

# Advances in ABI and Technology



**21st Annual Conference on Neurobehavioural  
Rehabilitation in Acquired Brain Injury**

**May 8–9, 2014**

**Hamilton Convention Centre  
Hamilton, Ontario**





# Advances in ABI and Technology

## 21st Annual Conference on Neurobehavioural Rehabilitation in Acquired Brain Injury

### Target Audience

This conference will be of interest to ABI Rehabilitation Professionals, Psychologists, Physicians, Program Planners, Insurance and Legal Representatives and Advocates.

### Attendance Certificates

Conference attendance certificates will be placed in your delegate kit. Delegates are encouraged to review self-assessment guidelines issued by their professional college/association for continuing education credits or contact their professional college or association for further information.

### Evaluation Prizes

Delegates who complete an evaluation form will be eligible for a draw. The draws will occur during lunch.

### Casual Friday

Show your support for the Hamilton Health Sciences Rehabilitation Resource Centre and Camp Dawn by purchasing a \$5.00 sticker and dressing casually on Friday May 9, 2014.

### Convention Centre Facilities

The temperature varies from room to room. Please dress accordingly.

### Caregiver sponsorships

A limited number of caregiver sponsorships are available. For information call Joyce Lambert at 905-521-2100 ext. 40833.

### Liability

Hamilton Health Sciences hereby assumes no liability for any claims, personal injury, or damage:

- To any individual attending this conference.
- That may result from the use of technologies, program, products and/or services at this conference.
- That may arise out of, or during this conference.

@ABIConference14

### Conference Goals

- Explore innovative technologies assisting in brain injury diagnosis and treatment
- Review practical uses of devices for complex rehabilitation issues
- Provide an opportunity to network, share experiences and cultivate partnerships

### For further information please contact

**Joyce Lambert**

ABI Conference  
Regional Rehabilitation Centre, HHS  
Level 1 North, Room B1-106F  
237 Barton Street East  
Hamilton, ON L8L 2X2

**Phone** 905-521-2100 ext. 40833

**Email** [jlambert@hhsc.ca](mailto:jlambert@hhsc.ca)

# Plenary Sessions

**Amir Raz** Ph.D., ABPH

Professor, Departments of Psychiatry  
Neurology & Neurosurgery, and Psychology  
McGill University & Jewish General Hospital

## Brain Training as a Vehicle for Behavioural Intervention

Brain training programs/products are advertised as safe and effective ways of improving cognitive performance in both healthy and neurologically affected populations. These products appeal to consumers and healthcare practitioners because of their ease of application and claims of efficacy. In a society that is increasingly focused on brain health, these applications constitute a burgeoning commercial market. Sparse evidence coupled with lack of scientific rigor, however, leaves claims concerning the impact and duration of effects from such training largely unsubstantiated. On the other hand, at least some scientific findings seem to support the effectiveness and sustainability of training some higher brain functions such as attention and working memory. This talk will review the current evidence and help determine the best approach to using and/or implementing brain training products.

**Michael D. Noseworthy** Ph.D., P.Eng.  
Director, Imaging Research Centre.  
St. Joseph's Healthcare

## State-of-the-Art Imaging of Acquired Brain Injury (ABI)

Routine imaging of acquired brain injury (ABI) is done with computed tomography (CT). The primary goal of a CT scan is to rule out any large cerebral bleeds that require immediate intervention. When large bleeds are absent magnetic resonance imaging (MRI) may or may not be done. Even though routine CT and MRI both show tremendous structural detail within the brain, most ABIs do not present with any abnormal findings on routine scans. This is frustrating for clinicians, and more so for patients who truly are suffering. Thus there has been a push to develop new methods that can non-invasively quantify and monitor recovery of ABI. This talk will describe some of the work from my lab, and from my colleagues, that takes our understanding of ABIs to a new level, hopefully allowing quantitation and recovery monitoring.

**Babak Taati** Ph.D., P.Eng. Scientist  
Toronto Rehabilitation Institute – UHN

## Cognitive Assistive Technologies and Intelligent (Neuro) Rehabilitation Devices

An overview of current research on ambient assistive technologies and intelligent rehabilitation devices. After briefly introducing a number of such systems, the talk will focus on two specific intelligent systems. The first system uses a camera and a computer to monitor individuals with cognitive deficit and delivers interactive prompts to assist with activities of daily living. The second technology is currently being developed for neurorehabilitation and motor recovery in an adaptive virtual reality environment.

