




The CIMIT Exploratorium 2009

Preview the innovation featured at the four Exploratorium pavilions:
Care Anywhere, Breakthrough Technologies, Wounded Warrior, and Innovation 101

 CIMIT-Funded Project


 CIMIT Prize for Primary Healthcare

CARE ANYWHERE EXHIBITS:

  **CollaboRhythm: Primary Care Teamwork Anywhere at Any Time, MIT**

John Moore, MD, PhD

View technology that enables patients to become active participants in their care and allows health professionals to provide continuous collaborative support.

 **Real-Time, Point-of-Care Simulation Training, CHB and SimGroup**

Debra Weiner, MD; Ryan Bardsley

Examine a handheld simulation training device prototype for care providers to learn, practice and ultimately perform medical procedures on demand, in real-time, at point-of-care in any environment.

The Inflection Navigator, Szollosi Healthcare Innovation Program

Lyle Berkowitz, MD

Interact with an ambulatory-based triage system and web-based tool that supports a navigator guiding patients thru an acute healthcare inflection point, such as cancer.

iHealthSpace: Redefining Patient Health Literacy Through Community And Communication, MGH

Jeanhee Chung, MD

Check out a virtual space created to optimally support patients, families and care providers in the myriad tasks required to assess their health state, manage problems and prevent complications.

The Revolution Will Be Mobile, gravitytank

Teaque Lenahan

Come see how "mobile apps" are starting to revolutionize healthcare and put power in the hands of patients and providers.

Affectiva Q: Comfortable Wristband to Measure Sympathetic Nervous System Activation, Affectiva Inc

Jocelyn Scheirer

Learn about the Q, a wearable, washable biosensor that comfortably measures and communicates emotional arousal without interfering with daily life.

Project RED: The Re-Engineering Hospital Discharge Program, Northeastern University, BMC


Timothy Bickmore, PhD; Brian Jack, MD

Interact with a “virtual discharge advocate” simulating face-to-face interaction between a patient and a nurse implementing a NQF Safe Practice hospital discharge protocol.

Hospital at Home, Johns Hopkins School of Medicine

Bruce Leff, MD

Learn about a program to provide hospital-level care at home for acutely ill older patients discharged from the emergency department to the home.

 **Partners TeleStroke Center: Helping Patients from Afar, MGH**

Lee Schwamm, MD

See how emerging telemedicine technologies are collapsing the barriers of time and distance, enabling specialists to collaborate in real-time on care of acutely-ill patients around the world.

Destination Bedside: Strong Finishes for Strong Starts to Nursing Shifts, Innovation Consultancy at Kaiser Permanente

Christi Zuber, RN, MHA

Explore prototypes that increase quality nurse-patient interactions by encouraging patient involvement during nursing shift changes.

Care Where You Are: In-Home Technology, Via Christi Health System

Janell Moerer

Learn about a program for well elders incorporating Smart Home technologies that activate an “On Star” service center in the event of an unsafe condition or alarm.

Sound Clinical Intuition: Depression and Engagement Monitoring in Care Management, Cogito Health Inc

Joshua Feast, MBA; Ali Azarbajani, PhD

Discover how Honest Signals present in natural telephone conversation can be used to automatically monitor for clinical depression and engagement levels in care management settings.

The Connected Health Care Suite, Partners Center for Connected Health

Doug McClure

Interact with a platform that delivers powerful remote monitoring, decision support, clinical rules and disease and behavior management tools for programs in heart failure, hypertension, diabetes, and obesity.

Partners Home Care: Telemonitoring Program, Partners Home Care


Kathy Duckett

Come see how remote telemonitoring extends the reach of the nurse into the home and enables patient self-management.

Steelcase: Nurture, Steelcase

Debra Holden

Experience Nurture's innovative furnishing solutions and environments that adapt and flex to the way caregivers work - not the other way around.

 **Ambulatory Practice of the Future, MGH**

David Judge, MD

View an architectural rendering of an innovative redesign of the physical space of an ambulatory practice.

Automated Vital Signs Capture in the Clinic, MGH

Nat Sims MD; Mike Dempsey

See a demonstration of a system that allows medical assistants to automatically and wirelessly capture data from vital signs monitors and upload to the medical record.

WOUNDED WARRIOR EXHIBITS:

Combat Gauze: a Novel Hemostatic Agent, USAISR

Bijan Kheirabadi, PhD

See Combat Gauze's utility as a hemostatic agent and hear about the ISR's experimental findings regarding this effective hemostatic technology.

MedEx 1000: "Suitcase ICU", Integrated Medical Systems, Inc.


Matthew E. Hanson, PhD, MBA

Learn about an integrated, modular, remotely-controllable, portable unit including a ventilator, physiological monitor, multiple infusion pumps and fluid warmer.

Hand Held System for Providing Resuscitation Decision Support, USAISR

Jose Salinas, PhD

Witness a portable hand-held system for providing resuscitation decision support along with a wireless vital signs monitor and mini medic system.

