements that indicate success were there. The keynote addresses, sessions, courses, and the exhibit floor were well-attended and the local events went off without a hitch. The numbers so far indicate the conference did OK financially. So, congratulations to Kim Greenwood and the CMBEC42 Organizing committee. An executive meeting also took place at the conference. This gave members of the CMBES executive a chance to discuss issues and challenges face-to-face. We focused on several topics including approval of co-sponsoring the 2020 EMBC42 conference in Montreal and discussing many ideas around future conferences and events. The appointment of a new committee was also tabled. It centered around the idea of having a Chair of Clinical Engineering. Read further for more snippets on the conference including photos.

Mike Capuano, CBET/CCE; CMBES President

Recent CMBES Member Publications

Have you published recently and want to share your work with CMBES? Email brendan.gribbons@vch.ca to have your work included in the next newsletter!

Journals


Conference Proceedings/Abstract

W. McGeown, R. Cassani, T. Falk, M. Cecchi, K. Fadem, Neuroanatomical and Neuropsychological Correlates of Resting State EEG Diagnostic Features in Patients with Alzheimer’s Disease, abstract AAIC, July 2019.


CMBES is pleased to announce that Marie-Ange Janvier has been appointed to as interim Chair for Bilingual Affairs. Marie-Ange is a certified clinical engineer (CCE) that works at the Children’s Hospital of Eastern Ontario (CHEO) in Ottawa Canada. She is a licensed professional engineer in the province of Ontario and Quebec. In 2017, she was awarded Early Career Achievement Award by the Canadian Medical and Biological Engineering Society (CMBES). She is a member of CMBES, American College of Clinical Engineers (ACCE), and the Association for the Advancement of Medical Instrumentation (AAMI). Mrs. Janvier is the Chair-Elect for the Canadian Board of Examiners for Clinical Engineering. She is also the Chair of Bilingual Affairs Committee in the Canadian Medical and Biological Engineering Society which is Canada's principal society for engineering in medicine and biology. She has a PhD in biomedical engineering from the University of Montreal. She also holds a degree from electrical engineering from the University of Ottawa where she graduated with honors as summa cum laude. She is a part-time professor at the University of Ottawa for undergraduates and graduates in the biomedical engineering program. In her spare time, she always looks for ways to help developing countries in equipment donation.

Upcoming Events

Keep an eye out in the monthly e-bulletin for further information on upcoming webinars being planned by CMBES:

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<th>Webinar Topic</th>
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<td>Ben Powers, Bob Butterfield</td>
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<td>Technologies of the Future</td>
<td>Tiago H. Falk</td>
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<td>Biomedical Engineering Opportunities</td>
<td>Dr. Michael Noseworthy</td>
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Save the Date: CMBEC43/EMBC42 2020 Montreal

The IEEE Engineering in Medicine and Biology Society is pleased to announce the 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society, to be held in Montreal, Quebec, Canada, July 20th – 24th, 2020. The theme of the meeting is “Enabling Innovative Technologies for Global Healthcare”. As the world’s largest international biomedical engineering meeting, a broad array of scientific tracks will cover diverse topics of cutting-edge research and innovation in biomedical engineering, healthcare technology R&D, translational clinical research, technology transfer and entrepreneurship, and biomedical engineering education.

In addition to the high-profile keynotes, the conference program will feature mini symposia, workshops, special sessions, oral and poster sessions, sessions for students and young professionals, sessions for clinicians and entrepreneurs, and exhibits from vendors and universities. Themes include:

- Biomedical Signal Processing
- Biomedical Imaging and Image Processing
- Micro/Nano-bioengineering
- Cellular/Tissue Engineering & Biomaterials
- Computational Systems & Synthetic Biology
- Multiscale modeling
- Cardiovascular and Respiratory Systems Engineering
- Neural and Rehabilitation Engineering
- Biomedical Sensors and Wearable Systems
- Biorobotics and Biomechanics
- Therapeutic & Diagnostic Systems and Technologies
- Clinical Engineering
- Biomedical & Health Informatics
- Biomedical Engineering Education and Society
- Translational Engineering for Healthcare Innovation and Commercialization