**Sergio Di Giovanni** Founder/Survivor  
**ABI Health App**

Sergio Di Giovanni, Q Card founder and ABI survivor. He will share his inspiring story about the motor vehicle accident that changed his life, his journey to recovery and how it led him to develop Qcard: a mobile app designed to improve the quality of life for survivors. Qcard has been featured in publications, recommended by OT's, Physiatrists and Neurologists. It has

been adopted by the American Congress of Rehabilitation and survivors are raving about it!

**Stephanie Hornyak** M.Sc.  
Hamilton Health Sciences  
Regional Rehabilitation Centre

## Smartphone use for Severe Memory Impairment Following Anoxia

Following an anoxic brain injury, individuals can experience moderate-to-severe 'explicit' memory impairment. Disruption of these specific memory networks results in difficulties recalling past personal events and reliably forming new memories. Research has demonstrated that 'implicit' memory is often preserved despite severe explicit memory impairment which can provide avenues for acquiring new skills and knowledge. The application of an established theory-driven implicit memory training program (Svoboda et al. 2012), using a commercial smartphone is described with an inpatient to facilitate daily functioning. Preliminary findings suggest that individuals with significant memory impairment are able to capitalize on emerging commercial technology.

*Plenary Sessions continued on page 4 ▶*

**Gail Simpson** Occupational Therapist  
Complex Injury Rehab

## Implementing a New Innovative Tablet Based Clinical Assessment Tool for Mild to Moderate Brain Dysfunction Within Clinical Practice

This presentation will discuss how organizations across Canada have successfully been using a new web and tablet based clinical assessment tool to comprehensively assess the functional effects of mild to moderate brain dysfunction. The assessment comprehensively measures across the spectrum of neurofunction (cognition, mood, social skills, behaviour, balance, function, quality of life) and it includes 50 real life activities implemented on the tablet to measure performance. Post-assessment, the application immediately scores the data and generates a report that is available for review by the client and health care team. Representatives from several of these community organizations will share their experience with using this new technology.

**Aaron Stiller** Neuromedical Business Specialist  
CogniSens Inc.

## NeuroTracker 3D Multiple Object Tracking: Improving Cognitive Processing, Attention and Working Memory in Those with MTBI and PTSD

Post-traumatic Stress Disorder (PTSD) is frequently apparent in those who have suffered mild Traumatic Brain Injuries (mTBI). It has been posited that the relationship can be due to reduced working memory and cognitive resources which also reduces the ability of the individual to deal with daily stressors directly or indirectly related to their PTSD. NeuroTracker 3D Multiple Object Tracking (3D MOT) is a novel and concise measurement and training tool that elicits mental resources known to be severely degraded by the effects of concussions. It has the potential to be both a diagnostic device to assess and monitor working memory, attention and cognitive processing abilities, as well as a therapeutic tool that can be used for training during the recovery process. In our presentation we will discuss NeuroTracker applications for mTBI and PTSD, as well as potential avenues for therapeutic application in a clinical setting.

**Mark Farrow** Information and Communication Technologies, HHS  
Vice President, Chief Information Officer

## The Future of Technology in Healthcare

The face of healthcare has changed significantly with the introduction of technology. On a daily basis, technology improves the quality of life for patients, staff and physicians. Electronic documentation, integrated systems, image technologies in hospitals and health care facilities across the province enhance access to information and improve patient care. In a world where most people have a smart phone or device, technology is at our fingertips. The potential for technology advancements in health care and the impact on patient care in the future will be discussed.

**Joanne Nunn** Occupational Therapist  
Options Therapy

**Bill Johnson** Ideas for Independent Living Inc.

**Pavneet Arora** B.A.Sc., M.A.Sc.  
Waroc Informatik

## Control of Environment Equals Control Over Life

Case presentation about an individual suffering from a brain injury & spinal cord injury who was feeling a loss of independence and control. A multi-disciplinary approach was used to devel-

op individualized control solutions for adaptive living allowing the client to independently access his entire environment using technology. Specific topics to be discussed include: assessing ability to utilize technology, barriers, choosing and integrating technology, education, and functional improvements.