 **Automated Processing of the Physiologic Registry for the Assessment of Injury Severity, MGH, TATRC Bioinformatics Cell**


Andrew Reisner, MD

Learn about this prospective trial of fully-automated diagnostic algorithms that analyze vital signs patterns of trauma patients transported by Boston Medflight that employ an innovative plug-and-play computing platform.

Brain Imaging in PTSD, Tufts University; VA Medical Center-Manchester; MGH


Lisa M. Shin, PhD; Scott P. Orr, PhD; Roger Pitman, MD

Check out this exhibit where participants will view color images of brain activity in PTSD patients and perform tasks that patients performed during scanning.

 **Clinical Use of Transcranial Direct Current Stimulation, Neuromodulation and Motor Training, SRH, BIDMC**

Felipe Fregni, MD, PhD, MPH

Observe the main principles of tDCS and recent updates on the clinical use of tDCS in neuropsychiatry and combination of tDCS with other techniques of motor training such as ARMEO.

 **Robotics for Upper Limb Rehabilitation in TBI Survivors, SRH, Hocoma AG**

Paolo Bonato, PhD

Interact with a system that combines a commercially available device and a data glove for the purpose of implementing rehabilitation protocols that are focused on recovering upper limb motor functions in TBI survivors.

Portable Brain Function Assessment for TBI Detection, BrainScope Company, Inc.

Michael Singer, PhD; Douglas C. Oberly, MS

See an objective brain function assessment product for early identification and potential optimization of treatment for Traumatic Brain Injury.

DE-STRESS: Delivery of Self-Training and Education for Stressful Situations, National Center for PTSD/VA Boston Healthcare System and Boston University School of Medicine

Eileen Delaney, MA; Carmen McLean, PhD

Destress with this web-based, self-management intervention that uses empirically supported techniques to help military personnel and veterans manage posttraumatic symptoms.

Pneumatic Medicine: Transformative Treatment For Microvascular Disorders And Wound Healing, NormaTec

Laura Jacobs, MD, PhD

Learn how the NormaTec PCD dramatically accelerates wound and incision healing, reduces edema, improves joint range of motion, and relieves pain.

Innovative Treatments and Prophylactics Based on Chitosan Derivatives, Synedgen Inc.

William P. Wiesmann, MD

See this platform of innovative chitosan-based antimicrobials that show highly significant killing of drug-resistant organisms of military importance, alone and in combination with antibiotics.

 **Micromechanical Forces in Wound Healing, BWH**

Dennis Orgill, MD, PhD

Explore how micromechanical forces are used to modulate surface interactions and waveforms to stimulate wound healing and tissue regeneration

Burn Flight Team: Connecting Combat Casualty Care Research with Medicine, USAISR

LTC Christopher White, MD

See the connectivity between combat casualty care research and the actual provision of critical care by Institute personnel at the Burn Flight Team exhibit.

Reverse-phase Gel for Rapid Temporary Hemostasis of Battlefield Wounds, Pluromed, Inc.

James Benn, PhD

Come learn about Pluromed's Gel system, which is used today in cardiovascular surgery, and explore how it can be used for rapid hemostasis of penetration and surface battlefield wounds.

BREAKTHROUGH TECHNOLOGIES EXHIBITS:

Endoscopic Optical Frequency Domain Imaging for Staging and Characterization of Human Diseases, MGH, HMS

Eman Namati, PhD; Gary Tearney MD, PhD

Explore non-invasive, high-resolution optical methods for diagnosing diseases. Clinical applications include coronary arteries, gastrointestinal tract and pulmonary airways.

Brain Computer Interface, A*STAR

Guan Cuntai, PhD

Learn about an effective therapeutic intervention for stroke patients. The Brain-Computer Interface (BCI) is a system that directly translates brain signals into commands for controlling an external device and enables stroke patients to relearn motor control and improve their cognitive capacities.

Polymer Microfluidic Device Creation, A*STAR

Zhiping Wang, PhD

See innovations in the creation of polymer microfluidic device manufacturing including design, fabrication, integration, testing, measurement, and characterization.

Natural Orifice Transluminal Endoscopic Surgery (NOTES), MGH, BWH, BIDMC

Patricia Sylla, MD; Christopher Thompson, MD; Kai Matthes, MD

Explore how Natural Orifice Transluminal Endoscopic Surgery (NOTES) utilizes the mouth, vagina and anus as entry points for minimally invasive procedures within the peritoneal cavity.

Neuro-modulatory Single-Transducer Focused Ultrasound System, BWH

Seung-Schik Yoo, PhD

View the image-guided single-transducer based ultrasound sonication system that selectively excites and suppresses the regional brain function.

Advanced Multimodality Image-Guided Operating Suite (AMIGO), BWH

Dan Kacher, MS

Learn about the AMIGO suite of procedure rooms that provide intra-operative imaging using multiple modalities and enables clinicians to better define tumor margins.

Innovative Visualization and Endoscopic Technologies, Karl Storz Endoscopy

info@ksea.com

See the Image 1® FULL HD solution that offers surgeons video capabilities and visualization. The ENDOCAMELEON™ is the unique telescope that provides a variable direction of view.