### Important Dates

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<th>Sessions Proposals, Mini-Symposia, Workshops, &amp; Special Sessions</th>
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<td>1-page papers (Research Poster Papers)</td>
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<td>Submission deadline</td>
<td>April 17, 2020</td>
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### Organizing Committee

- **Conference Chair**: Mohamad S. S. Al-Awami, Westlake University
- **Conference Chair**: Carolyn McGregor, Ontario Tech University
- **Conference Chair**: M. Mansour, New Jersey Institute of Technology (NJIT)
- **Finance Chair**: Emilio Sacristan, Universidad Autónoma Metropolitana-Iztapalapa
- **Program Chair**: Benoit Gosselin, Université Laval
- **Program Chair**: Joaquín Azpíroz Lechón, Universidad Autónoma Metropolitana-Iztapalapa
- **Program Chair**: Dominique Durand, Case Western Reserve University
- **Conference Editorial Board Chair**: Riccardo Barbieri, Politecnico di Milano
Spotlight on Biomedical Technologist Students and Recent Graduates

Rutvik Patel

Education
- Diploma Name: Biomedical Engineering Technology Advanced Diploma (Co-op)
- Graduation Date: April 2017
- School: Centennial College, Scarborough, Ontario

Tell us about an interesting technical project that you have worked on related to the Biological and Medical Engineering field?
Ventilators Upgrade: Performed external Power Supply (PS500) & Gas Supply (GS500) as well as Internal Power Supply (M7.3 Plus)/Software upgrade on Draeger Evita Infinity V500 ventilators. This project required going through over 75 pages of instructions and extensive technical knowledge to perform the upgrade.

Why are you interested in the Biological and Medical Engineering field?
Since high school, I was very curious to learn about medical equipment and how they are being used to diagnose and treat human body which developed my interest towards engineering and medicine. Since, Biomedical Engineering field comprises of both, I chose to be a Biomedical Engineering Technologist.

What are your aspirations for the future?
I am currently working as a Biomedical Engineering Technologist at the Government of Nunavut - Department of Health. I obtained my C.E.T certification via OACETT in July 2018 and currently working towards obtaining CBET certification.

What are your interests/hobbies outside of school?
Photography, Reading, Learning about astronomy
Spotlight on Biomedical Technologist Students and Recent Graduates

Chewash Shawn Harpaul

Education
- Diploma Name: Biomedical Engineering Technology (Co-op/Fast-Track)
- Year of Study: 3rd Final year (completed)
- School: Centennial College Progress Campus

Tell us about an interesting technical project that you have worked on related to the Biological and Medical Engineering field?

One interesting school project I completed was creating an ECG acquisition system out of basic semiconductor components, a lab oscilloscope and electrodes. We had to select the correct components to achieve the correct cut off frequencies for the filters, and amplifier gains for the system. In the end, we were able to successfully detect the P,Q,R,S waveforms on the oscilloscope.

Why are you interested in the Biological and Medical Engineering field?

I am interested in medical engineering due to the integration of various fields into one stream, where technology can help assist, diagnose, or treat an individual’s medical condition. But more importantly, I love being part of an industry where we indirectly and sometimes directly provide an impact on an individual’s life. Whether we’re developing a system or technology to assist a patient, or whether we are performing PM on medical equipment, it all plays a major role in trying to be of service to others by maintaining, or improving ones quality of life.

What are your aspirations for the future?

In the future, I would like to obtain my CTECH certification. I have also been flirting with the thought of obtaining my PENG designation. I am currently, working in the Rehab sector for a company called IDEASFIL – we specialize in mounting equipment for individuals with neuromuscular or spinal cord injuries and disorders. I work in the electronics department, where I troubleshoot any electronic issues with our products, as well as facilitate the design and implementation of any custom electronic systems for our clients.

What are your interests/hobbies outside of school?