**Jennifer Hendry** B.A., R.T.,  
Clinical Coordinator, Brain Injury Services

**Liana McLeod** B.A., R.T.,  
Research Assistant, Brain Injury Services

## Practical “Applications”: Using an iPad in ABI Rehabilitation

Compensatory tools and strategies for accommodating deficits caused by ABI are invaluable in the rehabilitation process. Current technology options and their benefits and possibilities for rehabilitation with ABI clients are only limited by a therapist’s access, knowledge and innovation. The Best Practices Committee of Brain Injury Services embarked upon a research and practical endeavour to investigate the benefits and practicality of using an iPad in ABI rehabilitation. Current literature, the potential and limitations of these types of devices for rehabilitation and recreational purposes will be reviewed.

**Stacey Smith** Behavioural Rehabilitation Services, TOH-Rehabilitation Centre

**Andrée Deslauriers** M.Sc.S., Reg. CASLPO

## The iPad – Not Just Fun & Games

Therapists in ABI rehabilitation at The Ottawa Hospital Rehabilitation Centre (TOHRC) have found the use of familiar technology in therapeutic interventions to be especially motivating for clients. The use of technology for cognitive retraining or compensatory strategies does not set them apart from their peers, but makes them blend in. This presentation will focus on a wide range of apps dealing with memory, organization and language that are used for cognitive rehabilitation with ABI clients at TOHRC. Some of our challenges and successes will be reviewed.

# Concurrent Sessions

**A1 Kim Carey** M.Sc., OT, OT Reg (Ont.), Hons. B.Kin., Technology Access Clinic HHS, Chedoke Site  
**James Leslie** Rehab Technologist Independence Technologies – HHS

## Applications of Technology for ABI Rehabilitation and Quality of Life

Participants will learn about the latest technologies available to assist people with ABI in tasks of daily living. A variety of equipment options will be demonstrated that are applicable to clients with a range of functional abilities in the areas of self-care, leisure and productivity. Examples that will be included are cause-effect applications, basic communication tools, environmental/home controls, switch options for control of music, video, board/card game supports, and computer/smart phone supports for executive functioning. Technologies range from simple, over-the-counter devices to smart phone apps.

**A2 Commander (ret.) Luis Becerra** M.D.

## Infrascanner: Portable Screen for ABI

The Infrascanner is a portable device that uses Near-Infrared (NIR) technology to screen for intracranial bleeding. On the scene, in the field, in remote locations and in emergency rooms, the infrascanner provides a unique opportunity for enhanced care for individuals with head trauma. Early detection and triage can assist in evaluating urgency of CT imaging and neurosurgical interventions. The technology and methodology of the infrascanner will be described along with current applications and research findings.

**A3 Robin Green** Ph.D., C. Psych.  
Canada Research Chair (II) and Senior Scientist, Toronto Rehab

## Understanding and Offsetting Deterioration of the Brain and Cognition in the Chronic Stages of TBI

We are coming to understand that brain and cognitive functioning in the chronic stages of TBI are not static. Progressive deterioration of both have been shown in our lab and elsewhere in people with a single moderate-severe TBI as well as multiple concussions and sub-concussions in the context of contact sports like

professional football and boxing. This talk will describe findings on this topic from our own lab, and on research in-progress from our group that is designed to offset this deterioration.

## A4, B4, & C3 Technology Room

Some of the technologies presented at this conference will be available in the technology room for delegates to personally view and discuss with presenters.

**B1 Susan Thurston** M.H.Sc., Reg. CASLPO  
Speech Language Pathologist  
Technology Access Clinic, HHS

**Kristin Bouma** B.A., R.T., Case Facilitator  
Brain Injury Services Hamilton

**Allan Robertson**

## “I have a hope:” Finding a Voice after 20 Years

One man’s journey is presented using video clips, interviews and outcome reporting. Focusing on his goal of reestablishing communication, an iPad was introduced for a client with global aphasia. He acquired new skills, made a successful transition to a supportive living environment, reconnected with family members and participated in the community. He demonstrated a renewed motivation for rehabilitation and a willingness to take risks.