Biomimetic Spleen for Sepsis Therapy, CHB, HMS, Wyss Institute for Biologically Inspired Engineering, Princeton University, MIT

Chong Wing Yung; Ryan Cooper

Observe a blood cleansing platform technology as a biomimetic spleen that has demonstrated ability to remove over 90% of candida albicans fungal pathogens from flowing human blood.

 **Point-of-Care HIV Patient Monitoring Device, BWH, HST**


Utkan Demirci, PhD; SangJun Moon, PhD

View a point-of-care platform that uses a microfluidic chip and far-field CCD based imaging technologies for HIV patient monitoring.

 **Real-time Breath Analysis for Early TB Detection, Draper Laboratory, BIDMC**

Jose Trevejo, MD, PhD

Learn about a volatile analysis system for early TB detection, utilizing a novel differential mobility spectrometer with a highly sensitive, real-time, portable, low-cost gas sensor.

 **Cost-effective Diagnostics Through Modular Aptazyme-Mediated Signal Transduction, University of California, Berkeley**

Richard Henrikson; Frankie Myers

Learn how Modular Aptazyme-Mediate Signal Transduction presents a novel mechanism for versatile, rapid, and low-cost molecular diagnostics.

Unique Bi-directional Nasal Drug Delivery Technology, Optinose

Helena Djupesland

Learn about a new therapeutic option that targets sites of absorption deep in the nose. This technology has broad applicability for sinusitis, rhinitis, migraine, Alzheimer's, Parkinson's, neurological and psychiatric diseases.

 **Automated Hand-Hygiene Reminder and Documentation System**


Michael Dempsey; Ron Newbower, PhD

View a simple technology solution designed to address costly hospital-acquired and food-borne related infections. The technology provides real-time prompts to remind employees to sanitize hands as needed.

Aingeal: Body-Worn Wireless Vital Signs Monitor, Intelesens

Michael Caulfield, PhD

Learn how a non-invasive body-worn patch device using existing wireless networks can measure respiration rate, heart rate and patient activity levels to provide alerts for clinical staff.

 **Neurocritical Care Demonstration of Medical Device Plug-and-Play Concepts, Moberg Research Corporation, MGH**

Richard Moberg; Julian M. Goldman, MD

Learn about a neurocritical care application in a plug-and-play integrated device using the new ICE (Integrated Clinical Environment) standards-based medical device adapters.

Web-based Virtual Simulation: Reducing the Spread of MRSA in the Department of Veterans Affairs, VA Boston

Mark Balch, MHA

Experience a web-based virtual simulation training program that enhances knowledge retention and facilitates behavioral changes associated with MRSA infection control.

Smart Walker of the Future, California HealthCare Foundation

Margaret Laws, MPP

Come see an affordable, reengineered walker designed to improve mobility and decrease avoidable falls.

inSPira HD: Battery Powered, High Resolution, Portable SPECT, NeuroLogica Corporation

Sang Lee

See the recently FDA approved inSPira HD, a portable SPECT designed primarily for brain imaging applications such as Epilepsy, Parkinson's, Stroke and Alzheimer's.

Setting the New Standard in Endoscopy, Olympus America Inc.

Ray Eckel

Learn about state-of-the-art Olympus endoscopy equipment that is ergonomically designed, minimally invasive, and offers outstanding optics for surgeons and patients.

INNOVATION 101 EXHIBITS:

Innovation Toolkit, Innovation Learning Network and Social Invention Group

Chris McCarthy, Keith McCandless

Engage in powerful innovation methods from the ILN Innovation Toolkit, unleashing the immense power of grassroots creativity, boundary-crossing collaboration, and decentralized networks.

CIMIT Young Clinicians, NWH, VA Boston, MGH, BWH, BMC, BIDMC, CHB

Claire Cronin, MD, MBA; Marilyn L. Moy, MD; Harald Ott, MD; Robert Riviello, MD; Jennifer E. Rosen, MD; Joan Spiegel, MD; Gerhard Wolf, MD

Meet young clinicians creating novel life-saving medical devices and technologies in tissue engineering, regenerative medicine, minimally invasive diagnostics and therapies, metabolic disease and biomaterials.

 **Therapeutic Game for Children with Autism, Columbia University**

Ming Jack Po

Explore a set of therapeutic computer games for autistic children (5 to 18) centered on social development providing customizability and feedback for therapists and caretakers.

 **Steerable Catheter, MIT 2.75**

Rajiv Gupta, Conor Walsh, MS

Interface with a prototype image-guided telerobot capable of repositioning the distal tip of a percutaneous instrument, such as a radiofrequency ablation probe, within a configurable volume inside the body

Image-Guided, Telerobot For Percutaneous Instrument Distal Tip Repositioning, MIT and MGH

Conor Walsh, MS; Alex Slocum, PhD; Rajiv Gupta, MD

An image-guided telerobot capable of repositioning the distal tip of a percutaneous instrument, such as a radiofrequency ablation probe, within a configurable volume inside the body.

Precision Motion Medical Devices, Piezo Resonance Innovations, Inc.

Maureen L. Mulvihill, PhD

Meet Piezo Resonance Innovations, developing active precision motion medical devices and integrating smart technologies in SBIR and commercial partnerships.