I am interested in taking part in healthy activities. I enjoy going to the gym, jogging, and participating in martial arts. I’ve been doing Maui-Thai classes, which trains both my body, and my mind. Also, I enjoy working with children leading science experiments, and teaching Chess at my local community center.
Spotlight on Biomedical Technologist Students and Recent Graduates

Dickson Ho

Linked In

Education
- Diploma Name: Biomedical Engineering Technology
- Graduation Date: 2017
- School: BCIT

Tell us about an interesting technical project that you have worked on related to the Biological and Medical Engineering field?

In my last term at BCIT, my classmates and I worked on a project constructing a custom wireless sound-activated alarm system for a mechanically-ventilated client with significant paralysis. If there was ever a scenario where the client’s ventilator is compromised, the client would be unable to speak, but would still be able to use ‘tongue clicking noises’ to activate the wireless alarm and alert the caretaker. We were able to implement noise filtering to block out any background noise and were ultimately successful in producing a fully functional system with a wireless range of 40m. More importantly, we were able to build an end-product that the client took home to use on a daily basis.

Why are you interested in the Biological and Medical Engineering field?

I think it’s a great field to work in. Our group (Lower Mainland Biomedical Engineering) is supporting a majority of the medical equipment in healthcare facilities (inpatient and outpatient clinics included) in the Greater Vancouver Area. We know our work has a direct impact on physicians, clinicians, and patients alike. It’s rewarding to know that we have a place in the healthcare industry, and that we are making a difference in people’s lives.

What are your aspirations for the future?

As a current biomedical engineering technologist working at BC Children’s & Women’s Hospital in Vancouver, I would love to work on more projects within Biomed while continuing to hone my skills in certain areas such as networking and IT. I’m still relatively new to this position, but my main goal right now is to continue to learn, progress, and grow within this healthcare field.
Spotlight on Biomedical Technologist Students and Recent Graduates

Shivali Shah

Education
- Diploma Name: Biomedical Engineering Technology Fast Track Co-op
- Graduation Date: January 2018
- School: Centennial College

Tell us about an interesting technical project that you have worked on related to the Biological and Medical Engineering field?
During my time of employment at The Ottawa Hospital, I have worked on many projects. One of the most important projects was about extending the life of baby warmer beds. During PM, I noticed the side wall brackets which holds panels were wearing out because of strong cleaning agents (and they were getting old too). At the two hospital campuses, there were total of 16 beds, and each bed consists of 6 brackets. This replacement part was very expensive (approx. $300 per bracket). I took the initiative to contact Tony Zandbelt (Mechanical engineer) working at TOH rehab centre. He was able to fabricate around 90-96 pieces, and all materials needed to fabricate was under $200. This project saved TOH thousands of dollars, and I learned about teamwork, communication and the importance of making and sticking to a plan.

Why are you interested in the Biological and Medical Engineering field?
I still remember my love for troubleshooting appliances at home when I was a kid. I was always the first to help my mom every time she had issue with them. I was also always fascinated by the human body and how it works. Knowing that I would enjoy both biology and engineering during college, the decision was to choose Biomedical Engineering as my profession for the rest of my life. As an engineer, I love troubleshooting and servicing medical equipment. I know that I can make a difference by supporting patient care and safety. I often refer biomeds as Doctor of Machines.

What are your aspirations for the future?
Currently, I am working at The Children's Hospital of Eastern Ontario as a General Duty Technologist where I maintain, troubleshoot and service medical equipment. I'm excited about the prospect of working with a strong group of people at CHEO that work well together in servicing the region. In five years, I'd love to be a true expert with successful technical and project management experience under my belt as I look to grow into a more challenging role. I want to continue to take part in conferences, seminars, meetings, use continuing education to pursue my professional development.

What are your interests/hobbies outside of school?
One of my favorite things to do is to paint. I love to express my emotions and thoughts through art. For me, art is like a meditation. I have learned to plan ahead, perseverance, and observations in details through painting. I also enjoy volunteering for an Ottawa-based not-for-profit organization which helps youth, new immigrants and international students. I volunteer a couple of hours on weekends and take part in community services.
Spotlight on Biomedical Technologist Students and Recent Graduates

Ian Torrance
Linked In

Education
- Diploma Name: Biomedical Engineering Technology
- Graduation Date: June 2017
- School: BCIT

Tell us about an interesting technical project that you have worked on related to the Biological and Medical Engineering field?
For my BCIT practicum project, my team developed a sound-activated, wireless alarm system to be used in the home of a ventilated quadriplegic patient whose family was relying on a baby monitor for emergency communication if a situation arose where the ventilator alarm did not sound during the night. It was an enjoyable problem to solve that required some sound amplification, Arduino coding and manufacturing to complete the final product.