*Concurrent Sessions continued on page 8* ➤

# Thursday, May 8th

7:45–8:30	Registration & Continental Breakfast	
8:30–8:45	Announcements Welcome	Rob MacIsaac, Rebecca Repa John Zsofcsin, Carolyn Galand
8:45–9:30	Brain Training as a Vehicle for Behavioural Intervention	Amir Raz
9:30–10:30	State-of-the-Art Imaging of Acquired Brain Injury (ABI)	Michael Noseworthy
10:30–11:00	Refreshment Break & Poster Presentations	
11:00–11:45	Cognitive Assistive Technologies and Intelligent (Neuro) Rehabilitation Devices	Babak Taati
11:45–1:00	Lunch & Poster Presentations	
1:00–1:30	Survivor Perspective and ABI Health App	Sergio Di Giovanni
1:30–2:15	3 Mini sessions: Smartphone, NeuroTracker and Tablet	Stephanie Hornyak, Aaron Stiller Gail Simpson
2:30–3:30	<b>Concurrent Sessions A (Select One)</b> A1 Applications of Technology for ABI Rehabilitation and Quality of Life A2 Infrascanner: Portable Screen for ABI A3 Understanding and Offsetting Deterioration of the Brain and Cognition in the Chronic Stages of TBI A4 Technology Room	Kim Carey, James Leslie Luis Becerra Robin Green Technology Room
3:30–4:00	Refreshment Break & Poster Presentations	
4:00–5:00	<b>Concurrent Sessions B (Select One)</b> B1 "I have a hope:" Finding a Voice after 20 years B2 Companions for Healing: One Page at a Time B3 Robotic Arm Spasticity Assessment (RASA) B4 Technology Room	Susan Thurston Lisa Keenan, Kenneth M. Sroka Denise Johnson, Nitin Seth Technology Room
5:00	Cocktail Reception & Band	

# Friday, May 9th

7:45–8:45	Buffet Breakfast & Announcements	
8:45–9:45	The Future of Technology in Healthcare	Mark Farrow
9:45–10:45	3 Mini Sessions: Environmental Controls, iPad and Apps	Joanne Nunn, Jennifer Hendry, Stacey Smith
10:45–11:15	Refreshment Break & Poster Presentations	
11:15–12:15	<b>Concurrent Sessions C (Select One)</b>	
	C1 Returning to Meaningful Occupations: Creative Solutions	PattiJill Roberts
	C2 The use of computer assisted rehabilitation environment (CAREN)	Mireille Sequin, Joan Heard
	C3 Technology Room	Technology Room
12:15	Farewell Lunch	

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### Gifts in Kind

Dr. Kevin Jones  
Dr. Lisa Keith

**We Thank All of our Sponsors for their Generous Support**

**B2 Lisa A. Keenan** Ph.D.  
Licensed Health Psychologist  
Erie County Medical Center Corporation ECMC

**Kenneth M. Sroka** Ph.D.  
Professor Emeritus, English Department  
Canisius College

### Companions for Healing: One Page at a Time

Interest in bibliotherapy, or “the reading cure”, has spawned numerous reading clubs internationally using reading and art as part of the rehabilitation process for survivors of injury and illness. With the development of e-readers and other technology, texts and literature are more readily available to the community. It is well-documented in literature that social and cognitive deficits are often persistent areas of concern for survivors of brain injury (reduced empathy, poor perspective taking, concrete thinking, impaired information processing). Traditional speech/cognitive programs attempt to target these deficits, but are limited and often structured in approach reducing participant motivation. July 2012 a pilot project was started at the Erie County Medical Center Corporation in Buffalo NY to study the effectiveness of reading clubs for continued recovery of ABI survivors.

**B3 Denise Johnson** Reg. PT., B.H.Sc.PT.,  
M.R.Sc. (candidate),  
HHS, Regional Rehabilitation Centre  
**Nitin Seth** Ph.D., (candidate)  
University of Guelph

### Robotic Arm Spasticity Assessment (RASA)

Assessing and treating spasticity with individuals diagnosed with acquired brain injuries can be critical to their rehabilitation. Our RASA (Robotic Arm Spasticity Assessment) research project quantifies spasticity. The system employs a robotic arm and force sensor to capture resistive force readings in the biceps and triceps. The information collected can provide insight as to how an individual's force changes with position, speed or joint angle. Data can be continually collected and compared in order to detect changes as an individual progresses through their treatment. You will learn: What is spasticity? How is spasticity currently assessed? How does the research we are doing with the University of Guelph Robotic arm change how we assess spasticity and what we know about spasticity?