Why are you interested in the Biological and Medical Engineering field?
I've always been fascinated by how things work, both biologically and electrically, so I wanted to find a career that would satisfy both of these interests. I also wanted a career in the medical field where I am helping to make a difference in patient outcomes on a daily basis by utilizing my technological skills. I enjoy problem solving and the biomedical engineering field in a hospital involves real-time problem solving of technological issues relating to medical devices so it meets all of my personal requirements of a satisfying career.

What are your aspirations for the future?
I'm employed at St Paul's Hospital in downtown Vancouver on the OR team and am aspiring to learn as much as possible about as many different devices as I can including perfusion and anaesthetic devices. I'm currently also taking a Bachelor of Technology Management in the evenings and my long-term aspirations are to move into a management role in a Biomedical Engineering Department.

What are your interests/hobbies outside of school?
Outside of work I enjoy playing volleyball, skiing, hiking, camping, biking and enjoying the vast amounts of local breweries that Vancouver has to offer.
CHEO Clinical Engineering brings out to the boogie in Ophthalmology

Marc Bergeron (Left), Darryl Cameron (Right)

Did you know the Village People perform their 1978 disco hit Y.M.C.A every day at CHEO?

**Young man, there’s no need to feel down…**

*I said young man, pick yourself off the ground…*

**It's fun to stay at the Y.M.C.A.**

*It's fun to stay at the Y.M.C.A.*

Thanks to the creative work of Marc Bergeron and Darryl Cameron in Clinical Engineering, you can hear the Village People, the Jackons, Kool and the Gang, Fats Domino, Captain and Tenille and more in the Ophthalmology Clinic (C-8).

To complete a proper eye exam, an ophthalmologist requires the subject’s eyes to remain stationary, at least for a moment. With adults, this is simple. The doctor simply asks, “Please stare at the red circle on the far wall.” But, try getting a four-year-old to do that, even for a moment.

A fixation device is something used in ophthalmology to briefly attract and hold a child’s attention on something in the distance, allowing a physician to make a thorough eye exam. To hold a child’s attention it needs to be fun, interesting and unexpected, so they will be compelled to look at it.

How about Elmo busting a move, complete with disco music and lights?

“The fixation devices we were using were based on garage door opener technology,” says Daryl. “Stepping on the floor button turned it on — there was a pause and then music played for ten seconds and a teddy bear rocked back and forth in a box near the ceiling at the far end of the room. That was it.”
CHEO Clinical Engineering brings out to the boogie in Ophthalmology (Continued)

“These fixation devices were 20 years old. They were starting to break and we thought… instead of repairing these, why don’t we build our own, from scratch,” says Marc. “We knew we could build something way better to fulfill CHEO’s customized needs.”

The first step was to consult the ophthalmologists to learn what features would make CHEO’s fixation devices as effective as possible?

Marc and Darryl learned that they need to turn on and off without delay — step on the pedal and Elmo instantly dances, lift your foot off and Elmo stops. They needed to be very visually stimulating to attract and hold a child’s attention. And they needed to be adaptable.

Every examining room in the Ophthalmology Clinic is now equipped with two fixation devices. These are compartments near the ceiling, facing the child, each containing something interesting like Elmo, a Furby, a cow, or another stuffy.

The foot controls have been rebuilt with new up-to-date wireless controls and 3D printing so that all of the room controls — fixation devices, room lights, exam chair height, and more — are included in the same console, minimizing cords all over the floor and improving safety.

And now, when an ophthalmologist steps on the pedal…

Don’t blame it on sunshine…
Don’t blame it on moonlight…

These new CHEO-built fixation devices are completely customizable. Are the disco lights blinking too fast? Slow them down. Is it the holiday season? Switch Elmo for Santa and the Village People for Bing Crosby.

The best life for every child includes making their CHEO experience as fun as possible.

“This has been such a great project,” says Mark Asbil, Manager, Clinical Engineering. “Darryl and Marc have done extraordinary work. They even brought their personal 3D printers in from home so this could happen. And, the doctors and the kids love the new devices.”

Don’t blame it on good times…
Blame it on the boogie.
The 42\textsuperscript{nd} Annual Canadian Medical and Biological Engineering Society Conference Recap

From the desk of the CMBEC42 Chair, Kim Greenwood

Our annual Canadian Medical and Biological Engineering Conference (CMBEC) was held this year from May 21 to 24, 2019 in Ottawa, Ontario at the Ottawa Conference and Events Centre. This annual Society event has been held continuously since 1966. The conference included Clinical Engineering, Medical Device Innovation and Academic streams alongside of a comprehensive Continuing Education program. A Student Networking Session gave students the opportunity to gain the insights from the experienced membership from across the country in support of their career path planning. The Vendor Exhibit Hall of the conference was sold to near capacity this year. Attendance was significantly up this year over the last conference held in Ottawa in 2013 to about 260 attendees in total.

The conference was highlighted with four keynote addresses on a wide range of topics which included Dr. Molly Shoichet “Delivering the Promise of Regenerative Medicine”, Dr. Carl-Eric Aubin “From Scoliosis Treatment Simulators to the Montreal TransMedTech Institute”, Dr. Monique Frize “Gender Balance in Biomedical Engineering” and Dr. Tiago Falk on “Artificial Intelligence, Signal Processing and Wearables: Building Blocks for Healthcare Technologies of the Future”.

The Conference Gala and Awards Banquet were held at the Canadian Aviation and Space Museum where the Society’s recognition awards were presented to this year’s honoured recipients. This year the Society conferred fellowships on three of its members, Dr. Evelyn Morin of Queen’s University, Mr. Martin Poulin of Vancouver Island Health Authority and Mr. Mario Ramirez of the Hospital for Sick Children. An Early Career Achievement Award was given to Mr. Brendan Gribbons of Vancouver Lower Mainland Biomedical Engineering. Mr. Navtej Virdi of The Hospital for Sick Children was named Outstanding Canadian BMET for 2019.

The conference organizing committee included Kim Greenwood (Chair), Rachel Zhang, Marie Ange Janvier, Mark Asbil, Andrew Ibey, Hal Hilfi, Gnahoua Zoabli, Mark Asbil, Sreeraman Rajan, Xudong Cao, Marianne Fenech, Sarah Kelso, Murray Rice, Kyle Eckhardt, Kelly Kobe, Mike Capuano, Martin Poulin, Parisa Bahrami, Natalia Kaliberda and Kenza Loulidi.

Next year’s Conference will be held in Montreal in conjunction with the International IEEE Engineering in Medicine and Biology Society Conference from July 21 to 25, 2020.

\textit{Kim Greenwood, CMBEC42 Chair}

The CMBES Executive and Conference Planning Committee would like to thank all CMBES members who attended this year’s conference. Your regular attendance is paramount for keeping the conferences going year-after-year! All vendors who attended also deserve a large thank you – their support is critical for ensuring that our conferences are a success. As always, the Willow Group was tremendously supportive and helped keep the conference on track. Lastly, a very special thanks is owed to Kim Greenwood for his leadership and the planning committee for their tireless work which ensured the conference went off without a hitch!

We hope to see you at CMBEC43/EMBC42 in Montreal! Be sure to hold the date for July 21\textsuperscript{st} - 25\textsuperscript{th}!
CMBEC42 Photos

Thank you to Rachel Zhang for photographing CMBEC42!
CMBEC42 Photos

Thank you to Rachel Zhang for photographing CMBEC42!
Carleton University Students Reflections on CMBEC42

As students from Carleton University, we had the opportunity to attend the CMBEC42 conference in Ottawa. Here are some of our reflections on this wonderful experience.