**C1 PattiJill Roberts** B.Sc.(Hons), M.Sc.(OT),  
OT Reg.(Ont.)  
Blue Balloon Health Services

### Returning to Meaningful Occupations: Creative Solutions

A variety of digital devices, software programs, smart phones and applications are proving to be invaluable therapeutic tools that can increase participation in meaningful activities. This presentation reviews the innovative process of using a video creation and editing software program, Windows Movie Maker, to achieve a variety of client-centered goals. How to incorporate additional assistive technology programs such as Dragon NaturallySpeaking, WordQ, and smart phone apps will also be reviewed. Specifically, video creation software can be utilized to accomplish a variety of goals such as relearning daily routines or particular components of activities of daily living.

**C2 Mireille Seguin** Physiotherapist  
**Joan Heard** PT (B.Sc. PT)  
The Ottawa Hospital Rehabilitation Centre

### The use of computer assisted rehabilitation environment (CAREN) for balance and mobility training in the ABI population

Clients with ABI often present with balance and mobility issues. The CAREN system is a virtual reality environment that combines motion platform, instrumented treadmill and motion capture to train movement function and stability. The applications useful for training include realistic terrain to challenge all aspects of balance control, introduction of random events to challenge reaction time and reflexes, navigation of complex busy environments for both physical and cognitive rehabilitation. The applications can also help with training of scanning with patients with neglect and training for patients with vestibular dysfunction. The clients use this interactive environment at different stages of their rehabilitation and the parameters are tailored to each individual's needs. The training is done in a safe controlled environment and is usefull in challenging client's sensory and motor systems.

# Delegate Registration

Name \_\_\_\_\_

Profession \_\_\_\_\_

Agency or Organization (please specify) \_\_\_\_\_

Address \_\_\_\_\_

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I **CONSENT** to having my name appear on a published registrant list YES  NO

## Payment

Please make cheque payable (in Canadian funds) to Hamilton Health Sciences – ABI Conference and return your completed form(s) with your cheque to:

### Joyce Lambert

ABI Conference  
Regional Rehabilitation Centre  
Level 1 North, Room B1-106F  
237 Barton Street East  
Hamilton, ON L8L 2X2

For further information contact  
**Joyce Lambert** 905-521-2100 ext. 40833  
[jlambert@hhsc.ca](mailto:jlambert@hhsc.ca)

## Concurrent Session Selection

I **will attend** (please circle):

Session A1 A2 A3 A4

Session B1 B2 B3 B4

Session C1 C2 C3

Please indicate any dietary limitations:

\_\_\_\_\_

## Delegate Registration Fee

**Early Registration** on or before April 13, 2014

- Single \$325
- 3 or more \$300 ea
- Caregivers or Full-time student \$150

**Group Rate:** A minimum of three registrations received together from the same organization is required. Subtract \$25 from each registration.

**Registration** after April 13, 2014

- Single \$400
- 3 or more \$375 ea
- Caregivers or Full-time student \$150

## Confirmation of registration

A written acknowledgement of your registration will not be sent to registrants prior to the event. Receipts will be provided in your registrant package.

Registration includes breakfasts, lunches, refreshment breaks, reception (excluding beverages) and delegate kits.

# Exhibitor Registration

Send your completed registration to:

**Joyce Lambert**

ABI Conference  
Regional Rehabilitation Centre  
Level 1 North, Room B1-106F  
237 Barton Street East  
Hamilton, ON L8L 2X2

**Phone** 905-521-2100 ext. 40833

**Email** [jlambert@hhsc.ca](mailto:jlambert@hhsc.ca)

## Exhibit space

*(Available on a first come first serve basis)*

Exhibitor space is available to agencies who wish to share information about their programs at the conference. Display area includes: an 8'x10' space; draped table; one chair. The exhibitor's room has limited provision for electrical outlets. The Exhibitor Registration includes a display area and one registration for the exhibitor. To reserve exhibit space, please complete the Exhibit Space form. Your space is confirmed upon receipt of the completed form. **Exhibit setup time** for the conference is from **06:00–07:45 a.m. on May 8th 2014**. **Removal time** is from **2:00–2:30 p.m. on May 9th 2014**. For further information:

**Joyce Lambert** 905-521-2100 ext. 40833

[jlambert@hhsc.ca](mailto:jlambert@hhsc.ca)

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## Exhibitor Registration Fee

- Early Registration** \$750  
Postmarked on or before April 13, 2014
- Registration** \$850  
After April 13, 2014

## Exhibitor Requirements

- I will require a table
  - I will require an electrical outlet
- Exhibitor Registration includes a display area and registration for one exhibitor.

## Cancellation policy

Hamilton Health Sciences reserves the right to cancel this event due to insufficient registration or circumstances beyond our control. Cancellations received before April 23, 2014 will be refunded. No refunds will be issued for cancellations received after this date.

## Driving Instructions

### From London and Beyond

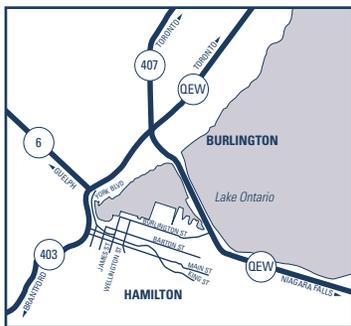
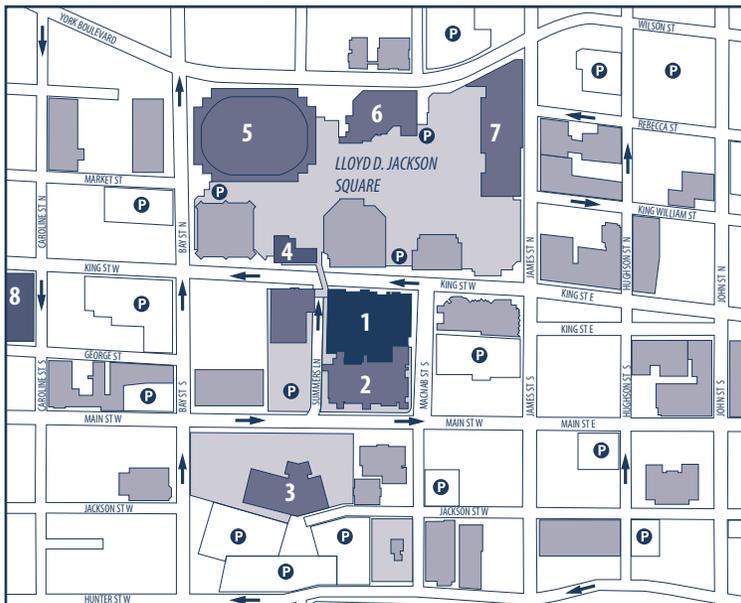
Follow the 401 East to Toronto. Take Exit 235 and merge onto Hwy 403 East to Brantford/Hamilton. Exit at Hwy 8 East/Main Street in Hamilton. Follow Main Street to Summers Lane. Turn left on Summers Lane. The Hamilton Convention Centre will be on your right hand side. Underground parking is on the left hand side.

### From Toronto and Beyond

Take the QEW West to HWY 403 Hamilton. Exit at Hwy 8 East/Main Street exit in Hamilton. Follow Main Street to Summers Lane. Turn Left on Summers Lane. The Hamilton Convention Centre will be on your right hand side. Underground parking is on the left hand side.

### From Niagara Falls and Beyond

Take the QEW West to Hamilton. Take Exit 89 Burlington Street. Turn left at Wellington Street. Turn right at King Street. Turn left at Caroline Street. Turn left on to Main St. Follow Main Street to Summers Lane. Turn Left on Summers Lane. The Hamilton Convention Centre will be on your right hand side. Underground parking is on the left hand side.



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## Accommodations

There are several hotels within walking distance or a short drive of the conference site. Please call the hotels directly for conference rates:\*

- Sheraton Hotel\*  
116 King Street West  
905-529-5515 or 1-800-514-7101
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\*A limited number of rooms have been block booked at the conference rate and are available on a first come first served basis until April 2, 2014.

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