Emma Farago, CMBES Member and PhD Student
I am a first year PhD student in electrical engineering, with a focus on biological signal processing. As a first year student, I was not fully aware of the diverse range of research and clinical work that occurs within CMBES. In particular, I was exposed to research in regenerative medicine, and clinical engineering work to improve hospital technology, incident reporting, and patient monitoring systems. Some of the vendors at the conference were even kind enough to teach me more about their devices, including an endoscope and an ultrasound machine for measuring bladder fullness.

I enjoyed the smaller concurrent sessions that focused on my area of study, and found them to be a very welcoming environment to ask questions of other researchers and my graduate student peers. I was a bit disappointed in the poster sessions, because the posters were pushed off to the side and did not allow for enough room to interact with all of the presenters. It is so important to be able to interact with the poster presenters as well, and I hope that next year there will be more of an opportunity to do so.

I hope that CMBES keeps up the great work when organizing the next conference, and I’m looking forward to presenting some of my research next year!

Curtis Lacelle, MASc. Student
I am a first year Masters student in Biomedical Engineering at Carleton University and was excited to attend my first conference at CMBEC42 in Ottawa this past May. The conference started with a very informative keynote speaker Dr. Molly Shoichet discussing her research in regenerative medicine. It was fascinating to see research that was not only theoretical, but actually applied through animal trials. This topic was one of many different biomedical subjects tackled throughout the weekend and a perfect way to start the conference. The diversity within the field is amazing and is one of the reasons I study in this field, to aid humanity in any biomedical niche.

I focused more on the student presentations throughout the rest of the conference so that I could gain some experience and learn how to present my research in the future.

Everyone’s presentations were very well organized and their research shined. The Medical Device Development session was one of my favorite sessions that highlighted a prosthetic leg with controlled stance when walking and validation of an intravaginal dynamometer.

CMBES provided an excellent platform to allow spectators to take in plenty of information without overloading the day. The breaks in between sessions were perfect to mingle with experienced people who work in research, hospitals and even the private sector. I really enjoyed the catering all week, who doesn’t love fantastic meals! I particularly gained value in the “speed networking” between students and experienced engineers. Learning how they got their start after school gave me great insight into what to expect in the next couple years. I am looking forward to attending my next conference and presenting my research one day. Thanks CMBES for putting on a wonderful conference.
Carleton University Students Reflections on CMBEC42

Fadwa Darwaish, CMBES member and MASc. Student

Attending the CMBEC42 has been a very exciting and memorable experience as it was the first conference I attended as a Masters student! The conference provided an exceptional opportunity for biomedical engineers and gave a sense of community. It was exciting to learn about all the interesting research and advancements that are currently happening in the biomedical field. Much innovative solutions have been presented for health problems and for biomedical development. This was evident in both oral and poster presentations. One of the best things about the conference is that it provided many opportunities to network and ask questions to the presenters and learn more about their work.

I learned more about clinical engineering work, project management, and the role women play in engineering, through the exciting talks, and engaging speakers. The panel that had the recent graduates of biomedical engineers was one of the most motivating portions, as it was the most relevant to me as a student and a recent graduate of biomedical engineering. It was exciting to see one of my previous TA in undergrad on the panel talking about her experiences and what she is doing. It would be nice for future conferences to have hands-on workshops targeted for the students or recent graduates, where they can learn skills that can advance their careers.

Throughout the conference, it was great to be exposed to professionals from the different sectors of academia, government and industry. I had the opportunity to further connect with health professionals and clinical engineers, who were pleased to answer my questions about clinical engineering and how it is like to work for a hospital. It was remarkable to see so many biomedical engineering companies exist and take part in the trade show. From my interaction with them, they were very happy to be there. It was very exciting for me to win the door prize, after participating in the tradeshow passport challenge. I won a 3D printing pen! Thank you for giving me the opportunity to attend such a conference, and I hope there will be more events in the future.
CMBEC 42 Award Winners

Outstanding Canadian BMET: Navtej Virdi (Toronto, ON)

Navtej is a Team Leader in Medical Engineering at the Hospital for Sick Children where over the years he has supported the technology in the NICU, NICU Transport, Neurology, and Dialysis areas. His accomplishments include the development of the first set of implantable electrodes for monitoring the location of the Epileptic activity in the brain, co-leading the technical advisory committee for purchasing neonatal transport systems in the province, and planning a new epilepsy monitoring unit.

Early Career Achievement Award – Brendan Gribbons (Vancouver, BC)

Brendan is a clinical engineer with the Lower Mainland Biomedical Engineering team in Vancouver BC, where he started first as an intern, and has worked full time since September 2016. He is responsible for the infusion pump portfolio and incident investigations in the Vancouver region. He provided outstanding technical leadership on a province wide incident investigation into medication over-infusions.

Brendan is an active member of CMBES. He initially volunteers with the Professional Affairs committee, and he is now Chair of the Publications committee.
CMBEC 42 Award Winners

Fellow of CMBES (FCMBES) – Evelyn Morin (Kingston, ON)
Evelyn is a faculty member in Electrical Engineering at Queens University. She developed an independent research program in the application of myoelectric signals and sensors to musculoskeletal biomechanics, investigations of human body movement, and measurement of muscle force output. The impact of this work has been extensive with many journal publications, invited presentations, invited book chapters, and term as Assistant Editor of the IEEE Transactions on Rehabilitation Engineering journal. She has contributed to the development of Queen’s Collaborative Biomedical Engineering graduate program and mentored graduate students in Biomedical Engineering who have gone on to contribute to the field.

Evelyn is an active member of CMBES. She has volunteered as a chair of the CMBES Awards Committee and a member of the CMBES Task Force for the 50th Anniversary Journal.

Fellow of CMBES (FCMBES) – Martin Poulin (Victoria, BC)
Martin is Director of Biomedical Engineering, Vancouver Island Health Authority. In this role he has overseen the opening of two hospitals on Vancouver Island, and been instrumental in working with the University of Victoria Biomedical Engineering program to train the next generation of Clinical and Biomedical Engineers.

Martin has been a staple and strong advocate for Clinical Engineering in Canada for the past 25 years. He has been an active volunteer with CMBES over the last 11 years starting as Treasurer in 2008 and President for 4 years (2014-18). He was Conference Chair of CMBEC37 in Vancouver, BC 2014, and has been a Board Member of the Canadian Board of examiners for Clinical Engineering Certification since 2013.

Fellow of CMBES (FCMBES) – Mario Ramirez (Toronto, ON)
Mario is the Director of Medical Engineering at the Hospital for Sick Children’s Medical Engineering Department. Prior to that, he served as a Director of Biomedical Engineering at both IWK Hospital in Halifax and St. Michael’s Hospital in Toronto. He has been a key contributor to the Canadian Clinical Engineering field for over the last thirty five years. He has participated in several university engineering programs academic reviews through the Canadian Engineering Accreditation Board (CEAB) since 2010.

Mario has been a significant supporter of CMBES, serving servicing a Vice President from 1996 to 2000 and then President from 2000 to 2002. He participated in the working group that revised and published the 2014 version of Canadian Clinical Engineering Standards of Practice. Mario is a peer reviewer for other Clinical Engineering departments in Canada, utilizing his valued experience to help others improve.
CMBEC42 – Paper Award Recipients

**Outstanding Research Competition:**
Dr. Alison Clouthier (University of Ottawa) for the paper “Effect of Patellofemoral Geometry and Simulated Tibial Tubercle Osteotomy on Patellar Stability”

**Student Paper First Prize:**
Alexander Fernandes (Carleton University) for the paper “Effect of Lateral Resolution on Classifying Individual Finger Flexions Using Ultrasound”

**Student Paper Second Prize:**
Catriona Czynryj (University of Ottawa) for the paper “Speed & Force Validation of an Improved Intravaginal Dynamometer Design”

**Student Paper Third Prize:**
Abhishek Tiwari (Institut national de la recherche scientifique) for the paper “A Comparison of Two ECG Intra-beat Measurement Methods for HRV-Based Mental Workload Prediction of Ambulant Users”.

Thank You to the CMBEC42 Keynote Speakers!

**Dr. Carl-Éric Aubin, Ph.D., ScD (h.c.), P.Eng.**

**Dr. Tiago Falk, Ph.D., SMIEEE**

**Dr. Molly S Shoichet, PhD, O.C., O. Ont**

**Dr. Monique Frize, Ph.D., FIEEE, FEC, O.C.**
The Canadian Medical Devices Sentinel Network (CMDSNet) is a pro-active surveillance program that encourages the reporting of medical device problem reports from all types of institutions. CMDSNet detailed reports obtained help to better characterize how organizations use devices, how problems are perceived, and which aspects of the system contribute to a particular event, potentially mitigating risk at an earlier stage. This program relies on a group of dedicated and trained professionals from acute or community based Canadian healthcare organizations that represents over 300 individual facilities to report high quality data to the regulator about adverse events associated with medical devices.

Adverse event reporting for medical devices consists of a combination of spontaneous reports from various sources and mandatory reporting by hospitals and manufacturers and importers of medical devices. CMDSNet provides a complementary data source for post market evaluations. More comprehensive incident data and earlier regulatory interventions also help to provide Canadians with timely new safety information to make informed decisions concerning the appropriate use of medical devices.

The CMDSNet program has led to:

- Access to early safety warnings and detection of potentials risks;
- Further development of quality/risk management approaches to medical devices safety;
- Improvement of manufacturing processes, licensing requirements and overall post-market product safety;
- A direct communication link between participating organizations and Health Canada;
- A sense of community among CMDSNet users, serving as an information-sharing forum;
- Increased awareness amongst front line users about the benefits of reporting incidents and knowledge of safe medical device usage.

In December 2018, Health Canada published its Action Plan on Medical Devices committing to do more to improve the safety and effectiveness of medical devices and to optimize health outcomes for patients. The Medical Devices Action Plan positively highlighted the contributions of CMDSNet program. As per the Action Plan, CMDSNet will expand the network to include additional facilities outside the hospital setting with a focus on long-term care facilities and private clinics in order to strengthen monitoring and follow-up of devices once they reach the Canadian market.

Only CMDSNet participating institutions report voluntary incidents occurring with medical devices within their organizations directly to the Marketed Health Products Directorate of Health Canada via the new Medical Device Problem Report Form for Health Care Professionals. Other voluntary reporting from non-participating facilities, consumers and health professional are encouraged to report device-related incidents directly to Health Canada by completing a Health Product Complaint Form via the Regulatory Operations and Enforcement Branch.

For additional information, contact the Canadian Medical Devices Sentinel Network.
CMBES Peer Review: Niagara Health System

In early December of 2018, CMBES Peer Review surveyors conducted a second peer review of NHS’s Biomedical Engineering department. It was the first review based on the 2014 version of the Clinical Engineering Standards of Practice (CESOP). The process was one that culminated after many months of diligence and hard work taken on by the leadership and staff of NHS Biomedical Engineering. As a result, the department was awarded their second certificate indicating a renewal of their first review which was completed in 2015. The CMBES congratulates NHS Biomedical Engineering on this recent achievement. The 2018 survey was one that the CMBES took great pleasure in conducting.

To attain this recognition, Manager, Kritananda Teeluckdharry, under Director, Amir Gill; has literally fine-tuned both strategies and operations of his department. As a result, NHS Biomedical Engineering increased their substantial ratings against standards more difficult and challenging than the 2007 set previously reviewed-on. This is an achievement in every sense. All members of NHS Biomedical Engineering and NHS-as-a-whole, has to be very proud of this department for receiving their renewed Certificate of CMBES Peer Review in 2018. To celebrate, NHS Leadership, along with the Biomed team, got together on July 8th, 2019 for an official presentation of the certificate. CMBES executive members and CMBES Peer Review surveyors Mike Capuano and Bill Gentles presided (see photos).


(L-R) Angela Zangari – Interim President and VP Finance; Mike Capuano – CMBES President, Peer Review Chair, Lead Surveyor; Bill Gentles – CMBES Standards Committee Chair, Peer Review Surveyor